REGULATING THE ARCTIC GOLD RUSH: RECOMMENDED REGULATORY REFORMS TO PROTECT ALASKA'S ARCTIC ENVIRONMENT FROM OFFSHORE OIL DRILLING POLLUTION

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ABSTRACT

Since 2008, major oil and gas operators have invested billions attempting to drill Arctic Alaska's Outer Continental Shelf. However, offshore drilling in the extreme Arctic is fraught with infrastructural, technological and environmental challenges that could result in enormous damages if an accident ever occurred. While offshore drilling operations would significantly benefit both the state of Alaska and the United States, it is imperative that the United States' offshore regulatory regime adequately protects the Arctic Alaskan environment and innocent third parties. This Note examines the shortcomings of the United States' current offshore drilling regulatory regime and proposes a four-part scheme that properly incentivizes operators to drill safely and adequately compensates damaged parties. The United States should revise its regulatory regime by: (1) significantly increasing the liability cap; (2) increasing an operator's financial responsibility requirement in the form of mandatory third-party insurance; (3) establishing a risk-based premium fund; and (4) creating a supplementary fund from firms that extract hydrocarbons in excess of a specific threshold level.

INTRODUCTION

In 2008 the United States Department of the Interior raised international interest in Alaskan offshore drilling when it released the

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United States Geological Survey (USGS) estimates of undiscovered oil and gas north of the Arctic Circle.[1] The USGS report estimated that the territory north of the Arctic Circle holds 90 billion barrels of oil, 1,669 trillion cubic feet of natural gas, and 44 billion barrels of natural gas liquids, 84% of which are located offshore.[2] This amount represents an estimated 30% of the world's undiscovered gas and 13% of the world's undiscovered oil, with most located under fewer than 500 meters of water.[3] The Bureau of Ocean Energy Management (BOEM) has estimated that Alaska's offshore region contains 23 billion barrels of oil, primarily in the Beaufort and Chukchi Seas.[4]

The potential profits from these hydrocarbons, coupled with longer ice-free seasons[5] and advances in offshore drilling technology, have oil companies lining up to sink their drill bits into the Arctic's offshore oil fields.[6] However, as oil giant Shell has found out over the past few years, the Alaskan Arctic is a harsh and unforgiving environment, with long stretches of sea ice, freezing temperatures, months of darkness, extended periods of heavy fog, and extreme weeklong storms.[7]

1. USGS is a scientific bureau within the United States Department of Interior. U.S. DEP'T OF THE INTERIOR, U.S. GEOLOGICAL SURVEY, CIRCUM-ARCTIC RESOURCE APPRAISAL: ESTIMATES OF UNDISCOVERED OIL AND GAS NORTH OF ARCTIC CIRCLE 2008-3049 (Peter H. Stauffer ed., 2008) [hereinafter USGS APPRAISAL].

2. *Id*. at 4; Press Release, U.S. Dep't of the Interior, U.S. Geological Survey, 90 Billion Barrels of Oil and 1,670 Trillion Cubic Feet of Natural Gas Assessed in the Arctic (Jul. 23, 2008), *available at* http://www.usgs.gov/newsroom/article.asp?ID=1980#.U2vMo61dU5d. "These resources account for about 22 percent of the undiscovered, technically recoverable resources in the world." *Id.*

3. U.S. Dep't of the Interior, U.S. Geological Survey, *supra* note 2; Donald L. Gautier et al., *Assessment of Undiscovered Oil and Gas in the Arctic*, SCIENCE, vol. 324 no. 5931, 2009, at 1175.

4. Margaret Kriz Hobson, *Is Arctic Oil Exploration Dead in the U.S.?*, ENERGY WIRE (July 18, 2013), http://www.eenews.net/energywire/stories/1059984582.

5. Gary D. Clow et al., *Climate Change Considerations*, *in* U.S. GEOLOGICAL SURVEY CIRCULAR 1370: AN EVALUATION OF THE SCIENCE NEEDS TO INFORM DECISIONS ON OUTER CONTINENTAL SHELF ENERGY DEVELOPMENT IN THE CHUKCHI AND BEAUFORT SEAS, ALASKA ("USGS, CIRCULAR") 81, 86–88 (Leslie Holland-Bartels & Brenda Pierce eds., 2011), *available at* http://pubs.usgs.gov/circ/1370/pdf/circ1370.pdf ("Environmental changes [from global warming] include . . . a marked decrease in the extent and thickness of sea ice . . . . [C]limate projections over the next 50–100 years . . . consistently show a pronounced warming over the Arctic [and] accelerated sea-ice loss . . . .").

6. *See* Jerry Beilinson, *Everything You Need to Know About Shell Oil and Arctic Offshore Drilling in Alaska*, POPULAR MECHANICS, (Sept. 14, 2012), http://www.popularmechanics.com/science/energy/coal-oil-gas/everything-you-need-to-know-about-shell-oil-and-arctic-offshore-drilling-in-alaska-10720112 (stating that some companies may start offshore drilling as early as 2014 and 2015).

