

LESSONS FROM THE NORTH SEA: SHOULD “SAFETY CASES” COME TO AMERICA?

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Abstract: The catastrophic oil spill in the Gulf of Mexico last spring and summer has triggered an intense search for more effective regulatory methods that would prevent such disasters. The new Bureau of Ocean Energy Management, Regulation and Enforcement is under pressure to adopt the British safety case system, which requires the preparation of a facility-specific safety plan that is typically several hundred pages long. This system is supposed to inculcate a “safety culture” within companies that operate offshore in the British portion of the North Sea, because it overcomes a “box-ticking” mentality and constitutes “bottom up” implementation of safety measures. Safety cases are strictly confidential; only company officials, regulators, and, in limited circumstances, worker representatives, are allowed to see the entire plan. This Article argues that the safety case approach should not come to America because this confidentiality, as well as the levels of risk tolerated by the British system, conflict with the both the spirit and the letter of American law. American regulators also lack the resources necessary to make a safety case regime minimally successful.

INTRODUCTION: THE SEARCH FOR NEW REGULATORY APPROACHES

In the aftermath of the catastrophic oil spill at BP’s Deepwater Horizon facility in the Gulf of Mexico, American officials have launched a frantic search for more effective regulatory methods that would prevent such disasters. The European Union has also gotten into the act, threatening to write its own set of prescriptive regulations for facilities located

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in the North Sea.¹ The special commission appointed by President Obama to investigate the Gulf spill recommended that American regulators take a close look at the British system, which relies on one core mandate: every offshore operator shall prepare and update at five-year intervals a “safety case” tailored to the risks posed by individual facilities.²

As explained by John Paterson and Greg Gordon, prominent Scottish legal experts on oil and gas regulation in the North Sea, the British system developed in the wake of catastrophes offshore, beginning with the collapse of the Sea Gem platform in 1965, killing thirteen workers, and culminating in the worst offshore accident in history—the 1988 explosions aboard the Piper Alpha platform that claimed 167 lives.³ The system traveled an arduous trajectory from the “Early Phase” of a primitive licensing regime where the authority responsible for promoting de-

¹ See Press Release, Günther Oettinger, European Union Comm’r for Energy, Offshore Drilling: European Comm’n Envisages EU Safety Rules (Oct. 13, 2010), *available at* <http://europa.eu/rapid/pressReleasesAction.do?reference=IP/10/1324>; Malcolm Webb, Chief Executive of Oil & Gas UK stated that, “Oil & Gas UK is extremely concerned that once again, the EU Commission is calling for a suspension of new licensing It is also deeply worrying that in addition, it now proposes to implement centralized and prescriptive safety regulation.” Press Release, Oil & Gas UK, European Commission’s Call for Suspension of Licensing in UK Wholly Unjustified (Oct. 13, 2010), *available at* <http://www.oilandgasuk.co.uk/news/news.cfm/newsid/551>. Oil & Gas UK is the leading trade association that claims to represent the entire offshore sector. See *About Us*, OIL & GAS UK, <http://www.oilandgasuk.co.uk/aboutus/aboutus.cfm> (last visited Apr. 15, 2011).

² See NAT’L COMM’N ON THE BP DEEPWATER HORIZON OIL SPILL & OFFSHORE DRILLING, DEEP WATER: THE GULF OIL DISASTER AND THE FUTURE OF OFFSHORE DRILLING 252 (2011) [hereinafter BP COMMISSION REPORT] (“The Department of the Interior should develop a proactive, risk-based performance approach specific to individual facilities, operations and environments, similar to the “safety case” approach in the North Sea.”); see also Letter from Deepwater Horizon Study Grp. to Nat’l Comm’n on the BP Deepwater Horizon Oil Spill & Offshore Drilling (Nov. 24, 2010), *available at* <http://www.oilspillcommission.gov/sites/default/files/documents/DHSG%20letter%2011%2024%2010.pdf>; J. Robinson West, President & CEO of PFC Energy, Written Statement on History and Expansion of Offshore Drilling to the Nat’l Comm’n on the BP Deepwater Horizon Oil Spill & Offshore Drilling, Meeting 2 (Aug. 25, 2010), *available at* <http://www.oilspillcommission.gov/sites/default/files/documents/Robinson%20West%20Written%20Statement.pdf>; see also H.R. 3534, 111th Cong. § 211 (2010) (a bill introduced by Rep. Nick Rahall (D-WV) and passed by the House, requiring that a “safety case” be prepared in conjunction with each new application for a drilling lease in the Outer Continental Shelf); *The Great Debate: A Safety Case Regime for U.S. Offshore Drilling and Production?*, SPE INT’L, <http://www.spegecs.org/en/cev/1795> (last visited Apr. 15, 2011) [hereinafter *Great Debate Conference*] (a website with materials from a conference sponsored by the Society of Petroleum Engineers, held in Houston, Texas on Sept. 16, 2010).

³ See OIL AND GAS LAW—CURRENT PRACTICE AND EMERGING TRENDS 116 (Greg Gordon & John Paterson eds., 2007) [hereinafter OIL AND GAS LAW]; see also John Paterson, *The Significance of Regulatory Orientation in Occupational Health and Safety Offshore*, 38 B.C. ENVTL. AFF. L. REV. 367, 369–79 (2011).

velopment was also expected to ensure safety; to a “Middle Phase” that Professor Paterson characterizes as an unsuccessful, short-lived experiment with traditional, prescriptive regulation; to the “Late Phase” in which “duty holders” were told to craft and implement their own detailed plans for avoiding catastrophe.⁴ The British call this approach “goal-oriented” regulation⁵ that is implemented through a “permissioning” system,⁶ although in American lexicon it would be described as a hybrid mix of “performance-based” regulation and voluntary self-regulation. This shift of emphasis from prescriptive regulatory requirements to duty holder hegemony and relative autonomy was quite deliberate; the trade-off for the offshore industry was considerable flexibility in formulating the details of its compliance obligations.

Safety cases are defined as a “structured argument, supported by a body of evidence that provides a compelling, comprehensible and valid case that a system is safe for a given application in a given operating environment.”⁷ They are prepared either by consultants or company employees in accordance with an elaborate set of guidelines mandating that each document address in detail such disparate topics as: (1) procedures for controlling risks; (2) the selection and training of key personnel; (3) installation of preventive technologies such as emergency cut-off equipment; (4) procedures to control higher-risk events such as change of shifts, design, or production goals; (5) the operating firm’s control over the activities of subcontractors; and (6) how the entire crew of a given facility should respond in an emergency.⁸

Safety cases are expected to reduce safety risks to a level “as low as reasonably practical” (ALARP).⁹ Until 2003, guidance from the super-

⁴ See OIL AND GAS LAW, *supra* note 3, at 116. Duty holders are the designated corporate entity that is responsible for the operation of offshore facilities. *See id.*

⁵ *Id.* at 132–44 (describing the rise of goal-oriented regulation in the aftermath of Piper Alpha).

⁶ HEALTH & SAFETY EXEC., POLICY STATEMENT: OUR APPROACH TO PERMISSIONING REGIMES 2–3 (2003), available at <http://www.hse.gov.uk/enforce/permissioning.pdf>. “Permissioning” is the term used by the British Health and Safety Executive to describe the approach it uses for all high-hazard industries. *See id.* Companies cannot operate hazardous industries without receiving government permission, but remain responsible for developing facility-specific safety cases that govern both conduct and equipment. *See id.*

⁷ J.R. INGE, MINISTRY OF DEFENCE, THE SAFETY CASE, ITS DEVELOPMENT AND USE IN THE UNITED KINGDOM 2 (2007) (citation omitted), available at http://safety.inge.org.uk/20070625-Inge2007_The_Safety_Case-U.pdf.

⁸ *See generally* HEALTH & SAFETY EXEC., ASSESSMENT PRINCIPLES FOR OFFSHORE SAFETY CASES (APOSC) (2006) [hereinafter APOSC REGULATIONS], available at <http://www.hse.gov.uk/offshore/aposc190306.pdf>.

⁹ ALARP at a Glance, HEALTH & SAFETY EXECUTIVE, <http://www.hse.gov.uk/risk/theory/alarpglance.htm> (last visited Apr. 15, 2011).

vising agency, the British Health and Safety Executive (HSE), translated this verbal formulation into two sets of numbers: (1) “an individual risk of death of 10^{-3} [one in 1000] per year”;¹⁰ and (2) an “implied cost of averting a statistical fatality (ICAF)” generally measured as six times the value of each life saved, with a life worth £1 million (about \$1.63 million in April 2011).¹¹ The revisions made in 2005 allowed the use of qualitative as well as quantitative risk analysis without changing the ALARP standard. However, no publicly available evidence indicates that this modification enhanced the protectiveness of such requirements.¹² A final feature of overriding importance in the British system is that all safety cases are held in the strictest confidence.¹³ No one except the consultants, top level management, the assigned agency official, and—in limited circumstances—a worker representative is allowed to see the finished document in its entirety.

