OFFSHORE SAFETY IN THE WAKE OF THE MACONDO DISASTER: THE ROLE OF THE REGULATOR

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1. This is Part Two of a two-part Article written by Professor Weaver. Part One has been published and appears as Jacqueline L. Weaver, *Offshore Safety in the Wake of the Macondo Disaster: Business As Usual or Sea Change?*, 36 HOUS. J. INT'L L. 147 (2013) [hereinafter *Part One*]. Part One discussed three changes that will require an effective regulator to implement and enforce. This Part Two addresses the role of the regulator in effectuating real change in offshore safety practices. For purposes of clarity and continuity, Section numbering between Part One and Part Two is continuous as though they comprise a single, unified publication. The Appendix to Part Two contains the acronyms used throughout Parts One and Two, with brief descriptions of the many entities referred to in both Parts.

III. THE ROLE OF THE REGULATOR: BEST PRACTICES

A. Introduction: the Pre-Macondo Regulator

> *"[The Macondo incident] challenged 40 years of generally accepted belief that offshore operations could occur safely under existing regulation and oversight."*
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> –Mary Kendall
> Acting Inspector General, Department of Interior[2]

From 2004 to 2009, fatalities in offshore oil and gas operations in U.S. waters were more than four times higher per person-hours worked than in European waters.[3] After citing this data, the National Commission Report on the BP-Deepwater Horizon oil spill noted that differing regulatory systems seemed most likely to explain the gap.[4] Part One of this Article discussed how a mandatory safety and environmental management system (SEMS) for regulating offshore operations

2. *See* OUTER CONT'L SHELF SAFETY OVERSIGHT BD., U.S. DEP'T OF THE INTERIOR, REPORT TO SECRETARY OF THE INTERIOR KEN SALAZAR 1 (2010). The safety oversight board was comprised of Wilma Lewis, Ass't Secretary for Land and Minerals Management, Chair; Mary L. Kendall, Interior Dep't Acting Inspector General; and Rhea S. Suh, Ass't Secretary for Policy, Management and Budget.

3. NAT'L COMM'N ON THE BP DEEPWATER HORIZON OIL SPILL AND OFFSHORE DRILLING, DEEP WATER: THE GULF OIL DISASTER AND THE FUTURE OF OFFSHORE DRILLING 225, 251 (2011) [hereinafter NAT'L DWH COMM'N REPORT].

4. *Id.*

appeared in the Gulf of Mexico in the wake of the Macondo disaster. This Part Two of the Article addresses the role of the regulator in this new regime. How does the government safety agency fit into the newly adopted SEMS regime which is to mimic many of the principles of the Safety Case regimes used in the North Sea? The purpose of both systems is to hold individual companies accountable for identifying and minimizing all major safety hazards in order to maintain a safe workplace. How does the regulator enforce operators' compliance with required SEMS programs and with other rules governing offshore safety equipment and processes? Part One concluded with Professor Hopkins' assessment that serious weaknesses still exist in the U.S. regime. This Part Two takes up his assertion and provides a detailed analysis of the current state of offshore safety in the Gulf of Mexico and a road map to improvements needed.

Several reports on the Macondo disaster have pointed to "government failure" as an important contributing cause. The National DWH Commission Report, for one, recited the same failures of the U.S. regulatory system that had contributed to the *Exxon Valdez* spill twenty years earlier: An under-resourced regulator, subject to the political winds of Congressional and Executive funding and oversight, could not prevail against a pro-industry ideology that treated additional regulation as a nuisance, especially when no large oil spills had occurred since tanker shipments had started moving Alaskan crude to market.[5]

The National DWH Commission Report presents a doleful history of the impediments to better offshore safety regulation over a twenty-year period before Macondo.[6] From 1989 on, the MMS took fitful steps to strengthen its inspection processes and to move to a limited adoption of some elements of a SEMS

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5. *Id*. at 67–82. The Coast Guard office in Alaska that monitored tanker movements in Prince William Sound was so underfunded that it lacked a radar tracking system for the oil supertankers moving in and out of the Sound amidst ice floes, counter-traffic, dense fog, and rocky islets in their path. ART DAVIDSON, IN THE WAKE OF THE EXXON VALDEZ: THE DEVASTATING IMPACT OF THE ALASKAN OIL SPILL 10–18 (Linda Gunnarson ed., 1990). Instead, a lone officer tracked tankers by moving pieces of paper on the floor based on radio contact information. *Id*.

6. *See* NAT'L DWH COMM'N REPORT, *supra* note 3, at 67–82 (suggesting that the *Exxon Valdez* oil spill had the effect of focusing congressional attention on tankers, not offshore facilities).

regime, but the agency's efforts were "repeatedly revisited, refined, delayed, and blocked alternatively by industry or skeptical political appointees."[7] Just as deepwater drilling began to surge in the 1990s, the MMS budget went into a steep decline.[8] Training of MMS inspectors was nothing short of "abysmal,"[9] and MMS personnel reviewing applications to drill were not competent to assess safety-critical technology or procedures.[10] In short, MMS personnel were not professionally capable of either regulating or enforcing safety in offshore waters. .

To its credit, the MMS realized two decades before the Macondo blowout that it had a significant problem enforcing safety offshore and asked the National Research Council's Marine Board to assess how the MMS could be more effective.[11] The resulting 1990 report by the Marine Board examined alternatives for effective inspection of OCS operations and bluntly concluded that more inspections using the current MMS checklist would yield no improvements in safety.[12] The checklist focused on compliance with hardware, yet most accident events on the OCS related to operational procedures or human error. The inspections did not provide a means of assessing an operator's attention to or attitude towards safety.

The Marine Board recommended that that MMS improve its data collection and safety analyses, develop a program to

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7. *Id*. at 71.

8. *Id*. at 73.

9. *Id*. at 76–77 (noting that no formal training, certification program or exam existed for MMS offshore inspectors at the time of the Macondo disaster); *see also* DONALD C. WINTER, NAT'L ACAD. OF ENG'G & NAT'L RESEARCH COUNCIL OF THE NAT'L ACADEMIES, INTERIM REPORT ON THE CAUSES OF THE DEEPWATER HORIZON OIL RIG BLOWOUT AND WAYS TO PREVENT SUCH EVENTS 16 (2010) [hereinafter NAS INTERIM REPORT ON DWH] (noting the lack of MMS training). This Interim Report documented many other regulatory failures, such as confusion among the MMS, Coast Guard, and classification societies, over which entity had inspected various aspects of the drillship (*id*. at 16–17).

10. *See* NAT'L DWH COMM'N REPORT, *supra* note 3, at 77–78 (noting that "pockets" of corruption in MMS offices also took root, leading to a demoralized workforce).

11. COMM. ON ALTERNATIVES FOR INSPECTION OF OUTER CONT'L SHELF OPERATIONS, MARINE BD., NAT'L ACAD. OF SCIENCES, ALTERNATIVES FOR INSPECTING OUTER CONTINENTAL SHELF OPERATIONS 2 (1990).

12. *Id*. at 80–83.

systematically upgrade safety requirements, conduct risk-based inspections of selected facilities, and provide training so that MMS inspectors could better assess safety procedures and behaviors rather than mere hardware compliance. The report strongly recommended against third-party inspections by private contractors because this would increase the tendency of operators to abdicate safety responsibility to the regulator. Yet reliance on self-inspection by the operator was not a tenable recommendation because the MMS would then be charged with having abdicated its responsibility. The presence of MMS inspectors was important to convey "a sense of oversight" and to provide "impetus to marginal and inexperienced operators to meet federal safety standards."[13] This last statement by the Marine Board shows how little the MMS inspection system then accomplished or was expected to accomplish.

In short, the 1990 Marine Board report concluded with no good solution for an agency so under-resourced. The best alternative was a form of enhanced inspection of only certain facilities (based on a formal sampling process), including a "high visibility" program of frequent and comprehensive inspections of drilling and workover operations where serious safety problems most often arose. The report strongly recommended that the MMS focus on detecting potential accident events and collecting information on near misses.[14]

Twenty years later in 2010, MMS oversight of OCS safety had not advanced beyond its 1990 status, despite the move to deepwater frontiers and the large increase in activity. In May 2010 (a month after the Macondo blowout), the Office of Inspector General of the Department of Interior was requested by Secretary Salazar to determine "whether specific deficiencies exist in Minerals Management Service (MMS) performance" of its regulatory mandate to assure that operations on the OCS were conducted safely.[15] The resulting December 2010 report is

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13. *Id*. at 81.

14. *See id*. at 83.

15. OFFICE OF INSPECTOR GEN., U.S. DEP'T OF THE INTERIOR, NO. CR-EV-MMS-0015-2010, A NEW HORIZON: LOOKING TO THE FUTURE OF THE BUREAU OF OCEAN ENERGY MGMT., REGULATION AND ENFORCEMENT 1 (2010) [hereinafter OIG, FUTURE OF BOEMRE]. After finding serious deficiencies, the Inspector General's report made sixty-

even more doleful reading: MMS engineers, lacking access to computer systems that displayed the history of an operator's well operations, approved departures from safety requirements without proper justification, especially in deepwater;[16] chronic staff shortages and back-logged work did not allow engineers to attend training sessions;[17] some operators "shopped around" to find an MMS engineer that would approve its request or waited until the MMS inspector left the facility to perform an operation that might be subject to an INC (an incident of noncompliance);[18] operators signed certificates that indicated they had corrected noncompliance violations on a form without a perjury oath swearing that the information was accurate; only 50 of the 2,298 INCs issued in 2009 had documented follow-up inspections to ensure compliance had been done;[19] the MMS relied on operators to report serious events such as fires, fatalities and lack of well control, but the operator-submitted information required to assess the severity of an accident and the need for an MMS investigation was woefully inadequate;[20] MMS had no accountability system to follow up recommendations based on accident investigations, meaning that the lessons learned from understanding the causes of accidents were either not communicated through safety alerts or, if communicated, were not tracked to see if operators implemented them;[21] and MMS did not have the capacity to

four recommendations to the Secretary of Interior to strengthen BOEMRE (now BSEE). *Id*. at 74–80 (listing, in Appendix I, the recommendations made throughout the report in categories of Permitting, Inspections, Enforcement, Environmental and Cultural Resources, Enhanced Accident Investigations, and Safety).

16. *See id*. at 3–4, 8.

17. *Id*. at 5 (explaining that fatigue from overtime and round-the-clock monitoring schedules also contributed to an environment where mistakes were likely to be made).

18. *Id*. at 7, 17.

19. *Id*. at 30–31.

20. *See id*. at 40 (describing how only "major" fires need reporting, but operator's description of a potentially catastrophic fire did not indicate the degree of danger involved).

21. OIG, FUTURE OF BOEMRE, *supra* note 15, at 42–43 (describing how the MMS could provide evidence that only one of twenty-five safety recommendations made by MMS offices had been implemented, in contrast to the National Transportation Safety Board that had data showing eighty percent of its safety recommendations had been implemented; and further noting that the MMS did not use an independent peer review

effectively review all API-issued industry standards or to identify the best and safest technologies required to be used offshore.[22]

Post-Macondo, the National Research Council was again asked to assess the effectiveness of OCS safety regulation by the MMS. An interim report from the National Academy of Engineering released in November 2010 found that the agency did not regulate offshore safety in any meaningful way. For example, the MMS had adopted offshore regulations that incorporated by reference about 80 of the industry's 240 recommended standards, but it was not clear that the MMS had the expertise to independently evaluate the adequacy of these industry standards.[23] The standards and recommended practices were developed by the technical arm of the American Petroleum Institute (API), an institution that plays a critical role in offshore safety, but is best known to Americans as a powerful lobbyist, whose media campaigns and spokesmen actively promote industry causes such as low taxes, less regulation, and continued oil industry subsidies.[24]

As to the API's role, the National DWH Commission report bluntly noted that "API's ability to serve as a reliable standard-setter for drilling safety is compromised by its role as

process for catastrophic and complex accident investigations).

22. *Id*. at 45–46; *See also* LYNN SCARLETT, ARTHUR FRASS, RICHARD MORGENSTERN & TIMOTHY MURPHY, RESOURCES FOR THE FUTURE DISCUSSION PAPER 10-64, MANAGING ENVIRONMENTAL, HEALTH AND SAFETY RISK: A COMPARATIVE ASSESSMENT OF THE MMS AND OTHER AGENCIES 8–10 (2011) (describing deficiencies in MMS practices as compared to other agencies like the Environmental Protection Agency and the Federal Aviation Agency).

23. *See* NAS INTERIM REPORT ON DWH, *supra* note 9, at 17–18 (detailing MMS reliance on the API for standard development that took years to respond to the need for new technologies; the MMS had been working for nine years on a draft regulation for secondary control systems for deepwater BOP stacks without result); *see also id*. at 18 (explaining that a lack of independent review of safety-critical equipment allowed operators to self-certify their BOPs with no requirement that the certification be done by a professional engineer; nor did the MMS oversee critical steps in well completion).

24. Lobbying overview of *The American Petroleum Institute*, INFLUENCE EXPLORER, http://influenceexplorer.com/organization/american-petroleum-institute/83bfbee9757c42308f4c7d0598cbdce3 (last visited Mar. 10, 2014) (summarizing the API's lobbying efforts, campaign contributions, and proposed regulations).

the industry's principal lobbyist."[25] The API regularly resisted agency rulemaking that the MMS believed would have led to greater safety, but which might cost more. More troubling, API's technical standards increasingly failed to meet best practice; rather, they reflected the lowest common denominator that almost all operators could achieve.[26] Because the MMS relied on the API standards in developing its own regulations, the API's shortcomings "undermined the entire federal regulatory system"[27] and was one of the reasons that the National DWH Commission determined that the industry as a whole had "systemic" failures beyond BP's individual shortfalls.

The next section of this Article presents an overview of the role of the model regulator, followed by a detailed examination of what the U.K. Health and Safety Executive (U.K. HSE) and the Norwegian Petroleum Safety Authority (PSA) do to implement effective safety regulation. This section lays the predicate for assessing whether the newly reformed U.S. offshore regulatory framework conforms to what is unanimously regarded as best practice in these two North Sea jurisdictions.

B. The Model of a Good Regulator

1. Overview

This section presents the views of some key players about the role of the regulator in advancing continuous safety improvement in high-risk environments.

In testimony before a Congressional subcommittee in November 2010, Rex Tillerson, the Chairman and CEO of ExxonMobil, described the role of the regulator as another "redundancy."[28] While this may sound dismissive of regulators, it is an acceptable answer in a Safety Case regime. Operators

25. NAT'L DWH COMM'N REPORT, *supra* note 3, at 225.

26. *Id.*

27. *Id.*

28. Rex Tillerson, CEO, ExxonMobil, Remarks before the National Commission on BP Deepwater Horizon Oil Spill and Offshore Drilling, Day 2, Panel V (Nov. 9, 2010) [hereinafter Tillerson Remarks] (transcript available in archive format at http://cybercemetery.unt.edu/archive/oilspill/20121210231300/http://www.oilspillcommission.gov/sites/default/files/documents/Transcript-%20Meeting%205.pdf).

must "own" the safety case that minimizes risks to workers to the ALARP level—As Low As Reasonably Practicable. Indeed, in an organization that lives and breathes the Safety Case, the statement is a truism: the company itself knows and understands the risks better than any regulator ever can or will and has performed a risk analysis and instituted all procedures, technologies and training necessary to minimize risk. Government checks on the company's Safety Case are a redundancy that functions as one of multiple barriers essential to "defense in depth" against human error, malfunctioning equipment, or unexpected geology that can lead to catastrophic disaster.

At this hearing, Tillerson described how ExxonMobil conducts "cold-eyed" audits, using its own teams of experts to evaluate operations worldwide rather than relying only on third parties or government regulators to search for gaps in its safety analysis and procedures. "Cold-eyed" audits are recognized as a best practice by the offshore industry, in a three-tiered system of effective auditing of safety management.[29]

At this same hearing, Shell Oil's President of Upstream Americas stated the role of the regulator more diplomatically: the Safety Case approach requires a "competent and nimble" regulator that can set and enforce the rules to assure safety without stifling innovation or commercial success.[30]

Another, more attention-getting summary of the role of the regulator comes from the Petroleum Safety Authority (PSA) of Norway, considered to be the leader in offshore safety practices.

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29. *See* INT'L ASS'N OF OIL & GAS PRODUCERS, DEEPWATER WELLS: GLOBAL INDUSTRY RESPONSE GROUP RECOMMENDATIONS, REPORT NO. 463, at 6 (2011) [hereinafter OGP REPORT NO. 463]. The first key recommendation of the six listed best practices to be promoted by industry in light of the Macondo disaster is a "3-tier review process" for safety operations. *Id*. First, every operator and contractor should audit its own processes; second, an independent engineering audit should be done, either in-house with "cold eyes" or by a third party; and third, the regulator should undertake robust and meaningful inspections. *Id*.

30. Marvin Odum, Upstream Americas Dir., Shell Global, Testimony before the Nat'l Comm'n on BP Deepwater Horizon Oil Spill and Offshore Drilling, Day 2, Panel V (Nov. 9, 2010) (video of the event *available at Gulf of Mexico Oil Spill Report, Day 2, Business Executives*, C-SPAN (Nov. 9, 2010), http://www.c-spanvideo.org/program/Day2B&showFullAbstract=1).

It is an independent agency inside the Ministry of Labor rather than the Ministry of Petroleum and Energy. The PSA's arresting summary of its role in promoting Health, Safety and Environment (HSE) appears in its short booklet titled "[thought processes]" under the heading "[an endless task]:"[31]

> HSE is taken for granted . . . . Everyone is convinced that a platform will neither collapse nor explode . . . .
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> . . . .
>
> The PSA's role is to supervise that good work on HSE is maintained, that somebody continues to roll the stone up the hill (like Sisyphus) even when everything is going well and the focus shifts from HSE to US$.[32]

The PSA's website more formally defines its "supervision" role as "much more than audits."[33] It covers "everything which gives the PSA the necessary basis to determine whether the companies are accepting their responsibility to operate acceptably in all phases."[34] It describes the bulk of its practical supervision of the industry as consisting of "dialogue" between PSA and industry.

The OGP, the offshore producers' forum in Europe, offers a similar view of an ideal regulator as engaged in dialogue with industry:

> In some areas of the world, the regulators are highly skilled in many aspects of well construction and highly knowledgeable about management structures and systems. A regulator who performs his or her tasks in a

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31. PETROLEUM SAFETY AUTHORITY NORWAY, [THOUGHT PROCESSES] 27 (2004) (delivering "thought processes" about safety, using attention-grabbing graphics (e.g., a black-and-white X-ray photo of a human brain crashing into a computer screen with a spray-back of red droplets that look like both blood and oil drops) and short, punchy stories and sentences). At page 21, titled "vulnerable arrogance," the PSA warns against complacency and advises workers to "never stop being afraid. If you forget the hazards in your work, you won't be thinking about what might go wrong." *Id*. at 18–21.

32. *Id*. at 27.

33. *What is Supervision?*, PETROLEUM SAFETY AUTH. NOR., http://www.ptil.no/supervision/what-is-supervision-article8519-88.html (last visited Mar. 10, 2014). The PSA purposefully replaced the term "inspections" with the term "supervision." *See infra* notes 74–75 and accompanying text.

34. *What is Supervision?*, PETROLEUM SAFETY AUTH. NOR., http://www.ptil.no/about-supervision/category888.html (last visited Mar. 10, 2014).

> diligent and consistent manner assists the well construction process greatly, as it helps operators understand regulatory requirements and work with the regulator on common goals.[35]

Because Norway's PSA and the U.K.'s HSE are the leading agencies with the most professional expertise in regulating a Safety Case regime in deepwater offshore areas, the next subsections of this Article will discuss examples of their work. The examples reflect a competent and nimble regulator that constantly seeks improvement in industry practices through expert assessments of industry practices**.** Both examples also illustrate how North Sea operators have had problems actually living the Safety Case and how an effective regulator can, like Sisyphus, constantly move safety levels up.

2. The U.K. Health and Safety Executive (U.K. HSE)

The first example from the U.K. Health and Safety Executive shows how a competent regulator can actively monitor industry's actual implementation of the Safety Case as a guard against complacency. Starting in 2001, the U.K. HSE initiated a series of "Key Programmes" focused on monitoring and then improving key factors in assuring safe operations.[36] Key Programme 1 (KP1) in 2001 trained its lens on reducing offshore hydrocarbon releases: There were too many and the U.K. HSE put the burden on industry to decrease the number. To further this goal, HSE put a more intensive inspection program in place following a hydrocarbon leak, so that a greater number of HSE inspectors could investigate the causes of the leaks and also share lessons learned more widely among industry. The leak reduction program significantly reduced leaks in the following years and the industry is on target to meet its goal of a fifty percent reduction in 2013.[37] Indeed, the U.K. offshore industry now publishes details of leak volumes, locations and operators as part of its own initiative to drive the number lower through

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35. OGP REPORT NO. 463, *supra* note 29, at 21.

36. Jake Molloy, Regional Organizer of the Nat'l Union of Rail, Mar. & Transp. Workers, Safety Performance Indicators: The Workforce Perspective, presented at CSB Public Hearing on Process Safety Indicators 1 (Hous., Tex. July 24, 2012).

37. *Id*. at 1–2.

shared learning.

Key Programme 2 (KP2), launched in 2003, centered on Deck and Drilling Operations: An unacceptable number of fatalities had occurred in the preceding two years, almost of all which were found to be preventable. Court cases, prosecutions, and public hearings put industry in the spotlight. As of mid-2012, there had not been a single death in drilling and deck operations in the U.K. sector since 2004.[38]

Key Programme 3 (KP3) started in 2004 and focused on Asset Integrity: Was maintenance on the aging production platforms keeping these facilities in a safe mode? HSE conducted one hundred targeted inspections over three years to inspect safety-critical elements on forty percent of all offshore installations.[39] In 2007, the HSE's report was released and it presented a bleak picture of the state of the safety equipment on the platforms. The deluge systems, the very equipment that had failed in the Piper Alpha disaster, were in poor condition on many facilities.[40] How short was industry's collective memory! The report concluded in its findings that the "role of asset integrity and concept of barriers in major hazard risk control" was not "well understood" for three main reasons:[41]

1. Lack of industry self-auditing and monitoring did not allow learning to be embedded. This fact alone signaled a significant failure of the permissioning approach and the Safety Case as a "living document" that operators used to assess the health of their facilities on a regular basis.
2. The engineering function in companies had declined to worrisome levels, possibly because the finance function was dominating decisions.
3. Senior management, the leadership of the

38. *Id*. at 3.

39. OFFSHORE DIV., HEALTH & SAFETY EXECUTIVE, HAZARDOUS INSTALLATIONS DIRECTORATE, KEY PROGRAMME 3 - ASSET INTEGRITY 6 (2007).

40. *Id*. at 7, 16–18 (noting that the powerful sprinkler systems known as deluge systems did not properly work on the Piper Alpha because scale had built up, blocking the release of water needed to prevent fire from spreading).

41. *Id*. at 6.

> companies, did not understand or appreciate the financial risk of operating with degraded safety-critical elements.

This U.K. HSE report strongly suggested that cost factors predominated in industry decision-making in a way that the Safety Case should have prevented, given its focus on continuous risk assessment.[42] The KP3 report presciently foreshadowed what safety experts would find to be root causes of the Macondo disaster. The actual decision tree used by the engineers who designed and approved the Macondo well design showed that commercial risks predominated over safety risks and that the engineers simply did not understand the concept of "defense in depth," which is essential to major hazard mitigation.[43]

Some commenters consider the KP3 report's findings as evidence of the failure of the Safety Case and argue that the U.S. should not emulate this regulatory regime. For example, Professor Rena Steinzor urged that greater prescriptive regulation with heavier sanctions and enforcement by an experienced agency such as OSHA or the EPA would be a better approach in U.S. offshore waters.[44] The counter-argument is

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42. John Paterson, *The Significance of Regulatory Orientation in Occupational Health and Safety Offshore*, 38 B.C. ENVTL. AFF. L. REV. 369, 389 (2011).

43. *See* ANDREW HOPKINS, DISASTROUS DECISIONS: THE HUMAN AND ORGANISATIONAL CAUSES OF THE GULF OF MEXICO BLOWOUT, chs. 2–4, app. 1 (2012) [hereinafter HOPKINS, DISASTROUS DECISIONS]. BP's engineers reported to business units rather than up a functional line to engineering superiors that would encourage engineering excellence. *See id*. at 103.

44. Rena Steinzor, *Lessons from the North Sea: Should "Safety Cases" Come to America?*, 38 B.C. ENVTL. AFF. L. REV. 417, 417, 444 (2011). Professor Steinzor's focus on stronger enforcement as an effective method for bringing greater safety to the offshore workplace is supported by Professor Thomas McGarity's study of EPA's enforcement of a section of the Clean Air Act. *See* Thomas O. McGarity, *When Strong Enforcement Works Better Than Weak Regulation: The EPA/DOJ New Source Review Enforcement Initiative,* 72 MD. L. REV. 1204 (2012-2013). Professor McGarity concludes with the "powerful lesson" that "old-fashioned deterrence-based enforcement works" in reducing air pollution, although it does require expending large agency resources). *Id*. at 1291–92. *But see* Lucija Muehlenbachs et al., *The Effect of Increased Group Size and Familiarity on Enforcement and Deterrence*, (Resources for the Future Discussion Paper No. RFF DP 13-36, 2013) (describing a statistical study finding that adding more government inspectors to the team performing offshore inspections resulted in more severe sanctions being issued; however, the increased severity did not appear to affect deterrence).

that the U.K. regulator found these deficiencies in the operators' implementation of their safety cases and instituted programs to correct them.

Professor Paterson notes other real problems with the Safety Case, including: (1) Safety Cases are often written by consultants, not "owned by the company"; (2) they are too technocratic and bureaucratic for the regulator to audit effectively; and (3) they often lack any trade union and worker buy in.[45] Moreover, even experienced Safety Case jurisdictions do not always require that operators show attention to root cause organizational factors, such as managers' incentivized pay agreements that may affect decision-making by rewarding on-time production targets over safety, however subtly.[46] These criticisms must be considered in evaluating gaps in any system of offshore safety regulation.

3. Norway's Petroleum Safety Authority (PSA)

The second example of best practice is found in the reports issued by Norway's PSA. Norway has the longest experience with using a Safety Case regime. It started moving away from prescriptive regulations to a system of company internal controls as early as 1979.[47] The PSA is a "data rich" agency. It has collected statistical evidence over many years of both actual spills, releases, injuries and the like and also data about "near miss" events that are precursors to more serious dangers. The PSA uses this data and its audit reports to make both fact-based conclusions about industry-wide trends in risk levels and also to assess individual companies' management of risks.

A June 2010 PSA report illustrates the latter. This report, called "Managing the Risk of Major Accidents in a Governance Perspective," summarizes the results of the PSA's auditing, over a two-year period, of the management of eleven named

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45. Paterson, *supra* note 42, at 382–83.

46. HOPKINS, DISASTROUS DECISIONS, *supra* note 43, at 149. Performance bonuses for BP managers were set largely by performance agreements based on cost savings and by a small safety factor based on personal safety (e.g., trips and falls) rather than process safety indicators that showed attention to major hazards. *Id*. at 86–87.

47. Knut Kaasen, *Post Piper Alpha: Some Reflections on Offshore Safety Regimes from a Norwegian Perspective*, 9 J. ENERGY & NAT. RESOURCES L. 281, 284 (1991).

companies (including Transocean and ExxonMobil) operating on Norway's continental shelf.[48] The purpose of the audit was to ascertain that top company management was "focuse[d] on the companies' own need for risk management and self-motivated efforts to manage the risk of major accidents."[49] Past investigations of major accidents uniformly showed that a company's understanding of its own "state of health" was often deficient and that company management overestimated the company's robustness with regard to major accident risk.[50] In other words, companies were often unaware of their own vulnerabilities; they were complacent. The PSA's audit activity was to provide an independent assessment of the "health" of these eleven companies because threats to their health, in terms of safeguards against disasters, were a threat to society as a whole.

To perform the PSA audit, each company was asked to conduct a self-assessment, based on PSA questions, and then to present its assessment of its own management of major risks to the PSA in a four-hour long meeting. The audit focused on how each company monitored the small incidents that signaled a decline in safety-critical barriers: What data did they collect as "weak signals" of a deterioration; how did they interpret this data; did the company assume that work incident data (e.g., number of slips and falls) gave reliable information about major accident risk? How did the company then use the data in their management decisions? How could the data be improved? The report gives examples of improvement items discovered by the companies themselves from their self-assessment. The report notes that many of the companies used data about near-accidents collected by the PSA to assess their own health. The report also found good examples of the use of leading

48. PETROLEUM SAFETY AUTH. NOR., MANAGING THE RISK OF MAJOR ACCIDENTS IN A GOVERNANCE PERSPECTIVE 3, 5 (June 22, 2010) [hereinafter PSA RISK GOVERNANCE REPORT].

49. *Report: Management of Major Accident Risk and Governance*, PETROLEUM SAFETY AUTH. NOR. (Mar. 26, 2010), http://www.ptil.no/management-and-major-accident-risk/report-management-of-major-accident-risk-and-governance-article6786-961.html.

50. *Id*.

indicators of critical safety conditions, such as the total hours of maintenance per month outstanding and the number of variances from established competency training plans per month.[51] Several companies expressed the need to focus more on "early indicators" of problems with critical safety equipment.

The PSA then offered its own expertise in evaluating the eleven companies' self-assessments. The PSA found that company management focused largely on monitoring technical and operational performance of facilities, but experience showed that data on these two factors may not be sufficient to provide an "early enough" indication of major accident risk.[52] The PSA then reported on broader practices, such as the clarity of individual managers' responsibilities for "risk ownership," including discussion of incentive systems of pay for managers.[53] The report outlined what additional data should be collected, analyzed and used for better risk management, especially between contractors and operators sharing work responsibilities on the same platform. All in all, the report is an honest and serious dialogue between regulator and industry; it is a detailed and professional "medical check up" on the health of the companies and ways in which the regulator can improve their health.

A second PSA best practice illustrates what Norway calls the "RNNP" process of assessing trends in the risk level of petroleum activity in its waters to better monitor factors that are significant to major accident risk. The title of its 2010 RNNP report is self-explanatory: "Risk Level in the Petroleum Activity: Project Report – Acute Discharges – Norwegian Continental Shelf – 2001–2009." The report analyzed both actual incidences of acute crude oil spills and also the frequency of near misses during those years in order to assess trends. The report shows a clear reduction in crude oil discharges into the sea and also a

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51. PSA RISK GOVERNANCE REPORT, *supra* note 48, at 14. Some of the audited operators stated that a major accident in a partner-operated license would threaten their survival as a company. *Id*. at 11.

52. *Id*. 15. While the PSA report names the eleven companies audited, the report does not identify which specific companies are linked to PSA statements about its findings. *See id*. at 3, 5.

53. *Id*. at 18.

reduction in near misses over the 2001-2009 time period.[54] The report also shows the value of the PSA's comprehensive database on near misses (also called precursors) which could lead to acute discharges if barriers fail and ultimately result in fires, explosions, deaths and oil spills.[55] One precursor, hydrocarbon leaks (largely gas leaks), declined sharply until 2007 and then rose significantly.[56] The data also flagged the variability of well control incidents in the years 2006 to 2009 as a cause of concern.[57]

Because of Macondo, the PSA included in its 2010 report a detailed analysis of risk levels by water depth. The frequency of incidents in deep water was found to be higher than in shallow water.[58] This meant that assuring the operation of barriers against blowouts was all the more important in deep water. The PSA's database and analysis allowed the following comment:

> [R]eported data show that substantial variations exist between installations when safety systems are tested. Some have a considerably poorer standard than the average for the industry. Clear indications have also been seen that the installations tested most frequently had fewer faults. In addition, some installations are lagging seriously behind in carrying out maintenance — including work on safety-critical equipment.[59]

The PSA report concluded with the agency's assessment of "knowledge gaps and further work" that would allow the PSA to bring greater analysis and expertise to the continuous improvement of safety on the Norwegian outer continental shelf.[60] The report called on the PSA to continue its Sisyphus-like task of improved monitoring of near misses and learning

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54. PETROLEUM SAFETY AUTH. NOR., RISK LEVEL IN THE PETROLEUM ACTIVITY: PROJECT REPORT – ACUTE DISCHARGES – NORWEGIAN CONTINENTAL SHELF – 2001-09, at 5, 9 (Nov. 18, 2010) [hereinafter PSA RNNP REPORT].

