ARE WE READY TO DRILL IN THE ARCTIC?

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I. INTRODUCTION

The United States demonstrates both an insatiable appetite for oil and an ingrained reluctance to tighten regulations on industry unless prompted by a major and preventable disaster. Intense lobbying efforts, economic interests, and pervasive externalization of the environmental costs of oil and gas extraction have stymied comprehensive reform efforts. Legislators and industry deserve credit to the extent that they reform policy and practices following disasters. However, such reforms have historically proven to be insufficient in preventing "the next" disaster.[1] Both the *Exxon Valdez* and *Deepwater Horizon* spills are largely regarded as preventable disasters.[2] A reflection on the causes of these tragic disasters and ensuing regulatory changes indicates that U.S. offshore energy policies remain deficient in numerous respects. In the context of the Arctic, the remote geographic location will compound these deficiencies, and the harsh environment will magnify the consequences.

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[1] *See* Cynthia Carney Johnson, *The Oil Pollution Act of 1990: A Long Time Coming*, 2 FORDHAM ENVTL. L. REP. 59, 59 (1990) ("The 1989 Exxon Valdez spill demonstrated the inadequacy of laws enacted prior to 1990 to respond to massive spills on the magnitude of the Valdez in terms of penalties and compensation."); Richard T. Sylves & Louise K. Comfort, *The Exxon Valdez and BP Deepwater Horizon Oil Spills: Reducing Risk in Socio-Technical Systems*, 56 AM. BEHAV. SCI. 76, 91 (2012) (discussing the fact that though legislation arising from the *Exxon Valdez* disaster did generally improve oil spill response preparedness, "it's disaster mitigation provisions largely failed to address the possibility that a catastrophic spill might be precipitated by a drilling platform disaster").

[2] *See e.g.*, ALASKA OIL SPILL COMM'N, SPILL: THE WRECK OF THE EXXON VALDEZ: IMPLICATIONS FOR SAFE TRANSPORTATION OF OIL, at iv (1990) (stating the *Exxon Valdez* "disaster could have been prevented"), *available at* http://docs.lib.noaa.gov/noaa_documents/NOAA_related_docs/oil_spills/spill_wreck_ExxonValdez_1990.pdf; 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, at vii (2011), *available at* http://www.gpo.gov/fdsys/pkg/GPO-OILCOMMISSION/pdf/GPO-OILCOMMISSION.pdf (stating that the Macondo well blow out was preventable).

Despite the risks, energy, economic, and industry demands are increasing pressure to expand offshore oil exploration throughout the Arctic.[3] Estimates suggest that the Arctic holds 90 billion barrels of oil and 1,669 trillion cubic feed of natural gas.[4] Oil production generates at least ninety percent of Alaska's revenue, but supplies flowing through the Trans-Alaska Pipeline have decreased dramatically since 1988.[5] Alaska's production could decrease to less than twenty five percent of 1988 production by 2020; proponents may argue that Arctic production is necessary to keep the Trans-Alaska Pipeline viable.[6] The American economy remains inextricably linked to and dependent upon oil and gas.[7]

Potential energy development in the Arctic brings many new opportunities to the table, and it brings as many concerns as well. The harsh climate and environment may exceed current technological capacity to drill safely or respond to a spill.[8] Furthermore, the challenging nature of a response operation would be compounded by the extreme remoteness of the Arctic and dearth of support infrastructure.[9] Any significant spill would have the potential for catastrophic consequences. The Arctic is a delicate ecosystem and supports endangered and threatened

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[3] Charles W. Schmidt, *Offshore Exploration to Commence in the Arctic: Can Shell's Oil-Spill Response Plans Keep Up?*, 120 ENVTL. HEALTH PERSP. A194, A195 (2012).

[4] *Id.* at A195.

[5] *Id.* (stating oil flow in the Trans-Alaska Pipeline peaked in 1988 and has fallen by two-thirds since that time). Less than 650,000 barrels were produced a day in 2009, down over two-thirds from a peak of 2 million barrels a day in 1988. NAT'L COMM'N ON THE BP DEEPWATER HORIZON, *supra* note 2, at 302.

[6] *Cf.* NAT'L COMM'N ON THE BP DEEPWATER HORIZON, *supra* note 2, at 302 (noting projected declines may "threaten the viability" of the pipeline but that Arctic reservoir production could be connected to the Trans-Alaska Pipeline System).

[7] *See id.* at vii; Mark Davis, *Lessons Unlearned: The Legal and Policy Legacy of the BP Deepwater Horizon Spill*, 3 WASH. & LEE J. ENERGY, CLIMATE & ENV'T 155, 159 (2012).

[8] *See* NAT'L COMM'N ON THE BP DEEPWATER HORIZON, *supra* note 2, at 302.

[9] *See id.*

species as well as commercial fisheries.[10] Moreover, native people are dependent upon the ocean for subsistence.[11]

It is ironic that Arctic drilling sites, which have the potential to cause environmental, economic, and social harm, have recently become more accessible as a result of climate change reducing ice coverage.[12] Seemingly, Arctic oil and gas production would create a feedback loop that benefits the oil industry as burning Arctic oil and gas will contribute to further climate change. Closing this area to development is the only action certain to prevent an ecological catastrophe and prevent those resources from contributing to climate change. Yet, recent lease sales and renewed Arctic exploration belie hopes that the legislature might ban Arctic development.[13] Therefore, it is necessary that policymakers and industry show that they have learned the most blatant lessons from the *Exxon Valdez* and *Deepwater Horizon* disasters. Any development in the Arctic must effectuate these lessons from the beginning before too many vested interests — industry infrastructure, local communities, and market interests — develop, thus becoming inextricably dependent on the resources and an unsustainable status quo.

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[10] DEP'T OF THE INTERIOR, REPORT TO THE SECRETARY OF THE INTERIOR: REVIEW OF SHELL'S 2012 ALASKA OFFSHORE OIL AND GAS EXPLORATION PROGRAM 15 (2013), *available at* http://www.doi.gov/news/pressreleases/loader.cfm?csModule=security/getfile&pageid=348469; NAT'L COMM'N ON THE BP DEEPWATER HORIZON, *supra* note 2, at 303 (describing the "richness" of the Arctic ecosystems which hold a vast diversity of marine mammals, provide critical habitat for polar bears as well as shorebirds, seabirds, and "abundant fish populations"); Arctic Fishery Management, NORTH PACIFIC FISHERY MANAGEMENT COUNCIL, http://alaskafisheries.noaa.gov/npfmc/fishery-management-plans/arctic.html (last visited May 15, 2013).

[11] *See* DEP'T OF THE INTERIOR, *supra* note 10, at 5.

[12] Schmidt, *Offshore Exploration to Commence*, *supra* note 3, at A195.

[13] *See generally* DEP'T OF THE INTERIOR, *supra* note 10, at 8-32 (providing background on offshore activity in the Beaufort and Chukchi Seas, renewed industry interest and the 2008 Lease Sale 193, and analysis of Shell's 2012 Arctic activity).

This paper argues that U.S. offshore oil and gas development policies have insufficiently incorporated the most obvious lessons from the *Exxon Valdez* and *Deepwater Horizon* disasters. Part II will overview the causes of these historic disasters and ensuing regulatory legislation. Part III will argue that reform has been insufficient to prevent the "next" disaster and that government and industry are particularly unprepared to respond to a disaster in the Arctic. This argument will focus specifically on the under-resourcing of regulatory agencies and inadequate advancements in cleanup technologies since the *Exxon Valdez* disaster. Further, it will describe the heightened challenges an Arctic response effort would face. Part IV will emphasize the need to address these concerns before industry expands throughout the Arctic.

II. LEARNING FROM OIL SPILL DISASTERS?

A. Torrey Canyon *and the Santa Barbara Spills: Source of Early U.S. Environmental Law and Policy*

U.S. offshore oil and gas policy has been defined by spills and other disasters. Events of the 1960's marked the development of environmental law and policy, and oil spills were part of the impetus. In 1967, the *Torrey Canyon*, a supertanker carrying 118,00 tons of crude oil, crashed into a reef off the coast of England.[14] The *Torrey Canyon* was one of the world's largest supertankers, and the crash resulted in the world's largest environmental disaster at the time.[15] Approximately 31 million gallons of crude spilled, and France and England were unable to respond effectively to the sheer volume of oil.[16] The international community, including the

[14] Frederick J. Kenney, Jr. & Melissa A. Hamann, *The Flow of Authority to Stop the Flow of Oil: Clean Water Act Section 311(c) Removal Authority and the BP/Deepwater Horizon Oil Spill*, 36 TUL. MAR L.J. 349, 353 (2012).

[15] *Id.*

[16] *Id.*

U.S., realized the need to pass legislation concerning oil spill response and liability.[17] In 1968, the U.S. established a National Contingency Plan to handle accident reporting, spill containment and cleanup, and create a national response to oil discharges.[18]

In 1969, a Union Oil Company well experienced an eleven-day blowout in the Santa Barbara Channel.[19] Between 3.4 and 4.2 million gallons of oil spilled into the Pacific.[20] The disaster reflected a lack of accountability in offshore operations and caused an 800 square mile slick that polluted thirty miles of the California coast, resulting in iconic images of oiled seabirds.[21] The public backlash resulted in the opposition to offshore oil production in California and helped secure passage of the National Environmental Law and Policy Act (NEPA) in 1970.[22] Although not specifically related to oil and gas pollution, NEPA aims to prevent unnecessary environmental harm and requires federal agencies to identify environmental consequences of their actions and consider potential alternatives.[23]

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[17] *Id.* at 353-55; *see* Elizabeth R. Millard, *Anatomy of an Oil Spill: The Exxon Valdez and the Oil Pollution Act of 1990*, 18 SETON HALL LEGIS. J. 331, 332 (1993).