I have no doubt that the British regulatory system has much to teach American regulators. The awkward fact remains that BP has historically been one of the biggest operators of deep wells in the North Sea¹⁴ and is a veteran of that system. If safety cases truly inspire a pervasive safety culture that is based on a deeply ingrained corporate recognition of the high costs of neglecting such procedures, how could this

¹⁰ APOSC REGULATIONS, *supra* note 8, ¶ 39 (defining risk level of one in 1000 lives).

¹¹ *Id.* ¶¶ 58–59.

¹² HEALTH & SAFETY EXEC., A GUIDE TO THE OFFSHORE INSTALLATIONS (SAFETY CASE) REGULATIONS 2005, at 13 (3d ed. 2006) [hereinafter GUIDE TO OFFSHORE INSTALLATIONS], available at http://www.hseni.gov.uk/130_a_guide_to_the_offshore_installations_safety_case_regulations_2005.pdf. The Guide states, in a circular fashion, inter alia, that safety cases must demonstrate that “major hazard risks” are “identified and evaluated” and that “in respect to these risks, the ‘relevant statutory provisions’ will be complied with.” *Id.* In a letter critiquing an early version of this Article posted on the Social Science Research Network (SSRN), Steve Walker, Head of the HSE Offshore Division, states that the 2005 decision to allow qualitative as well as quantitative analysis was significant, but he does not explain whether this modification has produced more rigorous safety requirements in the North Sea. Letter from Steve Walker, head, of HSE Offshore Div., to Rena Steinzor (Feb. 25, 2011) (copy on file with author) [hereinafter Walker Letter].

¹³ Mr. Walker’s letter does not dispute that safety cases are unavailable to the public, but does emphasize that “the installation operator or owner must genuinely attempt to seek the views and contributions of the workforce representatives.” Walker Letter, *supra* note 12, at 3.

¹⁴ See Rowena Mason, *Oil Spill: BP Reassures over Russian, North Sea Assets*, TELEGRAPH (London), June 23, 2010, at 11 (reporting on BP’s promises not to withdraw its major investments in the North Sea); Rowena Mason, *BP: A Beginners Guide to the Company*, TELEGRAPH (London) (June 22, 2010, 5:29 PM), <http://tgr.ph/9GDMHG> (reporting that: (1) until the Deepwater disaster, BP obtained eight percent of its oil from the North Sea; and (2) BP was Britain’s biggest company and the second largest oil company in the world, but as of June 2010, it slipped to the sixth largest oil company worldwide).

quintessentially British company have failed so abjectly to internalize these practices when it expanded its operations to the Gulf of Mexico? Remarkably insightful investigative journalism motivated by the Gulf spill, as well as independent reports on BP's management style on-shore, suggest that BP London headquarters maintained iron-clad control over its worldwide operations, imposing a rigorous cost-cutting regime that very likely contributed to the Gulf catastrophe.¹⁵ In this context, it is fair to ask whether BP's problems indicate that the British regulatory system fell short of inspiring the institutional metamorphosis claimed by its proponents.

An attempt to answer these questions should inform American efforts to learn from British system. I argue here that far from providing a perfect model for future regulation, as its proponents suggest, the British safety case system is the wrong choice for America.

Rather than relying on facility-specific and abstract demonstrations of unacceptably high risk levels, American regulatory reform should focus on mandating the installation of the best available "failsafe" technology and teaching workers how to use it. Compliance documents should be transparent and available not just to regulators, but to private sector overseers who can hold them accountable, including inspectors general, the Government Accountability Office, public interest groups, the insurance industry, and investment firms. The imposition of strong civil and criminal liability is far more likely than safety cases to alter industry complacency and produce real safety improvements.

The remainder of this Article describes in more detail how the British system results in insufficiently protective and likely ineffective plans. It examines evidence indicating that the British regime is in trouble, including an HSE self-audit in 2005 that indicated profound gaps in the system's effectiveness. This Article considers why the risk

¹⁵ See Siobhan Hughes & Stephen Power, *BP Spill—Panel Staff Cites Management Failings*, WALL ST. J., Dec. 3, 2010, at A6 (reporting that BP's cost-cutting moves in the years leading up to the spill created the maintenance conditions that contributed to it); Siobhan Hughes & Ben Casselman, *BP Took Risk on Well Job: Investigator*, WALL ST. J., Nov. 9, 2010, at A1 (reporting that BP removed a safeguard of heavy drilling mud before fully sealing the well with a cement plug, with the result that a crucial backup device was never installed); *Frontline: The Spill* (PBS television broadcast Oct. 26, 2010), available at <http://www.pbs.org/wgbh/pages/frontline/the-spill/>. Don Parus, the plant manager of BP's largest refinery in the United States, located in Texas City, Texas, made repeated trips to London to plead for relaxation of cost-cutting edicts because he was concerned about their implications for safety. *Id.* At one point he even presented a PowerPoint showing pictures of workers who had died at the refinery in an effort to bolster his case. *Id.* However, his efforts were fruitless because on March 25, 2005, an explosion occurred that killed fifteen people at the Texas refinery. *Id.*

standards tolerated under the British system are inappropriate in the context of American law. It concludes that given the resource constraints plaguing the Bureau of Ocean Energy Management, Regulation and Enforcement—at the moment, it has approximately fifty-five to sixty inspectors to cover 3500 offshore facilities—wholesale adoption of the safety case regime will prove an expensive and negative distraction to American efforts to strengthen regulation offshore.¹⁶

I. “IT CAN GET VERY COMPLICATED”¹⁷

The British government has grappled with the safety of deep well drilling for close to half a century, ever since the discovery of vast oil reserves in the North Sea in the late 1960s. The discovery was perceived as an economic miracle in Britain, staving off grave financial hardship and allowing the country to reclaim its position as an industrial powerhouse within the European community.¹⁸ Few people looked this providential gift horse in the mouth and regulation in the North Sea was quite lax for many years because the government had no interest in interfering with the rapid development of oil resources.¹⁹

Oil rigs can be analogized to apartment houses operating on top of unpredictably active volcanoes. When aspects of oil production go wrong, they easily degenerate into tragedy. Two catastrophic accidents—Sea Gem in 1965 and, especially, Piper Alpha in 1988—provoked political and social upheaval throughout Britain.²⁰ In the wake of Piper Alpha, a report by Lord William Douglas Cullen²¹ roundly condemned the flaws of the regulatory system.²² Lord Cullen concluded that al-

¹⁶ Leslie Eaton et al., *Inspectors Adrift in Rig-Safety Push*, WALL ST. J., Dec. 3, 2010, at A1 (reporting on the extraordinarily difficult challenges U.S. inspectors encounter when policing safety in the Gulf of Mexico).

¹⁷ *ALARP at a Glance*, *supra* note 9.

¹⁸ OIL AND GAS LAW, *supra* note 3, at 117.

¹⁹ *Id.* at 123–24; see CHARLES WOOLFSON ET AL., PAYING FOR THE PIPER: CAPITAL AND LABOUR IN BRITAIN’S OFFSHORE OIL INDUSTRY 19 (1997) (“Britain’s oil was to be extracted at the fastest rate possible, with limited state control and in conditions of close commercial partnership between American oil companies and banks and those of Britain.”).

²⁰ WOOLFSON ET AL., *supra* note 19, at 106–29, 301–27 (describing the Piper Alpha tragedy and its aftermath, especially the impact of these events on the British labor union movement).

²¹ Lord Cullen is a former member of the Scottish judiciary with an impeccable reputation for public service and integrity. See *High Profile Judge’s Lockerbie Role*, BBC NEWS (Jan. 22, 2002, 4:31 PM), http://www.simonbaker.me/2/hi/in_depth/1775558.stm.

²² LORD CULLEN, THE PUBLIC INQUIRY INTO THE PIPER ALPHA DISASTER 1–5 (1990) [hereinafter CULLEN REPORT] (presented to Parliament by the Secretary of State for Energy by command of Her Majesty).

though the British Department of Energy had inspected the facility in June 1987 and again in June 1988—only weeks before it blew into pieces—

those inspections were . . . superficial to the point of being of little use as a test of safety on the platform . . . [and] the evidence led me to question, in a fundamental sense, whether the type of inspection practiced by the [Department of Energy] could be an effective means of assessing or monitoring the management of safety by operators.²³

Among the most important consequences of Lord Cullen's report was the transfer of responsibility for controlling offshore safety hazards from the Department of Energy, which was also regarded as the oil industry's "sponsoring" department, to the HSE, the English equivalent of the U.S. Occupational Safety and Health Administration (OSHA).²⁴ This separation of function was deemed crucial to establish the independence of regulatory oversight.