55. *Id*. at 8.

56. *Id*. at 8, 12.

57. *Id*. at 8.

58. *Id*. at 16.

59. *Id*.

60. PSA RNNP REPORT, *supra* note 54, at 17.

from them with an eight-point "to do" list for its own staff.[61]

Now consider the two PSA reports together: The report on managing risk assessed the governance of risk at the highest management level of eleven companies. It concluded that the use of precursor data by these companies still requires improvement in the Norwegian offshore. The PSA itself works to develop the precursor data that can be used by both industry and regulator to test the "health" and robustness of a company's safety program in their safety cases. The RNNP analysis serves to identify negative trends in risk levels at an early stage to help prioritize hazard mitigation efforts by government and industry. Because the PSA has established a "good collaboration" with offshore industry players, labor unions and relevant specialists, all sectors of the industry have confidence in the PSA's reports.[62]

Moreover, Norway's citizens are informed about risk levels and individual company practices through the PSA website, which has summaries of all audit and verification reports, investigations, consents to operator activities, and enforcement notices. In its Foreword to the November 2010 RNNP report on risk levels, the PSA states:

> We have placed great emphasis on openness and integrity in our risk communication because we are convinced that knowledge about risk is crucial for preventing accidents, while under-informing, overdramatising [sic] or playing down accident risk does not serve the cause of safety.[63]

The PSA reports exemplify a dialogue between industry, labor, the citizenry and the regulator built on a strong foundation of trust. The approach seems so entirely foreign to the way that U.S. agencies, industry, and government officeholders have approached regulation in general, and safety and environmental rules in particular, that the PSA report is almost bewildering to a first-time reader steeped in the U.S. regulatory environment of adversarial lobbying, rulemaking, and litigation.

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61. *See id.* at 17–18.

62. Øyind Tuntland, *Foreword* to PSA RNNP REPORT, *supra* note 54.

63. *Id.*

The U.S. offshore regulator does not have a database that can perform the kind of analyses of risk levels and warning signs that are in Norway's RNNP report.[64] Again, one reason for this notable gap lies with industry and politicians. For example, the number of gas releases is widely recognized as a key metric for major hazard risk. In 2003, the former MMS had proposed a rule that all unintentional releases of gas be reported, but political pressure from the Executive branch and from industry weakened the rule substantially to requiring reports of gas releases only if they resulted in equipment or process shutdowns.[65] So, while regulators in some parts of world routinely collected, published and analyzed useful data on major hazard indicators, the U.S. offshore went largely unmonitored.

Norway and the U.K. use a range of tools in addition to the Key Programmes, audit analyses, and RNNP process described above. The next subsection describes this range as a background for assessing the tools being used in the Gulf of Mexico after the Macondo disaster.

4. Tools used by U.K. and Norway regulators

In response to Macondo, the National Academies charged the U.S. Transportation Research Board with the task of evaluating how regulators can provide effective oversight of offshore operators' safety management systems. In its final report, the Transportation Board summarized the tools used by the U.K. and Norwegian safety agencies to oversee safety in their waters.[66] The two European agencies had learned over

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64. *See* Jon Espen Skogdalen, Ingrid B. Utne & Jan Erik Vinnem, *Looking Back and Forward: Could Safety Indicators Have Given Early Warnings about the Deepwater Horizon Accident?* 3 (2011) (Deepwater Horizon Study Grp., Ctr. for Catastrophic Risk Mgmt., Working Paper). Even Norway's RNNP process has limited application to deepwater drilling. *See id*. at 14. The RNNP's major hazard indicators focus on production installations, not MODUs (Mobile Offshore Drilling Units), so RNNP indicators need to be supplemented and updated. *Id*. This Working Paper, produced by the Deepwater Horizon Study Group in the Center for Catastrophic Risk Management, offers many excellent recommendations on how to develop precursor data for offshore drilling. *See id*. at 14, 16–22.

65. HOPKINS, DISASTROUS DECISIONS, *supra* note 43, at 139; *see also* NAT'L DWH COMM'N REPORT, *supra* note 3, at 251.

66. TRANSP. RESEARCH BD., COMM. ON THE EFFECTIVENESS OF SAFETY AND ENVTL.

time that engagement with industry was more productive than punishment, but the threat of punishment was still necessary. The two agencies had migrated to a system using these types of tools:

1. Audits and inspections by qualified teams.
2. Dialogue and discussion with personnel in the operations about how a safety management system was actually being implemented and used in daily operations.
3. Feedback to top management of the companies.
4. Monitoring for continuous improvement.
5. Analysis of industry-wide trends (like the RNNP process in Norway) and targeted industry-wide investigations like the Key Programmes in the U.K., using data mandatorily submitted by operators.[67]

The U.K. HSE uses two kinds of inspectors: regulatory management inspectors who lead inspections and investigations and who manage the process of assessing safety cases; and specialist inspectors (such as process safety experts, mechanical and electrical engineers and occupational health experts) who conduct in-depth assessments of safety cases and provide input into inspections and investigations.[68] Companies must submit a safety case to HSE for assessment and acceptance prior to operations. HSE provides an in-depth assessment of the Safety Case of the regulated entity (called a "duty holder") to ensure it has an effective safety management system in place that identifies major hazards and measures to control risks. The HSE often identifies weaknesses that need resolving before operations can begin. The safety case must have provisions for audits and audit reports. These U.K. inspectors are clearly performing far more searching reviews than the MMS inspectors undertook through the use of their "PINC" (Potential Incident of

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MGMT. SYS. FOR THE OUTER CONT'L SHELF OIL AND GAS OPERATIONS, EVALUATING THE EFFECTIVENESS OF OFFSHORE SAFETY AND ENVIRONMENTAL MANAGEMENT SYSTEMS, SPECIAL REPORT NO. 309, at 55–66 (2012) [hereinafter TRB SEMS REPORT].

67. *Id*. at 5, 62–64.

68. *Id*. at 55.

Non Compliance) checklist of items.

U.K. HSE regularly conducts planned inspections and targeted investigations during which inspectors check records, test equipment, observe work practices, and talk with managers and workers on the facility to see if they understand the safety processes.[69] In addition to inspections, the HSE staff meet with operator's senior management, participate in industry committees and workgroups, and conduct joint research.

Norway's PSA has a staff of 166, 110 of whom are professionals with 60 qualified as audit team leaders.[70] The PSA chairs a board that consists of industry members and unions who work closely together to define PSA regulations and issue nonbinding recommendations and guidelines that satisfy good practice under the rules.[71] The guidelines draw heavily on industry standards for equipment, structures and procedures that are developed by Norway's two standard-development organizations (SDOs), NORSOK and Det Norske Veritas (DNV). NORSOK and DNV standards are intended to supersede company-specific standards and to be referenced in the PSA's legal regime.[72] These standards often use internationally developed standards as a base, with modifications to meet the needs of the Norwegian petroleum industry. OLF (the Norwegian oil and gas trade association analogous to the API)

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69. *Id*. at 45–46. HSE inspectors can serve an "improvement notice" on the duty holder explaining an observed violation and providing a fixed date for compliance. *Id*. at 57–58. A "prohibition notice" is served when there is evidence of risk of a serious injury and all work must stop. *Id*. at 58.

70. *Id*. at 59. About seventy offshore production platforms and forty-two drilling rigs operated on the Norwegian shelf in 2011. *Id*.

71. *Id*. at 61.

72. *See* Tina Hunter, *Use of American Petroleum Institute Standards in Regulating the Extraction of Unconventional Gas Resources: A Tool for Regulators?*, 30 INT'L ENERGY L. REV. 276, 279 (2012). By referencing NORSOK national and international standards in its regulations, PSA was able to reduce the volume of its Guidelines from 1200 pages to 300 pages. *See* INT'L ASS'N OF OIL & GAS PRODUCERS, REGULATORS' USE OF STANDARDS, REPORT NO. 426, at 33 (2010), *available at* http://www.ogp.org.uk/pubs/426.pdf. The PSA does not put the reference to standards into its regulations because if an operator has a different method to use for a project, the PSA would have to process an exception to the regulation. *Id*. at 52. By putting the references in the Guidelines, the operator can document a different method that it plans to use and the PSA can assess this documentation. *Id*.

participates in the standard-development process.[73] The PSA is the ultimate decision-maker for regulations and standards, but companies have a high degree of freedom in selecting good solutions as long as they meet the performance-based standards in the guidelines.

After defining the standards that companies must meet, the PSA audits to see if safety management systems are in place to ensure compliance with regulations. A PSA team of two to five experts conducts audits that take two to five weeks. The audit team meets separately with unions and management. The company is expected to do self-audits and inspections as a normal part of its safety management system and the PSA may request these results as part of its own audit.

The PSA's approach replaces inspection with supervision.[74] Like the quality management supervisor of a shop floor, the PSA does not view its job as merely inspecting an item coming off the assembly line or observing the way a worker uses a certain piece of equipment. Rather, it works with the company to improve safety on the floor. Supervision is directed at the management system used by the company to assure acceptable operations and at those managers who are responsible for assuring acceptable operations. The PSA uses many formal tools other than audits and inspections to supervise companies, but mostly the PSA engages in dialogue with the industry to assess trends and request information.[75]

Almost all PSA enforcement actions are in the form of "observations with comments" and "improvement possibilities" that drive discussion with the operator, although the PSA can also issue "not in compliance" notices.[76] Companies must notify the PSA about "undesirable incidents," clearly defined in the regulations with a dedicated form to use.[77] PSA receives more than 800 such notices a year. The data from these forms is used

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73. Hunter, *supra* note 72, at 279; *see also Standards*, PETROLEUM SAFETY AUTH. NORWAY, http://www.ptil.no/standards/category884.html (last visited Mar. 10, 2014).

74. TRB SEMS REPORT, *supra* note 66, at 60.

75. *Id*. at 62–63.

76. *Id*. at 64–65. The PSA can also recommend to the Minister that an operator's license by removed or that the operator be banned from future drilling blocks. *Id*. at 65.

77. *Id*. at 63.

by the PSA to assess an operator's safety management implementation: Too low a number of such reports may indicate a problem with an operator's safety management system, especially its reporting elements.[78] Each notice of an undesirable incident is closely followed up with a tailored response of a case officer from PSA.[79] Since 1984, companies have had to provide the PSA with data on drilling activities, using a Daily Drilling Report System (DDRS). This database allows the PSA to monitor current drilling operations for undesirable well incidents and assure itself that all such incidents have been reported.[80] This "trust but verify" system is a true eye into assuring best practices offshore, but it demands a good regulator to run it. Tellingly, the PSA has the ability to do a "drop in" audit when it deems necessary.[81]

In short, the Norwegian regulator's conviction is that "government cannot inspect quality into the industry."[82] Instead, dialogue about problems allows PSA to work with operators to "make them more successful."[83] The dialogue occurs on an industry-wide basis through the RNNP annual reporting process described earlier and through the PSA's participation in developing and revising industry standards to make sure they have kept up with technology and reflect best practices.[84] A high

78. In the tragic Piper Alpha fire, the operator (Occidental) was found to be "too easily satisfied that the permit to work system was being operated correctly, relying on the absence of any feedback of problems as indicating that all is well." HON. LORD CULLEN, DEPT. OF ENERGY, THE PUBLIC INQUIRY INTO THE PIPER ALPHA DISASTER, VOL. I, 1990, CM. 1310, at 3 (U.K.). This report also found that the Department of Energy's inspection of the Piper Alpha was "superficial to the point of being of little use as a test of safety on the platform." *Id*.

79. TRB SEMS REPORT, *supra* note 66, at 63.

80. *Id*. at 64. After a 2010 incident in Norwegian waters that the PSA found to indicate "serious deficiencies" in Statoil's well planning process, Statoil agreed, based on its own investigation, to voluntarily shut down operations in the Gullfaks field so that it could "double check" its compliance program. Guy Chazan, *Statoil Incident Is Probed*, WALL ST. J., Nov. 23, 2010, at B3.

81. NAT'L ACAD. OF ENG'G AND NAT'L RESEARCH COUNCIL, MACONDO WELL DEEPWATER HORIZON BLOWOUT: LESSONS FOR IMPROVING OFFSHORE DRILLING SAFETY 117 (2012) [hereinafter NAE-NRC, LESSONS FOR SAFETY].

82. TRB SEMS REPORT, *supra* note 66, at 65.

83. *Id*.

84. *Id*. at 66.

degree of trust is matched by a high degree of verification.[85]

C. The U.S. Safety Regime Today

> *"We are moving to an operator-driven safety program with BSEE oversight."*
>
> -James E. Watson, Director of BSEE[86]

As we have seen, the largest change in the offshore safety regulatory system in the United States has been the adoption of the SEMS rule. This rule requires every operator on the U.S. offshore to institute a safety management system that is meant to be similar to the Safety Case-type system that has proved efficacious in Norway and the United Kingdom.[87] In these two jurisdictions, experienced and respected regulators have the expertise to assess: First, whether companies have an acceptable Safety Case; and second, whether they are actually implementing the safety practices that mitigate risks to a very low level. As noted above, both regulators have found significant weaknesses in barrier protections, asset integrity and safety management in light of cost-cutting pressures within the offshore industry. Academic skepticism about the Safety Case derives from the view that it is basically a self-regulatory system, and industry has shown, in many contexts, that it is not capable of effective self-regulation.[88]

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85. Why is a verification process essential? Documents submitted to MMS by BP and several other deepwater operators active in the Gulf of Mexico claimed to have "proven equipment" to mitigate damage from blowouts and oil spills. *See* Mike Soraghan, *Industry Claims of 'Proven' Technology Went Unchallenged by MMS*, GREENWIRE, June 2, 2010, http://www.eenews.net/greenwire/stories/91665 (describing the identical wording used by seven companies that "in the event of an unanticipated blowout resulting in an oil spill, it is unlikely to have an impact based on the industry wide standards for using proven equipment and technology for such responses." *Id*. One company stated in its MMS submission that there was no possibility of a spill because of the extent of MMS regulations imposed on operations in the Gulf. *Id*.

86. James A. Watson, Director of BSEE, Prepared Statement presented at Ctr. for Offshore Safety: First Annual Forum (Apr. 29, 2013).

87. *See* Elana Schor, *Debate on Protecting Oil Rig Workers Takes a New Turn–But Likely to Last a Long Time*, GREENWIRE, Apr. 22, 2011, http://www.eenews.net/greenwire/stories/1059948147 (noting that the presidential commission suggested that a SEMS regime follow the safety case model).

88. Steinzor, *supra* note 44, at 420–21 (noting that despite extensive operations in

This Section of the paper assesses how the current institutions in the U.S. offshore safety framework work to assure that SEMS is actually a living document rather than a sterile file, put aside once stamped as completed. (Many offshore operators had filed required plans for oil spill response that featured walruses floating in the warm Gulf waters;[89] the plans were approved, seemingly without being read.)[90] This Section draws on a post-Macondo study by the Transportation Research Board, a division of the National Academy of Sciences, that was charged with recommending how the effectiveness of offshore SEMS systems should be evaluated by the offshore regulator.[91]

The two key players here are BSEE, the new federal safety regulator, and the Center for Offshore Safety, or COS, both of which were created in the wake of the Macondo disaster. However, other institutions also play important roles, notably the Chemical Safety Board and the Offshore Energy Safety Advisory Commission. The Coast Guard, which has jurisdiction over vessels and the certification of drillships (called MODUs), is another player, but its role is quite limited.[92] Virtually all the action to date in terms of implementing safety practices offshore has been through BSEE and the COS.

1. The Center for Offshore Safety (COS)

"Only time will tell whether COS can be an effective, independent force for safety."

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the North Sea, safety case regulation failed to inculcate a culture of safety at BP, and strong civil and criminal penalties are more likely to effectively deter unsafe practices).

89. *See, e.g.,* BP, GULF OF MEXICO REGIONAL OIL SPILL RESPONSE PLAN—GULF OF MEXICO BP-HZN-CEC 019492 (2009) (listing walruses as local wildlife in the Gulf of Mexico).

90. *See* Schor, *supra* note 87 (noting the United Steelworkers' health director statement that the process safety system at one refinery was treated as an exercise requiring that management "jump through a set of hoops to justify a dangerous decision they were going to make").

91. TRB SEMS REPORT, *supra* note 66, at 12.

92. *See* BUREAU OF SAFETY AND ENVTL. ENFORCEMENT & U.S. COAST GUARD, BSEE/USCG MOA: OCS-08, MEMORANDUM OF AGREEMENT BETWEEN THE BUREAU OF SAFETY AND ENVTL. ENFORCEMENT – U.S. DEPT. OF THE INTERIOR AND THE U.S. COAST GUARD – U.S. DEPARTMENT OF HOMELAND SECURITY 4–7 (2013) (describing the division of duties between BSEE and the Coast Guard).

–Transportation Board Special Report 309[93]

The Center for Offshore Safety (COS) describes its mission as promoting "the highest level of safety for offshore drilling, completions, and operations through leadership and effective management systems addressing communication, teamwork, and independent third-party auditing and certification."[94] COS "will achieve" excellence in meeting its mission by continuously improving industry's safety and environmental record, gaining and sustaining public trust in the industry, increasing public awareness of the industry's safety and environmental performance, urging industry to share best practices, and serving as a platform between industry, government and other stakeholders.[95]

The Center for Offshore Safety was created by industry leaders in March 2011, largely in response to the National DWH Commission's recommendation.[96] In that same year, BSEE was split off as a separate bureau within the Department of Interior, with a sole mission of enforcing safety and environmental regulations. These two entities now constitute the two pillars of the regulatory safety system offshore.

In recommending that the offshore industry form a center focused on promoting safe practices and a safety culture offshore, the National DWH Commission pointed to the model of the Institute of Nuclear Power Operations (INPO), developed by the nuclear industry after the Three Mile Island crisis. INPO was formed by the industry to promote "the highest levels" of safety in nuclear power plant operations and dramatically

93. TRB SEMS REPORT, *supra* note 66, at 69.

94. *About the Center for Offshore Safety: Mission and Objectives*, CTR. FOR OFFSHORE SAFETY, http://www.centerforoffshoresafety.org/about.html (last visited Mar. 10, 2014).

95. *Id*.

96. TRB SEMS REPORT, *supra* note 66, at 67–68; NAT'L DWH COMM'N REPORT, *supra* note 3, at 235–39; *see also Industry's Role in Supporting Health, Safety, and Environmental Standards: Options and Models for the Offshore Oil and Gas Sector* 5–12 (Nat'l Comm'n on the Deepwater Horizon Oil Spill and Offshore Drilling, Working Paper No. 9) (describing an industry-led offshore safety center that would not displace government's regulatory functions, but would play an important complementary role, especially when personnel with expertise in deepwater drilling are in such short supply and government cannot outbid industry for this talent).

change that industry's safety culture [97] Despite the differences between the two industries,[98] the Commission recommended that the offshore industry establish a credible safety institute that would earn the public's trust that the industry was committed to rigorous auditing, thorough inspections by technical experts of all aspects of the offshore operation (i.e., equipment, operations, human factors, incident investigation), and continuous learning. Indeed, William Reilly, co-chair of the Commission, spoke in terms of needing an industry institute as a "co-regulator" in the Gulf because no government entity would be able to match the offshore industry in either funding or expertise.[99]

In unequivocal words, the Commission demanded that an industry-sponsored safety institute be separate from the API. The API's lobbying and its focus on consensus-based standards had been found to be contributors to the poor safety record in the

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97. INPO created its own inspection process after careful study. NAT'L DWH COMM'N REPORT, *supra* note 3, at 235. INPO inspections are done by a team of twenty experts, about one-third of whom are permanent INPO inspectors, with the remaining two-thirds "on loan" from industry itself as peer evaluators. *Id.* at 236. The inspections last five to six weeks and are done by functional experts. *Id.* Lessons learned are delivered through a private online portal, without naming the individual plant that gave rise to that lesson. *Id.* Each inspection involves a Plant Performance Assessment that dissects the plant's human performance and training, engineering, maintenance and actual plant operations. *Id.* INPO's reports are not formatted as a checklist and the process is not adversarial. *Id.* at 235, 237. At an annual private meeting of the twenty-six CEOs of the 104 nuclear plants operating in the US, the INPO president passes out a report with grades for each site, ranging from one to five, with five indicating serious problems that will result in the shutdown of a plant when INPO reports pervasive, uncorrected deficiencies to the Nuclear Regulatory Commission. *Id.* at 237.

98. The National Commission on the DWH found three similarities between the offshore oil and gas industry and the nuclear industry: (1) a single weak actor threatened the entire industry's right to operate; (2) the oil industry has the financial ability to fund an effective self-policing organization; and (3) government regulators will never be as technically expert as the industry itself. NAT'L DWH COMM'N REPORT, *supra* note 3, at 239–40. The Commission noted that modifications to an INPO-type institute might be necessary because the oil industry has more actors, more diverse players and uses more types of drilling rig designs, technologies and proprietary inputs than the nuclear industry. *Id.* at 240–41.

99. Katie Howell, *Gulf Spill: Oil Industry Needs 'Systemic' Safety Overhaul — Commissioner*, E&E NEWS (Nov. 9, 2010), http://www.eenews.net/eenewspm/stories/1059941965/.

U.S. offshore.[100] The API could not be a credible self-policing agent of change in industry practices. Experienced regulators from other jurisdictions echoed this view.[101]

Yet COS is organized as a self-policing body within the API. Its governing board of twenty-four members was set up by the API's executive committee and it has no non-industry voting members.[102] The Transportation Board's Final Report on evaluating offshore safety systems views the integration of COS within the API as "a significant credibility problem" for COS,[103] but states that it was probably "inevitable" that the initial center be created by API. Because the API's standards and certification unit, the "non-lobbying" arm of the API, is so immersed in technical work, creating a second institute to focus on offshore safety alone would dilute the attention of top industry leadership and possibly dilute industry funding.[104]

The six members of the DWH Commission continue to call for the Center's independence from the API and remain concerned about its long-term viability.[105] The API asserts that COS is sufficiently independent because its technical standards

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100. NAT'L DWH COMM'N REPORT, *supra* note 3, at 241.

101. Ian Whewell, a retired director of U.K. HSE's Offshore Division, commented at a Chemical Safety Board hearing that BSEE's newly adopted SEMS rule, based entirely on API RP 75, was not as strenuous as European regulations. Jeremy P. Jacobs, *Federal Oil Spill Probe Finds U.S. Regulations Lacking*, GREENWIRE, Sep. 29, 2011, http://www.eenews.net/greenwire/stories/1059954335/print. He was skeptical of the new rule because it was developed by API. *Id*. "The degree of challenge in the API RP 75 is not of the scale of the European regimes or the Australian regimes." *Id*.

102. COS has a non-voting External Advisory Group to "provide perspective and insight on key issues." *COS Governance*, CTR. FOR OFFSHORE SAFETY, http://www.centerforoffshoresafety.org/governance.html (last visited Mar. 10, 2014). The COS Executive Director is Charlie Williams, Chief Scientist-Well Engineering and Production Technology of Shell Oil Company. *Center for Offshore Safety Names Charlie Williams, Executive Director; Announces Next Steps for Safety Program*, AM. PETROLEUM INST., http://www.api.org/news-and-media/news/newsitems/2012/mar-2012/center-for-offshore-safety-names-charlie-williams-executive-director.aspx (last visited Mar. 10, 2014).

103. TRB SEMS REPORT, *supra* note 66, at 69; *see also* NAE-NRC, LESSONS FOR SAFETY, *supra* note 81, at 108 (endorsing the concept of an industry safety center but stating that leadership of the center should involve persons from "neutral organizations, outside the petroleum industry").

104. TRB SEMS REPORT, *supra* note 66, at 69.

105. OIL SPILL COMM'N ACTION, ASSESSING PROGRESS THREE YEARS LATER 7 (2013).

unit is audited and accredited by the American National Standards Institute and the ANSI-ASQ National Accreditation Board.[106] The COS website also touts the Center's independence because of the "diverse representation on the governing board" and use of an external advisory group of government and academics. However, the diversity on the board derives from the allocation of seats among industry producers, contractors and suppliers, and the external advisory group has no defined tasks.

The COS website states that William Reilly, the co-chair of the National DWH Commission who had previously headed the federal Environmental Protection Agency, has recognized that the API's standards and certifications "demonstrate great technical capability and are respected all over the world,"[107] despite the fact that the report of the Commission found API's standard-setting to be deficient. The API's website proclaims that offshore U.S. exploration and production is among the "most heavily regulated activities" in the United States and meets what is "easily described as the world's most stringent government regulations and industry standards."[108] Neither website visit engenders comfort with these institutions as neutral, fact-based entities, as the statements seem disingenuous at best, and misleading at worst.

The COS's initial major focus was two-fold: First, to create documents that operators could use to do a proper SEMS audit, and second, to create a process for third-party certification of auditors who can assess the efficacy of operators' SEMS programs. As noted in Part One, BSEE adopted the SEMS rules by incorporating API RP 75 with its thirteen elements, and then

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106. The American National Standards Institute (ANSI) is a private organization that supports voluntary industry standards to achieve openness, balance, due process, and consensus, but it does not approve the technical substance of the standards. Manuel R. Gomez, Chemical Safety Bd. Dir. Recommendations, Summary of CSB Evaluation of ANSI/API Recommended Practice 754, presented at CSB Public Hearing on Process Safety Indicators, slide 7 (Hous., Tex. July 23, 2012).

107. *COS FAQs*, CTR. FOR OFFSHORE SAFETY, http://www.centerforoffshoresafety.org/FAQs.html (last visited Mar. 10, 2014).

108. *See* Am. Petroleum Inst., *Second to None: The U.S. Offshore Industry's Safety and Environmental Records*, AM. PETROLEUM INST., *available in archive format at* http://web.archive.org/web/20120107133052/http://www.api.org/aboutoilgas/sectors/explore/secondtonone.cfm (last visited Mar. 10, 2014).

added a few more elements in SEMS II. Operator compliance with the SEMS rule must now be monitored. COS's objective is "to have BSEE embrace the Center's accredited third-party audits as an effective means of complying with regulations and improving industry performance."[109] Because regulations now require that all offshore operators conduct audits of their SEMS systems, the goal is both immediate and pressing. This audit process, and the role of COS and BSEE in it, will be described after looking at the role of BSEE.

2. BSEE: The New Regulator

> *"BSEE works to promote safety . . . offshore through vigorous regulatory oversight and enforcement."*
>
> –BSEE Mission Statement, 2013[110]

BSEE has defined two strategic goals to accomplish its safety mission: (1) to "regulate, enforce and respond" to OCS development using a "full range of authorities, policies and tools to compel safety"; and (2) to build "intellectual capacity" within BSEE to keep pace with industry's technological advances, to innovate in regulation and enforcement, and to reduce risk in offshore operations through "systemic assessment" and regulatory actions.[111] The second strategic goal aims at nothing less than "human capital transformation" and a major "technology and information management investment" within the agency. The daily work of every BSEE employee is expected to contribute to these two goals.[112]

As noted earlier, BSEE was created as part of a splitting-up of the former MMS to replace a dysfunctional agency that tried to serve conflicting goals under a single umbrella. Three new bureaus now exist under the Department of Interior umbrella, each focused on one key part of DOI jurisdiction. BSEE's sole mission is safety and environmental regulation and enforcement

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109. TRB SEMS REPORT, *supra* note 66, at 68.

110. *BSEE Directorate*, BUR. OF SAFETY & ENVT'L ENFORCEMENT, http://www.bsee.gov/About-BSEE/Directorate/index.aspx, (last visited Mar. 10, 2014).

111. BUR. OF SAFETY AND ENV'L ENFORCEMENT, STRATEGIC GOALS AT A GLANCE 2, *available at* http://www.bsee.gov/WorkArea/DownloadAsset.aspx?id=6442455294.

112. *Id.*

offshore. Renaming offices and regrouping personnel is not reform, however. Unlike the U.K.'s HSE or Norway's PSA, BSEE is merely a sub-unit of the same executive-branch ministry that handles petroleum leasing and revenues. The former MMS was documented in many reports as being totally inadequate to the task of safety regulation.[113] A major rebuild of the capacity of this new bureau to address serious deficiencies and to prepare for a new type of risk-based regulatory system is indeed required. The strategic goals of BSEE recognize the daunting size of the task.

BSEE's immediate task was to prepare to regulate and enforce the newly adopted SEMS regime. In 2009, only fifty-four percent of OCS operators had a SEMS program and some of the programs failed to include all of API RP 75's thirteen elements.[114] The Transportation Research Board (TRB) of the National Research Council was asked to provide guidance to BSEE on how the agency could evaluate and assess the effectiveness of implementation of SEMS practices by offshore operators.[115] This TRB Report provides a roadmap for BSEE to use in building its oversight capacity for safety in the Gulf of Mexico.

The TRB Report first discussed and compared nine established practices for assessing SEMS programs submitted to a regulator by operators, and then recommended that BSEE adopt four of these as a start, given its limited resources.[116] The

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113. NAT'L DWH COMM'N REPORT, *supra* note 3, at 56–57; NAS INTERIM REPORT ON DWH, *supra* note 9, at 16; NAE-NRC, LESSONS FOR SAFETY, *supra* note 81, at 7.

114. Oil and Gas and Sulphur Operations in the Outer Continental Shelf—Safety and Environmental Management Systems, 175 Fed. Reg. 63,610, 63,613 (Oct. 15, 2010) (to be codified at 30 C.F.R. pt. 250).

115. TRB SEMS REPORT, *supra* note 66, at 17. In 2009, the MMS had requested that the Marine Board committee of the Transportation Board conduct a study assessing the effectiveness of MMS's offshore inspection program in protecting human safety. The request came nineteen years after the 1990 study by the same Marine Board had concluded that MMS inspections were largely ineffective). *Id.* at vii–viii. The Marine Board had started its work when the Macondo blowout happened. *Id.* at viii–ix. Because the SEMS rules were quickly adopted, the scope of the board's study was changed to "Evaluating the Effectiveness of Offshore Safety and Environmental Management Systems." *Id.* at x.

116. *See id.* at 33–37, 94, 126 (describing the nine practices for assessing SEMS programs and then recommending only four of them because these four "would result in

four, with brief descriptions, are:

1. Compliance inspections. These inspections can verify with little time and minimal inspector training, that some parts of the SEMS programs are working. Checklists can be used to assure that training certificates and emergency response plans are in place. But, inspectors should go beyond mere checklists to ascertain, for instance, that offshore workers know how to conduct emergency drills. Inspectors should be able to conduct carefully focused interviews of workers.
2. Audits. Audits are a comprehensive collection and review of information about an operator's SEMS program.[117]
3. Key Performance Indicators (KPIs). Objective metrics are developed from the auditing process and inspection data and used to evaluate SEMS implementation on a broader scale.[118]
4. Whistleblower programs. These should exist both on installations and also inside BSEE itself to assure the proper implementation of SEMS and guard against fraud.

All of these methods can be used to collect and aggregate data across operators to monitor trends (like the risk level analyses of Norway's RNNP process) and to disseminate learning and best practices to operators to further continuous improvement programs. The data collected would also allow benchmarking of operators' performance. The TRB report viewed BSEE as the entity best positioned to gather industry-wide data and to identify best practices.[119]

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the most effective evaluation with the resources available." *Id*. at 94. The five omitted practices include peer review audits, lessee's own reports on its SEMS program, tabletop exercises and drills of SEMS in action, monitoring sensors to track metrics for SEMS purposes, and quantitative risk assessment using data over time).

117. TRB SEMS REPORT, *supra* note 66, at 38, 74–85 (defining an audit of a SEMS program and then discussing the characteristics of a good audit).

118. *See id*. at 103–04.