[18] Kenney & Hamann, *supra* note 14, at 355.

[19] NAT'L COMM'N ON THE BP DEEPWATER HORIZON, *supra* note 2, at 28.

[20] *Id.*

[21] *See id.* at 28, 181.

[22] *Id.* at 29.

[23] 42 U.S.C. §§ 4331-32 (2012).

B. *The* Exxon Valdez *Disaster*

1. The *Exxon Valdez* spill

The *Exxon Valdez* spill occurred around midnight on March 24, 1989 when the tanker struck Bligh Reef off the coast of Alaska.[24] Approximately 10.8 million gallons of crude oil spilled into Prince William Sound, resulting in the largest oil spill in U.S. history at the time.[25] Ultimately, the spill spanned over 3,000 square miles and contaminated 1,300 miles of shoreline.[26] Entire fisheries of salmon and herring were lost, as well as hundreds of thousands of seabirds, an estimated 2,800 sea otters, 22 killer whales and hundreds of harbor seals and bald eagles.[27] The impacts on fishing and tourism industries were devastating.[28]

Multiple factors contributed to the extent of the disaster. Inadequate regulation was central.[29] At the time of the spill, Alaskan oil provided one quarter of the U.S. domestic oil supply.[30] The *Exxon Valdez* spill occurred because the industry and agencies prioritized speedy oil delivery over following the numerous safeguards set in place to protect the delicate, yet

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[24] SAMUEL K. SKINNER & WILLIAM K. REILLY, THE EXXON VALDEZ OIL SPILL: A REPORT TO THE PRESIDENT 1 (1989), *available at* http://docs.lib.noaa.gov/noaa_documents/NOAA_related_docs/oil_spills/ExxonValdez_NRT_1989_report_to_president.pdf.

[25] SKINNER & REILLY, supra note 24, at 1; Sylves & Comfort, *supra* note 1, at 83.

[26] SKINNER & REILLY, supra note 24, at 1; Sylves & Comfort, *supra* note 1, at 83.

[27] Sanne Knudsen, *A Precautionary Tale: Assessing Ecological Damages After the Exxon Valdez Oil Spill*, 7 U. ST. THOMAS L.J. 95 (2009) (noting that the herring fishery collapsed within a few years of the spill and has been closed since 1999); Sylves & Comfort, *supra* note 1, at 83.

[28] ALASKA OIL SPILL COMM'N, *supra* note 2, at iii; Sylves & Comfort, *supra* note 1, at 83; *see* Knudsen, *supra* note 27, at 95 (stating fishermen living on Prince William Sound blame the Exxon Valdez spill for the collapse of the salmon and herring fisheries).

[29] ALASKA OIL SPILL COMM'N, *supra* note 2, at iii ("The promises that led Alaska to grant its rights-of-way and Congress to approve the Alaska pipeline in June 1973 had been betrayed. The safeguards that were set in place in the 1970s had been allowed to slide. The vigilance over tanker traffic that was established in the early days of pipeline flow had given way to complacency and neglect.").

[30] *Id.*

hazardous environment.[31] Moreover, the contingency plans proved woefully inadequate to cope with the scope of the spill.[32] No plans existed to deal with the amount of oil that the *Valdez* spilled.[33] Further, neither the government nor industry had experience orchestrating a spill in a remote and environmentally sensitive location."[34]

2. *The* Exxon Valdez *cleanup*

a. Overview of cleanup technologies

It may be helpful to begin with an overview of available cleanup technologies: mechanical removal, *in-situ* burning, and chemical dispersants.[35] Mechanical removal is the most environmentally friendly method because it removes oil from the marine environment without any environmental side effects.[36] Booms, skimmers, and containment vessels collect

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[31] *See id.* at iv. The Alaska Oil Spill Commission explains how the spill occurred: the Exxon Valdez did not adhere to designated tanker lanes, an action that was authorized, but insufficiently supervised by the Coast Guard. *Id.*; Sylves & Comfort, *supra* note 1, at 83. Due to icy conditions in the outbound channel of Prince William Sound, the Valdez requested to travel out the inbound channel where it struck a shallow reef. SKINNER & REILLY, supra note 24, at 3 (stating "the Exxon Valdez was loaded to a draft of 56 feet" but the "chartered depth where the vessel grounded was 30 feet at low tide"); Sylves & Comfort, *supra* note 1, at 83.

[32] SKINNER & REILLY, supra note 24, at ES-1; *Adequacy of Preparation and Response Related to Exxon Valdez Oil Spill: Hearing Before the H. Subcomm. on Coast Guard and Navigation Comm. on Merchant Marine and Fisheries* 101st Cong. 4 (1989) [hereinafter *Adequacy of Preparation and Response*] (statement by Victor S. Rezendes, Director, Transportation Issues Resources, Community, and Economic Development Division).

[33] *See* SKINNER & REILLY, supra note 24, at 8. The Alyeska Pipeline Plan did, however, include an 8.4 million gallon spill scenario, yet Alaska's plan encompassed "over 100,000 gallons" as its maximum spill scenario. *Id.* at 6, 7. Nor had the industry or Coast Guard conducted field exercises "to test the ability of resources and personnel to realistically respond to a major spill in Prince William Sound." *Adequacy of Preparation and Response*, *supra* note 32, at 4.

[34] *See* Sylves & Comfort, *supra* note 1, at 83-84.

[35] JONATHAN L. RAMSEUR, CONG. RES. SERV., DEEPWATER HORIZON OIL SPILL: THE FATE OF THE OIL 5 (2010), *available at* http://fpc.state.gov/documents/organization/154155.pdf.

[36] SKINNER & REILLY, supra note 24, at 19;

surface oil or prevent it from spreading, and remove it from the water.[37] Mechanical removal is not favored by industry because it is expensive and inefficient.[38] In-situ burning removes oil by burning it off.[39] It can be extremely effective under ideal conditions, but it leaves behind toxic residues and releases particulate matter.[40] Finally, chemical dispersants dissipate oil by breaking it up — in theory the increased surface area accelerates natural degeneration of the oil.[41] Very little is known about the long-term effect of dispersants, and they have been controversial beginning with their application during the *Exxon Valdez* disaster.[42] Theoretically, dispersants cause oil to disperse before reaching shores, thus protecting those habitats.[43] Yet, there is a tradeoff: organisms in the water column are exposed to more oil.[44]

b. *The* Exxon Valdez *cleanup*

Exxon employed all available means in tackling the spill in Prince William Sound. Yet "shortcomings of preparedness" and the remote location proved insurmountable in the fight to

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[37] RAMSEUR, *supra* note 35, at 18; SKINNER & REILLY, supra note 24, at 19.

[38] *See* SKINNER & REILLY, supra note 24, at 19-20.

[39] RAMSEUR, *supra* note 35, at 18; SKINNER & REILLY, supra note 24, at 19.

[40] RAMSEUR, *supra* note 35, at 5 (noting health care professionals warn particulate matter must be monitored and investigated); Schmidt, *Offshore Exploration to Commence*, *supra* note 3, at A198 ("Under optimal conditions, *in-situ* burning can remove 85-95% of the oil but . . . the oil needs to be fresh, meaning that its combustible volatile fractions haven't yet been lost to evaporation.").

[41] Christopher M. Iaquinto, *A Silent Spring in Deep Water?: Proposing Front-End Regulation of Dispersants After the Deepwater Horizon Disaster*, 39 B.C. ENVTL. AFF. L. REV. 419, 425 (2012).

[42] ALASKA OIL SPILL COMM'N, *supra* note 2, at 108-09; *see* Iaquinto, *supra* note 41, at 425-27; *see* NAT'L COMM'N ON THE BP DEEPWATER HORIZON, *supra* note 2, at 174 (stating the impacts of oil on species within the water column is unknown).

[43] Iaquinto, *supra* note 41, at 425.

[44] RAMSEUR, *supra* note 35, at 6; Iaquinto, *supra* note 41, at 425.

contain the spill.[45] At the time, Alyeska Pipeline Service Company's oil spill response barge was damaged and unloaded; this delayed its response time by eleven hours.[46] Initially, the command structure was unclear, and the lack of a logistical plan to put the influx of workers and equipment to use also caused delays.[47]

Conditions complicated the response activities that actually occurred. A windstorm spread the oil across the immense bay.[48] The nature of the oil and conditions impeded the use of mechanical cleanup means.[49] Relocating booms as needed across the bay was incredibly time consuming as they had to be towed slowly to prevent damage.[50] A significant amount of time was lost on skimmers that broke down and could not be repaired immediately.[51] Finally, the viscosity of the oil hampered efficient transfers of cleaned-up crude from the skimmers' oil bladders to the recovery barge.[52] Exxon successfully burned off 12,000-15,000 gallons of oil using *in-situ* burning.[53] Responders also performed five trial applications of chemical dispersants.[54]

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[45] *See* ALASKA OIL SPILL COMM'N, *supra* note 2, at 63; SKINNER & REILLY, supra note 24, at 13. The town nearest the site, Valdez, had less than 4,000 residents and was two hours by boat from the spill itself. Moreover, as the spill spread, "it moved to even more difficult and remote areas." *Id.*

[46] ALASKA OIL SPILL COMM'N, *supra* note 2, at 1, 17.

[47] *Id.* at 63-64.

[48] *Id.* at 65.

[49] SKINNER & REILLY, supra note 24, at 19-20.

[50] *See id.* at 19.

[51] *See id.*

[52] *See id.* at 20.

[53] *Id.* at 18-19.

[54] *See id.* at 19.