At the time of Piper Alpha, the British health and safety regulators were already in the throes of adopting goal-oriented regulation to replace prescriptive regulation. Proponents justified this transition by arguing that if companies assumed responsibility for designing their own safety systems, they would embrace a "culture of safety" far more enthusiastically than if they were subject to rigid rules that led to mindless "box-ticking."²⁵ To develop redundant systems capable of preventing accidents on facilities operating in such a hostile environment would

²³ *Id.* at 3.

²⁴ OIL AND GAS LAW, *supra* note 3, at 124.

²⁵ *Id.* at 125. The term "box-ticking" is a label intended to connote profound disdain for a bureaucratic mindset that saps individual initiative and usurps corporate autonomy to the ultimate disadvantage of true safety. See, e.g., Angela Henshall, *Deep Water, Deep Trouble, The Oil Industry Must Rethink Risk Management Procedures*, WALL ST. J. (Oct. 6, 2010, 4:05 AM), <http://online.wsj.com/article/SB10001424052748703453804575479643629599782.html> ("Piper Alpha caused the UK industry to evolve in a very different direction to the U.S. It adopted a principals [sic] based approach rather than more prescriptive rule setting. Risk experts argue a more flexible, 'goal-setting' strategy has proved far better suited to achieving cost-effective solutions to offshore safety. They believe there are a number of disadvantages to a prescriptive approach that will need to be addressed in the Gulf of Mexico, not least that it encourages a box-ticking mentality."); see also PHIL DAVIS, ECONOMIST INTELLIGENCE UNIT, BEYOND BOX-TICKING: A NEW ERA FOR RISK GOVERNANCE 4, 18–19 (2009), available at http://www.acegroup.com/Attachments/EIU_risk_survey-report-Sept_09.pdf (reporting on a worldwide survey of business leaders who decry the perils of the rigid "box-ticking" mentality for the management of corporate financial risk that was prepared by staff of British magazine *The Economist*).

take bottom-up, fully integrated cooperation by everyone on a rig, or so British policymakers reasoned.

The core requirements of such planning depend heavily on quantitative risk assessment and cost-benefit analysis conducted as an integral part of the document and designed to reduce the cost of preventive measures. The application of both methodologies in the context of safety cases is based on the statutory requirement that employers provide protection “so far as is reasonably practicable” (SFAIRP), which was originally established in the Health and Safety at Work etc. Act of 1974.²⁶ HSE has adopted its own regulatory mandate that risk offshore be reduced “as low as reasonably practical” (ALARP).²⁷ At least so far as these verbal formulations go, their cost-benefit balancing approach is in rough alignment with the analogous standard in the U.S. Occupational Safety and Health Act (OSH Act).²⁸

HSE instructs that safety cases should contain number crunching demonstrating that risks in any given area are not higher than one in 1000 fatalities and that preventive measures—e.g., the installation of equipment and training programs—do not result in expenditures greater than £1 million (about \$1.6 million).²⁹ Additional guidance advises duty holders, who range from the company or companies that own the rig to the multiple contractors brought in to install and maintain drilling equipment, to calculate whether these numbers are met quantitatively, using algorithms that appear to be largely the province of a cottage industry of consulting firms.³⁰ Duty holders are also en-

²⁶ Health and Safety at Work etc. Act, 1974, c. 37, § 2(1). HSE asserts that the statutory formulation—SFAIRP—and the regulatory formulation—ALARP—are “interchangeable,” but warns duty holders to mind their terminology when referring to either standard in “legal” documents. *ALARP at a Glance*, *supra* note 9.

²⁷ *ALARP at a Glance*, *supra* note 9.

²⁸ See 29 U.S.C. § 655(b)(5) (2006) (employing a standard that takes into account feasibility).

²⁹ APOSC REGULATIONS, *supra* note 8, ¶ 39 (“An individual risk of death of 10^{-3} per year has typically been used within the offshore industry as the maximum tolerable risk.”); *id.* ¶ 58 (“HSE’s ‘Reducing Risks Protecting People’ document sets the value of a life at £1,000,000 and by implication therefore the level at which the costs are disproportionate to the benefits gained.”).

³⁰ See *Cost Benefit Analysis (CBA) Checklist*, HEALTH & SAFETY EXECUTIVE, <http://www.hse.gov.uk/risk/theory/alarpcheck.htm> (last visited Apr. 15, 2011); *HSE Principles for Cost Benefit Analysis (CBA) in Support of ALARP Decisions*, HEALTH & SAFETY EXECUTIVE, <http://www.hse.gov.uk/risk/theory/alarpcba.htm> (last visited Apr. 15, 2011). The 2005 revisions to the ALARP guidance somewhat deemphasized the performance of quantitative risk assessment, acknowledging that some risks could be described qualitatively and that HSE had also prescribed requirements that must be implemented regardless of site-specific risk assessment. See APOSC REGULATIONS, *supra* note 8, at 5 (“Changes to APOSC”).

couraged to refer to what is generally considered “good practice” at facilities like theirs.³¹

HSE documents are replete with exhortations that sound safety-minded:

In essence, making sure a risk has been reduced ALARP is about weighing the risk against the sacrifice needed to further reduce it. The decision is weighted in favour of health and safety because the presumption is that the duty-holder should implement the risk reduction measure. To avoid having to make this sacrifice, the duty-holder must be able to show that it would be grossly disproportionate to the benefits of risk reduction that would be achieved.³²

But the regulations also circumscribe expectations of how much companies are required to spend on limiting risk, preventing accidents, and providing protection. For example, in an “Information Sheet” designed to explain how safety cases should “demonstrate compliance with the relevant statutory provisions,” HSE disclaims the “precautionary principle,” viewed by many conservative commentators and industry representatives as the source of needlessly expensive regulatory requirements that protect against risks that are far from certain:

[I]nvocation of the precautionary principle may be appropriate in addressing the introduction of genetically modified plants where there is good reason to believe that the modifications could lead to harmful effects on existing habitats, and there is a lack of knowledge about the relationship between hazard and the consequence. In the offshore industry the hazards and consequences are well understood and hence conventional assessment techniques can be used to evaluate the risks, using a *cautionary approach* rather than application of the precautionary principle. Therefore invocation of the pre-

³¹ *ALARP at a Glance*, *supra* note 9 (“In most situations, deciding whether the risks are ALARP involves a comparison between the control measures a duty-holder has in place or is proposing and the measures we would normally expect to see in such circumstances i.e. relevant good practice. . . . We decide by consensus what is good practice through a process of discussion with stakeholders, such as employers, trade associations, other Government departments, trade unions, health and safety professionals and suppliers.”).

³² *ALARP at a Glance*, *supra* note 9.

cautionary principle is extremely unlikely to be appropriate offshore.³³

In 2005, HSE relaxed its rules, allowing duty holders to review safety cases once every five years rather than once every three years.³⁴ The rules were further loosened to provide that a safety case—paradoxically described as a “living document”—lasts the life of a facility without being resubmitted for explicit approval to HSE, although duty holders continue to have the obligation to revise them “as appropriate.”³⁵

“It can get very complicated,” HSE adds, in a throwaway sentence that is inadvertently both humorous and exasperating.³⁶ Safety cases are often “bulky.”³⁷ A recent PowerPoint presentation by Kevin Kinsella, a safety case expert at Environmental Resources Management, a global consulting firm, estimates that the typical safety case for a medium-size North Sea production platform covers anywhere from 490 to 660 pages.³⁸

The entire system is summarized in the following diagram:³⁹

³³ HEALTH & SAFETY EXEC., OFFSHORE INFORMATION SHEET No. 2/2006, OFFSHORE INSTALLATIONS (SAFETY CASE) REGULATIONS 2005: REGULATION 12 DEMONSTRATING COMPLIANCE WITH THE RELEVANT STATUTORY PROVISIONS 7 (2006) [hereinafter SAFETY CASE REGULATIONS] (emphasis added), *available at* <http://www.hse.gov.uk/offshore/is2-2006.pdf>.

³⁴ GUIDE TO OFFSHORE INSTALLATIONS, *supra* note 12, at 7.