119. *Id*. at 94 (explaining that because BSEE will have access to all SEMS plans, inspections, and follow-up reports, BSEE is best positioned to gather data to identify

Strikingly, the TRB Report recommended that the audits in the second item listed above should be done by the operator, using the "cold eyes" of an independent, internal audit team.[120] In the Report's words:

> It is critical that SEMS programs be audited . . . . Audits should be carried out by the operator's internal qualified, independent team wherever possible. Operator responsibility for audits will help prevent the development of a compliance mentality.[121]

BSEE's task would then be to review the operator's audit reports and BSEE's own reports from inspectors and incident investigations. When justified by this review, BSEE would then perform complete or partial audits of selected operators and their SEMS programs. To be effective, BSEE would need a "cadre of trained auditors" with special expertise in various aspects of offshore activity.[122] In essence, BSEE would audit the industry's self-audits.[123]

The TRB report pointedly noted that the SEMS II rule proposed by BSEE was not consistent with the TRB's findings in this regard. Instead, the rule, as proposed (and now as adopted), requires that independent third-party auditors conduct all SEMS audits.[124]

The TRB made another recommendation that would seem controversial in the context of an agency whose personnel had been found to have a too-cozy relationship to the industry that it regulated: BSEE inspectors and personnel should use company helicopters and stay overnight for several days on the offshore installations, eating meals and spending more time with the

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best practices and industry-wide trends).

120. Tillerson Remarks, *supra* note 28.

121. TRB SEMS REPORT, *supra* note 66, at 6–7; *see also id*. at 100 (noting that the operator's internal auditor team must be divorced from the daily operations of the company and from meeting any company goals targeted at financial, safety or environmental factors, and the team must report to the highest possible management level).

122. *Id*. at 7–8.

123. *Id*. at 98.

124. *Id*. at 38.

workforce.[125] This would allow them to get a better sense of the working environment on the rig.[126] The monies saved should be used to better train BSEE inspectors and auditors.

A key recommendation of the TRB Report is that BSEE should prescribe the accreditation method for the training and approval of auditors, whether the auditors be internal to the company or external.[127] In doing so, BSEE should consult with industry, and possibly the COS, to develop audit standards and certifications.

Thus, both COS's and BSEE's immediate objective was to create the auditing process that would measure the effectiveness of the required SEMS plans being put into place to improve safety offshore. The audits would allow companies and BSEE to identify areas of weakness in safety management and correct them.

3. The Tools Today: SEMS Auditing

> *"A SEMS program is a comprehensive system to reduce human error and organizational failure."*
>
> –SEMS II Final Rule[128]

A look at the SEMS auditing system in use today shows two parallel worlds. First is the "SEMS I World" that appears in Subpart S of the federal offshore regulations.[129] In this world, BSEE requires that offshore operators have safety management systems containing defined elements and that these systems be

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125. *See id*. at 97 (recommending, among other things, that BSEE analyze the benefits and risks of using operator-furnished transportation and accommodation when performing inspections and audits).

126. TRB SEMS REPORT, *supra* note 66, at 97. Interestingly, the California State Lands Commission (CSLC), which monitors oil and gas activity within that state's offshore waters, has long imposed a SEMS rule and comprehensive audits of operators. *Id*. at 54. The California staff ride company crew boats, attend company facility safety orientations and daily safety meetings and observe actual operations. *Id*.

127. *See id*. at 7 (stating that BSEE should develop an approach to certify auditors and approve all audit plans, whether conducted by an internal audit team or an external third-party team).

128. Oil and Gas and Sulphur Operations in the Outer Continental Shelf—Revisions to Safety and Environmental Management Systems, 78 Fed. Reg. 20,423, 20,424 (Apr. 5, 2013) (to be codified at 30 C.F.R. pt. 250).

129. 30 C.F.R. §§ 250.1900–250.1929 (2013).

audited. Parallel to the SEMS I World, COS has independently created an audit regime based on what COS leaders considered to be good or best practice.[130] This is the "COS World" of offshore safety and environmental management. All companies living in COS World as COS members must perform audits as specified by the COS protocols and membership requirements. The two worlds share many elements in common (notably both start with API RP 75) because the COS-created regime is designed to allow its members to simultaneously meet federal SEMS requirements. However, they also differ in significant ways, as explained further below.

After reviewing the two worlds, one can only conclude that the COS-constructed regime is now the major driver in moving offshore safety forward. COS leaders clearly understood that, regardless of the pace or content of federal regulations, the offshore deepwater industry needed to create its own SEMS-audit regime as one major way of avoiding another Macondo-type disaster and another moratorium. Both BSEE and COS quickly turned to the same "off the shelf" API Recommended Practice as the foundation stone for each entity's safety management regime. But COS then created a much more detailed auditing protocol that would allow it to better assure the quality of the audits performed for deepwater operations, to collect industry-wide data from the audits, to analyze this data to ascertain where its members were experiencing the most problems in implementing a SEMS program, to share good practices within the offshore industry, to benchmark operator performance, and to ascertain trends in offshore safety.[131] Later, in 2013, when BSEE adopted the SEMS II additions, BSEE could turn to the COS-created auditing framework and incorporate key features of it into the SEMS II regulations.

Thus, the SEMS auditing system in the federal regulations today is almost wholly a construct of the offshore industry itself. COS has been and still is the dominant player in creating and

130. As noted in Part One, the term "best practice" often means a "good practice" when used in the industry and by regulators. *Part One*, *supra* note 1, at 153 n.23.

131. *See infra* text accompanying notes 175–85 (describing the COS data analysis system more fully).

implementing an audit system for operators (and other offshore companies) to use in the Gulf of Mexico, a system based almost entirely on its parent API's Recommended Practice 75 and on COS-standardized audit protocols.

This Section of the Article describes how the BSEE and COS auditing systems interact with each other and describes and assesses the role of BSEE as a regulator in the SEMS II system which will be used in the future.

a. Different Missions, Different Jurisdictions

First, why are there two parallel worlds in place now—a BSEE World and a COS World? Both timing and mission explain the current status, which is admittedly rather difficult to piece together.[132]

Different missions: BSEE issued the SEMS I rule, based on API RP 75, on October 15, 2010. The Macondo well had been contained in late July and the moratorium on deepwater exploratory drilling was not due to expire until November 15, 2010. The Obama administration was under considerable pressure to lift the moratorium earlier, but needed to show that more effective regulation of Gulf operators would occur in the future. As explained in Part One of this Article, SEMS I was adopted as a regulation in record time, after years of delay.[133] SEMS I required that all operators develop a safety management system that would be audited to assure compliance. The federal regulator would police the operator's implementation of this new regulatory approach.[134] The

132. The difficulty is exacerbated by the fact that the public must purchase all API Recommended Practices and Standards or else be satisfied with a "read-only" version of those particular API documents that are incorporated by reference into federal regulations. *Compare Publications, Standards, and Statistics Overview*, AM. PETROLEUM INST., http://www.api.org/publications-standards-and-statistics (last visited Mar. 10, 2014) (offering API Standards for sale), *with* 30 C.F.R. § 250.198 (2013) (incorporating by reference API Standards). The "read-only" version does not allow downloading, copying or even printing of the detailed provisions that are part of federal law.

133. *See Part One*, *supra* note 1, at 190–94.

134. Under SEMS I (and later under SEMS II), the operator's SEMS program was required to be available to show to BSEE at the agency's request. *See* 30 C.F.R. § 250.1902 (2013) (stating that operators must have a properly documented

moratorium was lifted on October 12, 2010.

Soon thereafter, in January 2011, the Presidential Commission issued its report with its damning findings that several major players in the offshore had acted negligently, that the API had obstructed better offshore safety regulations and standards, and that the MMS was an ineffective regulator.[135] Within a matter of months, COS was created by industry leaders and held its first Governing Board meeting in August 2011.[136] One month later, in September 2011, COS released its "SEMS Toolkit," designed to enable operators to do a thorough SEMS I audit based on API RP 75.[137] Clearly, industry leaders had resolved to develop a self-governing industry entity that could provide the training, requirements, procedures and tools for effective auditing of safety management systems offshore.

The COS mission is different from BSEE's mission. COS aims at being a center of learning that promotes continuous improvement in offshore safety and that restores the public's trust (both in the United States and globally) in the offshore industry. Independently of federal regulations, offshore companies clearly needed to develop better safety and environmental practices, lest the mistakes of one of their members resulted in additional shut-downs for many of them. Once SEMS I became law, COS could serve its industry members by creating templates and protocols to provide the offshore industry with a "how to" manual for auditing their individual SEMS plans. An audit done using COS protocols would meet SEMS regulatory requirements, but COS envisioned its role as going beyond mere compliance with SEMS. As an

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SEMS program in place and make it available to BSEE upon request). BSEE neither receives nor pre-approves the operator's SEMS program.

135. *See Part One*, *supra* note 1, at 161–68.

136. *Timeline of Events*, CTR. FOR OFFSHORE SAFETY, http://www.centerforoffshoresafety.org/Documents/COS_Timeline.pdf (last visited Mar. 10, 2014).

137. *Id*. The SEMS Toolkit is available on the COS website and now contains many tools, such as audit checklists, templates, worksheets and guidance documents. *See COS SEMS Toolkit*, CTR. FOR OFFSHORE SAFETY, http://www.centerforoffshoresafety.org/toolkit.html (last visited Mar. 10, 2014) (stating that those tools are intended to assist operators and contractors in assessing readiness to meet SEMS requirements including the required contents of an operator's SEMS plan). Tools are added as COS develops them.

industry entity, it could promote shared learning and good practices based on data and analyses in a way that a government regulator, especially a weak one, could not do. COS leaders were largely executives from the major operators that drilled the "dazzling," technologically complex wells in the deep water of the Gulf.[138] The moratorium had stopped further exploratory drilling in deep water only. Deep water is where COS focused its attention.

Different "jurisdictions." The SEMS rules apply to all lessee/operators working on federal leases offshore, regardless of water depth, but the rules do not apply to offshore drilling contractors and service providers. BSEE holds the operator solely accountable, whether in shallow or deep water, for the overall safety on an offshore facility. It is the operator's responsibility to assure that all contractors and subcontractors have safety procedures in place that support the operator's SEMS program.[139] In noted contrast, COS membership is open to all companies that operate, drill, complete wells or provide services to operations in the Gulf of Mexico, but only if the companies operate in deep water, defined as waters over 1,000 feet (305 meters) deep.[140] Thus, COS members can be drilling

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138. For example, the speakers who presented at the COS Workshop held on August 13, 2012 were from ExxonMobil and ConocoPhillips; the Executive Director of COS is from Shell Oil. *See Presentation Slides 8-13-2012*, CTR. FOR OFFSHORE SAFETY, http://www.centerforoffshoresafety.org/search.html?cx=018007852092982092909%3Axljy7es-tpi&cof=FORID%3A11&q=workshop&x=0&y=0 (then follow "COS Presentation Slides 8-13-2012" hyperlink) (mentioning Jack Toellner (Senior Safety Consultant of ExxonMobil Development Co.) and Greg Duncan (ConocoPhilips) as presenters); *see also Center for Offshore Safety Names Charlie Williams, Executive Director; Announces Next Steps for New Safety Program*, CTR. FOR OFFSHORE SAFETY, http://www.centerforoffshoresafety.org/documents/Center-for-Offshore-Safety-NEWS-RELEASE-2012-03-07.pdf (last visited Mar. 10, 2014) (stating that Mr. Williams joined the Center after spending forty years at Shell); NAT'L DWH COMM'N REPORT, *supra* note 3, at viii (calling the Deepwater Horizon "a complex, even dazzling, enterprise").

139. *See* Oil and Gas and Sulphur Operations in the Outer Continental Shelf — Safety and Environmental Management Systems, 75 Fed. Reg. 63,610 (Oct. 15, 2010) (to be codified at 30 C.F.R. pt. 250).

140. *Membership Application*, CTR. FOR OFFSHORE SAFETY, http://www.centerforoffshoresafety.org/Documents/COS_Application_Final.PDF (last visited Mar. 10, 2014). The COS website states that deepwater operations in the Gulf of Mexico are its "initial focus," suggesting that it may expand its membership base later. *Establishing a Culture of Safety*, CTR. FOR OFFSHORE SAFETY,

contractors (like Transocean), cementing services providers (like Halliburton), and a host of other companies, such as mud loggers, that are not operator/lessees.

The bridge between BSEE jurisdiction over all offshore operators' SEMS programs and the COS-created SEMS protocols appears in Section 1904 of Subchapter S. This section states that every reference to the term "deepwater" in COS-created documents that are incorporated by reference in Subpart S of the BSEE regulations means "the entire OCS, including all water depths."[141] In addition, BSEE expressly states that it does not incorporate any requirement that an operator be a COS member company. Thus, every reference to the phrase "COS member company" in COS-created documents incorporated into Subpart S means the operator, regardless of COS membership.[142] Section 1904 further states that any reference to the Center of Offshore Center must be read as a reference to any accreditation body that has been properly authorized by BSEE to assess and accredit the third-party auditing companies that will perform the external audits required under the SEMS II rules.[143] In fact, however, COS is the only such body.[144]

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http://www.centerforoffshoresafety.org/COS_FactSheet_ForPrint.pdf (last visited Mar. 10, 2014). COS rules require that any member of API working offshore must become a member of COS, but non-API members may join COS without joining the API. *Compare COS Governance*, *supra* note 102 (stating that the Center is organized within API), *with Frequently Asked Questions-Do You Have to Be a Member of API?*, CTR. FOR OFFSHORE SAFETY, http://www.centerforoffshoresafety.org/FAQs.html#No7 (last visited Mar. 10, 2014) (answering in the negative).

141. 30 C.F.R. § 250.1904(a) (2013).

142. *Id*. § 250.1904(b)–(c).

143. *Id*. § 250.1904(c).

144. In fact, as of October 1, 2013, BSEE had not yet established a process for approving an Accreditation Body (AB). The Program Manager for COS has stated that COS has implied status as an Accreditation Body because of a reference in the Federal Register adopting the SEMS II rules which reads: "The BSEE will rely on ABs such as the COS to determine which ASPs [Audit Service Providers] meet the necessary qualifications and experience to perform SEMS audits." E-mail from Om Chawla, Program Manager, Ctr. for Offshore Safety, to Author (Oct. 1, 2013) (on file with author). In addition, BSEE has incorporated several key COS documents into its SEMS II regulations. *See* Oil and Gas and Sulphur Operations in the Outer Continental Shelf — Revisions to Safety and Environmental Management Systems, 78 Fed. Reg. 20,423, 20,428 (Apr. 5, 2013) (to be codified in 30 C.F.R. pt. 250).

The COS-created SEMS Toolkit and other SEMS-related documents are publicly available on the COS website. Thus, shallow-water operators, who are subject to the same SEMS requirements in Subpart S of the Code of Federal Regulations as deepwater operators, have ready access to the same audit templates and documents that COS members have. BSEE has requested that COS open its membership to all offshore companies in the Gulf of Mexico and the COS charter is likely to be changed to accommodate this request by early 2014, according to a COS program manager.[145]

b. The "SEMS I World" of Auditing

Under SEMS I, operators must submit their first completed SEMS audit to BSEE by November 15, 2013.[146] Recall that SEMS I required that operators have a safety management system containing the thirteen elements of API's Recommended Practice (RP) 75, such as Hazards Analysis (a facility-level risk assessment), Management of Change (to address changes in contractor personnel, equipment, operating procedures and the like), Safe Work Practices (manuals and standards for workers), Mechanical Integrity (maintenance and quality control), Training, Records, and Audits.[147] BSEE neither receives nor pre-approves the operator's SEMS program.[148] Thus, auditing the operator's compliance with SEMS is crucial to regulatory enforcement of SEMS requirements.

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145. *See* Telephone Interview with Om Chawla, Program Manager, Ctr. for Offshore Safety (Oct. 1, 2013) (on file with author).

146. Under SEMS I, operators were required to have a SEMS program in effect by November 15, 2011 and SEMS audits submitted to BSEE by November 15, 2013. 30 C.F.R. §§ 250.1900(a), 250.1920(a) (2010); Oil and Gas and Sulphur Operations in the Outer Continental Shelf—Safety and Environmental Management Systems, 75 Fed. Reg. 63,610, 63,649, 63,653 (Oct. 15, 2010) (to be codified at 30 C.F.R. pt. 250).

147. 30 C.F.R. § 250.1902; Oil and Gas and Sulphur Operations in the Outer Continental Shelf—Safety and Environmental Management Systems, 75 Fed. Reg. at 63,650.

148. The operator's SEMS program was required to be available to show to BSEE at the agency's request. 30 C.F.R. § 250.1902; Oil and Gas and Sulphur Operations in the Outer Continental Shelf—Safety and Environmental Management Systems, 75 Fed. Reg. at 63,650.

Figure 1 below shows how the auditing system works in the "SEMS I World":

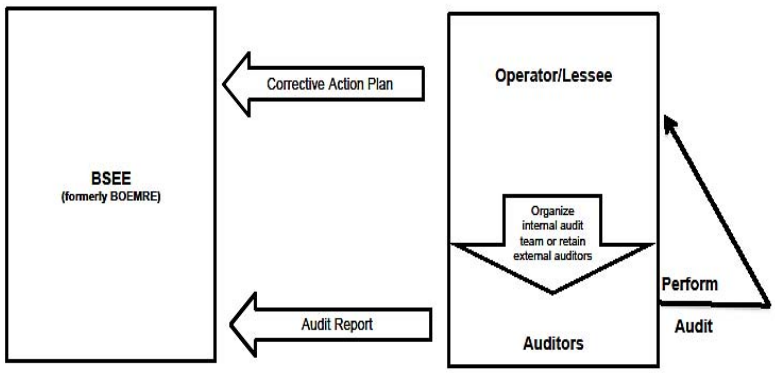

Figure 1: The SEMS I Audit World

Several features of the SEMS I regulations that govern this world bear noting. First, the operator may use either internal or external auditors.[149] Auditors' qualifications are derived from RP 75 and are quite general.[150] Second, the auditor, not the operator, is to submit the final audit report to BSEE.[151] Third, BSEE "may" exercise its authority to intervene in the operator's auditing process in several ways, such as evaluating the auditor's qualifications,[152] but few actions are required of BSEE.

149. 30 C.F.R. § 250.1920(a); Oil and Gas and Sulphur Operations in the Outer Continental Shelf—Safety and Environmental Management Systems, 75 Fed. Reg. at 63,653.

150. 30 C.F.R. §§ 250.1920(b)(6), 250.1926; Oil and Gas and Sulphur Operations in the Outer Continental Shelf—Safety and Environmental Management Systems, 75 Fed. Reg. at 63,653, 63,654.

151. C.F.R. § 250.1920(c); Oil and Gas and Sulphur Operations in the Outer Continental Shelf—Safety and Environmental Management Systems, 75 Fed. Reg. at 63,653.

152. For example, under SEMS I, BSEE "may" evaluate auditor qualifications and "may" participate in the audit. C.F.R. §§ 250.1924(d), 250.1926(c); Oil and Gas and Sulphur Operations in the Outer Continental Shelf—Safety and Environmental Management Systems, 75 Fed. Reg. 63,654 (Oct. 15, 2010) (to be codified at 30 C.F.R. pt. 250). BSEE is required to take only one action: if BSEE finds unacceptable the operator's planned schedule to correct deficiencies found during the audit, BSEE must notify the operator within fourteen days of its submitting the planned schedule. BSEE "may" also

Finally, the SEMS I regulations do not contain any standard auditing templates or forms nor do they incorporate any such forms by reference. Over in COS World, COS has constructed a SEMS Toolkit that operators and their auditors may freely access and import into the SEMS I World if they so desire.

c. The "COS World" of SEMS Auditing

COS was born into this SEMS I world and immediately set out to create an auditing process appropriate for deepwater operations in the Gulf. The "COS World" depicted in Figure 2 below shows the process that COS created and that COS members must use to audit their SEMS I programs. Much more detail appears in the COS documents themselves.

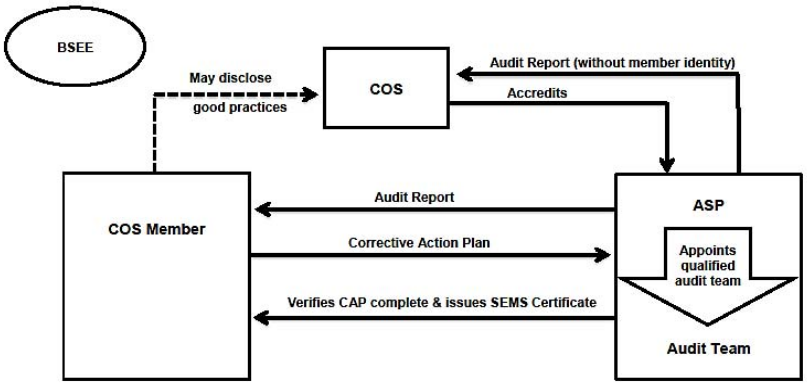

Figure 2: The COS Audit World

Several features of COS World bear noting. First, no formal arrow links BSEE to COS World. While BSEE had adopted API RP 75 as the basis of its SEMS I regulations, COS simply took the regulations and then created its own auditing system. Thus, two parallel SEMS auditing worlds exist, both designed to assure that the audited company has an operationally effective SEMS program, not just a paper file prepared by consultants and sitting on an operator's shelf or in an electronic file. Of the

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verify that the corrective actions have been effectively implemented. C.F.R. § 250.1920(d)(1), (e); Oil and Gas and Sulphur Operations in the Outer Continental Shelf—Safety and Environmental Management Systems, 75 Fed. Reg. at 63,653.

two, the COS system is far more specific and robust than the auditing provision in RP 75, as incorporated into the SEMS I regulations. If an operator conducts a COS audit, this audit will meet all auditing requirements in SEMS I World. The converse is not true.

Second, COS plays a defining role in accrediting the companies, now called Audit Service Providers (ASPs), that are allowed to perform COS audits. COS polices every phase of the auditing process, from setting minimum qualifications for the audit team leader and team members to creating standardized audit reporting formats, protocols and time tables.[153]

Third, all of the actions involved in performing an audit occur between the Audit Service Provider and the COS Member in terms of developing an audit plan, performing the audit, creating a Corrective Action Plan (CAP), and verifying that it has been completed.[154] Once a company is accredited by COS as an ASP, COS has no role in the actual auditing process. In reality, however, because the ASP must use COS-created forms and templates, COS's hands are deep inside every COS member's audit.

Fourth, after the audit report is final, COS steps back into the picture in an important way. The ASP is required to send the final audit report to COS with no company-identifying information.[155] COS will use the confidential data thus obtained

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153. *See, e.g.*, CTR. FOR OFFSHORE SAFETY, QUALIFICATION AND COMPETENCE REQUIREMENTS FOR AUDIT TEAMS AND AUDITORS PERFORMING THIRD-PARTY SEMS AUDITS OF DEEPWATER OPERATIONS, COS-2-01, at 4 (1st ed. Oct. 2012) (qualification requirements for audit teams and auditors for SEMS audits); CTR. FOR OFFSHORE SAFETY, REQUIREMENTS FOR THIRD-PARTY SEMS AUDITING AND CERTIFICATION OF DEEPWATER OPERATIONS, COS-2-03, 2 (1st ed. Oct. 2012) (requirements for third-party SEMS auditing and certification); CTR. FOR OFFSHORE SAFETY, COS SEMS RP 75: AUDIT PROTOCOL-CHECKLIST, COS-1-01 (1st ed. Oct. 2012) (requirements for third-party SEMS auditing and certification); CTR. FOR OFFSHORE SAFETY, COS STANDARD AUDITING REPORT, COS-2-03-A & COS-2-03-B (1st ed. Oct. 2012) (COS standard audit report templates).

154. COS-2-03, *supra* note 153.

155. *Membership Application*, *supra* note 140, ¶ 12; CTR. FOR OFFSHORE SAFETY, REQUIREMENTS FOR ACCREDITATION OF AUDIT SERVICE PROVIDERS PERFORMING SEMS AUDITS AND CERTIFICATION OF DEEPWATER OPERATIONS, COS-2-04 ¶ 6.10 (1st ed. Oct. 2012).

to prepare analyses as described further below.[156] If authorized by the COS member company, the ASP may also submit a summary of what it found to be a good practices(s) used by that COS member.[157]

Finally, there is a possible relationship between the individual COS Member and BSEE, if the COS Member is an operator/lessee rather than a drilling contractor or service provider.[158] The COS Member who is a deepwater operator/lessee can carry its COS audit report from "COS World" over to "SEMS I World." The COS audit process satisfies the audit requirements for SEMS I.[159] Shallow-water operator/lessees can use all of the COS documents posted in COS World to help assure that their internal or external auditors are performing a robust audit. However, COS will not receive any audit report information from operators who work only in shallow water because they are not COS members.

d. The SEMS II World: BSEE and COS Meet

On April 5, 2013, BSEE issued SEMS II, which revised and added several new elements to the SEMS I rule, effective as of June 4, 2013.[160] SEMS II also revised the auditing procedure to require that all SEMS programs be audited by an accredited third-party auditor. The "SEMS II World" is depicted in Figure 3 below, and it is here that BSEE and COS (as an Accreditation Body, or "AB") are formally linked.

156. *Membership Application*, *supra* note 140, ¶¶ 10, 12, 15, 20.

157. A COS member may disclose its good practices directly to COS at any time. *Id.* ¶ 12.

158. In COS World, neither COS nor the ASP sends the COS member company's final audit report to BSEE. Again, there is no arrow linking COS to BSEE in Figure 2.

159. COS has coordinated the time limits in its COS protocols to mesh with those required by the SEMS regulations.

160. 30 C.F.R. § 250.1902 (2013) (listing seventeen SEMS elements, including the newly added SEMS elements of Stop Work Authority, Ultimate Work Authority, required Employee Participation Program, and Reporting Unsafe Working Conditions); Oil and Gas and Sulphur Operations in the Outer Continental Shelf—Revisions to Safety and Environmental Management Systems, 78 Fed. Reg. 20,423 (Apr. 5, 2013).

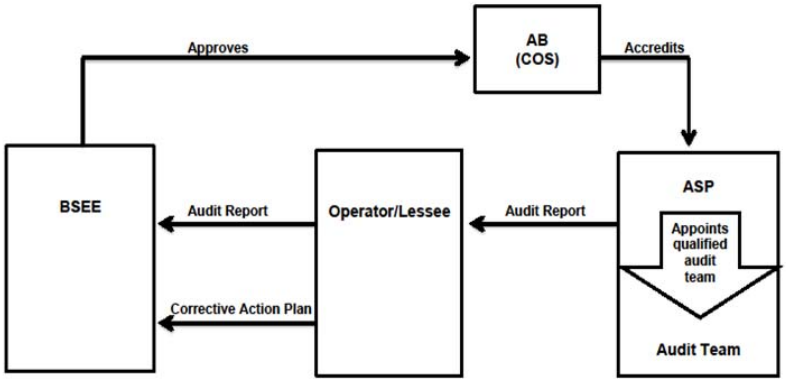

Figure 3: The SEMS II Audit World

BSEE will begin to receive SEMS II audits after June 4, 2014.[161] The SEMS II World has several notable features. First, four distinct players appear in this world. BSEE and the operator/lessee remain, but the "auditor" under SEMS I has become two new entities: an AB and an ASP. An AB is an Accreditation Body that accredits the external third-party providers of auditing services, now formally called Audit Service Providers, or ASPs, in the SEMS II regulations.[162] COS is the only such body in existence today, so COS is named in Figure 3 as the AB.

Secondly, BSEE's only formal link to COS is that BSEE "approves" COS as an Accreditation Body.[163] Once approved, the audit process runs as set up in COS World. COS accredits the external, third-party providers of auditing services, now called Audit Service Providers (ASPs).[164] The operator/lessee retains

161. Operators must be in compliance with the audit requirements of SEMS II by June 5, 2015. Oil and Gas and Sulphur Operations in the Outer Continental Shelf — Revisions to Safety and Environmental Management Systems, 78 Fed. Reg. at 20,423; 30 C.F.R. § 250.1920(b)(5) (2013). All other SEMS II requirements must be met by June 4, 2014. Oil and Gas and Sulphur Operations in the Outer Continental Shelf —Revisions to Safety and Environmental Management Systems, 78 Fed. Reg. at 20,423.

162. *Id*. §§ 250.1903, 250.1922.

163. *Id*. § 250.1922.

164. The thirty or so companies seeking COS accreditation to become ASPs and their progress are shown on the COS website. *COS Accreditation Status Directory*, CTR. FOR OFFSHORE SAFETY, https://accreditation.centerforoffshoresafety.org/Accreditation/

an ASP, and that company performs the SEMS II audit with the additional SEMS II elements which the operator must have incorporated into its safety management plan by June 4, 2014.

Third, and importantly, under SEMS II regulations, the ASP must use the COS-created auditing protocols and reporting templates and must deliver a final audit report to the operator/lessee, using the COS-standardized forms created in "COS World" and now incorporated by reference in the "SEMS II World." [165]

Finally, the auditor has no direct communication with BSEE, the regulator. Only the operator/lessee submits its audit plan, audit report, and corrective action plan to BSEE. This reflects BSEE's position that the operator/lessee is accountable for all safety management on its facilities.

In short, BSEE "approves" the ABs[166] that will then undertake to accredit the companies that want to become qualified "ASPs" under the qualification standards which appear in a COS document incorporated by reference in BSEE's

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AccreditationList (last visited Mar. 10, 2014). As of January 24, 2014, four companies had been accredited. *Id*.

165. COS-2-03, *supra* note 153. 30 C.F.R. § 250.1920 incorporates by reference Sections 9.1 through 9.8 of COS-2-03 on Requirements for Third-party SEMS Auditing. Section 9, in turn, requires the use of COS-1-01, titled the "COS SEMS RP 75 Audit Protocol." This Audit Protocol (which currently addresses only the thirteen elements of SEMS I) is a detailed 187-question checklist which auditors must use and which records audit results and observations in a format consistent with the required COS audit report templates. These audit protocols and reporting templates are designed to allow the analysis of safety management data. *See* 30 C.F.R. § 250.198 (2013) (incorporating three COS documents by reference: COS-2-01, COS 2-03, and COS 2-04). Other COS documents, such as COS 2-02 (titled TRAINING PROGRAM REQUIREMENTS FOR AUDITORS AND AUDIT TEAM LEADS PERFORMING THIRD-PARTY SEMS AUDITS OF DEEPWATER OPERATIONS (1st ed. Oct. 2012)). are in turn incorporated by reference in these three documents.

166. BSEE's approval of ABs is based on yet another set of external standards. BSEE will not approve an Accreditation Body (such as COS) unless the entity meets the requirements of ISO/IEC 17011 "*Conformity Assessment-General Requirements for accreditation bodies accrediting conformity assessment bodies.*" 30 C.F.R. § 250.1922(a) (2013). COS itself uses a set of external standards, already developed by standard-setting organizations, when it accredits the ASPs and periodically reaccredits them. *See* COS-2-04, *supra* note 155, ¶ 10.2 (providing that "suspension or loss of accreditation to ISO 17021 for any of the management system standards in 6.1.1 shall result in the suspension or withdrawal of COS accreditation").

regulations.[167] All SEMS II audits must be conducted by using an Accredited Service Provider (ASP) that puts together an audit team containing individuals who have the specific training required by another COS document incorporated by reference into BSEE's regulations.[168] Because the SEMS II regulations incorporate by reference so many COS protocols containing detailed standards and procedures, the COS-created audit framework will apply to any offshore operator's audit, whether or not it is a COS member operating in deep water.[169]

The astute reader will realize that "COS World" continues to exist, side by side, with the SEMS II World. Operator/lessees that seek only to satisfy the SEMS II auditing system can simply reside in the SEMS II World depicted in Figure 3. Nothing in the regulations requires a company to become a COS member. Thus, non-COS members never need to enter into COS World (in Figure 2) where their selected ASPs will submit all final audit reports to COS, stripped of company-identifying information.[170] All COS members who are deepwater operator/lessees will live in both parallel worlds simultaneously. But, only in COS World does the deepwater operator/lessee receive a formal SEMS Certificate from its Audit Service Provider, indicating that the latter has verified that the operator has completed its Corrective Action Plan and is now in total

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167. COS-2-01, *supra* note 153; COS-2-04, *supra* note 155.