3. Impact on regulations

The *Exxon Valdez* disaster, like the Santa Barbara spill before it, proved to be the impetus necessary to overhaul regulation of the oil industry.[55] Prior to the disaster, legislators knew that the existing laws — the Clean Water Act, the Trans-Alaska Pipeline Authorization Act, the Deepwater Port Act, and the Outer Continental Shelf Lands Act Amendments of 1978 — failed to provide comprehensive regulation and compensation in the event of a spill.[56] Nonetheless, Congress had remained "deadlock[ed] over how to streamline and strengthen federal oil pollution control laws" for fourteen years.[57] The *Exxon Valdez* disaster created widespread publicity and public outrage, forcing Congress to act.[58] More than a year after the spill, President G. H. W. Bush signed the Oil Pollution Act of 1990 (OPA-90).[59]

OPA-90 focused on spills from oil tankers more than spills caused by drilling platforms, yet it did improve regulations pertaining to preparedness and response for any type of spill.[60] Famously, OPA-90 required tankers to be double-hulled by 2010.[61] Perhaps less commonly

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[55] Sylves & Comfort, *supra* note 1, at 89-90 (stating the "Exxon Valdez spill impelled congressional enactment of the Oil Pollution Act of 1990" and was "the most ambitious regulation of the oil transport industry ever undertaken").

[56] *See* Elizabeth R. Millard, *Anatomoy of an Oil Spill: The Exxon Valdez and the Oil Pollution Act of 1990*, 18 SETON HALL LEGIS. J. 331, 332-41 (1993) (introducing each act, calling them a "patchwork of sometimes conflicting laws concerning liability for oil discharges," and stating the "existing levels of oil spill prevention, preparedness and response were insufficient to handle a major spill").

[57] Sylves & Comfort, *supra* note 1, at 90 (internal quotation marks omitted).

[58] *See* Sylves & Comfort, *supra* note 1, at 91.

[59] Millard, *supra* note 56, at 368; *see* Oil Pollution Act of 1990, 33 U.S.C.A. § 2701 (1990).

[60] Sylves & Comfort, *supra* note 1, at 91.

[61] 46 U.S.C.A. § 3703(a) (1990); Millard, *supra* note 56, at 366; Sylves & Comfort, *supra* note 1, at 90.

known is that many members of Congress resisted this section of the statute; its inclusion in OPA-90 was not secured until an additional, preventable tanker spill occurred.[62]

Overall, OPA-90 sought to increase oil spill preparedness, response capability, and compensation. It created a cause of action for removal costs and damages, holding responsible parties liable for damages resulting from the discharge of oil into navigable waters, or upon the shoreline through the exclusive economic zone.[63] The removal costs provision covers "costs incurred by the United States, a State, or an Indian tribe . . . [or] costs incurred by any person for acts . . . consistent with the National Contingency Plan."[64] Damages include damages to natural resources, real or personal property, subsistence use of natural resources, revenues, public services, profits and earning capacity.[65]

OPA-90 severely restricts available defenses. Responsible parties may escape liability only if a spill is "causes solely by: (1) an act of God; (2) an act of war; (3) an act or omission of a third party, other than an employee or agent of the responsible party or a third party whose act or omission occurs in connection with any contractual relationship with the responsible party."[66] However, the statute limited liability costs for tankers at $10 million and offshore drilling facilities at $75 million.[67] If the responsible party acted with gross negligence or willful misconduct or violated applicable federal safety regulations, the liability limits do not apply.[68] Likewise, the responsible party remains liable for "all removal costs incurred by the United

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[62] *See* Millard, *supra* note 56, at 366. On February 7, 1990, the *American Trader* tanker had an accident off of Huntington Beach, California. This resulted in a major spill, which a double-hull would have prevented. *See id.*

[63] 33 U.S.C.A. § 2702(a) (1990); Millard, *supra* note 56, at 362.

[64] 33 U.S.C.A. § 2702(b)(1).

[65] *Id.* § 2702(b)(2).

[66] *Id.* § 2703(a) (1990).

[67] *Id.* § 2704(a)(1) (1990).

[68] *Id.* § 2704(c)(1).

State Government or any State or local official or agency" for costs associated with a spill.[69] Finally, OPA-90 explicitly does not preempt state or local authority from imposing additional liability or spill response requirements.[70]

OPA-90 also established the Oil Spill Liability Trust Fund to help the government pay for response costs and compensate for damages not covered by a responsible party.[71] The fund is financed by a tax levied on each barrel of oil.[72] OPA-90 mandates that the President oversee cleanup operations.[73] The Act also established an Interagency Coordinating Committee on Oil Pollution Research.[74] Largely, this section mandates research on: assessing current oil pollution prevention, response, and mitigation capabilities; studying past response deficiencies; developing new or improved response technologies; improving the industries' response capabilities through research; studying the impact of various response technologies as well as oil spills on the environment; training and improving information systems for decision making; researching methods to restore damaged natural resources.[75]

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[69] *Id.* § 2704(c)(3).

[70] *Id.* § 2718 (1990).

[71] *Id.* § 2712 (1990); Millard, *supra* note 56, at 363; [71] Sylves & Comfort, *supra* note 1, at 90.

[72] Sylves & Comfort, *supra* note 1, at 90 tbl.6. The tax was originally five cents a barrel but was increased to eight cents in 2008. U.S. ARCTIC RESEARCH COMM'N & U.S. ARMY CORPS OF ENG'RS, OIL SPILLS IN ARCTIC WATERS 7 (2012), *available at* http://www.arctic.gov/publications/oil_spills_2012.pdf.

[73] 33 U.S.C.A § 1321 (1990).

[74] *Id.* § 2761 (1990).

[75] *Id.* § 2761(b).

C. *The* Deepwater Horizon *Disaster*

1. The *Deepwater Horizon* spill

The *Deepwater Horizon* disaster can be directly attributed to human error on the eve of the disaster and a series of mechanical failures.[76] Yet, like the *Exxon Valdez* disaster before it, the failure of regulatory oversight over the industry enabled these events to occur. Thus, on April 20, 2010, as the *Deepwater Horizon* crew was finishing tests in preparation for "temporary abandonment" of the well, the blowout occurred.[77] A perfect storm of four events combined to cause the blowout: (1) the well's cement job failed; (2) the crew failed to recognize evidence warning of a "kick" (what occurs when oil or gas enters the well); (3) BP took unnecessary risks in its temporary abandonment procedures; and (4) the blow out preventer (BOP) failed in three ways.[78]

Beyond the immediate causes of the blowout, the National Commission on the BP Deepwater Horizon Oil Spill and Offshore Drilling identifies industry management failures and regulatory failures as the "root causes" of the disaster.[79] The corporations involved continually engaged in decisionmaking that saved time and money when less risky alternatives were available.[80] There was also a detrimental lack of communication among companies working the *Deepwater Horizon* rig.[81] Officials and scholars have attributed the regulatory failure to severe underfunding of Mineral Management Service (MMS), insufficient expertise and training

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[76] *See* NAT'L COMM'N ON THE BP DEEPWATER HORIZON, *supra* note 2, at vii.

[77] *Id.* at 5-9.

[78] *Id.* at 106-14, 199-21, 174; RAMSEUR, *supra* note 24, at 114-15.

[79] NAT'L COMM'N ON THE BP DEEPWATER HORIZON, *supra* note 2, at 174; RAMSEUR, *supra* note 35, at 122-27.

[80] NAT'L COMM'N ON THE BP DEEPWATER HORIZON, *supra* note 2, at 125.

[81] *Id.* at 122-24.

among its employees, and lack of political autonomy.[82] On one hand, MMS was arguably "captured" by the industry it was meant to regulate.[83] And on the other, this agency was tasked with the conflicting responsibilities of regulating an industry and procuring revenue from it.[84] Finally, as deepwater drilling activities exploded off the Gulf of Mexico and drilling technologies continued to advance, MMS's budget underwent significant cuts.[85] Thus, the agency, which was not fully motivated to regulate the oil industry in the first place, lacked the resources to guard an industry with a culture of prioritizing reward and opposing increased safety procedures.[86]

The blowout resulted in the largest environmental crisis the U.S. has ever faced.[87] The initial explosion killed eleven workers and injured another seventeen.[88] Over approximately

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[82] *See id.* at 57, 67; Leila Monroe, *Restructure and Reform: Post-BP Deepwater Horizon Proposals to Improve Oversight of Offshore Oil and Gas Activities*, 5 GOLDEN GATE ENVT'L L. J. 61, 75 (2011); Hari M. Osofsky, *Multidimensional Governance and the BP Deepwater Horizon Oil Spill*, 63 FLA. L. REV. 1077, 1102 (2011).

[83] *See* ALYSON FLOURNOY ET AL., CTR. FOR PROGRESSIVE REFORM, THE BP CATASTROPHE: WHEN HOBBLED LAW AND HOLLOW REGULATION LEAVE AMERICANS UNPROTECTED 7 (2001) [hereinafter FLOURNOY ET AL., HOBBLED LAW AND HOLLOW REGULATION], *available at* www.progressivereform.org/articles/BP_Catastrophe_1101.pdf; NAT'L COMM'N ON THE BP DEEPWATER HORIZON, supra note 2, at 71 (describing one instance of American Petroleum Institute's successful efforts to impede MMS reform); Rebecca M. Bratspies, *A Regulatory Wake-up Call: Lessons From BP's Deepwater Horizon Disaster*, 5 GOLDEN GATE ENVT'L L.J. 7, 54 (2011); Monroe, *supra* note 82, at 68 (describing the "revolving door" between MMS and industry and "cozy industry-government collaboration").

[84] *See* NAT'L COMM'N ON THE BP DEEPWATER HORIZON, *supra* note 2, at 56.

[85] *See id.* at 72-73; Styles and Comfort, *supra* note 1, at 88.