7. THE PEW ENVIRONMENT GROUP, POLICY RECOMMENDATIONS: OIL SPILL PREVENTION AND RESPONSE IN THE U.S. ARCTIC OCEAN 2 (2012); *see* Hobson, *supra*

Furthermore, the Alaskan Arctic's remote location is sparsely populated, and the infrastructure needed in the case of an accident—transportation, communications, and equipment—is virtually non-existent.[8] Together, "the extreme physical environment and remote location and the unpredictable effects of climate change mean that the risks, difficulties and unknowns of oil exploration and development are far greater in the Arctic than in any other United States ocean area."[9] Furthermore, as opponents of drilling stress, obtaining oil in the Arctic presents additional challenges such as the area's unique ecosystem,[10] the Alaska Natives who rely on the environment for subsistence,[11] and the fact that spill response and containment technologies are unproven in icy waters.[12]

As offshore drilling in the Alaskan Arctic appears inevitable, it is imperative that the United States' laws and regulations create the proper incentives for the oil companies to operate as safely as possible and ensure prompt clean up and restitution in the case of an accident.

This Note examines the shortcomings of the United States' offshore drilling regulatory scheme as well as alternative regulatory mechanisms, and ultimately proposes a four-part regulatory scheme that places the impetus to drill safely on the oil and gas industry. Part I outlines the role the oil and gas industry has played in shaping the state of Alaska, the local and federal benefits of offshore drilling, and the environmental risks of drilling in the Alaskan Arctic. Part II examines the issues with the United States' current regulatory regime and potential alternatives. Part III recommends a four-part revised regulatory regime that: (1) significantly increases the strict liability cap; (2) requires increased

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note 4 (describing how Shell has, to date, been unable to drill any of its offshore Alaskan Arctic leases despite having invested over $5 billion); *see also* Matt Smith, *Shell's Arctic Dreams Postponed Another Year*, CNN, (Jan. 30, 2014), http://www.cnn.com/2014/01/30/us/shell-arctic/ ("Shell has canceled plans to drill in the Arctic waters off Alaska this year . . . .").

8. *See id.* at 12 ("The nearest USCG station is nearly 950 air miles away, and the closest major port is Dutch Harbor, 1,300 miles away.").

9. *Id.* at 4.

10. *See id.* at 3. ("[The Arctic environment] supports a variety of iconic marine mammals . . . [that] are found nowhere else in the United States. Millions of birds and various species of whales migrate great distances to the Arctic each year. More than 100 species of fish . . . are found there.").

11. *See id.* ("Indigenous communities along the coastline depend upon a healthy Arctic marine ecosystem to support the many species at the heart of their subsistence way of life.").

12. *See, e.g.*, Leslie Holland-Bartles & Jonathan J. Kolak, *Oil-Spill Response, and Impact*, *in* USGS, CIRCULAR, *supra* note 5, at 109, 133 ("Recent barge trials on the Beaufort Sea demonstrated that even trace amounts of ice (less than 1/10 ice coverage) can cause significantly reduced efficiencies in mechanical recovery.").

financial responsibility in the form of third-party insurance; (3) establishes a risk-based premium fund; and (4) creates a supplementary fund from contributions from firms that produce above a threshold level.[13]

I. OVERVIEW

The oil industry has been instrumental in shaping the character and economy of Alaska. Revenues from oil make up an enormous portion of Alaska's contributions to the federal government.[14] While there has been drilling in northern Alaska for decades, offshore drilling in its most remote locations is fraught with infrastructural and technological challenges, which could result in enormous damages if an accident ever occurred. As a result, it is imperative that the United States' regulatory regime properly incentivizes firms to protect against such a risk.

A. Oil: Shaping Modern Alaska

The discovery of oil in Alaska has been instrumental to the state's economic development and population growth. Today:

> Oil production currently accounts for approximately 93 percent of Alaska's unrestricted general fund revenues, or $8.86 billion in fiscal year 2012. The general fund pays for almost every state service, including the education system, transportation infrastructure, public health and safety services, and a host of other programs throughout Alaska . . . . According to a special report by the University of Alaska's Institute for Social and Economic Research (ISER), without oil, the economy in Alaska today would be only half its current size. A third of Alaska's jobs, 127,000, are oil related and depend on oil production.[15]

In Alaska, oil exploration and production have existed since the

13. This note does not consider the broader policy question: whether the United States should allow offshore drilling on the Arctic Outer Continental Shelf (OCS) and instead assumes the decision has already been made.