168. 30 C.F.R. § 250.1920 (Apr. 5, 2013); Section 9.1 of COS-2-03 requires that the audit team meet the qualification requirements specified in COS-2-01; one such requirement is completion of the auditor training in COS-2-02.

169. 30 C.F.R. § 250.1904(b). The three COS requirements incorporated by reference in BSEE regulations are posted on the COS website at: http://www.centerforoffshoresafety.org/cos-accreditation-documents.html. They include: (1) COS-2-01 (which, in turn, incorporates COS-2-02 on training requirements for auditors); (2) COS-2-03, and (3) COS-2-04. COS also provides the following items as tools for use in the audit process: COS-2-03-A (the standard audit report template), and COS-2-03-B and COS-2-03-C (standard SEMS audit report forms),

170. As already noted, there is no federal requirement that any company become a member of COS. However, if a company is a member of the API, that company must become a member of COS if it operates in deep water. The API's several hundred member companies are thus "pressured" to join COS or else withdraw from API membership. API membership confers considerable advantages, such as free access to API's technical standards. Recall that COS members are not required to also be API members. *COS FAQs*, *supra* note 107.

compliance with the SEMS requirements.[171]

e. Assessment of the SEMS II and COS Auditing Worlds

The SEMS II regulatory framework described above for SEMS compliance looks like "industry self-regulation through third-party audits." Other than adding several new SEMS elements and mandating that auditors be external, the entire SEMS II system adopted by BSEE is based on industry practices founded in API RP 75 and COS-created protocols and templates. Two observations follow.

First, the system reflects the view that the operator must be the entity primarily accountable for safety. As former BSEE Director James Watson articulated BSEE's role: "We are moving to an operator-driven safety program with BSEE oversight."[172]

Second, the system does not reflect the recommendation of the National Academy of Sciences' Transportation Research Board reports on best practices for safety audits. The TRB Report's conclusion on assessing the effectiveness of SEMS compliance bears repeating here: "An organization cannot turn over the development and monitoring of its safety program to a third party and expect the program to be effective."[173] The use of third-party auditors continues and fosters a compliance mentality by the company. The National Academy would have devolved even more responsibility on the individual operator to self-audit using "cold-eyed" internal, independent auditors.

Thus, the SEMS II auditing system can be simultaneously criticized for allowing too much industry self-regulation and for allowing operators to outsource their SEMS audits to third

171. The COS member may decide to publicly disclose completion of an audit and this seems to mean that it can publicize its receipt of a SEMS Certificate. The ASP shall not issue any certificate other than the one provided by COS and the Certificate remains the property of the API. COS-2-03, *supra* note 153, ¶ 7; *Membership Agreement*, CTR. FOR OFFSHORE SAFETY ¶¶ 12–13, http://www.centerforoffshoresafety.org/Documents/COS_MemberAgreement_General.pdf

172. Watson, *supra* note 86.

173. TRB SEMS REPORT, *supra* note 66, at 90. Several members of the TRB committee observed that internal audits are much better at uncovering problems than external audits. One COS member said that if BSEE mandated third-party audits, his company would merely add this as a regulatory requirement to its internal audits. The company would not accept the third-party audit as a substitute for its own. *Id*. at 99.

parties. As to the latter criticism, two efforts are made in SEMS II to encourage more operator involvement in an audit. The first allows the operator to supply its own employees (if qualified under COS standards) to be members of the ASP audit team, although the operator's employee can never be the audit team leader.[174] Secondly, SEMS II requires that operator/lessees review their SEMS program for effectiveness at least annually and document the observations, conclusions and recommendations of that review.[175]

As to the first criticism that the new offshore safety regime amounts to little more than industry self-regulation, the key question is whether BSEE has the authority and the expertise to perform effective "oversight" of the SEMS auditing process. The SEMS II rules give BSEE several opportunities to intervene in the SEMS regime. First, BSEE must approve the ABs that accredit the Audit Service Providers. Once approved, BSEE may subject the ABs to audits and "other requirements deemed necessary" to verify compliance with accreditation requirements.[176] So, BSEE can "audit the auditor's auditor," which is to say that BSEE can audit the AB's auditing of the ASPs. For example, BSEE could investigate what COS, as an AB, does to ensure that the ASPs it accredits have a process that assures proper audit team training and that the auditors, in fact, have the proper training.[177]

Otherwise, BSEE is largely a receiver of information from the operator/lessee, but the information received does allow for critical oversight of the operator's safety management if BSEE is properly resourced to use the data.. Under SEMS II, BSEE must

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174. 30 C.F.R. § 250.1920(a) (2013) (allowing operator employees to be on the audit team, but forbidding them from taking the lead auditor position).

175. *Id*. § 250.1909(d); *see also id*. § 250.1909(j) (stating that the operator/lessee must ensure that its SEMS program is maintained and kept up to date by means of periodic audits to ensure effective performance).

176. *Id*. § 250.1922(a)(2). At this time, BSEE has no formal process in place to approve ABs. Telephone Interview with Om Chawla, *supra* note 145.

177. 30 C.F.R. § 250.1920 (2013). The move from the SEMS I regulations to the SEMS II rules resulted in greater BSEE disengagement from the actual auditing process. For example, in the SEMS I World, BSEE was expressly authorized (but not required) to evaluate auditor qualifications. In SEMS II, the Audit Service Provider (ASP) performs this function. *Id*. §§ 250.1920, 250.1924.

receive an operator's audit plan before the audit begins and BSEE may revise the list of facilities planned to be audited.[178] BSEE must receive an audit report of the "audit findings, observations, deficiencies identified and conclusions" within sixty days after the audit is completed.[179] BSEE must also receive, after the audit is completed, a copy of the operator's Corrective Action Plan, or CAP, for addressing identified deficiencies found by the audit team during the audit.[180]

More broadly, BSEE has the authority to "evaluate or visit" an operator's facility to determine if its SEMS program is in place and is effective.[181] BSEE can direct the operator to have an additional third-party audit of its SEMS program if BSEE identifies safety concerns based on its inspections and evaluations or on an "event."[182] Alternatively BSEE can conduct the audit itself.[183] BSEE retains its long-standing authority to initiate enforcement actions against an operator who is not in compliance with any offshore regulations, now including the SEMS rules. Enforcement can include issuing an Incidence of Noncompliance (INC), assessing civil penalties or initiating probationary or disqualification procedures from serving as an OCS operator.[184]

Like the TRB's conclusion that the COS "inevitably" had to be organized under the API umbrella, the current system in which COS and third-party auditors play such a prominent role probably reflects the only realistic option open to the United States at the time. BSEE must build capacity at a time when professionals in engineering and safety management systems

178. *Id*. § 250.1920(b)(4). The audit plan must identify, *inter alia*, the facilities to be visited, the selected ASP's qualifications, the members of the audit team, the audit procedures, and the audit report format. While "Audit Plan" is capitalized as if it were a defined term, Subpart S does not contain a definition of an Audit Plan. The scope and coverage of the proposed audit plan are in section 12 of API RP 75, which is incorporated by reference, but not available to any one reading the Code of Federal Regulations.

179. *Id*. § 250.1920(c).

180. *Id*. § 250.1920(d).

181. *Id*. § 250.1924(a). The visits may be random or based on the operator's performance or that of its contractors.

182. *Id*. § 250.1925(a).

183. 30 C.F.R. § 1925(a).

184. *Id*. § 250.1927.

are in extremely short supply, both for government and industry positions. The process of transforming the agency will undoubtedly require a number of years.[185]

Meanwhile, in the Author's opinion, the effectiveness of the new U.S. regulatory framework is unknown at this time. The SEMS regime is in its infancy and it is difficult to assess whether drilling and operating in the Gulf of Mexico is, in fact, safer now than pre-Macondo. Yes, SEMS rules exist now, but the Macondo disaster involved a large operator (BP) with extensive experience in Safety Case regimes that required SEMS systems. This fact alone did not prevent the disaster. The key question is whether the SEMS II system, centered on industry standards, provides effective oversight of the operator's actual implementation of a safety management system. The provisions of SEMS II give BSEE broad and potentially powerful oversight of the audit process without being engaged in the audit itself. BSEE can verify, indirectly through third-party audits and directly with its own personnel, an operator's implementation of its SEMS program and then proceed with appropriate enforcement actions.

In sum, BSEE's oversight role in the new SEMS II system takes place as a high-level review of the performance of COS in constructing and monitoring an audit regime that will find deficiencies in safety management and drive operators to correct them. The audit regime adopted and overseen by BSEE is largely imported from COS World into the SEMS II regulations. The public's trust in the legitimacy of this offshore safety regime, so completely based on industry standards and practices, will depend on the extent to which BSEE uses its oversight and enforcement authority. One thing is clear: if a COS member company has received a prized SEMS II completion certificate from its COS-accredited Audit Service Provider and then has a Macondo-like incident, COS will be in the hot seat as the dominant player in the offshore safety regime. BSEE will surely be faulted also as having allowed regulation to be outsourced to COS and to third-party providers. COS and BSEE are allied in the need to assure this new SEMS

185. *See* discussion *supra* Section III.A (describing BSEE's grave deficiencies).

system works well. Still, for public legitimacy, BSEE must build the capacity that will allow it to use the SEMS II data it receives and observations from its own inspections and investigations of operators to set enforcement priorities and to revise SEMS protocols that appear to be inadequate.

f. Beyond SEMS II to Continuous Improvement

We have noted that in COS World, COS will receive the final audit reports from every COS member, stripped of company identification. The COS audit regime is designed to do more than allow its members to meet BSEE regulations for third-party audits of SEMS II systems. COS intends to analyze the aggregated data submitted to it by its diverse deepwater members (operators, drilling contractors, and service providers) and produce reports that identify key problems and practices discovered during the audit process. COS created a standardized Audit Protocol Checklist that consists of 187 questions (or 317 questions, when subparts of the 187 questions are counted separately).[186] Each listed question is linked to the language in API RP 75 or in Subpart S of the SEMS regulations. The audit protocol checklist allows only three answers to its many questions: did the operator's facility completely conform to SEMS requirements; not conform or only partially conform; or was the audit question not applicable to that facility.[187] BSEE

186. CTR. FOR OFFSHORE SAFETY, RP 75 AUDIT PROTOCOL CHECKLIST, COS-1-01 (Rev. 1.0, Jan. 23, 2012), *available at* http://www.centerforoffshoresafety.org/toolkit.html [hereinafter COS AUDIT PROTOCOL CHECKLIST]. The COS website also provides this same 187-question checklist with guidance notes for auditors to consult. This guidance document clearly states that the guidance does not represent any BSEE interpretation of the SEMS regulations nor any consensus standard for SEMS offshore programs. *Id.* at 1; *see also* CTR. FOR OFFSHORE SAFETY, RP 75 AND SEMS RULE (30 CFR 250) AUDIT CHECKLIST WITH GUIDANCE, COS-1-01 (Rev. 1.0 Jan. 23, 2012).

187. COS AUDIT PROTOCOL CHECKLIST, *supra* note 186. The Protocol Checklist has a separate column for SEMS audit findings titled "observations." This column appears to be where the auditor can input "Audit Results," which are defined as a nonconformance (a failure to satisfy a SEMS requirement), a "Concern" (a condition that marginally meets requirements, but warrants additional attention) or an "Opportunity for Improvement" (the condition meets SEMS requirements, but can be done better). It is not clear if the "observations" column in COS-1-01 is meant to include the "Audit Results" defined in COS-2-03. Because the audit team is also required to document "good practices," perhaps the observation column will be used for this purpose also. COS-2-03,

has incorporated this Audit Protocol Checklist into the SEMS II regulations.

At the end of the auditing process, the COS member will receive a Standard Audit Report from its ASP.[188] This report comes in two parts, both of which have a COS template that must be used. The first form is signed by the audit team leader and verifies that the company has complied with SEMS requirements, *except* as identified in an attached Objective Statement of Nonconformance.[189] The second form identifies all nonconformances by listing which of the 187 requirements on the COS 1-01 Audit Protocol checklist (further divided into their subparts) were not met by the company.[190]

A COS member must, through its ASP, submit this final audit report to COS, stripped of any individual company or facility identification.[191] The submitted data creates a rich database that COS intends to mine to improve offshore safety.[192] For example, COS analysis can determine which SEMS elements have the most non-conformances, thereby indicating where companies are having problems implementing their SEMS programs for deepwater operations. If the data show that compliance with the SEMS elements for Management of Change is low, COS can dig more deeply into why companies are finding it difficult to implement this element. Such data analysis will allow COS to do root cause analyses of areas that relate to the

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supra note 153, §§ 3.3, 9.7.1.

188. COS-2-03, *supra* note 153, § 9.6 (stating that "the ASP shall provide a copy of COS-2-03-A and COS-2-03-B to the COS member company").

189. COS-2-03-A, *supra* note 153 (templates for the final standard audit report).

190. *See* CTR. FOR OFFSHORE SAFETY, COS-2-03-B, STANDARD SEMS AUDIT REPORT WITHOUT PROTOCOL QUESTIONS (Oct. 17, 2013), *available at* http://www.centerforoffshoresafety.org/cos-accreditation-documents.html. This form has columns to input an "Objective Statement of Nonconformance" and other columns to input the Corrective Action Plan that the company must develop and complete to address each nonconformance. Only after the auditor verifies that the Corrective Action Plan has been completed will the COS-member company receive a certificate of SEMS compliance from its ASP. *See id.*; *see also Presentation Slides 8-13-2012*, *supra* note 138, slides 23–26 (explaining how the COS auditing and SEMS certification process works).

191. *Membership Agreement*, *supra* note 171, ¶ 12.

192. *Presentation Slides 8-13-2012*, *supra* note 138, slides 72–77 (showing examples of the type of analysis that COS will perform using the audit data submitted by COS members).

highest-consequence risks.

Using this data, COS can also perform analyses of industry trends in deepwater safety operations and COS can benchmark company performance in each element (without identifying the individual companies or facilities). A graphic will be able to show, e.g., that Company A has 100% compliance with a certain SEMS element compared to Company B that has 45% compliance. COS also encourages its members to share learnings and good practices identified during the audit or independently, but COS does not require this sharing.[193] However, under Paragraph 15 of the COS Membership Agreement, the COS analyses and benchmarking reports are the sole property of the API and will not be made available to the public without API authorization.

Because COS membership is currently limited to deepwater players, the COS database and analyses will not include the SEMS audit data submitted by shallow water operators to BSEE. Yet, operations in the shallow waters of the Gulf continue to be a major source of offshore fires, explosions and worker deaths.[194] BSEE, on the other hand, will receive from all operators a copy of the same ASP-generated standard audit reports that COS receives from its members, using the same COS templates,[195] but, of course, the individual company's identity is not stripped out of its BSEE submission.

Thus, BSEE will receive the audit findings that detail every operator's nonconformance with the SEMS rules. BSEE will have a large database to use to produce the same kinds of reports that COS envisions producing. BSEE will be able to benchmark offshore operators, compare audit non-conformances

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193. *Membership Agreement*, *supra* note 171, ¶¶ 12, 20.

194. *See* Jennifer A. Dlouhy, *Recent accidents highlight shallow water dangers, departing regulator says*, FUEL FIX (Aug. 30, 2013, 11:19 AM), http://fuelfix.com/blog/2013/08/30/recent-gulf-accidents-highlight-shallow-water-dangers-departing-regulator-says/. The departing Director of BSEE, James Watson, warned that recent explosions and deaths in the shallow waters of the Gulf showed that risks to worker safety are just as high there as in the deep water where much of BSEE's attention had been focused after the Macondo disaster. *Id.*

195. 30 C.F.R. § 250.1920(c) (2013); *see also* COS AUDIT PROTOCOL CHECKLIST, *supra* note 186. The third-party auditors will have used the same 187-question Audit Protocol Checklist.

between shallow-water operations and deepwater operations, and identify industry-wide problems. BSEE has not yet indicated how it intends to use this audit data either in enforcement actions or to generate publicly available reports on offshore safety,[196] but the COS-created audit protocols and templates give BSEE the opportunity to perform meaningful statistical analyses of offshore safety systems for the first time. Unquestionably, this data analysis can drive improvements in offshore safety in the coming years.

The next subsections of Section III discuss other roles that BSEE must become capable of handling if the United States is to have an adequate, if not good, offshore safety framework.

4. Other Safety Tasks for BSEE

a. Standard Setting

As noted previously, BSEE adopted the SEMS rule by incorporating virtually wholesale a Recommended Practice developed by the API's standards unit. Yet, the National DWH Commission seriously questioned whether the API's standards represented best practice versus a weaker consensus standard approved to win over the approval of API's wide industry membership. The National Academies' reports questioned the capacity of the former MMS to understand these standards, much less to participate effectively in their creation.

We have noted that the safety agencies of the United Kingdom and Norway participate in the standard setting that creates the hundreds of recommended practices and guidelines that govern technical standards for equipment, procedures for good practices (such as well construction and completions) and safety management systems for industries like refining and chemical processing where hazardous releases can have devastating consequences. Norway's safety framework relies almost entirely on industry standards developed with the participation of the PSA and the trade unions.

196. As to the COS data and analyses, COS members will receive copies of such reports, but may use them only for internal purposes, unless the API authorizes distribution to others. COS does seem to envision that some of the reports it prepares will be made public. *Membership Agreement*, *supra* note 171, ¶¶ 15, 20.

The MMS (and its successor agencies) has stated that it is statutorily compelled to use industry standards to the maximum degree possible under the National Technology Transfer and Advancement Act.[197] However, if BSEE is enforcing industry standards that are not the best safety practices, then the SEMS audit procedures may work well, but offshore safety remains compromised. This section of the Article reviews the role of API in the standard-setting context by assessing two recent standards in which the API has played a dominant role: RP 754 and RP 755. This section introduces a new agency, the Chemical Safety Board (CSB), which also has a role to play in offshore safety.

The CSB is an independent federal agency charged with investigating industrial accidents involving chemicals. The CSB looks at the physical causes of major accidents (such as equipment failures) and also gaps in regulations, industry standards and safety management systems. It has no authority to issue citations or fines, but it does make safety recommendations to plants, industrial organizations, and to regulatory agencies like OSHA and the EPA.[198] In short, the

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197. *See* Doug Morris, Chief, Office of Offshore Regulatory Programs, Presentation, Standards Development: BSEE Perspective, 1st Annual BSEE Domestic and International Standards Workshop, New Orleans, La., slide 8 (Nov. 14–15, 2012). In this presentation, Morris stated that under Public Law 104-113 (the National Technology Transfer and Advancement Act) and OMB Circular A-119, BSEE must consult with voluntary standards bodies, both domestic and international, and participate in developing voluntary consensus standards when participation is in the public interest and compatible with an agency's mission, priorities and budget. This is a BSEE "mandate." Morris stated that BSEE planned to have more Subject Matter Experts (SMEs) in place with the needed expertise to represent BSEE's interests who would then attend more industry meetings of Standard Development Organizations. BSEE representatives do not cast votes at these meetings and will not lead or focus the discussion, but may participate in discussion. Currently, BSEE incorporates over 100 standards in its regulations and is working on new ones related to safety and environmental management systems, deepwater operations, cementing, cranes and safety valves. BSEE participation "aids in the decision-making process of whether to incorporate a standard" into regulation. *Id*. slides 2–8.

198. *About the CSB*, U.S. CHEM. SAFETY BD., http://www.csb.gov/about-the-csb/ (last visited Mar. 10, 2014). The CSB's expertise in the use of a Safety Case regulatory regime is evident in its report on the Chevron refinery fire in August 2012. *See* U.S. CHEM. SAFETY AND HAZARD INVESTIGATION BD., CHEVRON RICHMOND REFINERY PIPE RUPTURE AND FIRE, DRAFT REPORT NO. 2012-03-1-CA (2013) (open for public comment).

CSB is the expert agency in industrial disasters involving explosions at pipelines, fertilizer plants (like the April 2013 blast in the small town of West, Texas), refineries, and the like. It also assesses the standards that Standard Development Organizations such as the API promulgate as recommended practices.

From the start, the CSB sought to use its considerable expertise to investigate the Macondo disaster offshore. Undeterred by ongoing litigation about its authority to investigate the Macondo explosion and release of hazardous substances,[199] the CSB held two days of public hearings on Safety Performance Indicators in July 2012. The second day focused on the development of offshore safety performance indicators, particularly precursor data that would warn of weaknesses in offshore safety systems, with presentations by the leading regulators and academics on this issue. The first day looked at the Board's evaluation of API Recommended Practice (RP) 754 for Process Safety Indicators in the refining industry. One key CSB recommendation stemming from its investigation of the 2005 BP Texas City refinery fire (that killed 15 workers and injured 180 others) was the need to develop better process safety indicators in high-hazard industries. In its press release about the July 2012 hearings, the CSB tied the two days of hearings together by stating that: "At the time of the 2010 Gulf Blowout, Transocean, BP, industry associations, and government offshore regulators had not effectively learned critical lessons from the 2005 BP Texas City Refinery explosion

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This report contains discussions of offshore Safety Case regimes abroad with comparisons to regulation by OSHA, the EPA and California agencies.

199. The Macondo drilling contractor, Transocean, litigated the CSB's jurisdiction over the offshore MODU and the oil spill, arguing that other agencies, like the Coast Guard, the National Transportation Safety Board, or the EPA, had authority that excluded the CSB from investigating the Macondo incident. *See* United States v. Transocean Deepwater Drilling Inc., 936 F. Supp. 2d 818, 821 (S.D. Tex. Mar. 30, 2013). Judge Lee Rosenthal held that the Chemical Safety Board had jurisdiction over the release of chemicals from the Macondo explosion and fire, after finding a gap in the complex, overlapping regulatory regime for offshore rigs. Judge Rosenthal found that Congress clearly intended that the CSB investigate explosions and releases that resulted in fatalities if no other agency had such authority. *Id*. at 832.

in implementing safety performance indicators."[200]

The CSB had recommended in 2007 that the API and the United Steel Workers (USW) jointly lead the development of a standard for leading and lagging process safety indicators to improve performance in preventing high risk incidents.[201] The standard was to be developed using the procedural framework of the American National Standards Institute, or "ANSI." ANSI is a private organization that supports the development of voluntary standards that have no force of law unless referenced or adopted in government regulations. ANSI provides procedures to achieve openness, balance, due process and consensus in the development of standards, but it does not approve the technical substance of the standards. The API issued the new RP 754 in April 2010, the same month that the Macondo well blew out.

By a two-to-one vote, the ANSI/API RP 754 on process safety indicators was evaluated by the CSB as "Open-Acceptable," meaning that the standard was a move in the right direction, but more work remained. One CSB member voted against rating the new RP as "acceptable." The USW and two other labor unions had withdrawn from the ANSI committee in August 2009 to protest an imbalance in the committee's membership. Virtually all of its members were from industry.[202] The CSB's

200. Press Release, U.S. Chemical Safety Bd., CSB Investigation: At the Time of 2010 Gulf Blowout, Transocean, BP, Industry Associations, and Government Offshore Regulators Had Not Effectively Learned Critical Lessons from 2005 BP Refinery Explosion in Implementing Safety Performance Indicators (July 24, 2012), *available at* http://www.csb.gov/csb-investigation-at-the-time-of-2010-gulf-blowout-transocean-bp-industry-associations-and-government-offshore-regulators-had-not-effectively-learned-critical-lessons-from-2005-bp-refinery-explosion-in-implementing-safety-performance-indicators/.

201. Manuel R. Gomez, Dir., Presentation, Summary of CSB Evaluation of ANSI/API Recommended Practice 754, CSB Public Hearing on Process and Safety Indicators, slide 3 (Hous., Tex. July 23, 2012).

202. Kelly Keim, Vice-Chair, API RP 754 Drafting Committee, ANSI/API 754: Process Safety Performance Indicators for the Refining & Petrochemical Industries, CSB Public Hearing on Process and Safety Indicators, slide 3 (Hous., Tex. July 23, 2012). The ANSI committee's members represented eleven refining companies (including BP, Chevron, ExxonMobil, ConocoPhillips, and Shell), two chemical companies (Dupont and Dow), four industry associations, one engineering company, and one academic safety center. *Id*.

evaluation of RP 754 matter-of-factly presented the "contributions and shortcomings" of RP 754. The shortcomings were far more numerous than the contributions. The CSB concluded that RP 754's ability to drive performance improvement in high-hazard process industries will be hindered by (a) the use of lagging indicators with insufficient statistical power (i.e., the events will be too infrequent to provide useful indicators); (b) the lack of well-defined, standardized and normalized leading indicators needed to do trend analysis and benchmarking; (c) ineffective public reporting of the data collected; and (d) lack of a broadly based consensus in developing the standard (because all three labor unions had withdrawn in protest).[203]

The CSB pledged to remain actively involved in pushing industry to develop better safety indicators, to advocate changes in RP 754 during its future revision with a better consensus process, and to consider the possible role of regulators in the design, collection, analysis and reporting of such indicators.[204]

The CSB had also recommended in its 2007 report on the BP Texas City fire that the API and USW jointly lead the development of an ANSI standard for fatigue prevention. Worker fatigue had been flagged as one of the most important contributing factors in this refinery disaster.[205] Offshore workers typically work twelve-hour shifts and may stay on the platform for several weeks at a time without a break.[206] Worker

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203. Gomez, *supra* note 201, slide 26.

204. *Id*. slide 29. Interestingly, the notes from the API drafting committee for API RP 754 stated that the Recommended Practice would be open for revision after two years of data collection, i.e., in 2013, perhaps reflecting the fact that some industry participants realized that the standards were inadequate. *See id*. slide 13.

205. U.S. CHEM. SAFETY BD., DRAFT RECOMMENDATIONS EVALUATION FOR PUBLIC COMMENT: FATIGUE RISK MANAGEMENT SYSTEMS (2013), *available at* http://www.csb.gov/assets/1/16/Fatigue_Evaluation_for_Public_Comment_3_11_20131.pdf. The CSB investigation had found that workers routinely worked twelve-hour shifts; some workers had worked for twenty-nine consecutive days during the turn-around of a unit, so judgment and problem-solving skills were impaired. *Id*.

206. Press Release, U.S. Chemical Safety Bd., CSB Investigation into Macondo Blowout and Explosion in Gulf of Mexico Continues; Two Public Hearings and Interim Reports Scheduled for this Year (Apr. 19, 2012), *available at* http://www.csb.gov/csb-investigation-into-macondo-blowout-and-explosion-in-gulf-of-mexico-continues-two-public-hearings-and-interim-reports-scheduled-for-this-year/?pg=8. The CSB noted that

fatigue is an issue for long-distance truckers, airplane pilots, and many other professions that have developed standards limiting work hours.

The API developed and adopted RP 755 on "Fatigue Risk Management Systems," or "FRMSs," for personnel in the refining and petrochemical industries. In March 2013, the CSB convened a public hearing to present its draft evaluation of RP 755. The CSB had underscored the importance of including a wide range of stakeholders, scientific organizations and disciplines in the ANSI process for this recommended practice.

This time, the CSB voted to rate the RP as "Open—Unacceptable Action" because of the many deficiencies in both the process and the substantive standards developed by what was an industry-dominated committee.[207] As noted in the RP 754 discussion above, the USW representatives withdrew from the ANSI/API committee in August 2009 because of its imbalance. The CSB concluded that RP 755 was not the result of an effective consensus process among diverse experts and stakeholders.[208] The committee had started with a preponderance of industry members and later became virtually exclusively industry members. There was very limited input from experts in the transportation sectors (aviation, rail, trucking) or from the nuclear industry or other national safety regulators, like the U.K. HSE.[209] It appeared that fatigue standards in these industries had not been studied or discussed in any systemic way in the development of the U.S. standard. The CSB noted that the API had made efforts to invite non-industry members, but for whatever reason, their efforts had not succeeded.[210]

Other serious shortcomings of RP 755 included a failure to denote that industry "shall" implement the practices or standards in RP 755. ANSI documents use "shall" language to

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Transocean's workers had recently moved from fourteen-day shifts to twenty-one day shifts on the Deepwater Horizon drilling rig. *Id.*

207. DRAFT RECOMMENDATIONS EVALUATION FOR PUBLIC COMMENT: FATIGUE RISK MANAGEMENT SYSTEMS, *supra* note 205.

208. *Id.*

209. *Id.*

210. *Id.*

indicate a minimum requirement to conform with the RP. Instead, the document mainly used "should" language, indicating actions that are merely advised, not required to conform to the RP.[211] While no RP has the force of law unless a regulator adopts it, the "shall" language indicates a minimum expectation by the ANSI/API committee of what is industry good practice for all of its members. Putting "should" language into an already voluntary standard has little force at all in advancing worker safety.[212] Moreover, the "should" word directly contradicted the approach in ANSI Standards for Occupational Health and Safety Management Systems and many other existing systems which define clear obligations for employers in similar contexts.

In addition, RP 755 stated that workers should self-determine if they are too fatigued to work safely, even though widely reported research findings showed that workers are very poor judges of their own level of fatigue and the impact of fatigue on their performance.[213] Moreover, the substantive content of RP 755 was internally inconsistent and fell far short of even acknowledging the large body of research on worker fatigue. In fact, the U.K. HSE had issued a caution to U.K. employers about using the API standard.[214] Its "hours of service guideline" was unacceptable in the United Kingdom.[215]

Thus, regulation by reference to industry-developed standards is not always a best practice or even a good practice. The API's RP 755 is in the public domain for industry to use, but it certainly does not reflect acceptable standards for worker fatigue, a risk factor in much offshore work. The CSB has the expertise to evaluate ANSI standards development. BSEE has acknowledged that it needs to hire experts to allow it to participate meaningfully in the standard-setting process.[216]

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211. *Id.*

212. *Id.*

213. DRAFT RECOMMENDATIONS EVALUATION FOR PUBLIC COMMENT: FATIGUE RISK MANAGEMENT SYSTEMS, *supra* note 205.

214. *Id.*

215. *Id.* Additionally, RP 755 contained work-hour limits that were not supported by scientific evidence. *Id.*

216. Morris, *supra* note 197, slide 2.

BSEE's focus is now centered on retraining inspectors and implementing the new auditing system under the SEMS rule. It is clear that a company may pass this SEMS audit with flying colors, but the audit will not have addressed the serious issue of worker fatigue on offshore facilities. In this regard, Judge Barbier's question about whether following industry standards can nonetheless result in a finding of gross negligence takes on real meaning.[217] So does use of a general duty clause to regulate offshore activities, as discussed in the conclusion of this Article.

b. Data Collection and Analysis

Being a data-rich agency is an essential feature of a good regulator. We have noted the key role that the United Kingdom and Norwegian regulators play in deciding what information to collect from operators, collecting it on an industry-wide basis, and then analyzing the data to assess trend levels in risk, to prioritize its own work as regulator, and to assist industry in learning where problems are arising and sharing information about how to solve them.[218] The data collection and analysis also perform the essential function of informing citizens about offshore safety and environmental protection.

The United States lags seriously behind best practice in this regard. In its interim report on the Macondo disaster, the CSB concluded that: "Companies and trade associations operating in other regulatory regimes *outside the United States* have developed effective indicators programs, recognizing the value of leading indicators and using these indicators to drive continuous improvement" by working with overseas regulators.[219] Only after the Macondo blowout were companies and trade associations in the United States "*initiating* efforts to advance the development of offshore major accident indicators."[220] As noted earlier, one reason for this notable gap lies with industry

217. *Part One*, *supra* note 1, at 160.

218. *See* discussion *supra* Section III.B.

219. Press Release, U.S. Chemical Safety Bd., *supra* note 200 (emphasis added) (summarizing major findings of CSB Interim Report).

220. *Id*.

and politicians pushing back against better regulation.[221] It is a sad fact that these U.S. initiatives are coming at such a late date in the history of OCS oil and gas development, and only after a disaster.