[86] *See* Davis, *supra* note 7, at 158 (stating that "[i]t was policy to run the risks that led to the blowout"); *id.* at 170; Zygmunt J.B. Plater, *The Exon Valdez Resurfaces in Mexico . . . and the Hazards of "Megasystem Centripetal Di-polarity"*, 38 B.C. ENVTL. AFF. L.J. 391, 399 (2011); Styles & Comfort, *supra* note 1, at 88.

[87] NAT'L COMM'N ON THE BP DEEPWATER HORIZON, *supra* note 2, at 173; Bratspies, *supra* note 83, at 19.

[88] NAT'L COMM'N ON THE BP DEEPWATER HORIZON, *supra* note 2, at 198.

eighty-five days, 206 million gallons of oil discharged into the Gulf of Mexico.[89] Like the *Exxon Valdez* spill, the spill devastated fishing and tourism industries.[90] It had significant impacts on the highly productive yet sensitive ecosystem as well.[91] Oil washed ashore from Louisiana to Florida and damaged or destroyed already vulnerable wetlands.[92] Thousands of sea turtles, birds, and marine mammals died as a result of the spill, including endangered and threatened species.[93] Less is known about the impact on marine life in the Gulf water column, which includes planktons, larvae, shellfish, commercial fish species, game fish species, crabs, corals, and sharks.[94] Long term monitoring is needed to analyze the ultimate impact of the spill on the ecosystem.[95] Unfortunately, there was no "comprehensive data on conditions before the spill" and extremely limited funding for studies immediately after the spill.[96] Therefore, it will not be possible to definitively prove the full range of ecological harm that the spill caused.

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[89] JONATHAN L. RAMSEUR & CURRY L. HAGERY, CONG. RES. SERV., *DEEPWATER HORIZON* OIL SPILL: RECENT ACTIVITIES AND ONGOING DEVELOPMENTS 1 (2013), *available at* www.fas.org/sgp/crs/misc/R42942.pdf. The National Commission on the BP Deepwater Horizon's report to the President states that the well was not contained for eighty-seven days. NAT'L COMM'N ON THE BP DEEPWATER HORIZON, *supra* note 2, at 165; *see also* GOV'T ACCOUNTABILITY OFFICE, OIL AND GAS: INTERIOR HAS STRENGTHENED ITS OVERSIGHT OF SUBSEA WELL CONTAINMENT, BUT SHOULD IMPROVE ITS DOCUMENTATION 8 (2012), *available at* http://www.gao.gov/assets/590/588961.pdf.

[90] *See* NAT'L COMM'N ON THE BP DEEPWATER HORIZON, *supra* note 2, at 185-91.

[91] *Id.* at 174-84.

[92] *Id.* at 198; Sylves & Comfort, *supra* note 1, at 85.

[93] NAT'L COMM'N ON THE BP DEEPWATER HORIZON, *supra* note 2, at 181; Mark Schleifstein, *BP Deepwater Horizon Oil Spill Draws Wide Array of Comments on 3rd Anniversary*, TIMES PICAYUNE (New Orleans) (April 19, 2013), http://www.nola.com/news/gulf-oil-spill/index.ssf/2013/04/wide_array_of_comments_on_3rd.html.

[94] NAT'L COMM'N ON THE BP DEEPWATER HORIZON, *supra* note 2, at 174-85.

[95] *Id.* at 184-85

[96] *Id.* at 174, 184-85.

2. *Deepwater Horizon* cleanup

BP was able to recover seventeen percent of released oil (approximately 820,000 barrels) directly from the wellhead.[97] According to the EPA, responders burned 222,000 to 313,000 barrels of oil, amounting to about five percent of the total.[98] Estimates of oil successfully skimmed are more uncertain, though listed at 160,000 barrels.[99] Windy conditions rendered many booms useless in the fight to absorb and collect the oil.[100] Natural processes accounted for the dispersal of over 1.8 million barrels or thirty-seven percent of the total oil.[101] These include oil that naturally dispersed into miniscule droplets, evaporated, or dissolved.[102]

Responders applied 1.8-2 million gallons of Corexit, a surface and sub-surface chemical dispersant, to the spill, which dissipated about 770,000 barrels, or sixteen percent of oil released.[103] The use of Corexit engenders numerous concerns due to its toxicity.[104] There was no disincentive for BP in utilizing this chemical, however. First, BP was able to bring a halt to disastrous images of an increasingly impacted coastline by expediting the spill's dissipation. Second, "[b]ecause the Clean Water Act stipulates that BP must pay $1,100 for every barrel of oil proven to have 'spilled' from the site, the use of dispersants to cloud the final estimates of

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[97] RAMSEUR, *supra* note 35, at 8.

[98] *Id.* at 8 n.28.

[99] *Id.* at 9.

[100] *See* Anthony E. Ladd, *Pandora's Well: Hubris, Deregulation, Fossil Fuels, and the BP Oil Disaster in the Gulf*, 56 AM. BEHAV. SCI. 104, 112 (2012) ("[T]he rough winds and ocean currents tended to push the oil over or under the lightweight booms that BP workers were given to deploy around beaches and marshes. As a result, some local observers estimated that 70% to 80% of the booms had little to no effect in isolating and absorbing the spreading oil.").

[101] *See* RAMSEUR, *supra* note 35, at 10.

[102] *Id.* at 10.

[103] *Id.* at 9.

[104] *See* Bratspies, *supra* note 83, at 20; Ladd, *supra* note 100, at 112; Plater, *supra* note 86, at 406-08; Schmidt, *Offshore Exploration to Commence*, *supra* note 3, at A198.

the disaster's scope could ultimately save BP billions of dollars in fines."[105]

3. Impact on regulations

Congress took little long-lasting legislative action following the Deepwater Horizon Disaster.[106] There have been notable changes within the Department of the Interior (DOI), however.

In 2012, President Obama signed the Pipeline Safety, Regulatory Certainty, and Job Creation Act of 2011.[107] This act does not relate to drilling facilities, but concerns the safety of oil pipelines and increases civil fines for violating safety requirements.[108] A second act, the RESTORE Act, established a Gulf Coast Restoration Fund within the General Treasury.[109] This fund will ensure that eighty percent of penalties paid by parties held liable for the Deepwater Horizon disaster pay for ecological and economic restoration activities.[110] Interestingly, Congress enacted a law that relaxes regulation of offshore drilling: it "transferred air emission regulatory authority in the OCS off Alaska's north coast from the U.S. Environmental

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[105] Ladd, *supra* note100, at 112.

[106] *See* JONATHAN L. RAMSEUR, CONG. RES. SERV., OIL SPILL LEGISLATION IN THE 111TH CONGRESS 2 table 1 (2010) [hereinafter RAMSEUR, LEGISLATION IN THE 111TH CONGRESS], *available at* http://www.fas.org/sgp/crs/misc/R41453.pdf (showing Congress only passed two laws in 2011, and these laws simply provided additional funding for the Coast Guard's response or for spill-related programs). In 2011, Congress amended OPA-90 to allow the Coast Guard access to additional advances — up to $100 million per advance — from the Oil Spill Liability Trust Fund for response activities related to the Deepwater Horizon disaster. *Id.* at 2 tbl.1; *see* 33 U.S.C. § 2752 (2012); Pub. L. No. 111-191, 124 Stat. 1278 (2010). Congress also "provide[d] $94 million for oil-spill related programs" in the 2010 Supplemental Appropriations Act. RAMSEUR, LEGISLATION IN THE 111TH CONGRESS, *supra*, at 2 tbl.1.

[107] Pipeline Safety, Regulatory Certainty, and Job Creation Act of 2011, Pub. L. No. 112-90, 125 Stat. 1904 (2012).

[108] *Id.*

[109] Pub. L. No. 112-141, 126 Stat. 588 (2012).

[110] *Id.*

Protection Agency (EPA) to the Department of the Interior (DOI)."[111]

The most dramatic reform to emerge after the Deepwater Horizon disaster was the dissolution of MMS. Ultimately, MMS transformed into the Bureau of Ocean Energy Management (BOEM), the Bureau of Safety and Environmental Enforcement (BSEE), and the Office of Natural Resources Revenue (ONRR).[112] Critically, this separated the revenue-generating branch of offshore regulation from enforcement.[113] In 2010, BOEMRE — the precursor to BOEM, BSEE, and ONRR — passed a rule requiring OCS operators implement a Safety and Environmental Management System (SEMS) program.[114]

There have been a number of positive developments within DOI, but oversight still has a long way to go.[115] Third parties must verify a BOP's compatibility with well type and location before BOEM will grant a permit.[116] DOI developed new software for analyzing the integrity of a proposed well's design, which has resulted in operators strengthening wellbore designed in numerous instances.[117] Yet, over a year and a half after the Deepwater Explosion, DOI had conducted only two unannounced spill drills including a subsea containment

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[111] Pub. L. No. 112-74, 125 Stat. 1049 (2011); RAMSEUR & HAGERY, *supra* note 89, at 8-9.

[112] Monroe, *supra* note 82, at 68; RAMSEUR & HAGERY, *supra* note 89, at 9. BOEM is "responsible for resource evaluation, planning, and other activities related to leasing"; BSEE is "responsible for creation of standards, inspections, and enforcement of safety and environmental protection regulations"; and ONRR is "responsible for the collection, distribution, and management of revenue." Monroe, *supra* note 82, at 68.

[113] *See* Osofsky, *supra* note 82, at 1088-89.

[114] RAMSEUR & HAGERY, *supra* note 89, at 9.

[115] *See generally* GOV'T ACCOUNTABILITY OFFICE, *supra* note 89 (noting numerous steps and developments within the DOI to increase offshore drilling safety and disaster responsiveness, but explaining that there are significant shortcomings in DOI's document review process and its capacity to incorporate subsea blowout situations into unannounced drills).

[116] *See id.* at 4.