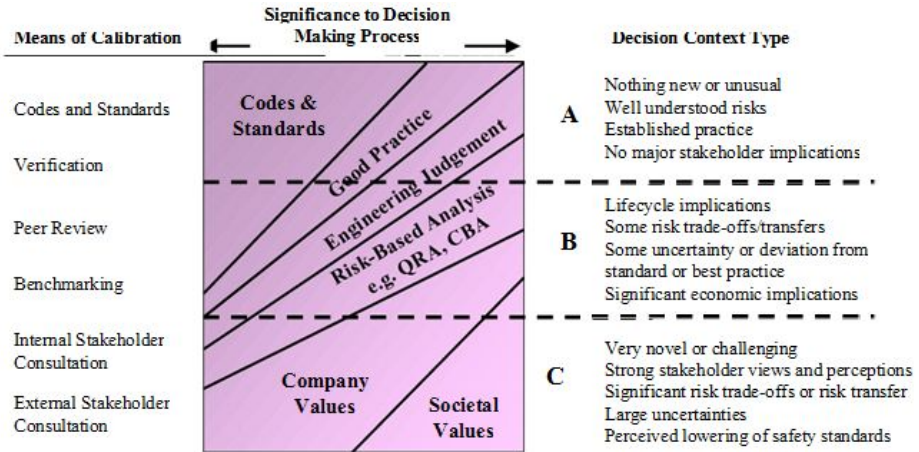
³⁵ *Id.* at 12.

³⁶ *Id.*

³⁷ *Id.* at 11.

³⁸ *Great Debate Conference*, *supra* note 2 (follow “4. Kevin Kinsella_UK Offshore Safety Cases_Lessons Learnt.pdf” hyperlink at bottom of page). For further information about Environmental Resources Management, see *About Us*, ENVTL. RES. MGMT., <http://www.erm.com/About-Us/> (last visited Apr. 15, 2011).

³⁹ Source: SAFETY CASE REGULATIONS, *supra* note 33, at 5.



Lengthy documents are common in the regulatory world. However, the longer and more technical such documents become, the greater the need for them to be digested and implemented by highly trained technical experts. The real question is whether safety cases written by and for highly skilled engineers can be translated into meaningful changes in behavior among workers who differ greatly in education. The more dense and complex the document, the greater the effort required to implement it among the large majority of workers who lack such advanced technical training.

II. BUT DOES THE SAFETY CASE SYSTEM WORK?

Because no major catastrophes have occurred in the British section of the North Sea since Piper Alpha, it is tempting to conclude that the system is working, at least to the extent of preventing such hazards.

However, two indicators suggest that Britain's safety case system is not nearly as effective as it may appear. The first is a damning indictment of overall safety consciousness offshore prepared by HSE auditors on the basis of inspections of 100 individual facilities.⁴⁰ The second involves figures compiled by the International Association of Drilling Contractors (IADC) showing routine offshore injury rates in Britain and the United States.⁴¹ These figures reveal a less disparate safety re-

⁴⁰ HEALTH & SAFETY EXEC., KEY PROGRAMME 3: ASSET INTEGRITY PROGRAMME 5 (2007) [hereinafter KP 3 REPORT], available at <http://www.hse.gov.uk/offshore/kp3.pdf>.

⁴¹ See *infra* Part II.B.

cord than we might expect given the supposedly superior British regulatory system.

A. HSE's Self-Audit

From 2005 to 2007, prompted by concerns that the North Sea infrastructure was aging rapidly and that new, relatively inexperienced companies were assuming control of many North Sea facilities as the largest players moved to more lucrative production sites around the globe, HSE reviewed maintenance practices with respect to "Safety Critical Elements" that are installed to "prevent, control, or mitigate major hazards."⁴² Its report, entitled *Key Programme 3 (KP 3 Report)*, was extremely troubling, concluding that at more than fifty percent of the 100 installations inspected, the state of the physical plant was "poor."⁴³ The report's anonymous authors dismissed out of hand the oil industry's defense that these problems occurred only in non-safety-critical aspects of the infrastructure: "This [claim] illustrates a lack of understanding in many parts of the industry that degraded non-safety-critical plant and utility systems can impact on safety critical elements in the event of a major accident reducing their performance."⁴⁴

Beyond concerns such as whether rusting external stairs could collapse in the event of a fire, the *KP 3 Report* inspectors found that systems critical to the survival of the workforce during major accidents were in terrible shape.⁴⁵ For example, HSE inspectors tested so-called "TR HVAC" systems, the mechanical means by which a compartment containing people can be closed off from the incursion of flammable and toxic gases during an explosion or fire.⁴⁶ Such systems failed to some degree in *sixty-four percent* of such tests, revealing a "picture of inade-

⁴² See KP 3 REPORT, *supra* note 40, at 8. ("The offshore oil and gas industry in the UK Continental Shelf (UKCS) is a mature production area. Much of the offshore infrastructure is at, or has exceeded, its intended design life. During the 1990s low oil prices and initiatives to reduce costs led to a reduction in the offshore workforce. This in turn led to reductions in levels of maintenance and, as a result, an overall decline in the integrity of fabric, structures, plant and systems."); see also Walker Letter, *supra* note 12, at 3.

⁴³ KP 3 REPORT, *supra* note 40, at 7.

⁴⁴ *Id.* Unlike most American government reports, HSE documents are devoid of the names of individual officials who wrote them or who can be contacted for further information. See *Publications*, HEALTH & SAFETY EXECUTIVE, <http://www.hse.gov.uk/pubns/index.htm> (last visited Apr. 15, 2011).

⁴⁵ KP 3 REPORT, *supra* note 40, at 16.

⁴⁶ See *id.* at 7, 16.

quate testing and very poor reliability” for a critical component of emergency response.⁴⁷

As for the notion that safety cases are living documents that instill an ongoing commitment to the prevention of major hazards, the *KP 3 Report* concluded that managers of offshore facilities rely far too extensively on “operational risk assessments”—that is, theoretical modeling of how workers are supposed to react—to compensate for degraded infrastructure.⁴⁸ The report also noted that at many facilities, “performance standards”—the fundamental building block of safety cases and their implementation—were “generic in nature without being specific and measurable.”⁴⁹ The report elaborated:

Examples of measureable criteria are valve maximum closure times and maximum allowable leak rates. An example of not being specific was where *a dutyholder used the same performance standard across all their installations* and there were differences in the actual systems on the installation that required changes to functionality.⁵⁰

Of course, the problem of cut-and-paste generic standards in safety protocols emerged with savage irony in the aftermath of the BP Gulf spill, when the *Associated Press* discovered that the company’s spill prevention control plan included: a discussion of the consequences of a spill for walrus, when such animals do not live in the area; the name of a deceased consultant on a list of experts to consult in the event of a spill; and a series of disconnected or wrong phone numbers as contacts during an emergency response.⁵¹

In addition to overreliance on cookie-cutter prototypes of critical documentation, the HSE team mentions repeatedly that severe “skills shortages” in engineering disciplines have accelerated corporate inattention to infrastructure maintenance.⁵² The shortage, described as a

⁴⁷ *Id.* at 17.

⁴⁸ *See id.* at 6.

⁴⁹ *Id.* at 21.

⁵⁰ *Id.* (emphasis added).

⁵¹ Holbrook Mohr et al., *BP’s Gulf Oil Spill Response Plan Lists the Walrus as a Local Species. Louisiana Gov. Bobby Jindal Is Furious.*, CHRISTIAN SCI. MONITOR, June 9, 2010, <http://www.csmonitor.com/From-the-news-wires/2010/0609/BP-s-gulf-oil-spill-response-plan-lists-the-walrus-as-a-local-species.-Louisiana-Gov.-Bobby-Jindal-is-furious>.

⁵² KP 3 REPORT, *supra* note 40, at 7, 12 (describing the dearth of technicians offshore, both because facility operators do not have enough employees with such skills and because of limited “bed space”—rooms that can accommodate visitors in addition to the permanent crew—aboard such facilities).

“problem of the industry’s own making,” began in the 1990s when low oil prices prompted companies to “shed significant numbers of onshore and offshore workers.”⁵³ This kind of reaction is a strong indicator of a weak and ineffective regulatory regime that does not exert sufficient pressure on corporate decisions to eliminate, for profit-driven reasons, the human and technological resources essential to achieving compliance.

In July 2009, HSE issued a follow-up “review report” (*KP 3 Review*) on the offshore industry’s progress in responding to the findings in its *KP 3 Report*.⁵⁴ This review involved a sharply circumscribed methodology in comparison to the original report, relying to a significant extent on information provided by offshore companies. For example, HSE only inspected *five* facilities to check on their progress in addressing the safety concerns it found during the 100 inspections it conducted for *KP 3 Report*.⁵⁵ The review concludes that “leadership is now firmly on the industry’s agenda” and that “progress has been made in key areas, which may produce a positive impact on safety culture offshore.”⁵⁶ With somewhat less equivocation, HSE concludes that “strong evidence” indicates that the most serious “red traffic light” problems identified in its original report were “closed satisfactorily.”⁵⁷ The *KP 3 Review* does not explain further how HSE can have such confidence given the limited number of follow-up inspections that were conducted.