The use of leading indicators, also called "accident precursors," is especially important to offshore safety performance because they warn of heightened risk levels while there is still time to react and control incidents. Lagging indicators measure past events: fatalities, injuries, fires and spills that have already occurred. Leading indicators help prevent the latter from occurring. Every disaster is preceded by warning signs. For example, all blowouts are preceded by "kicks," an increase in pressure inside the well bore brought about by gas or fluids entering the well bore.[222] Thus, kicks, which are visible on real-time data monitors, are an excellent precursor marker for blowouts. Another is how long it takes a crew to notice the kick. A crew that takes thirty-three minutes to notice that a kick occurred has lost precious time required to assure that the well is under control. [223]

It is not always easy to develop an effective indicator. For example, almost all companies track the amount of oil spilled into the ocean (often because national laws require this), but oil spill data is not a good indicator of the risk of explosion.[224] Gas leaks are far more dangerous to human safety than oil spills, which largely cause environmental damage. Choosing gas

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221. *See supra* notes 63–64 and accompanying text.

222. A kick is a good measure of *process safety* risks. It does not measure *personal safety* risks to workers, such as failing to wear a harness when working high up on the rig. Both BP and Transocean measured personal safety indicators, but not process safety indicators. *Id*. at 78. BP recognized in a 2008 report that process safety was not well understood by its offshore division and was working to correct this, but change came too late to prevent the Macondo blowout. *Id*. BP has now reorganized and has a single Global Wells Organization with uniform standards and a "cold-eyed," global Safety and Operational Risk Division staffed with experts and embedded in BP's decision-making structure. Bernard Looney, Executive Vice President, Developments, BP, Managing Potential Risk in Wells 4, *available at* http://www.bp.com/content/dam/bp/pdf/investors/SRI_May_2011_Mtg_B_Looney.pdf (displaying an organizational tree with the Global Wells Organizations and the Organization's stated duties).

223. HOPKINS, DISASTROUS DECISIONS, *supra* note 43, at 91.

224. *Id*. at 88–89.

releases as a precursor measure is fraught with problems in the context of drilling wells because gas is routinely released during the drilling process (although gas releases may be a good indicator for production wells).[225] Indeed, because gas alerts are so frequent on drilling rigs, most workers simply ignore them as not having significance.[226] The key is to have a gas alarm system that is triggered by the release of a dangerous concentration of gas. This is the indicator that could "greatly assist" companies to manage this hazard, according to one expert.[227]

The International Association of Oil & Gas Producers (OGP) clearly understands the value of this precursor analysis. Its final report on deepwater wells, written by the Global Industry Response Group (GIRG) created by OGP after Macondo, made six key recommendations.[228] The last one is that OGP form a new Wells Expert Committee (WEC) tasked with sharing industry-wide learning by analyzing incidents, advocating harmonized standards, communicating good practice and promoting continued R&D.[229] To fulfill its task, the WEC would create a centralized database of certain types of well incidents. This secure database would be used to identify repeated events and common weaknesses and vulnerabilities that industry could then address. To be effective, the database would have to have the participation of the entire industry—operators from E&P

225. *See id*. (noting that the API standard for vent gas in refining and chemical plants is not useful in the context of drilling).

226. *See id*. at 89.

227. *See* HOPKINS, DISASTROUS DECISIONS, *supra* note 43 at 89, 93–94 (noting that BP now uses several good precursor indicators and that other indicators could be developed).

228. INT'L ASS'N OF OIL & GAS PRODUCERS: INTERNATIONAL RECOMMENDATIONS ON WELL INCIDENT PREVENTION, INTERVENTION AND RESPONSE 4–6 (2011) [hereinafter GIRG INT'L RECOMMENDATIONS]. The first five recommendations are: (1) use of a three-tier auditing process to review operators' and contractors' safety procedures, with robust government inspections as the third tier; (2) formalized competency and training systems for workers at all levels; (3) use of national and international standards in well design, BOPs and related subsea equipment; (4) formalized well management systems, with each operator and contractor having a designated "technical authority" on well design, construction and management and a bridging document between them; and (5) the "two independent barrier" policy as a permanent minimum standard. *Id*.

229. *Id*. at 4.

companies, drilling contractors and well service contractors. Each company would submit reports to a designated third party (subject to a confidentiality agreement) of identified types of incidents soon after their occurrence.[230] The submissions would be categorized and analyzed to produce useful guidance back to industry.[231] The database and analysis methodology would be common to other national and international initiatives, coordinated through the OGP's Wells Expert Committee.

This OGP proposal received support from its membership and the Well Control Incident Database was launched in July 2012. The OGP reporting system issued its first Well Control Safety Alert in January 2013 to help its members improve safety by learning lessons from near misses.[232] Members submit data anonymously and confidentially to encourage reporting.[233] In short, OGP has implemented a Norwegian-type of database and reporting system to gather global information about near misses and lagging and leading indicators for deepwater drilling. Analysis of this data is the single most effective way of assuring continuous improvement in safety performance. But, note that the OGP's information flow is the opposite of that in Norway: the OGP's reports on well incidents are sent to the regulator, based on a database under the custody of the OGP. In Norway, the database is kept by the regulator and the regulator writes the reports that then flow to industry and the public. The WEC system is a voluntary one, aimed at self-regulation of the industry globally.

The National Academy of Engineering's Final Report on the Macondo disaster recommended that industry and BSEE develop a similar comprehensive database on safety-related incidents, with anonymous or "safety privileged" inputs to facilitate reporting.[234] When national regulators do not have the

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230. *Id*. at 4–5.

231. *See* GIRG INT'L RECOMMENDATIONS, *supra* note 228, at 5, fig. 1.1 (showing proposed WEC structure).

232. *Well Experts Committee – First Safety Alert Published*, INT'L ASS'N OF OIL & GAS PRODUCERS (Sept. 6, 2012), http://www.ogp.org.uk/news/2012/september/wec-launches-database/ [hereinafter *Well Experts Committee Safety Alert*].

233. *Id*.

234. NAE-NRC, LESSONS FOR SAFETY, *supra* note 81, at 107.

funding or competence to undertake such an effort themselves, the OGP approach has much to commend it. Nonetheless, the fact that the OGP's WEC has no authority to mandate the submission of data to the database by all actors in the industry, including operators, drilling contractors and well service companies, makes this arrangement less than ideal. Some incidents are so infrequent that insufficient submissions will prevent statistically significant analysis. Operators with safety problems may simply decide not to report (although this fact alone, if made public, provides useful information to the public and investment community). Again, the Norwegian regulatory system is the best approach. Another industry group, the International Association of Drilling Contractors (IADC), has called on international offshore regulators to "work aggressively" to investigate incidents and share learnings from them.[235]

Some experts push for more public disclosure of company-specific hazard indicators.[236] Certainly, the investment community and shareholders would find such data useful, given that a disaster can cause massive declines in company value. Further, the regulatory authority could use such data to prioritize the resources it has to conduct safety inspections and audits. Whether or not company-specific data is made public, a "nimble and competent" regulator certainly should have this data, and like Sisyphus, constantly push safety analysis to the forefront of company management.

Both COS and BSEE have talked about developing a database of near misses.[237] However, it is not clear from the

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235. Steve Kropla, Group Vice President, Operations and Accreditation, Int'l Ass'n of Drilling Contractors, Powerpoint, IADC Global Perspective, presented at International Regulators' Forum, Offshore Safety Summit Conference, Stavenger, Norway, slide 22 (Oct. 4, 2011) [hereinafter Kropla Norway Presentation] (recognizing the limits of the power of a trade association to coerce its members into reporting incidents and investigating them thoroughly).

236. HOPKINS, DISASTROUS DECISIONS, *supra* note 43, at 150. Professor Hopkins would also make public the performance agreements of senior executives so that the public can see how they are incentivized to meet cost reduction targets, personal safety indicators (such as lost time incidents) and major hazard indicators (such as well kicks). *Id*. at 178.

237. In its response to comments on its proposed SEMS II rule, BSEE stated that it was currently working with the COS to develop industry performance indicators. Oil

website of either entity how and when this database will be developed.[238] On August 28, 2013, BSEE announced that it would develop a confidential near-miss reporting system, using the U.S. Department of Transportation's Bureau of Transportation Statistics (BTS) to maintain control of the individual reports.[239] The BTS will provide trend analysis and statistical data to BSEE. However, the system is described as being based on "voluntary reporting" by both industry and federal personnel, so it is not clear how the system will be able to provide industry-wide trends.[240]

The Chemical Safety Board has considerable expertise in precursor analysis for process safety performance. The Board's investigation of the Macondo incident concluded that both BP and Transocean had "multiple safety management system deficiencies"[241] and inadequate hazard assessment systems.[242] Some of the deficiencies cited in the CSB findings are topics that

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and Gas and Sulphur Operations in the Outer Continental Shelf—Revisions to Safety and Environmental Management Systems, 78 Fed. Reg. 20,423, 20,427 (Apr. 5, 2013). The comment questioned BSEE's capacity to develop risk-based systems for inspections and SEMS compliance when the statistical expertise of the old MMS had been moved into BOEM, not BSEE. *Id*.

238. *See generally* CTR. FOR OFFSHORE SAFETY, http://www.centerforoffshoresafety.org (last visited Mar. 10, 2014); BUREAU OF SAFETY AND ENVTL. ENFORCEMENT, http://www.bsee.gov. (last visited Mar. 10, 2014).

239. Press Release, Bureau of Safety & Envtl. Enforcement, BSEE and BTS to Develop Confidential Near-Miss Reporting System (Aug. 28, 2013), *available at* http://www.bsee.gov/BSEE-Newsroom/BSEE-News-Briefs/2013/BSEE-and-BTS-to-Develop-Confidential-Near-Miss-Reporting-System/.

240. *Id*.

241. Press Release, U.S. Chemical Safety Bd., *supra* note 200.

242. Their safety systems centered on personal safety metrics and failed to use process safety metrics. *Id*. E.g., the bridging document that harmonized safety controls between BP and Transocean focused on six personal safety issues, such as minimum heights for the required use of harnesses. *Id*. The document did not address major hazards like loss of well control. *Id*. There was no Management of Change process to assess hazards (noting that the Macondo drilling plan changed five times in the last week before the blowout). *Id*. No written criteria or safe limits were defined to determine if the negative pressure test (crucial to well control) was successful. *Id*. Finally, the hazard assessments of major accident risks relied heavily on manual intervention to prevent catastrophes, but requiring humans to react in an emergency is not a reliable defense layer. *Id*. This is especially true if the accident prevents someone from reaching the manual control device because of smoke or fire. *Id*.

must be addressed in the SEMS II plans that operators are now required to have in the Gulf of Mexico. Good audits of these SEMS plans should identify areas where a company is lacking in good safety management practices. If done correctly, an operator's SEMS plan should include information about how the operator is using precursor data reporting to warn of danger signals that can then trigger a responsive action that lowers the level of risk.

Still, the systematic identification and collection of industry-wide lagging and leading indicators is the job of the regulator. Indeed, these tasks must be done by the regulator to evaluate the effectiveness of the SEMS audit approach to safety.[243] A SEMS system can be audited on a pass/fail basis for "paper" compliance with all prescribed SEMS elements, or "mechanisms" (such as Management of Change procedures), but the audit must also assess whether the mechanisms are actually being used, i.e., that workers "act properly even when no one is looking."[244] If SEMS mechanisms do not result in behaviors that prompt safer actions by people, then the operator does not have a "Culture of Safety" in its workplace.[245] Measuring compliance with SEMS mechanisms requires onsite observations by a skilled team of auditors and can never be simply pass/fail. There should always be room for improvement and feedback to management about improvements to make.[246]

While BSEE did require additional measures to be reported by operators after Macondo, the mandatory metrics were largely reactive risk management, based on lagging indicators.[247] No new predictive precursors were added to the reporting mandate.[248] The post-Macondo report by the Transportation

243. Kenneth E. Arnold, Presentation to U.S. Chemical Safety Bd., Lessons from National Academies Report "Evaluating the Effectiveness of Offshore Safety and Environmental Management Systems," slides 1–5 (Hous., Tex. July 24, 2012).

244. *Id*. slides 3–4.

245. *Id*. slide 4.

246. *Id*.

247. Cheryl Mackenzie, Kelly Wilson, & Don Holstrom, Investigators, U.S. Chemical Safety Bd., Public Hearing Presentation, Offshore Safety Performance Indicators: Preliminary Findings on the Macondo Incident, slide 42 (Hous., Tex. July 24, 2012).

248. *Id*. slide 45. The CSB staff listed process safety indicators currently in use in

Research Board instructed BSEE to work with Norway's PSA and the U.K. HSE because these agencies had access to a large amount of data on offshore Key Performance Indicators (KPIs) of precursor events and considerable expertise in using it for analysis.[249] The presentations collected at the Chemical Safety Board's public hearing on Safety Indicators in July 2012 are a trove of information to mine, especially the papers listing the types of leading KPIs already used offshore in other jurisdictions and other regulators' skilled use of the data to continuously improve safety performance. Both BSEE and COS have access to multiple sources of assistance and expertise.[250]

An example illustrates what BSEE must learn to do. When the U.K. HSE's Key Programme 3 report published its findings on the poor condition of many platforms on the U.K. offshore,

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other regulatory regimes, such as availability and integrity of safety critical equipment; unplanned shutdowns; hydrocarbon releases; out-of-service equipment; and management follow-up on safety recommendations. The API's RP 75 on SEMS addressed offshore performance measures in an optional appendix, but the metrics focused on personal safety or infrequent lagging events. *Id.* slide 38.

249. TRB SEMS REPORT, *supra* note 66, at 79.

250. *CSB Public Hearing: Safety Performance Indicators*, U.S. CHEMICAL SAFETY BD., http://www.csb.gov/events/csb-public-hearing-safety-performance-indicators/ (last visited Mar. 10, 2014). The papers presented at the these public hearings include Kenneth E. Arnold, chair of the Transportation Research Board Committee, "Lessons from National Academies Report on 'Evaluating the Effectiveness of Offshore Safety and Environmental Management Systems.'" Bob Lauder, Health and Safety Manager of Oil and Gas U.K., "Major Hazard Key Performance Indicators in Use in the UK Offshore Oil and Gas Industry"; Aud Nistov, "Statement from the Norwegian Oil Indus. Ass'n on Process Safety Indicators for Major Accident Prevention" (discussing how KPI data is used in Norway's RNNP process for assessing industry-wide risk level trends); Ian Whewell, "Performance Indicators in Major Hazard Industries—An Offshore Regulator's Perspective" (describing, *inter alia.* how involving the workforce in developing effective KPIs is important); Peter Wilkinson, "Progress on Safety Indicators—Necessary but Not Sufficient?"; Jessie Hill Roberson, Vice Chair of the U.S. Defense Nuclear Facilities Safety Bd., "Using Leading Indicators to Avoid Major Accidents" (describing the regulator's role as assuring that regulated entities have set viable leading indicator metric systems that incorporate the collected data into management strategies and daily operations); and Jake Molloy, Regional Organizer for the National Union of Rail, Maritime, and Transport Workers on "Safety Performance Indicators: the Worker's Perspective." Andrew Hopkins also presented a paper on "Safety Indicators for Offshore Drilling" that described the reporting requirements of Norway's and Australia's offshore regulations, provided five sets of additional indicators that can be used, and described the new set of KPIs that BP began to use after Macondo. *Id.*

the British media put the U.K. HSE under a "fierce spotlight"[251] for its role in allowing these conditions to develop. The agency realized that industry had a deep-rooted culture of focusing on occupational safety, not major hazard risk assessment or process safety.[252] A "radical change" in approach was needed, so the HSE inspectors focused on how the offshore companies were using performance data and on developing new KPIs.[253] Top company managers were now expected to be able to describe how they monitored major hazard indicators, such as maintenance backlogs, and boards of directors were expected to review this kind of data.[254] In sum, the U.K. HSE as regulator, through its inspection and enforcement powers, pressed every offshore company to have a meaningful array of major hazard KPIs to be used by senior management. The regulator used the KPI data to benchmark companies and then challenged the low-performers with intervention visits.[255]

It appears that the Center of Offshore Safety is the entity that can, at this time, best press its industry members to implement initiatives like those in the U.K. offshore waters.

c. Creating a Safety Culture

While serving as director of BSEE, James Watson, stated that creating a Safety Culture offshore was his highest priority, but that this task was not a job for regulation.[256] Instead, BSEE

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251. Ian Whewell, Presentation, Performance Indicators in Major Hazard Industries—An Offshore Regulator's Perspective, U.S. Chemical Safety Bd. Public Hearing: Safety Performance Indicators 7 (Hous. Tex. July 24, 2012), *available at* http://www.csb.gov/UserFiles/file/Performance%20Indicators%20-%20Offshore%20Regulator's%20Perspective%20(Whewell)-2.pdf.

252. *Id*.

253. *Id*. The industry agreed to adopt two additional KPIs that have been reported since 2008, thus allowing trend analysis and company benchmarking. Companies also agreed to share performance data and best practices in the development of company-specific indicators. *Id*.

254. *Id*. slides 6–7. Key training sessions for directors and senior managers were held to educate them in major accident hazard risks and the use of KPIs.

255. *Id*. slide 7.

256. Watson, *supra* note 86. *See generally* Luigi Guiso, Paola Sapienza & Luigi Zingales, *The Value of Corporate Culture* (Nat'l Bureau of Econ. Research, Working Paper No. 19557, 2013), *available at* http://www.nber.org/papers/w19557 (discussing research showing that culture is important because employees must make choices that

issued a Safety Culture Policy Statement.[257] This policy announces BSEE's expectation that all individuals and organizations performing or overseeing activities regulated by BSEE establish and maintain a positive safety culture.[258] BSEE defines safety culture as "the core values and behaviors of all members of an organization that reflect a commitment to conduct business in a safe and environmentally responsible manner."[259] The statement continues that certain personal and organizational "characteristics" or "pattern[s] of thinking, feeling and behaving" are present in a culture that promotes safety, especially in the context of responding to conflicting goals such as production schedules and costs.[260] The Policy Statement then lists nine characteristics of a robust safety culture, beginning with "leadership commitment" and ending with an "inquiring attitude" that avoids complacency by continuously reviewing existing conditions and noting "discrepancies" that might result in mistakes being made.[261] In other words, all workers must be sufficiently well-trained to have situational awareness of "what can go wrong."

Compared to the striking presentation on "[thought processes]" by Norway's PSA,[262] the BSEE policy statement is a rather bland compilation of some standard principles of a safety

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cannot be regulated ex ante; and that the enforcement of social norms (i.e., culture) differs from that of legal norms, particularly in the critical role of top managers leading by example). *Id.* at 1-7.

257. Final Safety Culture Policy Statement, 78 Fed. Reg. 27,419 (May 10, 2013).

258. *Id*.

259. *Id*.

260. *Id*. at 27,421. For an excellent analysis of how a company's culture affects, indeed "infects" the entire organization, see Robert G. Bea, *Understanding the Macondo Well Failures* 1 (Ctr. for Catastrophic Risk Mgmt., Deepwater Horizon Study Grp., Working Paper, 2011) (describing the corporate clash of cultures in the merger of BP with U.S.-based Arco and Amoco, both of which had an "American cowboy culture"; also describing the loss of core competencies from layoffs due to the mergers; and the consequent heavy reliance on consultants and service companies).

261. Final Safety Culture Policy Statement, 78 Fed. Reg. at 27,421. The other seven are: hazard identification and risk management, personal accountability, work processes, continuous improvement, an environment for raising concerns, effective safety communication, and a respectful work environment based on trust, teamwork and collaboration.

262. *See supra* notes 31–32.

culture. On the positive side, in recognizing the importance of embedding "patterns of thinking, feeling and behaving" into an organization, the statement acknowledges the size of the task confronting the industry: human beings must be rewired to make better decisions. Establishing a safety culture in the oil industry, with its reputation as a "cowboy" culture of rugged individualism, wildcatting, and risk-taking is not an easy job. Consider this: Not wearing a seat belt in a car or pick-up truck is part of oilfield culture, and oil and gas workers are 8.5 times more likely to die in car accidents than workers in any other industry.[263]

The BSEE Policy Statement does not acknowledge the core function of the regulator in assuring that a SEMS audit is conducted in such a way that it does assess whether the expected culture of safety exists in an operator's workplace. A good SEMS audit should assess the actual understanding and use of the "on paper" safety management systems by all personnel on the facility.[264] This *is* a matter of regulation. Indeed, it is the very essence of what the PSA and the U.K. HSE do. BSEE must learn to do the same.

Consequently, from a safety expert's perspective, it would have been more effective for Director Watson to make an express policy statement that BSEE would use the "general duty" clause of the Outer Continental Shelf Lands Act (OCSLA) to help build the safety culture that needs to exist in U.S. waters**.** OCSLA has a general duty provision in Section 1348(b) that reads:

> It shall be the duty of any holder of a lease or permit . . . to
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> (1) maintain all places of employment . . . in compliance with occupational safety and health standards and, in addition, free from recognized hazards to employees.[265]

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263. Jeannie Kever, *Roads Riskier for Oil and Gas Workers*, HOUS. CHRON. Jan. 21, 2013, at B6 (citing studies).

264. Arnold, *supra* note 243.

265. 43 U.S.C. § 1348(b) (1953); *see also* 43 U.S.C. § 1332(6) (1953) ("[O]perations in the outer continental shelf should be conducted in a safe manner by well-trained personnel using technology, precautions, and techniques sufficient to prevent or minimize the likelihood of blowouts, loss of well control, fires, spillages, . . . or other occurrences which may cause damage to the environment or to property, or endanger life

Professor Hopkins notes that most safety case regimes are supported by legislation that imposes a general duty on the operator to reduce hazardous risks to a level "as low as reasonably practical" or ALARP. This duty is important for several reasons. First, if an operator wants to use a procedure or standard that falls short of good and prudent practice, the regulator can reject it as not meeting the general duty of the ALARP standard. Second, the general duty requires that the operator identify and control all hazards as is reasonably practicable for a prudent operator to do. If an operator claims to be in compliance because it did a hazard analysis, but the process was inadequate, then it is relatively easy to prosecute the company for a violation of the general duty clause after a Macondo-like event occurs. Third, even if no specific regulation applies to a particular procedure or decision, the operator always has the duty to manage risk. Its risk awareness must go beyond mere compliance with written rules. The General Duty of Care raises a Safety Case regime above blind compliance.[266] Professor Hopkins directly attributes the higher fire protection standards on rigs in U.K. waters than those in the Gulf of Mexico to this "general duty" provision.[267] He has called for the Department of Interior to use this provision in its regulation and enforcement of offshore operations.[268]

IV. WHERE THE GAPS ARE: MEET OESAC

To this point, this Article's Part One and Part Two have traced the wake of the Macondo in four different waves of change: first, recognition of the role of complacency in an offshore industry that increasingly drills deepwater, HPHT wells; second, the tsunami of technology produced by the Macondo blast; third, the global diffusion of "best" or "good" practices by international trade associations abroad; and fourth,

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or health.").

266. HOPKINS, DISASTROUS DECISIONS, *supra* note 43, at 148.

267. *Id*.

268. *Id*. at 149. The citation violations issued to BP and others by the Department of Interior in the Macondo case were for violating specific regulations, not a general duty. Professor Hopkins asks why the general duty provision of OCSLA was not relevant in this case. *Id*.

the role of the regulator in surfing these waves in a competent and nimble way. The regulator's role, discussed immediately above in Section III, focused on the institutional agents that are to integrate these waves of change into a sustained pulse, constantly rippling throughout offshore waters and continuously driving improvements by industry in offshore safety. Two new institutions, BSEE and COS, were created and tasked with this job, joining a number of other entities, such as the Chemical Safety Board, the OGP, and the IADC that have long worked on safety management or on industry standards for oil and gas operations. The Article's focus on these institutions was to enable an assessment of the gaps that might exist between the regulatory structure used in U.S. offshore waters today compared to the best practices of experienced offshore regulators in Norway and the United Kingdom. This "gap analysis" is the focus of this next Section IV of the Article.

These are the major changes that we have traced to date:

1. The MMS was reorganized and BSEE is now an agency inside the Department of Interior with a sole focus on safety and environmental regulation offshore. However, it is not independent of either executive or congressional politics.
2. Two major rulemakings by BSEE resulted in two new offshore regulations: (a) the Drilling Safety Rule—a largely prescriptive rule that requires operators to have, *inter alia*, two barriers in place to prevent blowouts during drilling, access to capping and containment systems, and drilling plans certified by a professional engineer; and (b) the Workplace Safety Rule (SEMS I and SEMS II) governing safety management processes that operators must now have in place to work offshore.
3. The API created the Center for Offshore Safety under its technical standards unit as an ANSI-certified standard development organization. COS has focused on creating tools for SEMS audits and on certifying the third-party audit-service companies that will assess whether operators are actually complying with

their "on-paper" SEMS programs that they now must be ready to show to BSEE upon request. COS has devised audit protocols that enable it to assemble a valuable database to use for continuous improvement of offshore safety practices.

4. An outpouring of reports from diverse expert groups (including boards of the National Academies of Science, offshore regulators and industry associations in other jurisdictions, the API's Joint Industry Task Forces, the Chemical Safety Board's public hearings, and several academic institutions and special commissions) has created a monumental body of research on safety practices that can be used to assess the U.S. regulatory regime and draw a road map for what still needs to be done.

Now it is time to summarize where the gaps are between what the United States currently has in place and what, if anything, is needed to move our regulatory framework to a higher level of performance. A final key player now appears on the scene: The Offshore Energy Safety Advisory Committee, or OESAC. This obscure entity was chartered[269] in January 2011 by Secretary of Interior Salazar as a "government-created and sponsored center of excellence" that would form "collaborative" teams of experts from the offshore industry, national laboratories, academe, and non-governmental organizations to provide recommendations on new offshore safety regulations, research and technology development, offshore training, and containment and spill response.[270] OESAC's diversity of membership is unique among the institutional entities discussed to date.[271] Its charter gave OESAC two years to complete its

269. U.S. DEP'T OF INTERIOR, BUREAU OF OCEAN ENERGY MGMT., REGULATION AND ENFORCEMENT (BOEMRE), OCEAN ENERGY SAFETY ADVISORY COMMITTEE CHARTER (2011) [hereinafter OESAC CHARTER], *available at* http://www.bsee.gov/uploadedFiles/BSEE/About_BSEE/Public_Engagement/Ocean_Energy_Safety_Advisory_Committee/2011OceanEnergySafetyAdvisoryCommitteeCharter.pdf. OESAC is chartered under the Federal Advisory Committee Act.

270. *Id*.

271. *Id*.; Press Release, U.S. Dept. of Interior, Salazar Names Members of Ocean

final recommendations.[272]

OESAC formed a Safety Management Systems Subcommittee (SMS Subcommittee) to examine the human and management factors that contribute to risks of blowouts.[273] Its members included Nancy Leveson (the MIT professor of safety engineering quoted earlier in Part One) and Charlie Williams (the current Executive Director of COS who had years of experience as a well control expert with Shell Oil) and a diverse group representing other disciplines and professions.[274]

For two years, OESAC worked to bring recommendations forward to present to the Director of BSEE and to Secretary Salazar, using six public meetings as transparent forums for their work.[275] At the final January 9, 2013 meeting of OESAC, twenty recommendations from the six different Subcommittees were presented publicly.[276] For the few outsiders who might have read all of the minutes and presentations of the SMS

Energy Safety Advisory Committee to Guide Oil and Gas Regulatory Program Reform (Mar. 11, 2011). OESAC was chaired by Dr. Thomas Hunter, former President of Sandia National Laboratories, who had served as the lead in the federal government's scientific team working with BP to stem the Macondo's flow. *Id*.

272. OESAC CHARTER, *supra* note 269.

273. U.S. Dep't of Interior, Bureau of Safety and Environmental Enforcement, Meeting Minutes, Ocean Energy Safety Advisory Committee 4 (Apr. 18, 2011).

274. Press Release, U.S. Dept. of Interior, Ocean Energy Safety Advisory Committee Sets Goals, Agenda (Apr. 18, 2011). Other members included Joe Gebera, Director of Projects for the Floaters Business Unit of Technip (a project management, engineering and construction company serving the offshore industry); Don Jacobsen, senior vice president of operations for Noble Corp. and former vice president of Shell International E&P's health and safety operations; Dean Tad Patzek, Dean of the Engineering School at the University of Texas and a chaired petroleum engineering professor; Dr. Walter Cruikshank, Deputy Director of BOEMRE; Patrick Little, Commanding Officer of the Coast Guard Marine Safety Center; and Lois Epstein, Arctic Program Director for The Wilderness Society in Anchorage, Alaska. *Id*.

275. *Ocean Energy Safety Advisory Committee: Official Committee Records*, BUREAU OF SAFETY AND ENVTL. ENFORCEMENT, http://www.bsee.gov/About-BSEE/Public-Engagement/OESC/Index/ (last visited Mar. 10, 2014). OESAC held six public meetings at which each subcommittee presented its work in progress. The final recommendations were issued at the last meeting on January 9–10, 2013. All minutes and presentations are posted at the link provided *supra* in this footnote.

276. Letter from Thomas O. Hunter, Chairman, Ocean Energy Safety Advisory Comm., to James A. Watson, Director, Bureau of Safety and Envtl. Enforcement on Recommendations for DOI and BSEE (Jan. 25, 2013).

Subcommittee's work over the course of the prior five meetings, this Subcommittee's recommendations might not have been shocking. Anyone else would likely be stunned by them. In short, the group of experts on safety management systems concluded that BSEE needed to suspend work on SEMS II until critical issues were addressed; the U.S. SEMS rule was a short-term "cultural artifact"[277] that would not, without significant "enhancements," build a Safety Culture in the offshore industry; the United States had strayed far from the Safety Case approach used in the North Sea; and BSEE's job had only just started.[278] The hill that BSEE faced as it started its role as the U.S. Sisyphus of offshore safety, was a Himalayan-scale mountain with multiple vertiginous peaks.

Here are the highlights of the SMS Subcommittee's work, which focused on the "soft" elements of safety: people, procedures and processes, and particularly on three items of work called the three "vectors":[279]

1. Developing a safety culture.[280]
2. Optimizing the Safety Management System needed to build this safety culture.[281]
3. Designing a learning environment of continuous improvement.[282]

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277. Letter from Thomas O. Hunter, Chairman, Ocean Energy Safety Advisory Comm., to James A. Watson, Director, Bureau of Safety and Envtl. Enforcement on Recommendations for DOI and BSEE (May 17, 2012) [hereinafter May 2012 Letter on OESAC Recommendations].

278. SAFETY MGMT. SUBCOMM., OCEAN ENERGY SAFETY ADVISORY COMM., SAFETY MGMT. SYSTEM ENHANCEMENT RECOMMENDATION 7–8 (2012), *available at* http://www.bsee.gov/About-BSEE/Public-Engagement/OESC/042612/SMS-Vector-2---SMS-Enhancement-Recommendation-041012.aspx.

279. *Safety Management Systems Subcomm., Presentation to the Ocean Energy Safety Advisory Committee, Washington D.C.*, *in* U.S. DEP'T OF THE INTERIOR, OCEAN ENERGY SAFETY ADVISORY COMM., COLLECTION OF MATERIALS, 3, 120–26 (Nov. 7–8, 2011) [hereinafter NOV. 2011 OESAC COLLECTION OF MATERIALS], *available at* http://www.bsee.gov/uploadedFiles/BSEE/About_BSEE/Public_Engagement/Ocean_Energy_Safety_Advisory_Committee/OESC%20Meeting%20Minutes%20Washington%20DC%20November%207-8%202011.pdf.

280. *Id*. at 123.

281. *Id*. at 125–26. This task would be accomplished by comparing the SEMS rules to the Safety Case regimes used elsewhere to determine the "optimum" system. *Id*.

282. *Id*. at 127, 130–31. This task also involved identifying data collection and

Note that the Subcommittee defined its task in terms of developing a "safety culture." Its members well understood that safety management systems are merely sets of manuals occupying shelf space that may not reflect the reality of what is actually occurring on the facility. They are "virtual" safety systems unless an embedded safety culture is created by the organization's leaders to bring them to life.[283] The SMS Subcommittee also consistently differentiated the Safety Case regime used in the North Sea from the SEMS rules being adopted in the United States.[284] This differentiation became magnified over time as the Subcommittee learned more about the SEMS rules.

The Subcommittee came to realize that its proposals would require that more resources flow to BSEE to build its capacity,[285] but this fact did not deflect it from its formal charge to recommend a safety management system that could optimize the creation of a safety culture and an environment of continuous learning offshore to lay "the foundation for success."[286] The Subcommittee ultimately concluded that this foundation was not being properly built.