[117] *Id.* at 18.

scenario.[118] In many respects, it appears DOI's new regulations reflect stronger and more specific interpretations of OPA-90.[119]

III. Drilling in the Arctic Will Require Better-Funded Agencies and Developments in Response Technologies

There are ample reasons to find that we are inadequately prepared to commence drilling in the Arctic Circle. The government and industry have not sufficiently learned from the *Deepwater Horizon* or the *Exxon Valdez* disasters. Both disasters stemmed largely from the same failures — insufficient governmental oversight and completely inadequate disaster response plans.[120] Regulatory changes have been insufficient since the *Deepwater Horizon* spill to mitigate these issues. Disaster response capabilities remain completely inadequate as well. Further, technologies that are employed, particularly dispersants, may be more damaging than the spilled oil itself.[121]

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[118] *Id.* at 20.

[119] *Compare* 33 U.S.C. § 1321 (2012) (requiring response plans capable of responding "to the maximum extent practicable, to a worst case discharge"), *with* GOV'T ACCOUNTABILITY OFFICE, *supra* note 89 (stating DOI required operators to "demonstrate containment capacity," specifically list equipment to be used in an accident, and plans to administer regular inspections of containment equipment).

[120] *Compare* ALASKA OIL SPILL COMM'N, *supra* note 2, at 63 (stating there was neither the preparedness nor capability to respond to the *Exxon Valdez* spill), *with* Plater, *supra* note 86, at 397-99, 403 (describing a "culture of complacency, collusion, and neglect" in the case of Alaska and pervasive "less-than-vigilant government management practices" that "exhibited negligence an lassitude toward operations of all the oil companies in the Gulf"), *and* Styles & Comfort, *supra* note 1, at 87-88 (noting that in the case of both the *Exxon Valdez* and BP spill the government had no expertise in dealing with the scope of the spill and suggesting that the disasters were in part caused by overreliance on technology and poor safety management).

[121] *See generally* Iaquinto, *supra* note 41, at 425-27, 440-41 (describing: the present "dearth" of information regarding the long term impacts of using dispersants; the potential that some dispersants are not effective; the potential serious public health effects of dispersants; and the fact that dispersants may create compounds that are more toxic than physically dispersed oil).

In addition to these general concerns, drilling in the Arctic poses unique challenges that legislators and regulators did not consider when reacting to the *Deepwater Horizon* disaster.[122] The Gulf of Mexico has been degraded and abused for decades while the Arctic is still pristine habitat.[123] There is currently no expertise for drilling in the unique environmental conditions of the Arctic. Presently, plans do not involve deep-sea conditions and extreme pressure like in the Gulf of Mexico, but the Arctic's climate and long winters present new extreme conditions to overcome.[124] Ice covers the Chukchi and Beaufort Seas over three quarters of the year.[125] There is also the "extreme cold, extended seasons of darkness, hurricane-strength storms, and pervasive fog" to contend with.[126] These conditions will make exploration, drilling, and production more challenging than in other offshore areas and would make a cleanup response extremely difficult.[127] Finally, the remote nature of the Arctic makes the possibility of a successful cleanup inherently tenuous.[128] Thus, it is necessary to ensure that corporations will be sufficiently monitored for safety and are fully capable of responding to a significant spill before they can drill in the Arctic. Society and the environment should not bear the risk of

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[122] DEP'T OF THE INTERIOR, *supra* note 10, at 32.

[123] Daniel A. Farber, *The BP Blowout and the Social and Environmetnal Erosion of the Louisiana Coast*, 13 MINN. J. L. SCI. & TECH. 37, 38 (2012); Osofsky, *supra* note 82, at 1103; Melissa A. Verhaag, *It Is Not Too Late: The Need for A Comprehensive International Treaty to Protect the Arctic Environment*, 15 Geo. Int'l Envtl. L. Rev. 555, 557 (2003); *see also* U.S. ARCTIC RESEARCH COMM'N & U.S. ARMY CORPS OF ENG'RS, *supra* note 72, at 29 (noting the Chukchi and Beaufort coasts comprise areas of heightened ecological significance).

[124] *See* Osofsky, *supra* note 82, at 1101; Richard Stone, *Icy Inferno: Researchers Plan Oil Blaze in Arctic Waters*, 253 SCI. 1203, 1203 (1991); *see also* DEP'T OF THE INTERIOR, *supra* note 10, at 6.

[125] NAT'L COMM'N ON THE BP DEEPWATER HORIZON, *supra* note 2, at 302.

[126] *Id.* at 302.

[127] *Id.* at 302.

[128] *See* DEP'T OF THE INTERIOR, *supra* note 10, at 6 (noting "the absence of fixed infrastructure to support oil and gas activity, including resources necessary to respond in the event of an emergency").

another large-scale disaster if the industry cannot be regulated or cannot successfully respond to a spill.[129]

A. Insufficient Changes in Government Oversight and Capabilities

The task of regulating the oil industry simply exceeds the government's ability or willingness to regulate as necessary.[130] For too long, the government and industry have prioritized expediting revenue generating activities at the cost of environmental protection.[131]

Commentators frequently described MMS as a "captured" agency.[132] It suffered excessive shortcomings — shrinking budgets and expanding responsibilities; deficient technical expertise, corruption, and conflicting mandates — while facing one of the strongest lobbying efforts in the world.[133] The reorganization of MMS into BOEM, BSEE, and ONRR helped to eliminate the conflict of interest by separating oversight and revenue generating

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[129] *See* Davis, *supra* note 7, at 170.

[130] *See id.;* Styles and Comfort, *supra* note 1, at 88.

[131] *See* Bratspies, *supra* note 83, at 53, 56, 58; Plater, *supra* note 86, at 400-403.

[132] *See* FLOURNOY ET AL., HOBBLED LAW AND HOLLOW REGULATION, *supra* note 83, at 7; NAT'L COMM'N ON THE BP DEEPWATER HORIZON, supra note 2, at 71 (describing one instance of American Petroleum Institute's successful efforts to impede MMS reform); Bratspies, *supra* note 83, at 54; Monroe, *supra* note 82, at 68 (describing the "revolving door" between MMS and industry and "cozy industry-government collaboration").

[133] ALYSON FLOURNOY ET AL., CTR. FOR PROGRESSIVE REFORM, REGULATORY BLOWOUT: HOW REGULATORY FAILURES MADE THE BP DISASTER POSSIBLE, AND HOW THE SYSTEM CAN BE FIXED TO AVOID A RECURRENCE 24 (2011) [hereinafter FLOURNOY ET AL., REGULATORY BLOWOUT], *available at* www.progressivereform.org/articles/BP_Reg_Blowout_1007.pdf. NAT'L COMM'N ON THE BP DEEPWATER HORIZON OIL SPILL, *supra* note 2, at 77; Bratspies, *supra* note 83, at 51; Ladd, *supra* note 100, at 108-09 (noting corrupt practices that emerged after Vice President Cheney restaffed MMS); Osofsky, *supra* note 82, at 1102; Brian Walsh, *The BP Oil Spill, One Year On: Forgetting the Lessons of Drilling in the Gulf*, TIME (Apr. 20, 2012), http://www.time.com/time/health/article/0,8599,2066233,00.html. BP alone spent $15.9 million in 2009 on lobbying efforts, in part to "dilute new laws aimed a preventing oil-spill pollution." Ladd, *supra* note 100, at 109. In total, oil and gas companies invested over $350 million from 2008–2010 in lobbying. *Id.*

functions.[134] Yet BSEE and BOEM inherited many of MMS's problems, and there has been insufficient legislative action to address these defects.[135] Of greatest concern are the agencies' budgetary restraints and deficient technical expertise.[136]

Adequately funding BSEE and BOEM would likely be the most significant step the government can take in preventing future disasters. Funding for MMS failed to keep pace with industry expansion.[137] Between 1982 and 2007, there was a 200% increase in OCS leasing activity.[138] Yet MMS's budget "was roughly equivalent" to its budget in the 1980's, and its staffing resources actually shrank by thirty-six percent.[139] Talented employees could double their salaries by working for industry instead.[140] Further, increased technological complexity accompanied the proliferation of deepwater drilling, and the drill sites themselves became harder to travel between.[141] In 2010, sixty inspectors had the impossible task of regulating approximately 4,000 facilities in the Gulf of Mexico.[142] Most startling, these budgetary shortcomings did not allow for sufficient funding to conduct surprise inspections of deepwater

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[134] Osofsky, *supra* note 82, at 1088-89 (noting the reorganization "separated leasing, environmental oversight, and money collection"); *see* Bratspies, *supra* note 83, at 53 ("The revenue-generating function created a powerful disincentive to delay or deny approval of permits for further environmental investigation even when the proposed drilling posed risks to sensitive environments, and an even bigger deterrent to shutting down wells, even when the were being operated in an unsafe manner."); Walsh, *supra* note 133.

[135] *See* Walsh, *supra* note 133.

[136] Osofsky, *supra* note 82, at 1102.

[137] *See* Bratspies, *supra* note 83, at 51.

[138] *Id.*

[139] *Id.*

[140] *Id.*

[141] *Id.*; Osofsky, *supra* note 82, at 1102 ("[T]he regulatory regime and enforcement has had trouble keeping up with the pace of technology. The commission found that the requirements often lagged behind the technology and that the agencies were inadequately funded to enforce those requirements.").