B. British and American Safety Records

In the aftermath of the Deepwater Horizon spill, investigations of the chain of events that produced the disaster came to discouraging conclusions about the effectiveness of the American regulatory system.⁵⁸ Press accounts demonstrated that the Minerals Management Service (MMS) was a captive of the U.S. oil industry.⁵⁹ The oil spill commission appointed by President Obama concluded:

⁵³ *Id.* at 28.

⁵⁴ HEALTH & SAFETY EXEC., KEY PROGRAMME 3: ASSET INTEGRITY, A REVIEW OF INDUSTRY’S PROGRESS (2009), available at <http://www.hse.gov.uk/offshore/kp3review.pdf>.

⁵⁵ *Id.* at 9.

⁵⁶ *Id.* at 4.

⁵⁷ *Id.* at 3.

⁵⁸ See, e.g., Jason DeParle, *Minerals Service Had a Mandate to Produce Results*, N.Y. TIMES, Aug. 8, 2010, at A1 (“The causes of the spill remain unclear, but a number of the agency’s actions have drawn fire The story has gained a bacchanal gloss because agency employees in Louisiana and Colorado took meals, gifts and sporting trips paid for by the industry, and several Colorado officials had sex and used drugs with industry employees.”).

⁵⁹ *Id.*

The blowout was not the product of . . . aberrational decisions made by rogue industry or government officials Rather, the root causes are systemic and, absent significant reform in both industry practices and government policies, might well recur. The missteps were rooted in systemic failures by industry management (extending beyond BP to contractors that serve many in the industry), and also by failures of government to provide effective regulatory oversight of offshore drilling.⁶⁰

In short order, the benighted agency was renamed the Bureau of Ocean Energy Management, Regulation and Enforcement (BOEMRE).⁶¹ But the renaming has yet to enhance the agency's reputation. It continues to labor under the strong impression left by the Gulf spill that regulatory oversight offshore approaches the end of the continuum where no effective government controls are maintained over offshore operations.

It is somewhat disconcerting, then, to discover that, according to statistics compiled by the International Association of Drilling Contractors (IADC), a trade association with scant motivation to exaggerate safety problems, the rates of offshore injuries in the United States and Europe were not as disparate as one might suppose they would be given the claims made about the efficacy of the British regulatory system. The IADC reports cover only the drilling industry, are submitted voluntarily, and are *not* audited.⁶² Here are those statistics for the reporting periods in 2007, 2008, and 2009:⁶³

⁶⁰ BP COMMISSION REPORT, *supra* note 2, at 122.

⁶¹ U.S. Sec'y of the Interior, Order No. 3302, Change of the Name of the Minerals Management Service to the Bureau of Ocean Energy Management, Regulation, and Enforcement (June 18, 2010), *available at* <http://www.doi.gov/deepwaterhorizon/loader.cfm?csModule=security/getfile&PageID=35872>.

⁶² *ASP Report Disclaimer*, INT'L ASS'N DRILLING CONTRACTORS (Apr. 30, 2010), <http://www.iadc.org/asp/2009%20Annual%20Report/ASPREPORTDISCLAIMER.htm>.

⁶³ Source: *Incident Statistics Program*, INT'L ASS'N DRILLING CONTRACTORS, <http://www.iadc.org/asp.htm> (last visited Apr. 15, 2011).

U.S. Waters			
	2009	2008	2007
Total Man Hours	33,501,661	39,665,580	39,701,950
Total Medical Treatment Incidents	72	118	115
Total Restricted Work Incidents	40	100	97
Total Lost Time Incidents	32	26	56
Total Fatalities	2	3	0
Total Recordables	146	247	268
LTI Rate ⁶⁴	0.20	0.15	0.28

European Waters			
	2009	2008	2007
Total Man Hours	32,947,340	38,049,523	35,007,255
Total Medical Treatment Incidents	48	95	81
Total Restricted Work Incidents	24	43	42
Total Lost Time Incidents	48	51	72
Total Fatalities	1	0	0
Total Recordables	121	189	195
LTI Rate	0.30	0.27	0.41

The 2009 statistics were reported in a PowerPoint presentation by Ken Arnold, senior technical advisor to Worley Parsons, a global engineering firm.⁶⁵ His presentation was part of a conference sponsored by the Society of Petroleum Engineers and held in Houston, Texas on September 16, 2010.⁶⁶ The conference appears to have been designed to provide an opportunity for global consultants familiar with the British system to sing its praises before American oil industry professionals.⁶⁷ But Arnold actually opposed adoption of the safety case regime, arguing that “accidents are avoided by people operating in supportive organizations” and that the oil industry in America does “NOT need another level of analysis and documentation.”⁶⁸

Of course, routine injury rates are not a perfect proxy for “process safety,” a term of art in the engineering profession that connotes the

⁶⁴ “Lost time incidence” (LTI) is defined as a work-related incident (injury or illness) to an employee in which a physician or licensed health care professional recommends days away from work due to the incident.

⁶⁵ See generally Ken Arnold, Production Operations—The Need for a Safety Case, Address Before the Society of Petroleum Engineers, Gulf Coast Section (Sept. 20, 2010), available at <http://www.spepcs.org/en/cev/1795> (follow “2. Ken Arnold _Safety Case Process in Production Operations.pdf” hyperlink at bottom of page).

⁶⁶ See *id.*; *Great Debate Conference*, *supra* note 2.

⁶⁷ See *Great Debate Conference*, *supra* note 2.

⁶⁸ Arnold, *supra* note 65, at 34.

failure of manufacturing systems involving the use or extraction of extremely hazardous substances.⁶⁹ Individual workers may be hurt on the job despite the implementation of a sophisticated management system that is designed to prevent major mistakes in the system for processing chemicals or producing oil offshore.⁷⁰ Workers may underreport injuries for a variety of reasons, including the fear of retaliation from supervisors seeking to cover up hazardous conditions.⁷¹ However, even if catastrophes are not on a straight linear continuum with inordinate daily injuries, poor maintenance, and weak regulatory controls, they are a foreseeable result of the cumulative consequences of neglect in those areas.

It is also true that accidents are possible, even at companies with strong safety cultures. Yet analyses of the aftermath of major industrial catastrophes never conclude that a shipshape company, with a strong safety culture, operating in a rigorous regulatory environment, was in fact ambushed by a freak instance of bad luck. Instead, report after report concludes that the absence of a strong regulatory presence and corporate neglect of safety at the highest levels were *quid pro quos* for accidents that were waiting to happen.⁷² Poor maintenance and significant injury rates are reliable indicators that instilling a safety culture—the ostensible goal of the British system—remains elusive offshore.⁷³

III. CONFLICTING VALUES IN THE LAW

The fundamental principles of British and American worker protection laws are superficially similar—agencies are instructed to balance anticipated risks against the costs of reducing them.⁷⁴ These mandates have produced a pervasive reliance on quantitative risk assessment in both countries. But as implemented in the context of offshore regula-

⁶⁹ See Andrew Hopkins, *Thinking About Process Safety Indicators*, 47 SAFETY SCI. 460, 460 (2009) (explaining the differences between process safety and personal safety at work).

⁷⁰ See *id.*

⁷¹ See, e.g., TELOS GROUP, BP TEXAS CITY SITE REPORT OF FINDINGS 8 (2005), available at <http://www.propublica.org/documents/item/the-telos-report>.

⁷² See e.g., BP COMMISSION REPORT, *supra* note 2, at vii; CULLEN REPORT, *supra* note 22, at 1–5.

⁷³ See Ben Alc, *More Thinking About Process Safety Indicators*, 47 SAFETY SCI. 470, 470 (2009) (“[S]ometimes the frequency of small scale accidents can be an indicator for the probability of a large one.”).

⁷⁴ Compare Health and Safety at Work etc. Act, 1974, c. 37, § 2(1) (U.K.) (charging employers to ensure employee health and safety “so far as is reasonably practicable”), with Occupational Safety and Health Act (OSH Act), 29 U.S.C. §§ 652(8), 655(b)(5) (2006) (setting standards “which most adequately assure, to the extent feasible” the health and safety of employees).

tion, these surface similarities diverge in two key respects. Substantively, the British have been willing to tolerate a risk standard—one in 10^{-3} (one in 1000)⁷⁵—that is significantly less protective than what American regulators, instructed by court decisions, are allowed to accept. Procedurally, the British are willing to delegate to industry the role of performing quantitative risk assessments on individual facilities, while American regulators generally conduct their own analyses and apply them in the context of industry-wide rulemaking.