The panel invited leaders of key organizations to join them in dialogue.[287] At an early meeting, an IADC spokesman addressed the major issues that required resolution from the

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analysis, particularly leading performance indicators.

283. *See* ANDREW HOPKINS, SAFETY, CULTURE AND RISK: THE ORGANIZATIONAL CAUSES OF DISASTERS 1, 3–4 (2005).

284. May 2012 Letter on OESAC Recommendations, *supra* note 277.

285. Industry would probably also have to devote more resources in a Safety Case regime. NOV. 2011 OESAC COLLECTION OF MATERIALS, *supra* note 279, at 117–32.

286. *Id*. at 120.

287. Nuggets of insight into the challenges ahead emerged from the hearings' diverse range of speakers. *See, e.g.*, *Michael D. Farber, Kirk Malstrom, David S. Fish, & Steven Venckus, Presentation, Summary of Findings from Deepwater Joint Investigation Team (JIT) in* NOV. 2011 OESAC COLLECTION OF MATERIALS, *supra* note 279, at 224. The Coast Guard official in charge of the Joint Investigative Team on the Macondo admitted that allowing a "tribe" of "Parties of Interest" to comment on the JIT report turned out to be a "really good process with a lot of extremely valuable information." Dialoguing worked! *Id*. at 230. Two lifeboats burned in the Macondo fire, but rules required double the number of boats needed to evacuate all persons on a rig. Redundancy worked! *Id*. at 229. The vent line of the Macondo's mud-gas system goose-necked back onto the rig floor. Bad design kills! *Id*. at 228.

viewpoint of drilling contractors if an "optimum" SMS regime was to be put in place compared to what IADC members faced in the Gulf of Mexico at that time : (i) a clear definition of who the "duty holder" is under the U.S. regime; (ii) a clear definition of whether the Coast Guard or BSEE had jurisdiction over MODUs; (iii) the removal of regulatory impediments to the goal of using Best Available and Safest Technology; (iv) addressing the regulator's (BSEE's) resource constraints; (v) the need to dialogue with regulators; (vi) balancing prescription with goal-setting regulations, and (vii) addressing the auditing and bridging arrangements between the leaseholder-operator and the drilling contractor.[288] The "regulatory challenges" facing the SMS Subcommittee in its quest for an optimum offshore safety management system became longer with each hearing.

By the fourth meeting, the SMS subgroup recommended that BSEE suspend further work on the SEMS II final rule to focus on four critical areas: (i) the jurisdiction of multiple agencies and organizations over the offshore; (ii) defining who is the responsible party under a safety management system; (iii) using a performance-based Safety Case rather than the current prescriptive SEMS rule; and (iv) the use of process safety management, especially the use of leading indicators that measure rising risk levels in a facility's safety system. Two other proposals emerged: to set up an Offshore Safety Leadership Council of top-level industry managers to foster a safety culture and demonstrate ways to communicate this culture throughout each of their companies to the workers on the rig floor;[289] and to set up the framework for a permanent Offshore Energy Safety Institute that would continue the critical collaboration between industry, government, academe and scientific experts needed for

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288. *Alan Spackman, Vice President, Offshore Tech. & Regulatory Affairs, Presentation to the Ocean Energy Safety Advisory Committee: The IADC HSE Case for MODUs (Nov. 7, 2011) in* NOV. 2011 OESAC COLLECTION OF MATERIALS, *supra* note 279, at 143, 145.

289. *Id.* at 142. In 2013, COS created a document that advises senior managers how to demonstrate their visible commitment to safety and how to evaluate "site safety culture" as distinct from evaluating the safety management system. *See* GUIDELINES FOR LEADERSHIP SITE ENGAGEMENT FOR THE DEEPWATER INDUSTRY, CTR. FOR OFFSHORE SAFETY, COS-3-01 (2013).

an optimum safety management system process over time.[290]

The SMS group knew that its recommendations would delay enacting SEMS II, but in its opinion, the SEMS rule would eventually "have to be overhauled" to make it more performance-based, and this would be more difficult to do than building the system right from the start.[291] While API RP 75 (incorporated wholesale into SEMS I) was robust, it was only a baseline document on the way to an optimum Safety Culture regime.[292] The best Safety Management System for an offshore unit would use a single document that integrated all operations of all parties on a facility, not just those under BSEE's jurisdiction. Too many daily decisions onboard these units had blurry jurisdictional lines between the Coast Guard and BSEE.[293] For example, the SEMS rule did not require hazard analysis of those activities that fell under the Coast Guard's jurisdiction.[294] The final SEMS rule did not require that the drilling contractor have a SEMS plan, but instead required the operator to be responsible for the work practices and training onboard a leased MODU.[295] This seemed "confusing" at best to the SMS subgroup and did not accord with the frameworks built in Norway and the United Kingdom to structure their offshore safety agencies. [296]

Moreover, the existing SEMS rules promoted a compliance mentality of meeting the minimum requirements in the rule, reinforced by BSEE's recently published PINC (Potential

290. SAFETY MGMT. SUBCOMM., OCEAN ENERGY SAFETY ADVISORY COMM., SAFETY MGMT. SYSTEM ENHANCEMENT RECOMMENDATIONS 1–9 (2012).

291. *Id*. at 2.

292. *Id*.

293. *Id*.

294. *Id*.

295. *Id*. at 3.

296. *See* SAFETY MGMT. SYSTEM ENHANCEMENT RECOMMENDATION, *supra* note 290, at 3, 5–7 (describing the confusion resulting from contradictions in the SMS regulations, and also describing the SMS Subcommittee's conclusion that the regulatory agency structure in the United States made it impossible for BSEE to institute the best practices used in the North Sea where Norway and the United Kingdom each had a single agency, well-staffed with professional engineers and safety experts who have the training to do performance-based audits, under statutes that clearly defined who the "duty holder" was).

Incident of Noncompliance) list for SEMS audits, which focused heavily on checking if the paper documents existed rather than checking for whether the SEMS processes were actually working.[297] BSEE and industry needed to focus on weaknesses in major accident risk assessment at the process safety level, not on occupational safety.[298] Industry, working through COS, needed to partner with BSEE to develop an assessment methodology (i.e., an audit protocol) that used appropriate performance metrics to measure whether the process safety controls were effective.[299]

At the very least, the SMS Subcommittee concluded, the SEMS rule should require productive, post-audit dialogue between the company and BSEE to foster continuous improvement in safety.[300] Under both SEMS I and II, the operator writes the Corrective Action Plan (CAP) for SEMS deficiencies found by its auditor.[301] BSEE has a quite limited role here: It receives a copy of each operator's audit report and CAP and will notify the operator "as soon as practicable" if the Corrective Action Plan and time table are unacceptable.[302] Under SEMS II, the auditor must have a process and qualified personnel to verify that corrective actions have addressed the nonconformances.[303] But nothing in SEMS II requires that BSEE monitor the success of the corrective actions taken by the operator. The COS certificate, which COS will issue only after the auditor has verified that corrective actions have been taken, is not incorporated into SEMS II. Thus, the auditor, not BSEE, is the active monitor of the actual implementation of the CAPs. No requirement exists under SEMS rules that BSEE receive a report documenting that nonconformances have been corrected,

297. *Id*. at 4.

298. *Id*. at 4.

299. *Id*. at 5.

300. *See id*. at 1, 7–8 (discussing the eight essential elements of the U.K. and Norwegian regimes that are needed to avoid another catastrophic event in the United States).

301. COS-2-03, *supra* note 153. The operator does not receive a SEMS certificate of compliance from its ASP until the Corrective Action Plan items have been addressed. BSEE does not provide any certificate to operators.

302. 30 C.F.R. § 250.1920 (2013).

303. COS-2-03, *supra* note 153, § 9.8 (incorporated into 30 C.F.R. § 250.1920).

which illustrates the formal lack of any dialogue built into the post-audit phase.

A good SEMS system should also require that SEMS plans be submitted to BSEE in advance for review and comment because, absent this, BSEE would miss the opportunity to better understand the risks and risk controls of an operation through "proactive dialogue" with offshore facility managers.[304] The SMS Subcommittee stressed that BSEE had to move away from an inspection mentality to a real dialogue with each industry member being reviewed for safety compliance.[305] And, BSEE should allow "cold-eyed" internal audits by certified, independent internal auditors because this was a best practice.[306]

The full OESAC committee endorsed the SMS Subcommittee's recommendations and sent Director Watson a letter on May 17, 2012, asking him to "redirect" the work of BSEE in the many aspects described above.[307] These were OESAC's first formal recommendations to BSEE and DOI.[308] One can only imagine how this first message to basically start over again was received by BSEE.

But, OESAC saw a safety regime developing in the United States that outsourced auditing and dialogue to third-party

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304. SAFETY MGMT. SYSTEM ENHANCEMENT RECOMMENDATIONS, *supra* note 290, at 7–8.

305. *Id.*; *see also* TRB SEMS REPORT, *supra* note 66, at 74 (discussing the role of inspections in developing a compliance mentality).

306. SAFETY MGMT. SYSTEM ENHANCEMENT RECOMMENDATIONS, *supra* note 290, at 7–8 (discussing the use of third party auditors in other offshore systems).

307. *Letter from Thomas O. Hunter, Chairman Ocean Energy Safety Advisory Comm., to James A. Watson, Dir. Bureau of Safety and Environmental Enforcement (May 17, 2012) in* U.S. DEP'T OF THE INTERIOR, OCEAN ENERGY SAFETY ADVISORY COMM., COLLECTION OF MATERIALS 123–42 (Apr. 26, 2012) [hereinafter APR. 2012 OESAC COLLECTION OF MATERIALS], *available at* http://www.bsee.gov/uploadedFiles/BSEE/About_BSEE/Public_Engagement/OESC%20Meeting%20Minutes%20Houston%20TX%20April%2026%202012.pdf. The letter noted that the SEMS rules were far too prescriptive in specifying items that needed to be verified and records that needed to be kept. *Id*. If SEMS were truly performance-based, it would allow each facility operator to have the freedom to develop a safety management system tailored to its specific operations. *Id*. Furthermore, the words "must" and "shall" would not appear so frequently. *Id*.

308. *Id*.

service providers and left the regulator out of any feedback loops or dialogue with industry, both at the front end of submitting a SEMS plan and at the back, post-audit end. BSEE would continue to do inspections with more inspectors[309] (many just coming out of college programs, some of them with professional degrees), but they would issue PINCs, as usual. BSEE was not resourced to do effective audits or to do the essential data collection, analysis, and development of metrics that would allow an assessment of industry-wide risk level trends in the Gulf and the benchmarking of companies' performance. OESAC members clearly worried about how BSEE would train its existing and new employees to be able to do effective inspections and audits and to understand deepwater operations.[310] BSEE had launched a new National Offshore Training and Learning Center in 2011 to build the capacity of its employees to monitor offshore operations, but its first and only director left in 2012, and BSEE had down-sized the center to a National Offshore Training Program.[311] Even experienced agencies like the EPA

309. *See* SAFETY MGMT. SYSTEM ENHANCEMENT RECOMMENDATION, *supra* note 290, at 7–8; This is not to say that inspections have no place in enforcement. Inspections do work. *See* Michael Toffel, David I. Levine, & Matthew S. Johnson, *Randomized Government Safety Inspections Reduce Worker Injuries with No Detectable Job Loss*, SCIENCE (May 18, 2012), http://www.sciencemag.org/content/336/6083/907.full?sid=97ac7364-384e-4907-b58b-33733ab6390c (randomized OSHA inspections decreased injury rates by 9.4% with no evidence of any loss of jobs; in fact the inspected companies saved an average of $350,000 in medical expenses and lost wages).

310. SAFETY MGMT. SYSTEM ENHANCEMENT RECOMMENDATION, *supra* note 290, at 6–7 (discussing the lack of trained inspectors in the U.S.). When a Chevron executive asked about training of BSEE employees, Director Watson replied that BSEE was doing training internally, without using external certifiers. Watson's main concern was training the new hires how to be a government employee. *Meeting Minutes*, *in* APR. 2012 OESAC COLLECTION OF MATERIALS, *supra* note 307, at 22. In a survey of thirteen industry members with much experience working with MMS inspectors, five members reported that they thought BOEMRE (now BSEE) had few competent inspectors. Laura Hall, *Calling on Experts: Industry's Perspective on the Regulatory Response to the BP Blowout*, 30 INT'L ENERGY L. REV. 95, 101–04 (2012). Five members also thought that BOEMRE decision-making suffered from political pressure to strictly enforce the rules and delay permits. *Id*.

311. Jennifer Dlouhy, *Tougher Offshore Scrutiny? Not Yet*, HOUS. CHRON., Dec. 13, 2012, at D1. BSEE's website has no information about its National Offshore Training Program and lists no staff director of it. *National Offshore Training Program*, BUREAU OF SAFETY & ENVTL. ENFORCEMENT, http://www.bsee.gov/Research-and-Training/National-Offshore-Training-Program/National-Offshore-Training-Program/

have serious problems training their inspectors to effectively monitor for compliance with risk management practices in high-hazard facilities under laws that were enacted decades ago.[312]

Nor, it seemed, did BSEE itself appear to understand how SEMS differed from the real Safety Case regimes used abroad.[313] The SEMS system might lower risk over the short term, but "superficial fixes" that did not address the set of shared social norms of a culture of safety were likely to be undone over time.[314] A Norwegian safety management expert added that the SEMS system also needed a "penetrating verification scheme" to check that the commitments in the SEMS plans were actually happening,[315] indicating that this might be lacking in the SEMS approach in the United States. Director Watson's brief response letter to OESAC stated that BSEE had many "ongoing efforts" to address the recommendations and would like OESAC's guidance in five other areas.[316]

When OESAC issued a full set of twenty-five recommendations from all six of its subcommittees in October

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(last visited Mar. 10, 2014).

312. *See* Office of Inspector Gen., U.S. Envt'l Prot. Agency, No. 13-P-0178, Improvements Needed in EPA Training and Oversight for Risk Mgmt. Program Inspections (2013) (EPA Inspector General report finding one-third of the management inspectors and one-half of the program supervisors did not have the proper training to assure industry compliance with airborne releases of harmful chemicals under the Clean Air Act).

313. *Meeting Minutes*, *in* APR. 2012 OESAC COLLECTION OF MATERIALS, *supra* note 307, at 20. In April 2012, Director Watson told OESAC at its public hearing that "I feel very confident that we have a system that is first class in the world." *Id*. He then stated that prescriptive rules can be very useful because they tell everyone what the minimum requirements are. That is precisely why prescriptive rules do not promote an improvement mentality. *Id*.

314. SAFETY MGMT. SUBCOMM., OCEAN ENERGY SAFETY ADVISORY COMM., SAFETY CULTURE RECOMMENDATIONS 1 (2012), http://www.bsee.gov/uploadedFiles/BSEE/About_BSEE/Public/Engagement/OESC%20Meeting%20Minutes%20Houston%20TX%20April%2026%202012.pdf.

315. *Public Comments by Robin Pitblado, Det Norske Veritas USA (DNV)*, *in* APR. 2012 OESAC COLLECTION OF MATERIALS, *supra* note 307, at 141.

316. Letter from James A. Watson, Dir. Bureau of Safety and Environmental Enforcement, to Dr. Tom Hunter (Aug. 10, 2012).

2012, the SMS Subcommittee's recommendations had been edited into a shorter punch list of five items.[317] OESAC recommended that BSEE consider using COS to identify, analyze and maintain the database on key performance indicators for safety.[318] If BSEE elected to receive this data, BSEE could use it to direct BSEE-initiated inspections and audits, but the data should not be made public in its raw form or used to punish companies.[319] BSEE should make the information public in a neutral format that was not company-specific.[320] BSEE should work to develop a submittal and approval process for the SEMS plans over time, as necessary resources were obtained.[321] BSEE should also review the inspection and audit practices of other countries and consider the recommendations of the National Research Council's report on "Evaluating the Effectiveness of Offshore Safety and Environmental Management Systems," especially its recommendation that independent internal auditing be permitted.[322]

The BSEE Director's responses to the SMS Subcommittee's recommendations came in a few terse sentences:

- BSEE was working with COS on a database.
- BSEE would not approve SEMS plans at the submission stage because this would shift the responsibility for ensuring good safety management systems to BSEE and result in a compliance mentality by industry members.
- SEMS is designed to encourage continuous

317. Letter from Dr. Thomas O. Hunter, Chairman Ocean Energy Safety Advisory Comm., to James A. Watson, Dir. Bureau of Safety and Environmental Enforcement (Oct. 15, 2012).

318. *Id*. The OESAC letter included additional recommendations on data management and using near-miss data, such as hydrocarbon releases, and identified COS as an example of where such data could be analyzed and shared in a neutral environment.

319. *Id*.

320. *Id*.

321. Letter from Dr. Thomas O. Hunter, Chairman Ocean Energy Safety Advisory Comm., to James A. Watson, Dir. Bureau of Safety and Environmental Enforcement (Oct. 15, 2012).

322. *Id*.

> improvement and BSEE's primary focus is on increasing the safety culture offshore. BSEE will ensure that the Corrective Action Plans derived from the audit reports and submitted to BSEE are fully implemented.
>
> - SEMS II does not allow internal independent auditors.[323]

After its final January 2013 meeting, OESAC passed a somewhat shorter list of twenty recommendations to the BSEE Director, of which four were from the SMS Subcommittee, repeating its calls for amending the SEMS rules and creating a database of key performance indicators.[324] The tenth recommendation was to establish a permanent Ocean Energy Safety Institute that would report to the BSEE Director and support BSEE's missions regarding offshore safety and environmental management.[325] This new Institute would

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323. Letter from James A. Watson, Dir. Bureau of Safety and Environmental Enforcement, to Thomas O. Hunter, Ocean Energy Safety Advisory Comm. (Jan. 4, 2013).

324. Letter from Thomas O. Hunter, Chairman Ocean Energy Safety Advisory Comm., to James A. Watson, Dir. Bureau of Safety and Environmental Enforcement (Jan. 25, 2013). The SMS Subcommittee's four recommendations were (1) a continued call to amend API RP 75 to incorporate all operations that take place on an operator's facility, not just those that fall under BSEE's jurisdiction; (2) amend the SEMS rule to require that "major contractors" have a SEMS program in addition to the operator's SEMS plan, and that a bridging document link the two; (3) BSEE should work with industry (perhaps through COS) to develop assessment methodologies and protocols that test the effectiveness of a SEMS program in focusing on process safety (rather than personal safety) and to develop performance metrics as part of a process to improve SEMS itself; and (4) BSEE should amend the SEMS rule to allow a performance-based approach tailored to each facility (so that a facility with little production volume or equipment would not have to meet the same SEMS requirements as a high-volume production platform with processing systems and living quarters).

325. *Id*.; Secretary of Interior Salazar had proposed such an institute in November 2010 with a goal of "creating a framework for regulatory predictability in a global market." The institute would work collaboratively with many groups, such as the Department of Energy, the Coast Guard, industry and academe, especially on protocols for the use of new technology and on training. News Release, The Dep't of the Interior, Salazar Proposes Ocean Energy Safety Inst. (Nov. 2, 2010), http://www.doi.gov/news/pressreleases/Salazar-Proposes-Ocean-Energy-Safety-Institute.cfm#; The API endorsed the plan, but stated that the institute should work apart from the Department of Interior. Letter from Jack N. Gerard, President and CEO API, to Ken Salazar, Sec'y of the U.S. Dep't of the Interior (Nov. 30, 2010), http://www.energytomorrow.org/digital-

continue the collaborative approach of OESAC by engaging regulators, industry, academics and scientific experts to assist BSEE in its many new tasks. OESAC clearly recognized that BSEE needed help.

OESAC had given BSEE a massive workload, not only in safety management, but also in technology development. Other OESAC subcommittees had worked on equipment-testing protocols and research needed to assure that operations for drilling, especially in the Arctic, were the best and safest possible. As noted earlier, the OCS Lands Act mandates that BSEE assure the use of "Best and Safest Technology" (BAST) offshore.[326] An existing BSEE regulation states that "compliance with MMS regulations [is considered] to be the use of BAST."[327] This regulation freezes technology to whatever BSEE's rules specify, and the rules may not reflect what is best and safest. If BSEE does not have the resources to develop testing protocols and performance criteria, then the public interest in assuring that BAST is used on the Outer Continental Shelf cannot be served. A post-Macondo report by the Department of Interior in late 2010 concluded that the agency did not have this expertise.[328]

The OESAC's Spill Prevention Subcommittee recommended that BSEE facilitate a Joint Industry Project (JIP) with the ultimate goal of automated well safety systems and then establish a "technology roadmap" to get to that goal.[329] Oversight of the JIP would fall to the proposed OESI.[330] OESI

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resources/news-and-press-releases/2010/November/API-Letter-on-Interiors-Ocean-Energy-Safety-Institute/~/media/E05DFBBFABF743E292121048FE015A75.ashx.

326. *See supra* text accompanying notes 264–65.

327. 30 C.F.R. § 250.107(c) (2013).

328. *See* OFFICE OF INSPECTOR GEN., U.S. DEP'T OF INTERIOR, No. CR-EV-MMS-0015/2010, A NEW HORIZON: LOOKING TO THE FUTURE OF THE BUREAU OF OCEAN ENERGY MGMT., REGULATION AND ENFORCEMENT 45 (2010) (noting the MMS's inability to identify BAST). BSEE has a "Technology Assessment and Research Program," but DOI's internal review of its ability to establish BAST showed many deficiencies.

329. Letter from Thomas O. Hunter, Chairman, Ocean Energy Safety Advisory Committee, to James A. Watson, Director, Bureau of Safety and Environmental Enforcement (Jan. 25, 2013) [hereinafter Jan. 2013 Letter on OESAC Recommendations].

330. *Id.*

would partner with BSEE to "establish a process for implementing BAST," by identifying and prioritizing key technologies, equipment and processes to consider.[331] For those selected items, industry standard-setting organizations (like the API's standards unit) would develop testing protocols to set performance levels, failure points and reliability for equipment and processes.[332] OESI would facilitate recurring expert forums to provide "evergreen" input to BSEE on BAST-related topics.[333] Using this input from OESI, BSEE would then decide whether to accept the testing protocols and evaluation criteria.[334] The existing BSEE regulation on BAST would be revised to state that technologies evaluated through this new process and accepted by BSEE would be certified as meeting the BAST standard.[335]

Thus, BSEE had two enormous peaks to scale as the untiring Sisyphus pushing offshore safety upward: SMS and BAST. Scaling both requires nothing short of "human capital transformation" inside BSEE and the building of new technology and information management systems to drive data, knowledge and innovation. Pre-Macondo, BSEE had 36 inspectors. By April 2012, it had 100 inspectors and was budgeted to hire 55 more.[336] Pre-Macondo, BSEE had 69 engineers; by April 2012, it had 97 and was budgeted to have 131 more, for a total of 228 engineers.[337] However, little information exists publicly about

331. *Id*.

332. *Id*.

333. *Id*.

334. *Id*.

335. Jan. 2013 Letter on OESAC Recommendations, *supra* note 329. The importance of BAST for Arctic drilling cannot be overstated. The OESAC Containment Subcommittee's report on seafloor broaches (i.e., fractures and fissures in the floor of the seabed caused by an underground well blowout) recognizes that there is no existing containment technology for deepwater broaches. *Id*. Ten of the final twenty OESAC recommendations to Director Watson addressed Arctic drilling and its special requirements. *Id*.

336. *James A. Watson, Bureau of Safety and Environmental Enforcement (BSEE), Directors Remarks*, *in* APR. 2012 OESAC COLLECTION OF MATERIALS, *supra* note 307, at 17–18.

337. *Id*. BSEE's Environmental Enforcement Unit, which did not exist pre-Macondo, has nine people in it and is budgeted to have thirty-eight. *Id*.

the training provided to BSEE employees in terms of specialized skills related to offshore operations.

In May 2013, BSEE announced that the Offshore Energy Safety Institute would be created as a forum for collaborative information sharing to assure that the safest and best practices are used offshore by industry.[338] OESI would receive $5 million in funding over five years, and would be "completely independent."[339] It would serve as a "forum for dialogue, shared learning and cooperative research" to assure safe operations and also train and educate government employees to the same level of expertise as industry.[340] Like the Chemical Safety Board, OESI would not have a regulatory role to play. Its major goal would be to coordinate research from other sources to inform the substance of BSEE's future regulations, particularly in setting new standards for Arctic operations. OESI expected to receive some of the $500 million that flowed to the National Academy of Sciences from BP's settlement of criminal charges with the Department of Justice, a fitting use of the monies.[341]

In November 2013, the Department of Interior announced that a consortium of Texas universities had won the grant to set up OESI as a functioning entity,[342] under the model envisioned

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338. Press Release, Bureau of Safety and Environmental Enforcement, BSEE to Establish Ocean Energy Safety Institute (May 29, 2013).

339. *Id*.

340. *Id*.

341. Phil Taylor, *Interior to Launch Safety Institute*, E&E NEWS, May 29, 2013, http://www.eenews.net%2Feenewspm%2F2013%2F05%2F29%2Fstories%2F1059981958. House Natural Resources Chair Doc Hastings (R-Wash.) released a draft bill that would open parts of the east and west coasts to leasing, codify the reorganization of the MMS, establish a "National Offshore Energy Health and Safety Academy" to train government inspectors who will have to meet certain qualifications; and codify OESAC as a safety advisory board to offer independent scientific advice. Offshore Energy and Jobs Act, H.R. 2231, 113th Cong. (2013). The bill passed the House on June 28, 2013 by a vote of 235 to 186. *Bill Summary & Status—113th Congress (2013-2014) H.R. 2231*, LIBR. OF CONGRESS, http://thomas.loc.gov/cgi-bin/bdquery/z?d113:HR02231:@@@L&summ2=m& (last visited Mar. 10, 2014).

342. Jennifer Dlouhy*, 3 Texas Colleges Join in Offshore Safety Institute*, HOUS. CHRON., Nov. 8, 2013, at A1. OESI will be a consortium of Texas A&M University's Engineering Experiment Station, which houses a Process Safety Center that will manage the new Ocean Energy Safety Institute, in partnership with the University of Houston's Cullen College of Engineering and the University of Texas.

by OESAC. OESI will provide recommendations and technical assistance to BSEE in evaluating BAST and also provide training for federal employees to keep pace with the newest technologies. [343] In addition, OESI will develop an international equipment-failure reporting system and database of critical device failures tied to well control.[344]

The OESI announcement came one week after yet another National Academy of Sciences report was released, this time focused on BSEE's options for implementing its statutory mandate to assure that BAST is used offshore.[345] This NAS report made two key recommendations: First, that BSEE fund OESI at a considerably higher level than the initial $5 million to assure that it could function effectively;[346] and second, that BSEE consider making OESI a federally funded or university-affiliated R&D center, so that it can pay salaries competitive with the private sector.[347] The NAS report bluntly noted: "BSEE needs a trusted agent"[348] to fulfill its mandates. OESI would serve this function, not only for BAST protocols, but also for research on the "often underappreciated" human factors[349] and for training of BSEE employees. All stakeholders, including industry, environmental organizations, and the general public, would be able to engage in dialogue with BSEE through OESI.

In 2011, the Department of Interior was newly added to the list of federal agencies at "high risk" of not being able to perform

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343. OESI will also research improvements in environmental protection, blowout containment, and oil spill response. *Id*.

344. *Id*.

345. MARINE BD. OF THE NAT'L ACAD. OF ENG'G & NAT'L RESEARCH COUNCIL, BEST AVAILABLE & SAFEST TECHNOLOGIES FOR OFFSHORE OIL AND GAS OPERATIONS: OPTIONS FOR IMPLEMENTATION (2013) [hereinafter NAS REPORT]. The Marine Board consisted of a thirteen-member committee chaired by Dr. Donald Winter, with experts in petroleum engineering, marine systems, system safety risk analysis, testing of new technologies and human factors).

346. *Id*. at 51.

347. *Id*. at 43. The NAS report stressed the importance of hiring a Chief Engineer for OESI who had the same qualifications as would be found in the private sector. *Id*. at 48.

348. *Id*. at 38.

349. *Id*. at 19.

some of their key functions properly.[350] It remains on this list.[351] Clearly, BSEE has recognized, as did OESAC, that BSEE does not have the capacity to participate effectively in standard-setting for equipment or procedures used offshore or in performing effective audits that "breathe life" into the safety management documents of operators offshore.[352] BSEE remains a data-poor agency, comprised largely of inspectors with limited training and checklists to fill out. Decades of under-investment in this agency contributed to the Macondo disaster and cannot be fixed quickly. BSEE is still very much a work in progress rather than the nimble and well-resourced regulator that it needs to be. In this regard, one can correctly say that, to date, "little has changed" on the government front with one exception: BSEE's strategic goals through 2015 rightly recognize that a total re-build of its human capacity and information management systems lies ahead.[353]

V. CONCLUSIONS, RECOMMENDATIONS AND FINAL OBSERVATIONS

A. Conclusion: BSEE Is Not (Yet) a Nimble and Competent Regulator

Part One of this Article began with a quip about post-Soviet Union reform in Russia: "Much has changed, but nothing has happened." The Article then traced key changes that have occurred in spheres other than legislation since the Macondo disaster: a better understanding of safety management systems

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350. U.S. GOV'T ACCOUNTABILITY OFFICE, GAO-11-278, REPORT TO CONGRESSIONAL COMMITTEES: HIGH RISK SERIES—AN UPDATE 54 (2011).

351. U.S. GOV'T ACCOUNTABILITY OFFICE, GAO-13-283, REPORT TO CONGRESSIONAL COMMITTEES: HIGH RISK SERIES—AN UPDATE 76–78 (2013) (reporting that DOI still suffers from lack of human capital; that BSEE's new offshore training program will take up to two years to fully train inspectors; and that long-term BSEE staffing with professionals in the sciences is still uncertain).

352. HOPKINS, DISASTROUS DECISIONS, *supra* note 43, at 147.

353. BUREAU OF SAFETY AND ENVIRONMENTAL ENFORCEMENT, STRATEGIC GOALS AT A GLANCE, BSEE FY 2012-2015, http://www.bsee.gov/workarea/downloadasset.aspx?id=6442455294. The 2013 NAS report noted with approval that BSEE had contracted with NASA to create a non-punitive safety reporting system based on NASA's Aviation Safety Reporting System (ASRS). NAS REPORT, *supra* note 345, at 22.

and their role in fighting complacency; a wave of technological innovation; and the globalization of industry standards often used in government regulation of offshore operations. All of these changes need an effective regulator to assure that good safety management systems for major hazards are actually put into practice on offshore facilities; that the technology used is the Best and Safest (as required by existing law); and that industry technical standards and Recommended Practices have been developed using an open process that includes academic experts, labor and government officials so that when they are incorporated into mandatory regulations they reflect good, if not best, practice that drives continuous improvement. The public interest in developing offshore resources is not served without such a regulator. Sections III and IV looked at the role of the regulator in offshore safety and found serious deficiencies in the former MMS and its successors. It seems fair to say that BSEE has "happened," but little has yet fundamentally changed in terms of its capability to regulate the U.S. offshore using best regulatory practices.[354]

Many readers may conclude that the U.S. offshore is essentially self-regulated by industry. The auditors that will check to see if SEMS plans are being used offshore are consultants, pre-qualified through the Center of Offshore Center, an industry-created and owned entity. BSEE neither

354. The OIG report on the future of BOEMRE (now BSEE) made sixty-four recommendations for strengthening the agency's role in permitting, inspections, enforcement, environmental and cultural resources, accident investigations and safety. OIG, FUTURE OF BOEMRE, *supra* note 15. No follow-up report has been released to the public that documents what specific reforms have been made and which recommendations are being addressed as priorities. An unreleased report, obtained from the Office of Inspector General of the DOI through the Freedom of Information Act in late 2013, is reported to show that few recommendations for improving offshore safety enforcement or accident investigation have been made, probably because the agency lacked the trained staff to move forward. Corbin Hiar, *Offshore Drilling Safety Recommendations in Limbo Years After BP Spill*, SNL FIN. (Oct. 31, 2013, 2:12 PM), http://www.snl.com/InteractiveX/articleabstract.aspx?ID=25614820&KPLT=2. A recent visit to BSEE's website does show that BSEE now publicly posts more information on enforcement, such as a list of INCs that its inspectors have found based on investigations of accidents. *See Incidents of Noncompliance*, BUREAU OF SAFETY & ENVTL. ENFORCEMENT, http://www.bsee.gov/Inspection-and-Enforcement/Enforcement-Programs/Incidents-of-Non-Compliance/ (last visited Mar. 10, 2014).

approves the SEMS programs of offshore operators before they begin operations nor does it conduct audits itself. BSEE will continue to use its inspectors, with some enhanced knowledge, to check facilities offshore. BSEE itself describes the new safety framework as "industry self-regulation with BSEE oversight," although the oversight seems minimal at this time. The OESAC Subcommittee on SMS pushed unsuccessfully for a better safety system protocol to start the new BSEE off with a framework that, if not "optimized," was at least "enhanced" beyond the current SEMS rules so that it could better embed a permanent safety culture into an organization. Audits by third parties with protocols of questions to ask, but no continuous dialogue with an active regulator, would not do the job.