[142] *See* Bratspies, *supra* note 83, at 51.

rigs.[143] In the year and a half following the spill, DOI only conducted two unannounced spills drills and had yet to test, or establish a time frame to test, most operators' capability to respond to a subsea blowout.[144] If the DOI is unable to fund necessary inspections on Gulf rigs due to distance issues, it is not credible that it would be capable of funding regulation of Arctic rigs, which would be far more remote. Since the breakup of MMS, there is little evidence that the successor agencies are receiving sufficient funding to adequately achieve their mandates.[145]

Providing sufficient funding to BSEE and BOEM will allow these agencies to ensure drilling takes place as safely as possible. BOEM must have the capabilities to ensure proposed contingency plans are adequate and relevant to individual drill sites. BP, along with all major players in the Gulf of Mexico, infamously relied upon a "cut and paste" contingency plan that referenced a long-dead expert and assured the safety of Pacific walrus populations.[146] "Given that the nearest walrus population was quite far away, this was the only assurance of no harm that the companies could be confident of delivering in the event of a spill."[147] Yet MMS approved such plans too quickly to consider their substantial defects or consider the fact that BP was unable to provide the clean up services it claimed it was capable of.[148] Plainly, it is

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[143] *Id.*

[144] Gov't ACCOUNTABILITY OFFICE, *supra* note 89, at 20.

[145] *Cf.* Schleifstein, *supra* note 93 (quoting Jim Noe, director of Shallow Water Energy Security Coalition: "Lawmakers must allocate the necessary resources to BSEE and the IRU to allow it to perform on par with the most effective regulatory regimes in the world.").

[146] Bratspies, *supra* note 83, at 47; *see* NAT'L COMM'N ON THE BP DEEPWATER HORIZON OIL SPILL, *supra* note 2, at 133.

[147] Bratspies, *supra* note 83, at 47.

[148] *See* NAT'L COMM'N ON THE BP DEEPWATER HORIZON OIL SPILL, *supra* note 2, at 132 (stating that BP's spill response plan stated private oil spill response organizations had the capacity to recover almost 500,000 barrels of oil a day); Bratspies, *supra* note 83, at 47-48 (stating "approvals in the Gulf occurred with lightening speed" and that BP was unprepared to respond to a major spill); Davis, *supra* note 7, at 157-58 ("Also the spill response plans

necessary that BOEM take more time to give greater attention to the corporations' plans before approving them. It is imperative that the agencies ensure that there are no discrepancies between a company's assertions and actual spill-response capabilities. It is preferable that BOEM receive the funding to generate the man-hours and expertise necessary to oversee the plans. Alternatively, DOI could require that third party contractors certify plans for completeness before industry may submit them. Yet, as the *Deepwater Horizon* disaster and Shell's 2012 problems in the Arctic indicate, reliance on contractors often results in mismanagement and generates unnecessary risks.[149]

More funding is necessary for BSEE to provide sufficient enforcement. Presently there is insufficient deterrence for companies because it pays to break the regulations.[150] BSEE must be funded adequately to conduct surprise inspections and enforce regulations.

Industry has argued that stricter enforcement will curtail business, harming the economy. However, the post-disaster economic boom in the Gulf refutes these concerns.[151] Despite the imposition of new regulations and the fact that approval of development plans and permits takes two to three times as long as before the *Deepwater Horizon* disaster, the pace of development in the Gulf has exceeded expectations.[152] By August 2012, 105 permits were granted, up from 79 in all of 2011.[153] Furthermore, small firms expanded operations as well,

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drawn by the industry and approved by the Minerals Management Service were completely out of scale to the actual threats posed by a blowout.").

[149] DEP'T OF THE INTERIOR, *supra* note 10, at 1.

[150] Jennifer A. Dlouhy, *After Spill, Offshore Enforcement Remains Murky*, FUELFIX (Dec. 12, 2012), http://fuelfix.com/blog/2012/12/12/after-spill-offshore-enforcement-remains-murky/.

[151] Tom Fowler, *After Spill, Gulf Oil Drilling Rebounds*, WALL ST. J. (Sept. 20, 2012), http://online.wsj.com/article/SB10000872396390443890304578008573749823206.html#articleTabs%3Darticle.

[152] *See id.*

[153] *Id.*

thus dispelling predictions that only the largest companies could withstand the new regulations.[154] Therefore, it is possible to impose necessary regulations without adversely impacting industry.

B. *Cleanup Technologies: Insufficient Technological Progress*

While industry has realized exponential technological advancements in drilling expertise, there have been no comparable advancements in disaster response technology.[155] Too frequently industry and government have demonstrated complacence regarding improved cleanup response capabilities. This is entirely unacceptable in any drilling situation, and will cause egregious harm in the event of a disaster in the Arctic.[156]

It is critically important to recognize that the Arctic Sea presents unparalleled challenges to future oil spill recovery efforts.[157] Several factors determine the success of clean up efforts: location of the spill as well as the climate environmental conditions and natural processes.[158] The conditions in the Arctic will exacerbate response efforts across the line.

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[154] *See Id.*

[155] *Cf.* NAT'L COMM'N ON THE BP DEEPWATER HORIZON, *supra* note 2, at k (noting that "[t]wenty years after the Exxon Valdez spill in Alaska, the same blunt response technologies—booms, dispersants, and skimmers—were used, to limited effect"); Bratspies, *supra* note 83, at 49; Ladd, *supra* note 100, at 108, 112 ("Despite the sophistication of today's drilling technology, the available clean-up methods are barely more advanced from the straw bales and shovels employed more than 40 years ago after the Santa Barbara Oil Spill.").

[156] *See* DEP'T OF THE INTERIOR, *supra* note 10, at 32 (stating a spill in the Arctic would have "catastrophic consequences on fragile ecosystems and the people who depend on the ocean for subsistence").

[157] *See* NAT'L COMM'N ON THE BP DEEPWATER HORIZON, *supra* note 2, at 302; DEP'T OF THE INTERIOR, *supra* note 10, at 3-4, 6; Osofsky, *supra* note 82, at 1101; Stone, *supra* note 124, at 1203.

[158] RAMSEUR, *supra* note 35, at 3; Sylves & Comfort, *supra* note 1, at 94.

1. Remoteness

Due to the remote location of the Chukchi and Beaufort Seas, it is questionable whether sufficient clean up equipment and manpower could be available to respond to a blow out.[159] - The Deepwater Horizon response effort benefitted from the close proximity to "the Gulf's highly developed coastline" and a "consortium of oil companies, each contributing resources and manpower to the cleanup effort."[160] There is presently no comparable infrastructure on the Arctic OCS.[161] Response operations would likely be limited by numerous factors such as "fuel capacity, distance to fuel sources, and crew rest requirements."[162] Moreover, the Arctic lacks the redundancy of response equipment that provides extra insurance for mitigation plans in the Gulf of Mexico.[163] Thus, cleanup efforts would be severely delayed if cleanup vessels and equipment stationed in the Chukchi Sea prove insufficient, paralleling the difficulties encountered in the *Exxon Valdez* spill.[164]

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[159] *See* DEP'T OF THE INTERIOR, *supra* note 10, at 6; Schmidt, *Offshore Exploration to Commence*, *supra* note 3, at A197 ("OCS waters are exceedingly remote—roads, airports, port facilities, housing, and other infrastructure needed to support a large-scale spill response are few and far between.").

[160] Schmidt, *Offshore Exploration to Commence*, *supra* note 3, at A197.

[161] DEP'T OF THE INTERIOR, *supra* note 10, at 6; GOV'T ACCOUNTABILITY OFFICE, *supra* note 89, at 25.

[162] *See* GOV'T ACCOUNTABILITY OFFICE, *supra* note 89, at 25.

[163] *Id.* at 19, 25.

[164] *See* Schmidt, *Offshore Exploration to Commence*, *supra* note 3, at A197.

2. Climate

The Arctic climate will compound the difficulties of cleanup efforts due to the ice cover, freezing temperatures and extreme whether.[165] "Weather conditions in the Beaufort Sea could make it impossible to mount any oil-spill response whatsoever 22% of the time in July, 41% of the time in August, and 56% of the time in September."[166] When wind conditions exceed twenty knots or waves top 1.5 meters — which is common in the Arctic OCS — it will be impossible to use *in-situ* burning or booms.[167] Icy conditions can clog skimmers, reducing their efficiency.[168] Finally, cleanup operations would have to be called off until spring when ice coverage becomes too extensive.[169]

Moreover, climatic conditions in the Artic interfere with the natural processes that eliminated approximately thirty-seven percent of the oil released in the Deepwater Horizon disaster.[170] Oil-consuming microbes are less active in cold water.[171] Colder temperatures also slow the rates of evaporation, biodegradation, and dissolution of oil.[172]

Arctic conditions present additional problems for response plans including chemical dispersants — which, as it stands, are not currently preapproved for use in Alaska.[173] There is

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[165] Charles W. Schmidt, *Arctic Oil Drilling Plans Raise Environmental Health Concern*, 119 Envtl. Health Persp. A116, A116 (2011) [hereinafter Schmidt, *Arctic Oil Drilling Plans*]; *see* DEP'T OF THE INTERIOR, *supra* note 89, at 5.

[166] Schmidt, *Offshore Exploration to Commence*, *supra* note 3, at A199; *see also* Stone, *supra* note 124, at 1203 (internal quotation marks omitted)("When it's really bad out . . . all we can really do is sit back and watch.").

[167] *See* Schmidt, *Offshore Exploration to Commence*, *supra* note 3, at A198.

[168] *Id.*

[169] *Id.*

[170] *See* RAMSEUR, *supra* note 35, at 4-5, 10.

[171] *See* NAT'L COMM'N ON THE BP DEEPWATER HORIZON, supra note 37, at 174; RAMSEUR, *supra* note 24, at 4-5.

[172] See sources cited supra note 171.