A. *The British Reliance on Numbers*

The British Health and Safety at Work etc. Act of 1974 requires protection “so far as is reasonably practicable” (SFAIRP).⁷⁶ This standard is based upon a 1949 case, *Edwards v. National Coal Board*, decided by the Court of Appeal, Britain’s equivalent of the United States Supreme Court.⁷⁷ The case involved a worker in a coal mine who was killed by a collapsing wall of coal mining waste on the side of a road where he was walking; his widow won the case in the highest court after having lost it below.⁷⁸ In the passage commonly considered to be the most significant in the opinion, Judge Asquith wrote:

“Reasonably practicable” is a narrower term than “physically possible” and seems to me to imply that a computation must be made by the owner, in which the quantum of risk is placed on one scale and the sacrifice involved in the measures necessary for averting the risk (whether in money, time or trouble) is placed in the other; and that if it be shown that there is a gross disproportion between them—the risk being insignificant in relation to the sacrifice—the defendants discharge the onus on them. Moreover, this computation falls to be made by the owner at a point of time anterior to the accident.⁷⁹

⁷⁵ APOSC REGULATIONS, *supra* note 8, ¶ 39.

⁷⁶ Health and Safety at Work etc. Act § 2(1). HSE asserts that the statutory formulation—SFAIRP—and the regulatory formulation—ALARP—are “interchangeable,” but warns duty holders to mind their terminology when referring to either standard in “legal” documents. *ALARP at a Glance*, *supra* note 9.

⁷⁷ [1949] 1 K.B. 704 (Eng.). Excellent background on the British Court system is provided by the Library of Congress. *Legal Research Guide: United Kingdom*, LIBR. CONGRESS, <http://www.loc.gov/law/help/uk.php> (last updated Aug. 30, 2010).

⁷⁸ *Edwards*, [1949] 1 K.B. at 712.

⁷⁹ *Id.* at 704.

As discussed earlier, HSE obtained jurisdiction over offshore work from the Department of Energy in 1992 and was immediately confronted with the need to further interpret what level of risk was acceptable in an industry that represented a crucial engine for the country's economy, but that was compelled to operate in an environment as dangerous as it was unforgiving. The result was the "as low as reasonably practicable" standard that has been interpreted to establish one in 1000 deaths and a value of £1 million per life as the minimum levels of risk to be tolerated.⁸⁰ Although HSE announced in 2005 that it would rely less on quantitative risk assessment, giving industry the flexibility to use qualitative (or non-numerical) assessments in safety cases,⁸¹ this flexibility is unlikely to result in any meaningful increase in the levels of protection provided to workers on rigs and platforms because HSE has not required any change in the substantive standard it will use to judge safety cases for the small number of new wells drilled each year.⁸²

B. *The United States' More Protective Approach*

The central judicial interpretation of the levels of protection required by the OSH Act⁸³ is the 1980 Supreme Court decision in *AFL-CIO v. American Petroleum Institute*, commonly known as the *Benzene* decision.⁸⁴ The case involved an OSHA decision to set the "permissible exposure limit" (PEL) for benzene at one part per million (ppm) in air.⁸⁵ The Court reversed and remanded the decision, concluding that OSHA's evidence did not rise to the level of proving a "significant risk"⁸⁶—its interpretation of the statutory standard that the agency should adopt rules that are "reasonably necessary or appropriate" using the "best available evidence" to assure that "to the extent feasible" that "no employee will suffer material impairment of health or functional capacity."⁸⁷ The Court also discussed the question of how to measure risk levels numerically:

⁸⁰ See *supra* notes 9–11 and accompanying text.

⁸¹ See Walker Letter, *supra* note 12.

⁸² See KP 3 REPORT, *supra* note 40, at 8 (explaining that the North Sea is a "mature production area" where new investment in discovering and extracting oil is unlikely to occur).

⁸³ 29 U.S.C. § 655(b)(5) (2006).

⁸⁴ 448 U.S. 607 (1980).

⁸⁵ *Id.* at 632.

⁸⁶ *Id.* at 653.

⁸⁷ *Id.* at 612. This paraphrase of the statute's mandate is based on sections 3(8) and 6(b)(5) of the OSH Act. See 29 U.S.C. §§ 652(8), 655(b)(5).

[T]he requirement that a “significant” risk be identified is not a mathematical straitjacket. It is the Agency’s responsibility to determine, in the first instance, what it considers to be a “significant” risk. . . . If, for example, the odds are one in a billion that a person will die from cancer by taking a drink of chlorinated water, the risk clearly could not be considered significant. On the other hand, if the odds are one in a thousand that regular inhalation of gasoline vapors that are 2% benzene will be fatal, a reasonable person might well consider the risk significant and take appropriate steps to decrease or eliminate it.⁸⁸

Seven years after remand, OSHA lowered the benzene limit after the International Agency for Research on Cancer concluded that workers exposed to ten to 100 ppm of benzene faced an excess leukemia risk of 170 per 1000.⁸⁹

Like the OSH Act, other American health, safety, and environmental statutes and regulations almost always establish through verbal formulations the levels of protection to be provided to the public as a whole and workers in particular. In fact, American statutes contain only two examples of such numerical standards, both of which tolerate no more than a one in 1,000,000 level of risk. The first is section 408(b)(2)(A)(ii) of the Food Quality Protection Act, interpreting the statutory standard of a “reasonable certainty of no harm,”⁹⁰ and the second is section 112 of the Clean Air Act, setting the maximum level of exposure for the “most exposed” individuals in the context of limiting exposure to carcinogens.⁹¹ Both of these provisions appear in sections of the statutes that do not allow the balancing of costs and benefits, and they involve the protection of the general public, not workers.⁹² All the same, congressional unwillingness to embrace a higher numerical level of risk is worth noting.

⁸⁸ *Benzene*, 448 U.S. at 655.

⁸⁹ ROBERT V. PERCIVAL ET AL., ENVIRONMENTAL REGULATION, LAW, SCIENCE, AND POLICY 211 (6th ed. 2009).

⁹⁰ See Food Quality Protection Act, 21 U.S.C. § 346a(b)(2)(A)(ii) (2006).

⁹¹ Clean Air Act, 42 U.S.C. § 7412(c)(9) (2006) (providing for the delisting of source categories that emit carcinogens); *id.* § 7412(f)(2) (authorizing the EPA Administrator to regulate sources of carcinogens if Congress does not act).

⁹² See 21 U.S.C. § 346; 42 U.S.C. § 7412.

C. Comparing the Systems

The British comfort with numbers—especially a risk level measured as one in 1000 deaths and a value per life lost of £1 million—is striking, as is HSE’s willingness to delegate the chore of deciding what actions to take to meet these numerical standards. Of course numerical risk factors, such as risk levels in deaths per thousands and cost-benefit analysis as dollars per statistical life, are routinely incorporated in documents used as the basis for regulation in the United States, including regulatory impact assessments prepared by the government.⁹³ However, I have been able to find only two examples where an American agency used numerical risk levels to explain how a final regulation would work.⁹⁴ Embracing such numbers in safety cases largely as substitutes for regulation reflects comfort with the reliability of the methodologies used to produce such numbers, a comfort that American regulators are rightly unwilling to accept.

As for the British regulatory system’s decision to value a worker’s life at £1 million,⁹⁵ this figure is 5.5 times lower than the \$8.8 million “Value of Statistical Life” (VSL) used by the Environmental Protection

⁹³ See, e.g., U.S. EPA, REGULATORY IMPACT ANALYSIS FOR EPA’S PROPOSED RCRA REGULATION OF COAL COMBUSTION RESIDUES (CCR) GENERATED BY THE ELECTRIC UTILITY INDUSTRY 121–22 (2010) [hereinafter EPA REGULATORY IMPACT ANALYSIS FOR RCRA], available at <http://www.regulations.gov/search/Regs/home.html#documentDetail?R=0900006480ac5d01>.