Protocols for testing the safety-critical equipment used offshore are not yet developed. BSEE collects no data on leading indicators that can warn of rising risk levels offshore and then work with industry to reduce them. There is little participation by labor in developing standards offshore; indeed, the only workers' voices heard in the many post-Macondo hearings that the Author accessed were those of labor leaders from the United Kingdom or Norway. The API process of standard setting, at least in the area of worker fatigue (API RP 754), has been judged unacceptable by the U.K. HSE and by our U.S. Chemical Safety Board; and the onshore labor unions in the U.S. chemical processing sector withdrew from an API-ANSI standard-setting process because of its perceived industry bias.

Meanwhile COS is actively driving improved safety in deepwater offshore and the SEMS regulations incorporate much of this Center's work product, thereby applying it to all offshore operators regulated by BSEE, regardless of water depth. It is only partly facetious to state that COS is the nimble and competent "regulator" in the Gulf of Mexico today. COS has set up the SEMS audit process that will certify that companies operating in the Gulf of Mexico have met all SEMS requirements.[355] The COS mission statement extends beyond

355. Emily Pickrell, *Offshore Operators Should Focus on Building Safety Barriers*, FUEL FIX (May 9, 2013), *available at* http://fuelfix.com/blog/2013/05/09/offshore-operators-should-focus-on-building-safety-barriers/. Charlie Williams, the current Executive Director of COS, has stated that the offshore auditors will focus on identifying

SEMS auditing. COS defines itself as a "platform for learning and sharing between industry, government and other stakeholders regarding SEMS" through "measurement, reporting, analysis, learning and sharing" based on the audit results, incidents, and safety performance indicators.[356] As discussed earlier, COS will collect industry data on deepwater operations and share it with industry through COS reports and forums, always maintaining the confidentiality of COS member-specific data.[357] COS will seek individual company examples of good practices to share with industry and also identify and share possible corrective actions for problem areas.[358]

In short, the COS vision is to be the "one-stop" central source for information about offshore safety in deepwater operations that will raise industry's safety standards and promote a safety culture of continuous improvement focused on "behavior."[359] It is currently the nimble and competent actor that is providing robust supervision over the SEMS audit process now required by BSEE's regulations.[360] It is clear from

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potential hazards and protective barriers against them. The question of whether safety barriers are maintained is, in his view, "the key to these audits." *Id*.

356. Brad Smolen, Ctr. for Offshore Safety Presentation to Potential Audit Service Providers, slide 3 (Aug. 13, 2012). The SEMS audit protocol questions and audit checklist prepared by COS are taken directly from Subchapter S, the SEMS rules. *See* 30 C.F.R. § 250.1920. Greg Duncan, Ctr. for Offshore Safety Presentation to Potential Audit Service Providers, slides 41–42, 44 (Aug. 13, 2012) (noting that improvements were made with input from BOEMRE).

357. *See* discussion *supra* Section III.C.3.f.

358. In addition to preparing the audit report, the Audit Service Provider will prepare a memo on "good practices" that the audited company has been found to use. The operator then decides whether to share this information with COS and with industry. Jack Toellner, Ctr. for Offshore Safety Presentation to Potential Audit Service Providers, slides 25–26 (Aug. 13, 2012). Thus, "good practice" sharing is done through a blind, voluntary system. COS may set up a COS review panel to evaluate submissions of good practices, and this may include BSEE (as indicated by the question mark in slide 75). Jeff Ostmeyer, Ctr. for Offshore Safety Presentation to Potential Audit Service Providers, slide 75 (Aug. 13, 2012).

359. Smolen, *supra* note 356, slide 8. COS also provides the training material and training for its members. *See* COS-3-01, *supra* note 289.

360. Toellner, *supra* note 358, slide 22. COS maintains oversight over the auditing process in many ways: the audit plans used by the Audit Service Providers (ASPs) must be consistent with COS protocols and publications. *Id*. slide 24. COS states that it periodically evaluates the ASP's audit processes and competencies, the training

the names and titles of the presenters at the COS workshop on the SEMS auditing system that the biggest of the major oil companies are leading the COS effort and sharing their own safety management practices with the rest of industry.[361] They rightly fear that another incident will lead to a moratorium either in the United States or overseas that will seriously impact their own futures, regardless of their lack of fault.[362] A newswire report of even the smallest of sheens near a major oil company's facility sent stock prices down for all the integrated majors.[363]

This Article has noted criticism of the Safety Case used in the United Kingdom and Norway because it relies too much on industry self-regulation without enough prescriptive rules that regulators can enforce through diligent inspections and strong liability schemes.[364] Most citizens probably share some degree of unease with the use of an industry self-regulatory framework for offshore safety, especially when it is created under the API umbrella. The real question is whether the unease is justifiable when many prescriptive-rule regimes have failed to enforce safety through rigorous inspection processes and when

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programs for auditors, and the individual competencies of the lead auditor and other audit team members. *Id.* slide 27.

In November, 2013, Statoil, the Norwegian state oil company, received the first COS-issued certificate of compliance, awarded after Bureau Veritas, a COS-accredited third-party audit provider, verified the quality of Statoil's SEMS program. Nathanial Gronewold, *Norwegian Firm Is First to Get U.S. Safety Certification*, ENERGYWIRE, Nov. 27, 2013, http://www.eenews.net/energywire/stories/1059991075/. Statoil achieved this certification long before the SEMS II rules require such third-party audits, perhaps reflecting Statoil's ease with safety management systems used for so many years in its home country.

361. *See Presentation Slides 8-13-2012*, *supra* note 138, slides 12, 39 (listing presenters from ExxonMobil and ConocoPhillips).

362. Daniel Gilbert & Russell Gold, *As Big Drillers Move In, Safety Goes Up*, WALL ST. J., Apr. 2, 2013, at A1, A10 (showing infraction rates found by inspectors in the Marcellus Shale between 2008 and 2012. Shell, Exxon and Chevron were cited for infractions in 6.5% of inspections, compared to an 11% citation rate for midsize companies and a 17% rate for small companies. *Id.*

363. *See Shell Says Gulf Oil Slick is Not From Its Wells*, BUSINESS WEEK (Apr. 12, 2012), http://www.businessweek.com/ap/2012-04/D9U3FAT83.htm; David Brett, *Oils Drag European Shares Down, Italy Debt Yield Rise Hits Banks*, REUTERS, Apr. 12, 2012, 12:35 PM, *available at* http://uk.reuters.com/article/2012/04/12/markets-europe-stocks-idUKL6E8FC2E720120412.

364. *See* Steinzor, *supra* note 44 and accompanying text.

regulators are under-resourced.

B. The "New Governance": Regulation by Third-Party Certification

A large body of literature has discussed and then analyzed the successes and failures of what is called the "new governance": the trend to use hybrid regulatory systems in many areas of regulation from food safety to greenhouse gas reporting.[365] This new governance has been described as "more consensus-based, contextual, flexible, integrative and pragmatic."[366] The results of empirical studies of various self-regulatory or hybrid regimes are decidedly mixed.[367] Deregulation of the financial system in the early 1990s and weak government oversight of banks contributed to the banking collapses and the global financial recession which began in mid-2008 and still continues—a notable failure of the new governance. In other contexts, self-regulation has been quite successful, as in the INPO model, cited by the National Commission on the Deepwater Horizon as a model for what is now the Center for Offshore Safety.[368]

Some academics have reported favorably on one type of this

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365. *See, e.g.*, Michael P. Vandenbergh, *Private Environmental Governance*, 99 CORNELL L. REV. 101, 105–126 (2013) (discussing the use of private and public governance in environmental areas), and the numerous studies cited therein; *see also, e.g.*, Jody Freeman, *Extending Public Law Norms through Privatization*, 116 HARV. L. REV 1285, 1285, 1288 (2003) (discussing the tradeoffs that result from privatization as a means to achieve public goals).

366. Vandenbergh, *supra* note 365, at 38 (quoting Bradley C. Karkkainen, *"New Governance" in Legal Thought and in the World: Some Splitting as Antidote to Overzealous Lumping*, 89 MINN. L. REV. 471, 474 (2004)).

367. *Compare* Lesley McAllister, *Co-Regulation in Mexican Environmental Law*, 32 UTAH ENVTL L. REV. 181, 208–09 (2012) (calling for innovative approaches to regulatory regimes), *with* Thomas O. McGarity & Rena I. Steinzor, *The End Game of Deregulation: Myopic Risk Management and the Next Catastrophe*, 23 DUKE ENVTL L. & POL'Y F. 93, 96–99, 148–49 (2013) (describing many failures of deregulation). *See also* THOMAS MCGARITY, FREEDOM TO HARM: THE LASTING LEGACY OF THE LAISSEZ FAIRE REVIVAL 66, 74 (Yale Univ. Press 2013) (describing how the anti-regulatory message of conservatives and their effective use of media have resulted in profound public distrust in government and have weakened worker safety, environmental protection, drug and device safety, food safety, and consumer protection, including mortgage financing).

368. *See* discussion *supra* accompanying notes 97–99.

new governance: the use of "regulation by third-party verification," which is an apt description of the very system that BSEE is now using to audit offshore operators. In her article so titled, Professor Lesley McAllister proposes greater consideration of government reliance on private auditors to verify the achievement of government objectives.[369] Regulatory failure too often occurs because agencies lack both the expertise and the funding to monitor and detect noncompliance. Third-party verification (3PV) privatizes the verification process by requiring companies to hire independent auditors to determine compliance. The agency does not pay for the audits and does not have to hire or retrain personnel to conduct them. The drivers of this type of new governance are not just lack of funding and expertise of government regulators. The 3PV process can further an approach to a targeted industry member that engages the services of an experienced auditor in a more cooperative, "peer-assist" manner that promotes greater information sharing, better communication, and tailored correction plans.[370] The audit becomes a learning experience that fosters continuous improvement in a way that traditional government audit and inspection processes cannot achieve.

Professor McAllister conditions her proposal for greater reliance on 3PV regimes on having essential safeguards in place to assure that the private verifiers are accountable for achieving the public values expressed in the government regulation.[371] The government agency must set the ground rules for auditor qualifications and for the audit protocols to be used by them in performing the task of enforcing public values. The government must always retain the authority to apply sanctions on non-complying companies that have been audited through third-party verifiers.[372]

One significant disadvantage of using a 3PV system is that the regulator is left outside the "learning loop." Its employees lose expertise in understanding the industry's problems and how

369. Lesley McAllister, *Regulation by Third Party Verification*, 53 B.C. L. REV. 1 (2012).

370. *Id*. at 14–15.

371. *Id*. at 32.

372. *Id*. at 33.

the regulations work in practice.[373] Also, there are fewer ways of sanctioning a third-party verifier who does poor work, so the 3PV system is less accountable for advancing the public goals embraced in the laws it is enforcing. Therefore, using a 3PV system requires that the government maintain accountability for these public values in two essential ways. First, the government must actively oversee the 3PV process by monitoring the work of the verifiers (that is, the Audit Service Providers) and by assessing how the system is functioning in terms of actually improving safety. Second, the agency must operate transparently by publicly disclosing the results of its own monitoring of the 3PV system. Thus, the agency must check, for example, that the third-party verifiers are independent from the client company they are auditing; it must deter "shopping around" for auditors; and it must monitor and prevent conflicts of interest that develop when the Audit Service Provider seeks other work from the same client company. COS has built in considerable oversight authority of the ASPs that it certifies,[374] but this cannot substitute for government accountability for meeting the public mandates delegated to specialized regulatory agencies by law.[375]

C. Recommendations to Help BSEE Become a Competent and Nimble Regulator

BSEE must become an effective regulator, and it has set its sights on this goal. It will need help. A wealth of useful material from numerous reports and public hearings involving diverse expert groups has been stirred up in the wake of the Macondo. These provide much expert direction to provide assistance. A roadmap for BSEE's route to good, if not best, practice is outlined below. The first set of five recommendations use OESI

373. *Id*. at 30–31.

374. *See* COS-2-04, *supra* note 155.

375. The first SEMS I audits were required to be submitted to BSEE by November 15, 2013, at which point BSEE had its first opportunity to assess the quality of these required audits, which do not require the use of a COS-certified ASP. The first COS-style audits under SEMS II are not required to be submitted until June 5, 2015. It is not clear from BSEE's website how it will assess the COS auditing process in the evaluation of the SEMS I audit submissions.

as a long-term (and possibly permanent) committee of diverse experts in key areas of offshore oil and gas development. The last recommendation can be accomplished by BSEE immediately, on its own.

It is important to note that OESI's designated role in the recommendations below goes beyond the development of BAST protocols for the Arctic. It is somewhat worrisome that the announcements about OESI and the industry response to its creation focus so much on the "hardware" aspects of drilling in this harsh northern environment. Yes, it is important for the United States and its oil and oil-service companies to play a leading role in technological developments in new offshore frontiers.[376] But, the institutional infrastructure for assuring that the public values of safety and environmental protection are meaningfully addressed in all U.S. waters is even more important. There is much work for BSEE to do in the Gulf of Mexico where far more lives and livelihoods depend on safe offshore operations.[377] If BSEE cannot show that it has the capacity to regulate effectively in the Gulf, opposition to drilling off the east and west coasts of the United States (and possibly off other countries' coasts) will continue and even intensify with the next Macondo-like event.

OESI, like OESAC, must also work on the "soft" side of safety: the people, procedures and processes that are the cause of most fatalities and catastrophes in industrial accidents, whether onshore or offshore. The United States already has a program (called RPSEA, the Research Partnership to Secure Energy for America) that centers on joint research technologies in frontier areas of oil and gas development.[378] While the Center

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376. The Coast Guard's ability to supervise operations in Arctic waters is seriously jeopardized by its lack of ice-breaking ships. In 2012, the U.S. Coast Guard had three ice-breakers, two of which were not fully operable. RONALD O'ROURKE, CONG. RESEARCH SERV., RL34391, COAST GUARD POLAR ICEBREAKER MODERNIZATION: BACKGROUND AND ISSUES FOR CONGRESS 7 (2012).

377. *See* Jennifer A. Dlouhy, *Company's Report Blames Contractor for Fatal Offshore Blast*, HOUS. CHRON., Aug. 22, 2013, at D3. An explosion killed three offshore workers at Black Elk's production platform in the shallow water of the Gulf in November 2012. *Id*. Contractors were welding a pipe that had not been cleared of flammable gas. *Id*. Many precursors of danger were found to have been ignored. *Id*.

378. The Research Partnership to Secure Energy for America (RPSEA) was

for Offshore Safety appears to be doing excellent and important work, it should not occupy all of the offshore safety management system space. COS can play a unique and important role as a permanent institution that assists its own industry members to focus rigorously on safety data and research and shared learnings. But, COS is not a regulator, and its existence and funding are dependent on industry membership and support.

OESI must assure that a wide diversity of disciplines are represented in its leadership positions, committee assignments and workshops. As this Article has shown, almost every other institutional actor with a significant role to play in offshore operations represents a fairly narrow constituency, often with a limited mission or jurisdiction. These silos of expertise, no matter how competent and public-oriented, do not and cannot fully serve the public interest in assuring the highest level of offshore safety. Collaborative dialogue among all the diverse stakeholders in offshore drilling in more open and transparent forums should be OESI's mission.[379] Like the Safety Forum used in Norway as a "central arena" for industry, labor and government regulators to cooperate in HSE activities for the offshore petroleum sector, OESI can provide a neutral forum for dialogue on safety issues from multiple perspectives and disciplines. Norway's Safety Forum also serves as a consultation body for the Norwegian national assembly, furthering the values of openness and public accountability.[380]

Both industry and government must rebuild the trust of the American public. For its first five years, OESI's strategic agenda

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established by the Energy Policy Act of 2005 to address technological challenges facing the industry, such as ultra-deepwater architecture and unconventional gas development. RESEARCH PARTNERSHIP TO SECURE ENERGY FOR AMERICA, http://rpsea.org/about/ (last visited Mar. 10, 2014).

379. *See* BSEE to Establish Ocean Energy Safety Institute, *supra* note 338 (describing Director Watson's view that the Institute will provide a cross-disciplinary forum for dialogue, research and learning among academics, government, NGOs, and industry that would provide unbiased information).

380. Statement from the Norwegian Oil Indus. Ass'n, at 16 (July 17, 2012) http://www.csb.gov/UserFiles/file/Statement.pdf. The Safety Forum participates with the National Assembly in preparing White Papers on HSE activities in the petroleum sector. *See generally Safety Forum*, PETROLEUM SAFETY AUTH. NOR., http://www.ptil.no/safety-forum/category917.html (last visited Mar. 10, 2014).

should aim at strengthening BSEE's capacity so that it can be the nimble and effective regulator that it must be to assure public accountability for developing the U.S. outer continental shelf under OCSLA's balanced mandates.

Here is the roadmap, with a significant role for OESI to play as described above:[381]

1. Building Human Capital in BSEE

This is clearly the most pressing task. OESI, working with industry, academe and expert NGOs, can help BSEE (and also the Coast Guard and BOEM) create an effective training program for government employees involved in offshore safety. Federal employees throughout DOI must keep pace with the technological expertise of the oil and gas industry and with the best regulatory practices used by skilled and experienced regulators in other industry sectors and in other countries.[382]

BSEE employees must be trained in offshore safety management systems and become certified in the skills and expertise necessary to be an auditor at the same level of proficiency as industry members and consultants are trained and certified through COS. BSEE must become knowledgeable enough to be able to engage in a two-way dialogue with industry. BSEE must have Subject Matter Experts (SMEs) available in key areas related to offshore drilling and production facilities. BSEE must also have access to scientists who are expert in the unique environments in which offshore and related onshore facilities will be built. These BSEE experts can then assist in the training of BSEE inspectors to enhance their ability to observe SEMS-related practices while they inspect facilities

381. If OESI is not structured as a multi-disciplined forum for both the technical and the human behavior side of offshore safety, or if OESI fails to set a collaborative and strategic research agenda that involves multiple parties (such as COS, other offshore industry associations, academics, labor, NGOs and regulators), then BSEE's progress toward becoming an effective regulator will probably be slower.

382. *See* BSEE to Establish Ocean Energy Safety Institute, *supra* note 338 (noting the necessity for regulators to maintain a high level of expertise in the context of new, and increasingly technical, domestic oil and gas exploration). The GAO's high-risk reports state that the Office of Natural Resources Revenue of the DOI also needs human capital improvements to assure that royalties paid to the government from leasing public lands are accurately reported and collected. GAO-11-278, *supra* note 350, at 17–18.

using their PINC checklist. It is interesting to note that SEMS I had a provision requiring that the operator notify BOEMRE (now BSEE) at least thirty days prior to conducting its audit so that "BOEMRE may make arrangements to observe or participate in the audit."[383] This notice requirement, which seemed to envision greater regulator engagement in the audit process, was deleted under SEMS II. Such engagement must be revived.

The ultimate goal is that BSEE have skilled auditing teams, separate from BSEE inspectors, that, through sampling techniques of the audit reports submitted by operators or their Audit Service Providers and through intensive investigations of incidents, can conduct their own audits and even assess SEMS plans before operations are allowed to begin. Because the Gulf of Mexico has many more facilities and operators to supervise than in other jurisdictions, it may not be either possible or advisable that BSEE eventually conduct all audits and pre-approve all audit plans. But, BSEE must develop enough specialized expertise in offshore safety auditing to be a credible source of both dialogue and enforcement actions against poorly performing operators. As has been noted, one large disadvantage of the 3PV auditing system is that the regulator is left outside the "learning loop." This cannot be a permanent feature of federal offshore regulation.

OESI, working with industry associations, the International Regulatory Forum, and others should conduct a study of how agencies like the U.K. HSE and Norway's PSA, trained their regulators at the start of North Sea development and how they are trained now. Were industry personnel seconded into the agency? What problems did this create? Did government employees "shadow" industry supervisors, spending days at a time on facilities offshore as part of their training? How are new recruits obtained and trained in other jurisdictions at a time of global shortages in the skilled professions related to petroleum operations? What are the advantages and disadvantages of certifying government employees using the same training

383. Oil and Gas and Sulphur Operations in the Outer Continental Shelf—Safety and Environmental Management Systems, 75 Fed. Reg. 63,610, 63,654 (Oct. 15, 2010).

providers that industry uses? How can academic curricula in engineering and safety management be revised to assure that students are exposed to lessons in safety culture from the very start of their professional careers? The lessons learned from this study will be useful for governments in many countries with newly discovered oil and gas resources.

2. Evaluating the COS-3PV Auditing of SEMS Compliance

Apart from training BSEE auditors to be able to independently evaluate the safety systems of individual operators under the SEMS program, BSEE must have a protocol that allows it to assess the effectiveness of outsourcing the SEMS audits to third-party Audit Service Providers certified through COS procedures and qualification standards. BSEE must actively oversee the 3PV system by monitoring the work of the Audit Service Providers (ASPs) to assure their independence from the industry clients they serve and by publicly disclosing the results of its own monitoring. An OESI task force can help develop such a protocol.[384] Whether the entire edifice of offshore safety management system auditing actually results in greater safety offshore is addressed in the next subsection on becoming a data-rich agency.

This oversight issue of "auditing the auditors" has been faced in other contexts, notably in policing the performance of

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384. Personnel from OSHA, the EPA, and the Chemical Safety Board have expertise in the area of process safety management systems and enforcement that can be "borrowed" for task force purposes. OESI and BSEE can also draw on experts from the National Academies, the National Labs, ANSI and academic centers like the Center for Catastrophic Risk Management at the University of California at Berkeley to recommend an assessment protocol and perform the first assessments of the COS-ASP audit regime until BSEE has the requisite in-house capacity.

A recent study has shown the importance of assuring auditor independence from clients. *See* Esther Dufio et al., *Truth-Telling by Third-Party Auditors and the Response of Polluting Firms: Experimental Evidence from India* 29 (MIT Dept. of Econ. Working Paper Series, Working Paper No. 13, July 17, 2013), *available at* http://ssrn.com/abstract=2294736 (reporting that removing the conflict of interest which arises when a company pays for the services of an independent auditor led auditors to report more truthfully; the fraction of plants that were falsely reported to be compliant with pollution emissions levels was very significantly reduced, as were emissions).

the Big Four accounting firms that audit the financials of client companies. The financial scandals of Enron, Tyco International, WorldCom, HealthSouth and others exposed seriously deficient auditing practices by some of the best-known and largest accounting firms that had failed to uncover the fraudulent accounting schemes used by company executives.[385] In response, Congress created the Public Company Accounting Oversight Board (PCAOB) to audit the performance of the Big Four auditing companies.[386] Even today, the public reports of this Board show a disturbing lack of auditor independence and/or competence in these major accounting firms. The Board has found serious deficiencies in the audit reports of all of the Big Four companies. All still place too much faith in management assertions without verifying that the statements are true in areas where fraud is a risk.[387]

The PCAOB does not immediately publish its performance reviews of the accounting firms' auditing practices. If the accounting firm has not remedied its poor performance in one

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385. Sarbanes-Oxley Act of 2002, Pub. L. No. 107-204, § 101, 116 Stat. 745, 750–53 (2002) (codified at 15 U.S.C. § 7211); *see also* John C. Coates IV, *The Goals and Promise of the Sarbanes-Oxley Act*, 21 J. ECON. PERSPECTIVES 91, 91 (2007) (noting emergence of a consensus that "auditing had been working poorly" in the context of major corporate scandals).

386. *Id*. The Big Four accounting firms are Deloitte & Touche, Ernst & Young, PriceWatershouseCooper, and KPMG.

387. Michael Rapoport, *Audit Firms' Work Deemed Deficient*, WALL ST. J., Sept. 17, 2012, at C3 (noting the PCAOB had found deficiencies in nearly one-third of the audits they examined at the Big Four firms). *See* Floyd Norris, *Ernst & Young's Audit Procedures Faulted*, N.Y. TIMES, May 24, 2013, at B7 (noting that in 9 of 58 audits reviewed, Ernst & Young identified the fraud risk but did not adequately address it, raising questions about the "rigor and efficacy" of the firm's work, especially when the auditor accepted company management's assumptions even though they were contrary to past experience). The PCAOB is now considering whether to disclose the name of the lead auditor, putting further "name and shame" pressure on professionals whose poor performance can harm the public citizenry. *Id.*; *see also* Floyd Norris, *Board Finds Bad Audits at Deloitte*, N.Y. TIMES, Oct. 18, 2011, at B4 (noting that the PCAOB found Deloitte to have a company culture that tolerated audits which failed to use critical analysis and objective evidence and that relied too heavily on industry self-reporting). Regarding Deloitte's perceived failure, the PCAOB chair concluded "[t]he loss of independence destroys skepticism." *Id.* In October 2013, the PCAOB censured Deloitte and fined it $2 million for failing to put in place the changes that the PCAOB had required earlier. Floyd Norris, *Accounting World, Still Resisting Sunlight,* N.Y. TIMES, Oct. 25, 2013, at B1.

year, the Board then releases its critical evaluation. Thus, a PCAOB-published report means two things: First, that the accounting firm had weaknesses in its auditing practices; and second, that it has not corrected them. Naming these companies provides public accountability on two levels: First, of the Big Four companies' performance in serving the public interest of protecting shareholders; and second, of the PCAOB's work directed to this same end.[388]

OESI should study and recommend the institutional framework for a board or expert group to "audit the auditors," that is, to evaluate the 3PV system used for offshore safety. Once BSEE has a trained cadre of offshore safety management experts, it may be able to conduct "SWAT-team" type sampling of the SEMS audit reports done by the Audit Service Providers. No legislation (other than appropriations for funding) should be needed to create a permanent office or expert group that can function like the PCAOB does in the financial auditing sector.

3. Developing a Data-rich Agency

We have seen how Norway's PSA and the U.K. HSE require that operators submit data on Key Performance Indicators (KPIs), both lagging and leading, that are then used by the regulator to measure trends in industry-wide risk levels, to prioritize regulatory resources in both enforcement and problem-solving dialogue, and to benchmark companies. This data function is critical to a good regulatory framework.[389] Much

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388. INPO has an internal system of policing its nuclear power plant operators. It sets standards and conducts detailed inspections and then grades every plant on a 1 to 5 scale. The names of the CEOs who manage a plant rated as low as "4" are disclosed at an industry meeting, and any plant rated a "5" is shut down by the Nuclear Regulatory Commission. NAT'L DWH COMM'N REPORT, *supra* note 3, at 237. In comparison, COS can terminate any member company that fails to comply with its membership requirements, but this appears to be its only method of internal policing . *Membership Application*, *supra* note 140, at 4.

Even the Chemical Safety Board is subject to performance reviews. *See* U.S. Envtl. Protection Agency, U.S. Chemical Safety and Hazard Investigation Board Needs to Complete More Timely Investigations 4 (July 30, 2013) (finding the CSB does not have an effective management system to meet its performance goals and lacks defined performance indicators).

389. *See* Roger M. Cooke et al., *Precursor Analysis for Offshore Oil and Gas*

expertise in this matter already exists in the North Sea safety authorities, the Chemical Safety Board and academic institutions. BSEE should be able to leapfrog very quickly into data collection if it receives adequate funding. An OESI task force should be quickly convened to recommend the data that all operators must start to submit to BSEE. Data must be collected under reporting definitions and protocols that allow data aggregation and manipulation in order to produce statistically significant analyses. All "undesirable incidences" must be logged and reported.

Data has great truth-telling power and is action-forcing. Industry and regulators cannot manage what they do not measure. For example, when the Wall Street Journal reported in September 2010 that between 2007 and 2009, 381 fires had occurred on offshore facilities in the Gulf of Mexico, amounting to more than one every three days, the president of the IADC is reported to have responded: "This is almost an absurd number to me. You want to lower that number."[390] As discussed earlier, the Key Programmes of the U.K. HSE were effective drivers of industry efforts to reduce gas leaks and focus on maintenance of aging facilities.

No industry association has the power to require that all companies working offshore submit key data indicating risk

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Drilling, RESOURCES FOR THE FUTURE DISCUSSION PAPER 10-61, at 2 (Jan. 2001), *available at* http://www.rff.org/RFF/Documents/RFF-DP-10-61.pdf (concluding that an Accident Sequence Precursor system should be developed for oversight of offshore drilling regulators and recommending further steps for doing so). The paper finds that BSEE's current regulation for collection of data is inadequate because it relies on narrative descriptions of hazards and their mitigation, not on rigorous data analysis and risk estimation. *Id*. at 15. This paper further concludes that the regulator is the best entity to develop these accident precursors as a tool, using the experience of the U.S. Nuclear Regulatory Commission (NRC) as a guide. The NRC developed a sophisticated precursor program after the near meltdown at Three Mile Island in order to monitor nuclear plants for signs that a problem, if not corrected, could have the potential to lead to a core meltdown. *Id*. at 2–3. The authors admit that an Accident Precursor System is more challenging to develop offshore because there are so many different companies with disparate operator characteristics relative to the universe of 104 nuclear power plants for which the NRC is responsible, and also because the regulator, BSEE, starts with such a low baseline use of quantitative techniques. *Id*. at 15.

390. Ben Casselman et al., *Mariner Has Dealt With Fires Before*, WALL ST. J., Sept. 3, 2010, at A4.

levels. The IADC has directly called on regulators to work aggressively to investigate incidents and share learnings from them because trade associations face legal impediments to coercing data reporting and sharing from all of their members.[391]

While COS is collecting much data from the audit reports and is set up to manipulate it in many useful ways, this data system is entirely different from the mandatory reporting of near misses (such as kicks), hydrocarbon releases, and failures of tested barriers. The COS audit protocol will report whether companies are internally recording near-miss data to improve their own risk assessment, but it will not require that the actual data on near misses be reported in the audit. The audit assesses the effectiveness of safety processes and procedures; it is entirely separate from data collection of both actual incidents and potential near misses. Moreover, COS focuses only on deepwater operations at this time. BSEE must supervise, regulate and enforce all offshore operations, regardless of depth.

BSEE announced in late 2013 that it had arranged with the Bureau of Transportation Statistics (BTS) to develop a voluntary, near-miss reporting system for use in the offshore industry.[392] Individuals can report near-misses on a confidential basis. BTS will provide trend analysis of the reported data to BSEE. While this is a small step forward, the system is only now being developed, and it is voluntary. Until BSEE is able to do a RNNP-type of analysis of trends in offshore risk levels, it cannot credibly report back to the American public on whether the new SEMS system and Drilling Safety Rule are having an impact.[393]

By acquiring expertise in data collection and research, BSEE can indirectly assess the effectiveness of COS and its mission to advance the "highest level" of safety offshore. Such expertise promotes public trust and accountability in both BSEE

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391. *See Part One*, *supra* note 1, at 202. The OGP's Well Control Incident Database also suffers from the trade association's lack of enforcement power to require incident reporting. *See supra* Section III.C.4.c.

392. *See* Press Release, *BSEE and BTS to Develop Confidential Near-Miss Reporting System*, http://www.bsee.gov/BSEE-Newsroom/BSEE-News-Briefs/2013/BSEE-and-BTS-to-Develop-Confidential-Near-Miss-Reporting-System/.