[173] Schmidt, *Offshore Exploration to Commence*, *supra* note 3, at A198.

still little understanding of the efficacy of dispersants in Arctic conditions or their long-term effects on the delicate ecosystem.[174] It is possible that chemically dispersed oil may be more toxic to marine life than untreated oil.[175] If regulators approved dispersants to combat a spill, issues such as severely shortened daylight hours or oil captured in ice floes present problems to pilots attempting to accurately spray dispersants.[176]

To be fair, there are circumstances when Arctic conditions can improve the efficacy of traditional remediation means. While booms cannot work when "sea-surface ice cover exceeds 30%," ice may act as a natural boom in some circumstances.[177] Because less evaporation occurs in cold climates, *in-situ* burning may be more effective in the Arctic.[178] Extensive ice-coverage can concentrate oil and protect it from wind, which also improves the efficacy of in-situ burning.[179] This may be why the industry currently sees *in-situ* burning at the response technique with the greatest potential.[180] But, excessive burning of oil would likely have serious effects on air quality.

a. Dispersants: controversy and concerns

The use of dispersants as a cleanup tool warrants specific scrutiny — their use has been controversial since the Exxon Valdez disaster over twenty years ago.[181] Scientists have little

[174] *Id.*
[175] *Id.*
[176] *Id.* at A198-99.
[177] *Id.* at A198.
[178] *Id.*
[179] *Id.*
[180] PER JOHAN BRANDVIK, JOINT INDUSTRY PROGRAM, OIL SPILL RESPONSE FOR ARCTIC AND ICE-COVERED WATERS (2009), *available at* http://dfdickins.com/pdf/jip-oil-in-ice_print-a41.pdf.
[181] *See* Plater, *supra* note 86, at 405 ("EPA's continued failure to scrutinize and regulate dispersants has been a critical element in the shortcomings of national spill response."); Sylves & Comfort, *supra* note 1, at 95

understanding of the long-term effects of this process on ecosystems or human health.[182] Many scientists, citizens, and even legislators fear that the potential toxicity of dispersants is more damaging than exposure to the oil itself, and thus advocate banning their use.[183]

Categorizing dispersants among cleanup technologies conveys the wrong impression in some ways. Dispersants do not remove spilled oil from the water, nor does their application aim to do so. Dispersants function by breaking the oil up into minuscule droplets that dissolve throughout the water column.[184] Thus, less oil washes up on beaches or in wetlands, protecting the coastline.[185] The flip side of this, of course, is that more oil remains in the ocean ecosystem.[186] This oil-dispersant mix creates subsurface plumes that are deadly to the countless

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("Moreover, questions and reservation pertaining to use of dispersant continue to plague the oil spill cleanup regulatory community.").

[182] Bratspies, *supra* note 83, at 20; *see* TOXIPEDIA CONSULTING SERVS. & EARTHJUSTICE, THE CHAOS OF CLEAN-UP: ANALYSIS OF POTENTIAL HEALTH AND ENVIRONMENTAL IMPACTS OF CHEMICAL IN DISPERSANT PRODUCTS 10 (2011), *available at* earthjustice.org/sites/default/files/Oil_Dispersants_Report.pdf.

[183] *See* S.B. 97, 2011 Reg. Sess. (La. 2011), *available a*t http://legiscan.com/LA/text/SB97/2011 (aiming to ban dispersants unless standard toxicity test methods determine it is "Practically Non-Toxic"); TOXIPEDIA CONSULTING SERVS. & EARTHJUSTICE, *supra* note 182, at 3, 14 (discussing the dangerous properties of dispersants and indicating it may be necessary to ban the more toxic dispersants); Bratspies, *supra* note 83, at 20 (discussing the harmful effects of Corexit and the fact it has been banned in England). See generally Dahr Jamall, *BP Dispersants 'Causing Sickness'*, Al Jazeera Online, (last modified Oct. 29, 2010) for a discussion of the severe illnesses occurring in Gulf communities that may be attributable to BP's widespread use of dispersants. *See generally* Iaquinto, *supra* note 41, at 425-27, 440-41 (describing: the present "dearth" of information regarding the long term impacts of using dispersants; the potential that some dispersants are not effective; the potential serious public health effects of dispersants; and the fact that dispersants may create compounds that are more toxic than physically dispersed oil).

[184] NAT'L COMM'N ON THE BP DEEPWATER HORIZON OIL SPILL, *supra* note 2, at 143.

[185] *Id*.

[186] *See* Bratspies, *supra* note 83, at 21.

larva throughout the water column.[187] This can create repercussions for the entire ecosystem, as the larva form the basic trophic level.[188]

The health impacts of dispersant use may prove to be tragic. Dispersants are composed of different formulas made from fifty-seven different chemicals.[189] Some of these chemicals are carcinogenic, disrupt endocrine function, are toxic to aquatic organisms, and scientists suspect some of being toxic to a host of critical organs.[190] After the *Exxon Valdez* and *Deepwater Horizon* disasters, numerous response workers reported illnesses due to exposure to dispersants.[191] *Exxon Valdez* cleanup workers reported numerous health problems including harm to their kidneys and livers.[192] In the Gulf, cleanup workers and locals exposed to dispersants are exhibiting severe symptoms that may studies may link to Corexit.[193] The symptoms include passing blood in their urine, hemorrhages, rashes, eye irritation, nausea and vomiting, and chronic respiratory problems.[194]

In Alaska there is "greater continued ecological damage" on beaches that were sprayed with dispersant, than those that were not "cleaned."[195] Dispersants, rather than the oil itself, may have caused the loss of the herring fishery and declined success of a local orca population.[196] Likewise, in the Gulf of Mexico, dispersants may be responsible for the death of

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[187] *See* Plater, *supra* note 86, at 407.

[188] *See id.* at 407; *See* Sylves & Comfort, *supra* note 1, at 96 (noting dispersants and the dispersed oil contain toxins harmful to the food web).

[189] TOXIPEDIA CONSULTING SERVS. & EARTHJUSTICE, *supra* note 182, at 6.

[190] *Id.*

[191] *See* Bratspies, *supra* note 83, at 20; Plater, *supra* note 86, at 406.

[192] Bratspies, *supra* note 83, at 20.

[193] *See* Plater, *supra* note 86, at 406;

[194] Bratspies, *supra* note 83, at 20.

[195] Plater, *supra* note 86, at 406 (internal quotation marks omitted).

[196] *See Id.* at 407.

dolphins and billions of larva.[197] Thus, there is a strong likelihood these chemicals are not as safe as BP and the industry would like to profess.

Oil companies enjoy great benefits from the use of dispersants. First, dispersants cost the responsible party less than mechanical cleanup equipment.[198] Second, they do actually dissipate the spill, creating an "optical" advantage: the spill becomes "out-of-sight, out-of-mind."[199] Fewer heart-wrenching images of oil soaked beaches and animals are generated, and the responsible party can deny the extent of the damage.[200] Proponents claim breaking oil down with dispersants allows the oil to be consumed by microbes faster.[201] Yet there is evidence suggesting it actually inhibits biodegradation of the oil.[202]

3. Cleanup recommendations

It is obvious that one of the weakest links in the regulatory chain is the capability to contain a spill effectively. In light of past failures and distinctive conditions in the Arctic, oil spill response plans must feasibly be capable of responding to a worst-case situation at the specific location of the well, and they must be practiced.[203] BOEM should not approve contingency plans that rely on dispersants unless they are proven to be safe. Oil companies may not rely on the improbability of a blowout — planners must exercise imagination in conceiving

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[197] *Id.* at 406.

[198] *Id.* at 405 (noting that "mechanical surface collection technologies" such booms and skimmers are more effective and safer than dispersants but cost more to maintain and operate).

[199] *Id.* at 405-06.

[200] *See Id.* at 406.

[201] *See* NAT'L COMM'N ON THE BP DEEPWATER HORIZON OIL SPILL, *supra* note 2, at 143.

[202] *Id.* at 143.

[203] See ALASKA OIL SPILL COMM'N, *supra* note 2, at 102 (stating response equipment and plans "should be tested well in advance of a spill").

of the worst-case scenario. Disasters repeatedly exceed the narrow-minded planning seen in contingency plans.[204]

Much more information is needed before dispersants can be effectively regulated.[205] Placing a moratorium on dispersant use could be seen as effectively decreasing responders' ability to clean up a spill and potentially allowing unnecessary ecological damage. Yet as the costs of using some dispersants will likely prove to outweigh the benefits, continued approval of such dispersants is counterproductive and dangerous. Therefore, the best approach may be to implement new procedures for unapproved response plans and improve regulation of dispersants in already approved plans.

BOEM should not approve contingency plans involving dispersants unless two conditions are met. First, BOEM should require full disclosure of a dispersant's ingredient list.[206] Cleanup workers and local citizens have a right to know what chemicals they have been exposed to, and this information would be helpful to scientists studying the impact of dispersants on the ecosystem. Second, industry must prove that the dispersants will not cause significant ecological harm or health hazards. At minimum, industry should show that the dispersants are less harmful than the oil itself. This will place the burden of proof and cost of

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[204] *See* Sylves and Comfort, *supra* note 1, at 87-88 (noting that the government was not prepared to deal with the scope of either the *Exxon Valdez* or *Deepwater Horizon* spills).

[205] *See* Iaquinto, *supra* note 41, at 440-41 (discussing the need to resolve "glaring informational deficiencies regarding dispersant application").

[206] *See id.* at 428-29 & n.86. Presently manufacturers must disclose to the EPA the dispersant formula's "chemical name and percentage by weight." 40 C.F.R. § 300.915(a)(10); Iaquinto, *supra* note 41, at 428. However, a manufacturer can shield this information from the public by "assert[ing] that certain information in the technical product data submissions, including technical product data submissions for sorbents . . . is confidential business information." *See* 40 C.F.R. § 300.920(c); Iaquinto, *supra* note 41, at 429 & n.86.

scientific research on the industry.[207] For contingency plans already in place, the EPA should mandate operators and responders only use the safest known dispersants in the event of a spill and impose fines on parties that disobey this mandate. Finally, long-term tests should continue in Prince William Sound and within the Gulf of Mexico to learn the long-term effects of dispersants on ecosystem and human health. In particular, the government should fund studies surveying the depth of the water column to investigate the effect of releasing prodigious quantities of dispersants at great depths.