⁹⁴ The first example is the EPA’s efforts to set a lifetime exposure risk for airborne benzene for the general population where it set up a system that established a “maximum level of a pollutant for a lifetime” (MIR) of one in 10,000 as “acceptable” and then promised to consider other health and safety factors in making a final regulatory determination. National Emission Standards for Hazardous Air Pollutants; Benzene Emissions, 54 Fed. Reg. 38,044, 38,048 (Sept. 14, 1989) (codified at 40 C.F.R. pt. 61). “The presumptive level provides a benchmark for judging the acceptability of maximum individual risk (‘MIR’), but does not constitute a rigid line for making that determination.” PERCIVAL ET AL., *supra* note 89, at 291. The second is OSHA’s use of such figures in explaining how it sets permissible exposure levels (PELs) for toxic chemicals, which is typified by its *Federal Register* notice for the final rule controlling workplace exposures to hexavalent chromium. Occupational Exposure to Hexavalent Chromium, 71 Fed. Reg. 10,100, 10,225 tbl.VII-2 (Feb. 28, 2006) (codified at 29 C.F.R. pt. 1910, 1915, 1917, 1918, 1926). The rule’s preamble contains a table showing the risk estimates following the imposition of OSHA PELs for a series of chemicals, including ethylene oxide, asbestos, benzene, formaldehyde, methylenedianiline, cadmium, 1,3-butadiene, methylene chloride, and chromium VI. *Id.* The table indicates risks as high as ten per 1000 workers that would occur if a worker was exposed continuously to benzene at a level equivalent to the relevant PEL over a forty-five year period, although most of the estimated recorded risks were significantly lower than this figure. *Id.* OSHA does not assert that this level of risk is acceptable. Rather, it states that these levels of risk are “significant,” but were nevertheless tolerated in its past rules. *Id.*

⁹⁵ See *supra* note 11 and accompanying text.

Agency (EPA) in recent rulemakings.⁹⁶ The figure is one-third of the lowest VSL used by other agencies, such as the Department of Transportation and the Department of Health and Human Services, in conducting cost-benefit analyses.⁹⁷

D. *Secrecy*

Last but not least, we have the question of how U.S. law deals with confidentiality of permitting regimes, the closest analogy to a safety case in the American system. Individual permits under the Clean Air Act and Clean Water Act, as well as other federal environmental statutes, are written to govern how regulated activities must be conducted at a specific facility—for example, how many and what types of air pollutants may be emitted,⁹⁸ or the content and amount of effluent that may be discharged from a point source to surface waters.⁹⁹ Those permits are always available to the public.¹⁰⁰ Similarly, Congress has evidenced a clear intent that rulemaking remain as transparent as possible.¹⁰¹ In accord is President Obama's often stated commitment to

⁹⁶ EPA REGULATORY IMPACT ANALYSIS FOR RCRA, *supra* note 93, at 121.

⁹⁷ John D. Graham, *Saving Lives Through Administrative Law and Economics*, 157 U. PA. L. REV. 395, 403, 465, 497 (2008) (noting that, according to the author, who was the director of the Office of Information and Regulatory Affairs (OIRA) responsible for reviewing the economic impact of proposed regulations for President George W. Bush, OIRA advised agencies in 2003 to use VSLs ranging from one million dollars to ten million dollars, but states that the lower-end figures actually used ranged from three to five million dollars). In a recent report on the costs and benefits achieved by the Clean Air Act, the EPA used \$7.4 million as the VSL in 2010. OFFICE OF AIR & RADIATION, U.S. EPA, THE BENEFITS AND COSTS OF THE CLEAN AIR ACT: 1990 to 2020, at 5–20 (2010), available at <http://www.epa.gov/oar/sect812/aug10/fullreport.pdf>.

⁹⁸ 42 U.S.C. § 7503 (2006) (discussing the Clean Air Act permitting requirements for nonattainment areas).

⁹⁹ See, e.g., 33 U.S.C. § 1342 (2006) (establishing the Clean Water Act's national pollutant discharge elimination system permitting program).

¹⁰⁰ See, e.g., 33 U.S.C. § 1342(j); 40 C.F.R. § 70.4(b)(3)(viii) (2009) (requiring that Clean Water Act and Clean Air Act permits be made available to the public).

¹⁰¹ See, e.g., *Natural Res. Def. Council v. U.S. EPA*, 859 F.2d 156, 175 (D.C. Cir. 1988) ("The requirement of public participation in efforts to control water pollution is established in the congressional declaration of policy and goals of the Act The legislative history of the Act repeatedly echoes the desire 'that its provisions be administered and enforced in a fishbowl-like atmosphere.'"); *Conn. Light & Power Co. v. Nuclear Reg. Comm'n*, 673 F.2d 525, 530 (D.C. Cir. 1982) ("In order to allow for useful criticism [in rulemaking], it is especially important for the agency to identify and make available technical studies and data that it has employed in reaching the decisions to propose particular rules. To allow an agency to play hunt the peanut with technical information, hiding or disguising the information that it employs, is to condone a practice in which the agency treats what should be a genuine interchange as mere bureaucratic sport.").

“open and transparent” government.¹⁰² A secret system for offshore safety cases would flout all of these well-established regimes, practices, and policies.

CONCLUSION: FUTURE DIRECTIONS

The best possible scenario for a safety case regime is that the owners and operators of offshore facilities take the preparation of such documents very seriously, to the point that the process of drafting them inculcates an effective safety culture from the top of the organization down and from the bottom of the organization up. The worst possible scenario is that safety cases are outsourced to consultants and devolve into cut-and-paste renditions of standard form reports, allowing the documents to be completed and filed without having any significant impact on the safety of the facility. In the absence of constant, stringent supervision by regulators, safety case regimes are unlikely to result in more than unsupervised exercises in self-regulation that fall at the worst scenario end of the spectrum most of the time.

On December 15, 2010, the United States Chemical Safety and Hazard Investigation Board (the “Chemical Safety Board”) held a public hearing on “regulatory approaches to offshore oil and gas safety,” which involved testimony by senior regulators from Norway, Britain, and Australia, as well as by Dr. Andrew Hopkins, a world-renowned expert in the incentives that inspire the inculcation of safety culture within high-hazard industries.¹⁰³ All of these experts stressed that the success of safety case regimes depended on the capacity of regulators to provide concrete incentives for companies to take the preparation and implementation of such documents seriously. First and foremost, regulators must have adequate resources in terms of the number and quality of the staff that is available to review the adequacy of safety cases, inspect facilities on a frequent basis, and bring swift enforcement action against violators. The operation of an offshore oil production facility is

¹⁰² See, e.g., Memorandum for the Heads of Executive Departments and Agencies: Transparency and Open Government, 74 Fed. Reg. 4685, 4685 (Jan. 26, 2009) (“My Administration is committed to creating an unprecedented level of openness in Government. We will work together to ensure the public trust and establish a system of transparency, public participation, and collaboration.”).

¹⁰³ U.S. CHEM. SAFETY & HAZARD BD., PUBLIC HEARING, REGULATORY APPROACHES TO OFFSHORE OIL AND GAS SAFETY 1–2, 7 (2010) [hereinafter CSB SAFETY CASE TRANSCRIPT], available at http://www.csb.gov/assets/document/Transcript_of_Public_Meeting_12_15_2010.pdf. See generally ANDREW HOPKINS, FAILURE TO LEARN: THE BP TEXAS CITY REFINERY DISASTER (2008) (analyzing the failure of management systems that led to an explosion at this refinery in 2005, killing fifteen workers).

enormously complex from a technical perspective, requiring an interdisciplinary team of well-trained experts.¹⁰⁴ A thorough inspection of such facilities can take several days and involve a multi-disciplinary team of several inspectors.¹⁰⁵ As Dr. Hopkins put it:

[A successful safety case regime] requires a highly competent and well resourced and independent regulator. Without a well resourced regulator safety case is no better than any alternative. Indeed, in some cases it can be worse. So any decision to introduce a safety case regime must involve a commitment to ensure proper funding.

....

...[A] safety case regime is worthless unless the regulator is properly funded.¹⁰⁶

As for the importance of a deterrence-based regime that does not place the regulator in the position of counseling offshore owners and operators into compliance without creating the incentive for companies to take the preparation and implementation of safety cases seriously in the first instance, John Clegg, the retired head of the Australian National Offshore Petroleum Safety Authority, told the Chemical Safety Board:

The employer treats the whole process [the safety case regime] as a necessary evil to get a tick in the box and the regulator to operate, i.e. they see it as an impediment to operation. The employer treats it as a one-off event—it's only a piece of paper, isn't it

Initially, we tried to work with industry to improve their safety cases. We did that for about 18 months. But we found that in the end the operators were . . . using the regulator as a free consultant. So we stopped that. And we just moved straight through rejection. And I think in the first year after we rejected half-dozen or so safety cases. And that certainly

¹⁰⁴ CSB SAFETY CASE TRANSCRIPT, *supra* note 103 at 26–27 (describing the technical complexity of oil production offshore).