393. *See* discussion *supra* Section III.B.3.

and in COS. For example, by creating and evaluating key performance indicators that measure the safety concerns of workers, BSEE can assure that the work experience of offshore workers is heard in contexts other than whistleblowing. An OESI forum or workshop that draws the participation of workers, industry managers, government regulators, and labor specialists from academe can fill a void that appears to now exist in U.S. offshore waters where labor unions are not represented and the safety regulator is still not an independent agency.

4. Standard Setting and BAST Protocols

OESAC has already recommended a protocol to determine what is the Best and Safest Technology to use for deepwater and Arctic operations. However, BAST should be used in all operations offshore. Norway's operators routinely use sparkless tools on offshore facilities, so that explosions do not result when welding or other such work is conducted in an area where volatile hydrocarbons may lurk. .[394] Acoustic transponders are also used in the North Sea to allow personnel to activate the blowout preventer (BOP) from an off-rig location.[395] Then, if the activation device on the rig floor is destroyed in a blowout or becomes unreachable, another method of activation exists.[396] Are these two tools the best and safest technology that should routinely be used in certain types of offshore operations?[397] If so,

394. *See* Loren Steffy, *Tools Without Sparks Could Save Lives Offshore*, FUEL FIX (Dec. 5, 2012, 7:29 AM), http://fuelfix.com/blog/2012/12/05/tools-without-sparks-could-save-lives-offshore/ (describing the routine use of sparkless tools on North Sea offshore facilities); and *Gulf Drillers That Ignore Safety Deserve Real Punishment*, Hous. Chron. (Dec. 2, 2012), http://www.houstonchronicle.com/opinion/editorials/article/Gulf-drillers-that-ignore-safety-deserve-real-4082116.php (noting that three workers were killed in November 2012 on a shallow-water production platform in the Gulf while welding a pipe that still contained flammable vapors. The platform was operated by Black Elk, which had been cited 315 times for rule violations). Daniel Gilbert, *Report Blames Gulf Platform Explosion on Safety Lapses*, WALL ST. J., Nov. 5, 2013, at B8 (noting that all but three of fifty-one fatal incidents in the Gulf since 2006 occurred in water less than 500 feet deep).

395. Russell Gold, *Leaking Oil Well Lacked Safeguard Device*, WALL ST. J., Apr. 29, 2012, at A1.

396. *Id*.

397. Recall that the API's Joint Industry Task Forces which convened hurriedly to

BSEE can either prescribe such a rule or require that operators explain in their SEMS plans why they are not using a BAST-approved tool in mitigating risks of major hazards like fire and explosions.

In a broader context, BSEE must develop the expertise that enables its employees to participate meaningfully in the development of industry standards by Standard Development Organizations so that BSEE can properly assess whether such a standard should be incorporated into regulations. If this is not done, BSEE may be diligently enforcing standards that do not reflect good practice, much less a best practice.

In a similar context, the Coast Guard Commandant's post-Macondo report on the inspections of the Deepwater Horizon drillship documented both lax inspections by the third-party certification agents (the classification societies of ABS and DNV) and the inadequacy of the International Maritime Organization (IMO) Guidelines that set the standards for drillship safety certifications.[398] Thus, even if ABS and DNV

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make recommendations to the Secretary of Interior for the "30-day report" requested by President Obama in May 2010, discussed acoustic transponders and other technologies that could meet the ALARP standard. *Part One*, *supra* note 1, at 170; *see also* JOINT INDUS. TASK FORCE, WHITE PAPER: RECOMMENDATIONS FOR IMPROVING OFFSHORE SAFETY 11–13 (2010); Jan. 2013 Letter on OESAC Recommendations, *supra* note 329. The BAST standard does require that BSEE take costs into consideration in setting the standard. *Id*. An industry task force should not be the sole arbiter of BAST; a joint task force of labor, industry, academics and experienced regulators can better balance "best" against "cost." For background on the role of ALARP in moving risk management levels from "unacceptable" risks, through "tolerable risks" and into the "broadly acceptable" category, *see* Lynn Scarlett et al., *Risk Management Practices: Cross-Agency Comparisons with MMS*, RESOURCES FOR THE FUTURE DISCUSSION PAPER, DP 10-67 (Jan. 2011), *available at* http://www.rff.org/RFF/Documents/RFF-DP-10-67.pdf.

398. The Coast Guard performed an extensive investigation (jointly with BOEMRE) of the disaster, resulting in the report titled U.S. COAST GUARD, REPORT OF INVESTIGATION INTO THE CIRCUMSTANCES SURROUNDING THE EXPLOSION, FIRE, SINKING AND LOSS OF ELEVEN CREW MEMBERS ABOARD THE MOBILE OFFSHORE DRILLING UNIT *DEEPWATER HORIZON* IN THE GULF OF MEXICO APRIL 20–22, 2010 (2011). Page ix of this report concluded that the flag state, the Republic of Marshall Islands, failed to ensure that the Deepwater Horizon MODU complied with all requirements. *Id*. at ix. ABS and DNV had performed the drillship inspections on behalf of the Republic of Marshall Islands. The Commandant recommended working with the IMO to evaluate whether to require that flag states audit the classification societies acting on their behalf. *Id*. at xx. Strikingly, the Commandant repeatedly found that the IMO Guidelines were too weak to ensure safe operations. *Id*. at xii. The Coast Guard's own inspection of the DWH drillship

had conducted good audits and found deficiencies, the drill ship might have met the IMO Guideline criteria for certification. When government agencies devolve so much of their regulatory work to industry standard-setting organizations and third-party auditors, the agencies must assess the effectiveness of these actors in meeting the public goals entrusted to the government.

5. Building Public Accountability and Transparency

Both BSEE and the offshore industry must rebuild the public's trust that this country has a good offshore safety regime in place. The OGP and COS, two industry associations that are now engaged in collecting data on offshore safety performance, emphasize the need to maintain the confidentiality of the data on safety performance submitted by individual operators.[399] No doubt their concern reflects a real fear of how operator-specific data can be used in litigation against their members. However, both the Norwegian and the U.K. oil industry associations have moved to more transparency, even identifying operators by name in regard to certain indicators, such as hydrocarbon releases.

Oil & Gas UK, the U.K. industry's trade association, has historically published composite data at an industry-wide level of Dangerous Occurrences (which include major accident hazards) that must be reported to the regulator.[400] However, in 2011, it moved to publish detailed hydrocarbon release (HCR) data on its website, naming specific operators and installations.[401] Additionally, the U.K. HSE began publishing

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was also found to be poor. *Id*. at 29–30. *See Part One*, *supra* note 1, at 162–63 nn. 46–47.

399. *See, e.g.*, COS-2-04, *supra* note 155, § 6.10 ("Upon direction from the COS member company, the ASP shall submit a copy of the completed COS-2-03-A and COS-2-03-B to the COS at the close of the audit, . . . No company-identifying information shall be included in COS-2-03-A or COS-2-03-B that is submitted to COS"). Moreover, COS analyses and benchmarking data cannot be released to the public without API authorization. *See Membership Agreement*, *supra* note 171, ¶ 15.

400. Bob Lauder, Health & Safety Policy Manager, Oil & Gas UK, Major Hazard (Asset Integrity) Key Performance Indicators in use in the UK Offshore Oil and Gas Industry, presented at CSB Public Hearing on Process Safety Indicators (Hous., Tex. July 24, 2012).

401. *Id*. at 10. The industry voluntarily submits some additional data beyond what is required by the regulator. The KPI data collection program for asset integrity is still a

KPI (Key Performance Indicator) data on asset integrity in its annual offshore safety statistics bulletin available to the public.[402] Oil & Gas UK explains this move to more public safety data thusly:

> The recent move to greater transparency has been driven from the top of our industry and is part of a wider concerted effort to improve major accident hazard management . . . . UK industry leadership agreed that in order to identify opportunities for shared learning and the adoption of good or best practice, we need to know more about HCR performance than just how many releases we have had. A secondary but nonetheless significant consideration is the fact that there is Freedom of Information legislation in place in the UK. That enables journalists for example to request access to detailed information on HCR reports in order to expose those who might be deemed to be "poor performers." Having had experience of that form of access and the distorted picture it is possible to represent from raw data, the industry now proactively publishes KPI and HCR data.[403]

It is clear that the Key Programmes of the U.K. HSE cast both industry and existing regulatory practices in a harsh public light by exposing serious deficiencies in offshore safety. Prosecutions of companies that had fatal accidents and increased HSE inspections were part of the backdrop to the industry's decision to pursue greater transparency in the United Kingdom.[404] The U.K. labor union also staged high profile press briefings on several key safety issues after using Freedom of Information provisions to access HSE reports.[405] We have seen how Norway's PSA informs its citizens about risk levels and individual companies' performances on its website.[406] It is also clear that the press as the Fourth Estate (including publishers that generally have a pro-business bias) has played an

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voluntary system; it accounts for eighty percent of all facilities on the UKCS. *Id*. at 3.

402. *Id*. at 3–4.

403. *Id*. at 10.

404. Molloy, *supra* note 36, at 2–3.

405. *Id*. at 5.

406. PSA RNNP Report, *supra* note 54.

important role in exposing weaknesses in both regulators and industry.[407] A free press adds to the checks and balances in a democratic society where power becomes concentrated in both public and private institutions that prefer closed meetings and limited access to information.

OESI, or some other entity, should conduct a study of what safety data is made publicly available and in what forms by trade associations and regulators in both the global offshore oil industry and in analogous contexts onshore in the United States (such as onshore oil and gas operations, refineries, and the nuclear industry). This report should then recommend the type, form, and timing of publicly released data on U.S. offshore safety.[408] The report should also analyze the impact of the Freedom of Information Act, courtroom discovery proceedings, and Congressional subpoenas in determining access to data that is currently not released to the public. Proactively publishing data in a statistically meaningful format can assist policy makers, company shareholders, industry members, academics, and the general citizenry in evaluating the health of the offshore industry that is a vital part of America's economy.[409]

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407. *See, e.g.*, Russell Gold et al., *Oil Regulator Ceded Oversight to Drillers*, WALL ST. J. (May 7, 2010, 12:01 AM), http://onlinewsj.com/news/articles/SB10001424052748704370704575228512237747070 (exposing long delays by MMS and industry in developing new BOP standards, cementing procedures, and requirements to have a "deadman switch" that can remotely activate a BOP); Robert Campbell, *Special Report: Deepwater Spills and Short Attention Spans*, REUTERS (June 14, 2010, 12:45 PM), http://www.reuters.com/article/2010/06/14/us-oil-spill-ixtoc-idUSTRE65D3Z220100614 (exposing major research gaps in industry understanding of deepwater drilling conditions); *see also* Thomas O. McGarity et al., *The End Game of Deregulation: Myopic Risk Management and the Next Catastrophe*, 23 DUKE ENVTL. L. & POL'Y F. 93, 98 (2012–2013) (attributing some of the failure of disasters to lead to regulatory reform in the 21st century to weaker investigative reporting by today's media).

408. Some benchmarking data that compares accident severity levels among deepwater operators is publicly available, based on BSEE's PINC system. *See* Cooke et al., *supra* note 389, at 19–20 (showing some of the compiled data).

409. *See* HOPKINS, DISASTROUS DECISIONS, *supra* note 43, at 150 (noting that if a company's risk analysis report concludes that an event is too unlikely to need further analysis, this conclusion should be made public for others to challenge).

6. Declare a "General Duty" to Provide a Hazard-free Workplace

Without further ado, and without waiting for OESI expertise or any other input, BSEE can immediately issue a statement informing industry that the OCS Lands Act imposes a general duty on all offshore leaseholders' operators to "maintain all places of employment . . . in compliance with occupational safety and health standards and, *in addition*, free from recognized hazards to employees."[410] Through this simple statement, BSEE can close one of the gaps that makes our current safety management system less robust than those used in experienced Safety Case regimes.[411] As explained earlier, this declaration will bring BSEE closer to the ultimate goal of building a culture of safety offshore.[412] It will force both BSEE and the industry to stop thinking about safety only in terms of occupational safety and only in terms of meeting minimum standards in existing regulations.

As Professor Hopkins explains, the general duty imposes "some reasonable level of risk awareness that goes beyond mere compliance" with written rules.[413] This general duty transcends any certificate of compliance with specific SEMS elements. Thus, worker fatigue practices can be found to have violated the general duty provision, even if the SEMS rule does not require any specific documentation or process for assessing when workers are too fatigued to work safely, especially around HPHT wells. The general duty prevents a Safety Case regime from becoming blind compliance with a written document. It would "enhance" the current SEMS rules in a way that the OESAC Subcommittee on SMS strove to do by making the SEMS audit process less about complying with an audit checklist protocol and more about adopting a Safety Culture that is always aware

410. Outer Continental Shelf Lands Act, 43 U.S.C. § 1348(b) (2012) (emphasis added).

411. HOPKINS, DISASTROUS DECISIONS, *supra* note 43, at 148–49 (explaining that "[m]ost safety case regimes are supported by legislation that imposes a general duty on the operator," and that the U.S. lacks three of the four required elements of a Safety Case regime).

412. *See* discussion *supra* Section III.C.4.c.

413. HOPKINS, DISASTROUS DECISIONS, *supra* note 43, at 148.

of risks and looking to mitigate them to the level of ALARP (As Low As Reasonably Practical). [414] In doing so, the U.S. regime would match what is becoming a global standard and would assist COS in its mission to raise safety standards to the "highest level."

D. Final Observations

> *"An industry ideology that regulation is a nuisance."*
>
> –Alaskan Oil Spill Report on the Exxon Valdez 1990[415]

The wake of the Macondo disaster has spread waves of change in offshore safety practices and regulations within the executive branch agencies and in industry associations, perhaps explaining the near-total lack of Congressional action to address the notable shortcomings that profoundly affected the U.S. offshore safety regime under the MMS.[416] Much remains to be

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414. It is entirely foreseeable that industry will argue that a compliance certification issued under the SEMS rules through the COS-ASP process meets the general duty to maintain a workplace free from recognized hazards. This argument defeats the purpose of having a general duty provision in the statutory framework for offshore safety that mandates continuous improvement. BSEE should also issue a policy statement, followed by a rulemaking if necessary, that compliance with a SEMS audit does not necessarily fulfill the operator's general duty to keep its offshore facility free from recognized hazards to employees.

As a more minor note, it is also not clear if the reference to "employees" in the statute refers to only the operator's employees or also to those of contractors and subcontractors. Given that both types of employees are likely to be endangered by the same failures of safety management processes, this issue may be largely academic.

415. ALASKA OIL SPILL COMM'N, SPILL: THE WRECK OF THE EXXON VALDEZ: IMPLICATIONS FOR SAFE TRANSPORTATION OF OIL 134 (1990). The following excerpt from the 1990 Alaskan Oil Spill Report foreshadows nearly identical findings made by the DWH National Commission two decades later in its 2011 report on the Macondo disaster:

> [The] industry has attempted to reduce virtually every performance standard sought, asking that government impose only minimum standards and claiming that most carriers voluntarily will exceed those minimums. But, when accidents have occurred, industry representatives have frequently claimed that it [sic] has no obligation to go beyond those minimums.

Id. at 135.

416. Useless as it may be in today's fractured political climate to outline what Congress still needs to do to assure that BSEE can become a world-class regulator, the list is short and simple. First, BSEE must be funded at appropriate levels (and OESI also) and a funding mechanism, possibly a small severance tax on offshore oil and gas

done to strengthen BSEE, the new agency that is to regulate and enforce safety offshore. BSEE is far from being a "world-class" regulator, despite what its Director says. This Article has documented how very far the United States is from having the regulatory expertise required to assure the public that drilling, whether it be in shallow water, in deep water or in the frontier areas of the Arctic, can be done in a way that reduces risk to as low as reasonably practicable.[417] Some commenters have already judged the "modest reorganization and renaming" of the MMS harshly and declared that BSEE is "still failing" to regulate deepwater drilling.[418] In some ways, almost four years out from April 20, 2010, the Russian comedian's quip that began this Article is insightful: "Much has changed, but little has happened."

It will take years to build the regulatory expertise that Norway and the United Kingdom have to govern a technically complex industry where one actor's mistakes can cause grave injury and deaths and great damage to society at large. Because industry sets the pace of offshore development based on its superior expertise, it is industry that is ultimately responsible for using good (often called "best") practices. Until regulatory agencies around the world have the expertise to monitor and supervise the industry effectively, industry will not have this additional source of "necessary redundancy" that builds the

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production, should help to assure its independence from the political whims of legislators and executive-branch appointees. The Coast Guard's authority over the safety systems of MODUs and other floating facilities used in drilling or production operations should be moved to BSEE so that only one agency has jurisdiction over all offshore facilities, whether or not they are affixed to the sea floor. (The Coast Guard should retain its rescue and fire-fighting missions.) Post-Macondo, BSEE has asserted jurisdiction over offshore contractors for the first time, an assertion that is very likely to be tested by litigation. Many experts have presented evidence of how difficult it is to establish a good safety regime when multiple agencies have control of different activities offshore or when one agency lacks the power to regulate all operations involved in drilling and production operations. Congress could also legislatively approve the Chemical Safety Board's jurisdiction over offshore incidents that result in fatalities and the release of hazardous substances like crude oil and natural gas, putting an end to any further litigation of this issue and to the need to consider creating a new independent agency with similar expertise in standard setting and incident investigation offshore.

417. *See* discussion *supra* Sections III.C., IV.

418. McGarity & Steinzor, *supra* note 367, at 97.

industry's defense in depth, essential to high-risk operations.

An under-resourced government regulator is a non-trivial safety risk for industry. The industry's own trade association has said so. Here is the OGP's studied message to its members on what must be learned from the Macondo disaster in terms of recommended practices to follow in the future:[419]

> - [Highly skilled and knowledgeable regulators do not exist everywhere] . . . . When a regulator is not carrying out meaningful audits or inspections . . . the result can be a loss of focus in an operator's own audits.
> - OGP members should be aware that if a regulator is not providing robust oversight, then an important part of the technical assurance process may be missing. This is a "weak signal"[420] and should be recognized as a reason to carry out a more extensive programme of self-audit to compensate for the lack of competent regulatory oversight.[421]

Clearly, the former MMS did not provide robust oversight. It was not nimble or competent or single-mindedly determined, like Sisyphus, to roll the stone of greater offshore safety uphill forever, defying the forces of gravity imposed by the strong opposition of industry, politicians, and even well-funded citizens' groups who have come to view the federal government as a nuisance. This lack of robust oversight is an increased "health risk" (using the Norwegian Petroleum Safety Authority's term) to the companies' own people and property on the Outer Continental Shelf as well as to society's health.

When industry promises, as it so often does, that offshore technology can control hazards, the public understandably feels betrayed when the promised controls fail. Public inquiries

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419. OGP REPORT NO. 463, *supra* note 29, at 21. It bears repeating here how different the tone and attitude of non-U.S.-based industry associations are from that of the combative API.

420. *Id*. The OGP defines a "weak signal" as "[a] series . . . of omissions, events or minor incidents that may not attract immediate attention, but if investigated [may be] a window into the general health of an operation." *Id*. at 33.

421. *Id*. at 21.

invariably show that the companies acted with a "surprising degree of negligence."[422] People died needlessly because of corporate "sloppiness." These inquiries unleash a public fury which ultimately leads to the passage of legislation allowing corporations to be prosecuted for manslaughter.[423] It is the very "promise of control which makes the loss of control so intolerable."[424] The explosions of public outrage and blame that follow these broken promises are the core, "external, societal source" of pressure on politicians and industry leaders to create cultures of safety.[425]

Message to U.S. politicians and industry lobbyists: Pay heed to the "weak signals" that you create when an anti-government ideology trumps sound regulation.[426] A good regulator is industry's best friend.[427]

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422. HOPKINS, *supra* note 283, at 146.

423. *Id*.

424. *Id*.

425. *Id*.

426. *See* Jacqueline Lang Weaver, *The Federal Government as a Useful Enemy: Perspectives on the Bush Energy/Environmental Agenda from the Texas Oilfields*, 19 PACE ENVTL L. REV. 1, at 10 (2001) (describing the API's ideological fervor against federal intervention that could have prevented the astounding underground and above-ground waste that occurred in the first decades of oil production in the United States, leaving a legacy of thousands of marginal wells, high-cost production, and permanently scarred land).

427. Sally Jewell, the new Secretary of Interior, has astutely asked the offshore industry to not "throw[] the regulator under the bus" and to accept its own role in delayed OCS development. Nathanial Gronewald, *Jewell Reassures Industry on Cuts, Says Safety Regs Coming This Year*, E&E NEWS, May 8, 2013, http://www.eenews.net/eenewspm/2013/05/08/stories/1059980818. Meanwhile, in Congress, a House Subcommittee on the Interior, Environment and Related Agencies proposed to return the DOI's budget to 2002 levels, seriously reducing funding for its offshore energy bureaus. Phil Taylor, *Jewell Slams 'Drastic' House Cuts to Agency Spending*, E&E NEWS, July 29, 2013, http://www.eenews.net/eenewspm/stories/1059985240.

APPENDIX A
OFTEN USED ACRONYMS

ALARP – As Low As Reasonably Practicable (or Practical). A risk reduction standard commonly used in Europe for environmental protection and worker safety; also recommended for use by the API's JITF's Operating Procedures Task Force in response to the Macondo disaster.

API – American Petroleum Institute. The U.S. trade association that represents all sectors of the oil and natural gas industry and lobbies on their behalf. The API has a technical arm that is accredited as a Standards Development Organization to engage in standards development for equipment and recommended practices for operations in all sectors of the oil and gas industry.

BAST – Best Available and Safest Technologies. The required standard for offshore equipment established in the 1978 amendments to the Outer Continental Shelf Lands Act (OCSLA).

BOEMRE – Bureau of Ocean Energy Management, Regulation and Enforcement. BOEMRE replaced the former Minerals Management Service (MMS) in mid-June, 2010 (less than two months after the Macondo blowout). The Office of Natural Resources Revenue (ONRR) became a separate office under the Assistant Secretary for Policy, Management and Budget on October 1, 2010. On October 1, 2011, BOEMRE was divided into two different bureaus: the Bureau of Ocean Energy Management (BOEM) and the Bureau of Safety and Environmental Enforcement (BSEE). See also MMS.

BOP – blowout preventer. This safety device is a large valve at the top of a well used to control the flow of liquids and gasses during drilling operations. The blind shear rams on a BOP are designed to cut through the drill pipe and seal the well in the event that an uncontrolled surge of fluids and gasses occurs, thereby preventing a blowout.

BP – BP plc, formerly British Petroleum, is a British multinational oil and gas company and is a major producer of oil and gas in the Gulf of Mexico.

BSEE – Bureau of Safety and Environmental Enforcement.

BSEE is responsible for safety and environmental oversight of offshore oil and gas operations, including permitting and inspections of offshore oil and gas operations and the development and enforcement of safety and environmental regulations. See also BOEMRE.

CCRM – Center for Catastrophic Risk Management at the University of California, Berkeley. The Center has experts in the study of catastrophic risks; a group of experts formed a Deepwater Horizon Study Group and wrote many research papers on the Macondo blowout.

COS – Center for Offshore Safety. An industry organization (part of the API) formed to adopt and promote safety standards in deepwater Gulf of Mexico operations. It assists its member companies to improve safety practices and provides certification of third-party audit service providers who will conduct the audits of the safety management systems that are now required by the federal SEMS regulations.

DNV – Det Norske Veritas. Headquartered in Oslo, Norway, DNV is one of the world's leading certification bodies and provider of services for risk management.

DOI – U. S. Department of the Interior, the ministry with jurisdiction over all federal offshore land and leasing.

DWH – Deepwater Horizon. The name of the MODU (Mobile Offshore Drilling Unit) that was drilling the Macondo well. The well experienced a blowout (an uncontrolled surge of gas) that quickly caused an explosion and fire on board the MODU, which later sank to the sea floor.

EU – European Union.

FAA – Federal Aviation Administration. Regulator of civil aviation in the US; part of the Department of Transportation.

GAO – Government Accountability Office. Investigative arm of Congress.

GIRG – Global Industry Response Group of the OGP. GIRG's aim is to ensure that the lessons learned from Macondo, Montara and other accidents are applied globally.

HPHT wells – High pressure, high temperature wells.

HRO – High Reliability Organizations. A key attribute of an HRO is that it effectively manages inherently risky technologies through organizational control of risks and hazards. HROs have

a culture of safety and constantly seek to improve performance by collecting and analyzing data and observations about risk levels and learning from mistakes and failures.

HSE – In the U.K., refers to the Health and Safety Executive, whose mission is to prevent death, injuries and ill health in Great Britain's workplaces. Otherwise, generally refers to Health, Safety and the Environment.

IADC – International Association of Drilling Contractors. Trade association of the global oil and gas drilling industry.

IMIST – International Minimum Industry Safety Training. This is an OPITO training standard designed to support worker safety in the global oil and gas industry.

IMO – International Maritime Organization. The IMO is a specialized United Nations agency with responsibility for the safety and security of shipping and of workers serving on vessels. Its duties also include the prevention of marine pollution by ships. The IMO has adopted a *Code for the Construction and Equipment of Mobile Offshore Drilling Units* (MODU Code).

IRF – International Regulators' Forum. The IRF is a group of eleven regulators of health and safety in the offshore upstream oil and gas industry who meet to share ways to perform their regulatory duties. The Forum itself has no regulatory enforcement power. BSEE is the U. S. representative to the IRF.

ISO – International Organization for Standards. ISO is an independent, non-governmental organization made up of members from the national standards development bodies of 164 countries. The ISO is the world's largest developer of voluntary international standards and has published over 19,000 international standards.

JIT – Joint Investigation Team. The two U.S. agencies with responsibility over offshore drilling safety, BOEMRE and the U.S. Coast Guard, formed a team that conducted an intensive joint investigation of the Macondo disaster, resulting in final reports and recommendations to improve offshore safety.

JITF – Joint Industry Task Force. An expert group (with a number of subgroups) drawn from industry and formed by the API in May 2010 to recommend improvements in offshore

operating procedures and offshore equipment to federal regulators and to industry members.

MMS – Minerals Management Service. The MMS was created in 1982 and managed offshore leasing and resource management, safety and environmental protection, and revenue collection until 2010. Shortly after the Macondo blowout, MMS was renamed BOEMRE. The MMS's functions have now been transferred to three separate organizations with clearly defined missions: the Bureau of Safety and Environmental Enforcement (BSEE); the Bureau of Ocean Energy Management (BOEM) (in charge of offshore leasing, resource evaluation and the review of exploration and development plans); and the Office of Natural Resources Revenue (ONRR) (the revenue collection arm). See also BOEMRE.

MODU – Mobile Offshore Drilling Unit. MODUs are vessels (including drillships, semisubmersibles, submersibles, and jack-up rigs) that can be moved without substantial effort (either with or without self-propulsion on board), designed to engage in offshore drilling and exploration.

MRI – Mechanical Risk Index. This index is an industry standard point of reference that classifies wells by the degree of risk involved in drilling them. The MRI risk index uses a point system based on six primary variables and 14 qualitative indicators to characterize wellbore complexity.

MWCC – Marine Well Containment Company. This company was formed in July 2010 by ExxonMobil, Chevron, ConocoPhillips and Shell to provide a deepwater well containment response capability in the Gulf of Mexico. MWCC now has 10 member companies.

NTL – Notice to Lessees. Notices to Lessees and Operators (NTLs) are formal documents that provide clarification, description, or interpretation of the agency's offshore regulations or standards.

OCS – Outer Continental Shelf. These are the submerged lands lying seaward of state coastal waters which are under U.S. jurisdiction as defined in OCSLA.

OCSLA – Outer Continental Shelf Lands Act of 1953. This Act is the statutory basis for Department of Interior regulation of OCS mineral exploration and development. Under OCSLA,

the Secretary of the Interior is responsible for the administration of mineral exploration and development of the OCS. The Act, as amended, provides guidelines and requirements for implementing an offshore oil and gas exploration and development program.

OESAC – Offshore Energy Safety Advisory Committee. The Ocean Energy Safety Advisory Committee (OESAC) was chartered on February 8, 2011 for a two-year term to advise the Secretary of the Interior, through the Director of the Bureau of Safety and Environmental Enforcement (BSEE), on a variety of issues related to offshore energy safety. The OESAC was a public federal advisory body and included some of the nation's leading scientific, engineering and technical experts. Chaired by former Sandia National Laboratory Director Dr. Tom Hunter, the group consisted of 15 members from federal agencies, the offshore oil and gas industry, academia, and nongovernmental organizations.

OESI – Offshore Energy Safety Institute. OESI was created by the Department of Interior to continue the work of OESAC in areas such as: facilitating research and development; training federal workers to identify, verify and adopt the use of Best Available and Safest Technology (BAST) offshore; and implementing improvements in offshore drilling, safety and environmental protection, blowout containment and oil spill response. In November, 2013, Texas A&M was selected to manage OESI, in partnership with the University of Houston and the University of Texas. The formation of OESI was one of the recommendations of OESAC to continue collaboration among government, academe, scientific experts and industry.

OGP – International Association of Oil and Gas Producers. OGP is a global forum created to share best practices in health, safety, environment, security, social responsibility, engineering and operations in oil and gas exploration and production. Its membership is comprised of upstream oil and gas producers from around the world, including national oil companies, and trade associations (such as the API and IADC). Its associate members are equipment and service providers to the industry. The OGP has 82 members and is headquartered in London. In addition to its mission of improving industry performance and

knowledge sharing, the OGP represents the industry in front of international regulators and legislators, including the EU, World Bank, IMO, ISO and the Commission on Sustainable Development.

OIMS – Operations Integrity Management System. ExxonMobil's management system for addressing safety, security, health, environmental, and social risks. OIMS provides a systematic and disciplined approach to measure progress and track accountability across business lines, facilities, and projects.

OLF – Norwegian Oil and Gas Association. OLF is the industry trade association for oil companies engaged in exploration and production on the Norwegian Continental Shelf, including their suppliers.

OPA – Oil Pollution Act of 1990. This act was passed largely in response to the *Exxon Valdez* oil spill in Alaska. It created a system of strict corporate liability for oil spills, a compensation regime with a dedicated fund for oil spill damages, and mandates for oil spill response plans.

OPITO – Offshore Petroleum Industry Training Organization that promotes global training.

OTC – Offshore Technology Conference. The conference and exhibition held annually each May in Houston for the offshore oil and gas industry.

RMT – The National Union of Rail, Maritime, and Transport Workers. A U.K. trade union with more than 80,000 members, including offshore workers.

ROV – Remotely operated vehicle. In offshore applications, ROVs are tethered, underwater vehicles that are unoccupied, highly maneuverable and operated by a crew aboard a vessel, using an umbilical cable that carries electrical power and transmits video and data signals.

RP – Recommended Practice. One of the types of API standards. API standards include manuals, standards, specifications, recommended practices, bulletins, guidelines and technical reports.

RPSEA – Research Partnership to Secure Energy for America. Non-profit organization set up to manage a ten-year, $375 million program designed to enable the development of

new technologies necessary to produce domestic energy supplies. R&D program areas include Ultra-Deepwater and Unconventional Resources.

SDO – Standards Development Organization. These are organizations whose primary activities are developing, coordinating, and promulgating technical standards that are intended to address the needs of a relatively wide base of affected adopters of the standards.

SEMS – Safety and Environmental Management Systems. Offshore operators in the Gulf of Mexico are now required to have these safety management systems in place. The SEMS I regulations were effective November 15, 2010, and SEMS II (the "SEMS Final Rule") became effective June 4, 2013.

SINTEF – SINTEF is the largest independent research organization in Scandinavia. It is a non-profit, Norwegian "think tank."

SOI – Secretary of the Interior of the United States. Kenneth Salazar was Secretary of the Interior during the Macondo disaster.

WCID – Well construction interface (or interfacing) document. This document connects the operator's safety management system and other well design and construction documents with those of the drilling contractor. The goal is to align the systems, with particular reference to management of change and hazard and risk analysis. API Bulletin 97 addresses Well Construction Interface Document Guidelines.

WEC – Wells Expert Committee. This is one of the three technical teams established by OGP's GIRG in the aftermath of the Macondo incident. The WEC was created to analyze well incident report data, advocate harmonized standards, communicate good practices, and promote continued R&D.