Likewise, BOEM should not approve contingency plans that are incomplete to the extent they exaggerate a company's capability to respond, or are too narrow to be successful.[208] As seen in the *Exxon Valdez* disaster, critical clean up equipment was out of commission at the time of the spill. Moreover, responders lacked the capacity and the training to respond to a spill the size of the *Exxon Valdez* disaster in such a remote location.[209] In the case of the *Deepwater Horizon*, neither BP nor the government had the capability to respond to a blowout of that magnitude that lasted for nearly three months.[210] BP had insufficient equipment to clean up the spill, yet knew it lacked the expertise to stop a deep sea leak at the time.[211] Corporations industry-wide assumed the risk of an uncontainable blowout due to the belief that such a disaster would not happen.[212]

Clearly these lessons still need to be learned in full. Shell evidenced this industry drive to exceed preparations when exploring the Arctic in 2012. It was delinquent in preparing and

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[207] *See* Iaquinto, *supra* note 41, at 441 (advocating a front-end regulatory structure along the lines of FIFRA).

[208] *See* FLOURNOY ET AL., REGULATORY BLOWOUT, *supra* note 133, at 15.

[209] Sylves and Comfort, *supra* note 1, at 87-88.

[210] *See* NAT'L COMM'N ON THE BP DEEPWATER HORIZON OIL SPILL, *supra* note 2, at ix; Sylves and Comfort, *supra* note 1, at 88.

[211] Bratspies, *supra* note 83, at 18, 22.

[212] *Id.* at 48.

testing crucial containment equipment.[213] Also, despite the well-understood dangers of attempting a cleanup in icy conditions, Shell argued for a longer window of time to drill for hydrocarbons.[214] Shell was scheduled to cease drilling in hydrocarbon-bearing zones thirty-eight days before a "trigger date" related to scientific predictions of the date of "ice encroachment over the well site."[215] Shell advocated pushing the "trigger date" back two to three weeks to allow more time to potentially drill. Ultimately, BOEM did not allow Shell to drill for hydrocarbons due to the problems with the containment equipment, but it is worth noting that the freeze-up occurred near the set trigger date — well in advance of the date Shell wanted.[216]

Another significant weakness in MMS approval of response plans lay in the low threshold MMS set. Although OPA-90 requires response plans "to the maximum extent practicable, to a worst case discharge," MMS interpreted this provision to require response plans to be "within the limitations of available technology."[217] There is no requirement that the technology actually be capable of responding to a potential spill.[218] Thus, oil companies are perversely disincentivized from developing cleanup technologies: if the technology does not exist, they cannot be required to use it.[219] Instead, approval of contingency plans should be technology forcing rather than allowing plans to rely on available technology.

Alternatively, the government could prioritize an incentive system to shift some investment in development technology to investment in cleanup technology. Rewarding

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[213] DEP'T OF THE INTERIOR, *supra* note 10, at 17-22.

[214] *Id.* at 27.

[215] *Id.*

[216] *Id.*

[217] 33 U.S.C. § 1321(j)(5)(A) (West 2012); 30 C.F.R. § 254.6 (2013); *see* Bratspies, *supra* note 83, at 41.

[218] Bratspies, *supra* note 83, at 41.

[219] FLOURNOY ET AL., REGULATORY BLOWOUT, *supra* note 133, at 15; *see* Bratspies, *supra* note 83, at 41.

significant advances with priority at lease sales may prove to be an incentive. The government could provide a tax break for companies that prove to use a specific portion of their research and development budget on cleanup equipment development. A cash prize could be offered for a winning design or concept and thereby stimulate research outside of the industry. The government could also use money from lease sales or levy an additional tax on each barrel of oil to fund response research and development within the DOI or the National Oceanic and Atmospheric Administration.

The final recommendation in this section is reminder that practice and testing are necessary. Practice would afford governments responders and industry an opportunity to discover shortcomings in their plans and identify points of confusion over authority without any consequences. Scholars attribute part of the response failures in the *Exxon Valdez* and *Deepwater Horizon* spills to a lack of practice and training among responders.[220] To an extent, government and regulators are slowly learning this lesson. Before the *Deepwater Horizon* disaster, the Coast Guard had held practice drills in the Gulf. Last summer, containment dome tests demonstrated that Shell was less than adequately prepared to safely drill for hydrocarbons in the Arctic.[221] Importantly, while the test proved that the safety equipment was not ready, it also unveiled areas where authority was not clearly delineated and areas where the crew needed increased competency as well.[222] In this instance, the failures resulted in Shell's inability to

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[220] *See Adequacy of Preparation and Response Related to Exxon Valdez Oil Spill: Hearing Before the H. Subcomm. on Coast Guard and Navigation Comm. on Merchant Marine and Fisheries* 101st Cong. 4 (1989) (statement by Victor S. Rezendes, Director, Transportation Issues Resources, Community, and Economic Development Division) (noting lack of field exercises exacerbated the Exxon Valdez spill response failure).

[221] DEP'T OF THE INTERIOR, *supra* note 10, at 19.

[222] *Id.*

obtain permits to drill in hydrocarbon-bearing zones.[223] However, future tests should take practice one step further. The 2012 tests were conducted in Puget Sound rather than in the Arctic. But given the unique challenges that Arctic operations will face, BOEM should ideally require industry to carry out equipment tests and response drills in the Arctic with the crews and on the vessels that would actually be used in emergency conditions.[224]

IV. TIMING IS CRITICAL

It is critical to take a close look at these issues now. There is one more important lesson from the Deepwater Horizon and Exxon Valdez disasters: once industry builds extensive infrastructure and establishes jobs in a region, and once the nation begins to rely on an energy supply from that region, it is all but impossible for the government to reign in the industry.[225] It became apparent after the *Deepwater Horizon* disaster that once the machinery is in place, people become too dependent on the status quo to embrace increased safeguards.[226] President Obama's six-month moratorium on deepwater drilling was met with vitriolic resistance.[227] "[I]n

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[223] *Id.*

[224] *Id.* at 20.

[225] *See* Ladd, *supra* note 100, at 120 (discussing the "virtual stranglehold that the fossil fuel industry exercises over energy policy and development in the United States"); Plater, *supra* note 86, at 398 (noting that a drive for profits, politics, and dependence on the oil supply contributed to the breakdown in operations in Alaska).

[226] *See* Ladd, *supra* note 100, at 120 (exhibiting frustration at the lack of public backlash against BP or support for cleaner energy resulting from the Deepwater Horizon disaster).

[227] *See* Ladd, *supra* note 100, at 100; Edward W. Thrasher, *Cleaning Up the Muck: A Takings Analysis of the Moratorium on Deepwater Drilling Following the BP Oil Spill*, 77 BROOK. L. REV. 1285, 1288 (2012); Kim Chipman, *Americans in 73% Majority Oppose Deepwater Drilling Ban*, BLOOMBERG (July 14, 2010), www.bloomberg.com/news/2010-07-14/americans-in-73-majority-oppose-ban-on-deepwater-drilling-after-oil-spill.html; Gary Langer, *Poll: Gulf Coast Residents Oppose Drilling Moratorium*, ABC NEWS (July 14, 2010), http://abcnews.go.com/US/abc-news-poll-bp-oil-spill-impact-gulf/story?id=11163367#.UZUwHILhHak. *See generally* Hornbeck Offshore Servs., L.L.C. v. Salazar, 696 F. Supp. 2d 627 (E.D. La. 2010) (showing that owners

the minds of a lot of people a disaster that's trashed half the economy is not a good reason to shut down the other half."[228]

While the Arctic provides unique challenges, it also presents a unique opportunity for U.S. energy policy. The government can require adequate safeguards and oversight from the beginning, thus creating a culture that emphasizes precaution rather than risk taking. As the *Exxon Valdez* and *Deepwater Horizon* disasters evidence, it is extremely difficult to change an embedded culture later. Because the costs of oversight will be so much greater due to the extremely remote geography of the Arctic and the environmental complications, government should require the industry to pay for its own oversight. This is fairer than expecting taxpayers to pay the burden and will ensure that the agencies are adequately funded to perform necessary oversight.

Finally both government and industry should continue to perform scientific research in the Arctic. It is necessary to establish a baseline of ecosystem health and functions. Then if an oil spill occurs, scientists will be better capable of determining the full consequences of the spill. This will give a better picture of operator liability and clarify the true costs of oil extraction, which largely remain externalized.

V. CONCLUSION

If a spill the size of the BP *Deepwater Horizon* were to occur in the Arctic, the consequences would likely be far more damaging than the devastation in the Gulf of Mexico. While both bodies of water support crucial economies and threatened or endangered species,

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and operators of vessels, shipyards, and supply services companies related to offshore oil and gas activity challenged the six-month moratorium on deepwater drilling following the BP disaster).

[228] Ladd, *supra* note 100, at 100 (quoting Rebecca Solnit, Diary, 32 LONDON REV. BOOKS 28 (2010), *available at* http://www.lrb.co.uk/v32/n15/rebecca-solnit/diary).

the Arctic lacks numerous advantages present off the coast of Louisiana — mainly proximity to redundant spill response technologies, immediate availability of cleanup crews, and more efficient biodegradation processes. Thus, it is imperative to assess whether the government and industry are capable of safely carrying out offshore oil and gas production in the Arctic. Safe operations, at minimum, will depend BOEM and BSEE receiving full funding and significant advancements in spill response technologies. Congress must address these concerns immediately. Exploration missions have already begun in the Arctic, but there is still plenty of time to establish policies and a culture of safe operations distinct from the laissez-faire regulation expected in the Gulf of Mexico.