¹⁰⁵ As former British regulator Ian Whewell told the Chemical Safety Board, HSE typically conducted a “three-day inspection with three to four inspectors in various disciplines with areas identified prior to the visit as being a priority and needing review and needing to be properly looked at.” *Id.* at 120.

¹⁰⁶ *Id.* at 35–36.

brought the attention of the industry to the need to do a better job.¹⁰⁷

The regulators testifying before the Chemical Safety Board did not explicitly address how to ensure that regulators remain independent in relationship to the oil and gas industries. But it is worth noting that for the British in the wake of the Piper Alpha disaster, the separation of the functions of leasing drilling rights and overseeing the safety of such operations was deemed crucial to the effectiveness of the latter work. The regulators also did not address whether the confidentiality of safety cases was consistent with the fundamental values that define the American regulatory system, but I would add that principle to the list of the conditions precedent for an effective safety case regime.

At the moment and for the foreseeable future, the United States does not come close to satisfying any of these preconditions. The supposedly momentous conversion of MMS into BOEMRE did not translate into increased effectiveness in the actual policing of the over 3500 oil platforms and drilling rigs now located in the Gulf of Mexico. Investigative reporting by the *Wall Street Journal* on December 3, 2010, was grim regarding the true significance of the reorganization, noting that BOEMRE was only able to field a “small cadre” of fifty-five inspectors armed with “checklists and pencils” to cover the entire offshore industry, resulting in the daunting ratio of one inspector for every sixty-three offshore facilities.¹⁰⁸

[T]hese inspectors have been overruled by industry, undermined by their own managers and outmatched by the sheer number of offshore installations they oversee. Inspectors come into the job with little or no hands-on experience in deep-water drilling, learning as they go.

[They] are largely checking hardware [and] get good marks for reducing workplace injuries on rigs and platforms. But safety experts say the main causes of major accidents are almost always human error, not the mechanical failure that inspectors focus on. Inspectors aren’t looking for signs of systemic safety problems—poor decisions, cutting corners, muddled responsibilities—that investigators are linking to the Deepwater Horizon explosions.

. . . .

¹⁰⁷ *Id.* at 53–55.

¹⁰⁸ Eaton et al., *supra* note 16.

No one knows if a more robust and sophisticated inspection program could have detected [the problems that caused the Deepwater Horizon disaster] explosion. But there is broad agreement among safety experts that a massive overhaul is needed to create the kind of inspection program that can help avoid such disasters in the future.¹⁰⁹

I will go out on a sturdy limb and predict that a significant expansion of BOEMRE's budget is unlikely in the foreseeable future. My evidence for this prediction is fourfold: (1) the results of the 2010 election that granted conservative Republicans a decisive majority in the House of Representatives and a significantly stronger hand in the operation of the Senate; (2) congressional failure to pass legislation to strengthen the government's ability to police offshore and authorize higher funding levels, even in the wake of the worst environmental disaster in American history; (3) President Obama's refusal thus far to recognize the crisis in performance that afflicts every agency responsible for preserving public health, safety, and the environment; and (4) the oil industry's remarkable refusal to acknowledge problems offshore.¹¹⁰ Assuming BOEMRE will be compelled to stumble along as best it can, adoption of a safety case regime is not likely to improve offshore safety and could actually prove counterproductive.

In the aftermath of the Deepwater Horizon spill, the *Wall Street Journal* reported that investors around the world were anxiously demanding evidence that "companies have robust spill contingency plans and clear guidelines for contractor selection and oversight. Investors also want to make sure the compensation and incentive packages for senior management include specific links to environmental health and

¹⁰⁹ *Id.*

¹¹⁰ As mentioned earlier, the oil industry argues that BP is a rogue company and that it has safety issues. John M. Broder, *Oil Executives Break Ranks and Criticize BP at Congressional Hearing*, N.Y. TIMES, June 16, 2010, at A20 ("The chairmen of four of the world's largest oil companies broke their nearly two-month silence on the major spill in the Gulf of Mexico on Tuesday and publicly blamed BP for mishandling the well that caused the disaster."). According to an October 15, 2010 *Federal Register* notice publishing a final rule that strengthens to a modest degree the existing requirement that all offshore facilities implement "environmental management systems," BOEMRE reported that "[m]ost comments expressed the view that the safety and environmental protection record of the offshore industry is excellent, and that imposing these new requirements is not justified." Oil and Gas and Sulphur Operations in the Outer Continental Shelf—Safety and Environmental Management Systems, 75 Fed. Reg. 63,610, 63,612 (Oct. 15, 2010) (to be codified at 30 C.F.R. pt. 250) (strengthening the existing system of regulation that requires all offshore facilities to institute an environmental management system).

safety targets.”¹¹¹ These concerns reflect an astute fingering of two of the most important problems now undermining offshore safety: the divided authority exerted onsite by diverse corporate entities that have conflicting economic interests, and top management’s neglect of safety issues.

Divided authority occurs because, unlike the vast majority of industrial sites, offshore facilities house workers employed by the company that officially owns the rig or platform, along with a variety of independent contractors. In unraveling the causes of the Deepwater Horizon disaster, investigators have been compelled to disentangle the culpability of Transocean, the owner of the rig that was leased by BP; Halliburton, the company that provided the cement used to suppress volatile gases in the well; and BP itself.¹¹² Those reports indicate that BP wanted the drilling to be completed as quickly as possible, while its drilling contractors had minimal economic incentives to rush their work.¹¹³ Bickering over how to complete this work was one cause of the accident.¹¹⁴ The distinct corporate entities involved in onsite decision-making obviously require overpowering incentives to come up with a crystal clear chain of command.

The problem of top management neglect is underscored by the conclusions of independent investigations into BP’s operations in North America.¹¹⁵ The common themes of these reports are best summarized by the findings of a review commission headed by former Secretary of State James A. Baker III that investigated the explosion at BP’s Texas City Refinery that killed fifteen people in March 2005. The report stated:

Although we necessarily direct our report to BP, we intend it for a broader audience. We are under no illusion that defi-

¹¹¹ Henshall, *supra* note 25.

¹¹² See, e.g., Ben Casselman & Russell Gold, *Unusual Decisions Set Stage for BP Disaster*, WALL ST. J., May 27, 2010, at A1 (explaining the conflicting pressures and resulting dissonance among BP and its contractors in the events leading up to the spill).

¹¹³ See *id.*

¹¹⁴ See, e.g., Douglas A. Blackmon et al., *There Was ‘Nobody in Charge,’ After the Blast, Horizon Was Hobbled by a Complex Chain of Command*, WALL ST. J., May 27, 2010, at A6 (reporting that the only person who noticed that the rig had not sent a “Mayday” call to onshore executives and took upon herself the job of calling in the alarm was reprimanded for taking such action without the express authorization by other higher ranking officials who were milling around the deck); see also Casselman & Gold, *supra* note 112, at A1.

¹¹⁵ See, e.g., JAMES A. BAKER, III, THE REPORT OF THE BP U.S. REFINERIES INDEPENDENT REVIEW PANEL, at viii (2007) [hereinafter BAKER REPORT], available at http://www.bp.com/liveassets/bp_internet/globalbp/globalbp_uk_english/SP/STAGING/local_assets/assets/pdfs/Baker_panel_report.pdf; *Frontline: The Spill*, *supra* note 15.

ciencies in process safety culture, management, or corporate oversight are limited to BP. . . .

The passing of time without a process accident is not necessarily an indication that all is well and may contribute to a dangerous and growing sense of complacency. When people lose an appreciation of how their safety systems were intended to work, safety systems and controls can deteriorate, lessons can be forgotten, and hazards and deviations from safe operating procedures can be accepted. Workers and supervisors can increasingly rely on how things were done before, rather than rely on sound engineering principles and other controls. People can forget to be afraid.¹¹⁶

Until and unless an independent regulatory agency is established, and given adequate resources and political support, safety cases should not come to America. In the interim, the best we can do is to turn to another well-established government tool—in a word, liability, imposed by high-profile lawsuits brought by Attorney General Eric Holder and pursued with the full resources of the Justice Department behind them. On December 15, 2010, Holder announced such a case against BP and Transocean seeking civil damages.¹¹⁷ Criminal charges are still under consideration and will pack an even more powerful deterrent than civil penalties in amounts easily absorbed by the mammoth company. These actions are a start, and the best hope of averting any more such tragedies.

¹¹⁶ BAKER REPORT, *supra* note 115, at i.

¹¹⁷ John Schwartz, *U.S. Sues Company for Spill Damages*, N.Y. TIMES, Dec. 16, 2010, at A30 (explaining that the complaint filed in the case does not specify the amount of damages the Justice Department is seeking, but the fines and penalties available under the law could total tens of billions of dollars).