14. *See* Alex DeMarban, *Will Offshore Oil Development in Alaska's Arctic Make State Rich? Don't Count on It.*, ALASKA DISPATCH NEWS (July 1, 2012), http://www.adn.com/article/will-offshore-oil-development-alaskas-arctic-make-state-rich-dont-count-it (explaining that the majority of revenue from offshore leasing to oil companies and royalties from oil production in Alaska go to the federal government).

15. *Alaska's Oil and Gas Industry*, RESOURCE DEVELOPMENT COUNCIL, http://www.akrdc.org/issues/oilgas/overview.html (last visited Sept. 17, 2014).

early 1900s.[16] Oil discoveries in the 1950s led to great economic interest and, following the granting of statehood in 1959, oil companies vigorously explored the State.[17] These explorations led to the discovery of a number of successful sites containing billions of gallons of oil and natural gas.[18] For example, the upper Cook Inlet has supplied nearly 1.3 billion barrels of oil and 5 trillion cubic feet of natural gas to date.[19]

In 1967, North America's largest oil field was discovered at Prudhoe Bay on the Arctic Coast.[20] Enormous investment poured into the area, beginning in 1973 for the trans-Alaska pipeline,[21] and continuing in 1977 to produce the North Slope oil field.[22] The construction of the pipeline cost $7.7 billion and resulted in economic booms for both Fairbanks and Anchorage.[23] "For three decades, Alaska's North Slope has produced about 20% of the domestic oil used in the United States."[24] As a result, Alaska's economy is highly dependent on the production of oil.

B. Benefits Of Offshore Drilling

With oil revenues from the North Slope reserves expected to wind down in the next few decades,[25] and production already beginning to slow,[26] the Alaskan economy would greatly benefit from offshore drilling on the Outer Continental Shelf (OCS).[27] Harvesting the

16. *Modern Alaska, Oil Discovery and Development in Alaska*, ALASKA HISTORY AND CULTURAL STUDIES, http://www.akhistorycourse.org/articles/article.php?artID=140 (last visited Sept. 17, 2014).
17. *Id.*
18. *Id.*
19. *Id.* And "[t]he Cook inlet oil and gas area is classified as [only] a moderate-sized deposit." *Id.*
20. *Id.*
21. *Id.* Authorization to construct the pipeline was hotly contested. Following approval from the House of Representatives, the Senate was equally divided 49-49 and Vice President Spiro Agnew cast the deciding vote to approve the pipeline. *Id.*
22. *Id.*
23. *See id.* ("Unemployment dropped to near zero.").
24. *Id.*
25. *Id.* (noting that the North Slope may be able to constantly produce at close to existing levels for only "thirty or forty more years").
26. *See* Beilinson, *supra* note 6 ("Prudhoe Bay's oil output was only 205 million barrels [in 2011], down more than two-thirds from its peak of 722 million in 1988.").
27. *See* RESOURCE DEVELOPMENT COUNCIL, *supra* note 15 ("According to a special report by the University of Alaska's Institute for Social and Economic Research [], without oil, the economy in Alaska today would be only half its current size. A third of Alaska's jobs, 127,000, are oil related and depend on oil production.").

goldmine of offshore oil would ensure Alaska's position as a predominant energy-producing state and could spur investment and economic growth in America's last frontier for decades to come.[28]

On a national level, the Obama administration has stated its goal is to promote "safe and responsible domestic oil and gas production as part of a comprehensive, all-of-the-above energy strategy to grow America's energy economy and continue to reduce our dependence on foreign oil."[29] Whether or not offshore drilling in Arctic Alaska occurs will affect America's demand for oil (and other forms of energy) supplied by other sources, such as on-land drilling, pipeline imports from Canada, or tanker imports from other foreign countries.[30] Currently, and for the foreseeable future, the United States will be the world's largest per-capita consumer of crude oil.[31] If drilling in the Alaskan Arctic could be conducted safely, it would help meet the United States' demand and therefore help achieve the President's goal of limiting American reliance on imported energy sources.[32] Additionally, offshore drilling is a huge economic stimulus for the national government as "[a]nnual federal proceeds from offshore leases have ranged as high as $18 billion in recent years, second only to income taxes as a revenue source."[33]

28. *See* Hobson, *supra* note 4 (noting that the Beaufort and Chukchi Seas contain an estimated 23 billion barrels of oil).

29. *Bureau of Ocean Energy Mgmt.'s Offshore Oil and Gas Leasing Under the Current Five Year Outer Continental Shelf Oil and Gas Leasing Program: Hearing Before the H. Comm. on Natural Resources,* 112th Cong. 1 (2012) (statement of Tommy P. Beaudreau, Director, Bureau of Energy Mgmt.).

30. ALAN KRUPNIK ET AL., RESOURCES FOR THE FUTURE, UNDERSTANDING THE COSTS AND BENEFITS OF DEEPWATER OIL DRILLING REGULATION 7 (2011), *available at* http://www.rff.org/RFF/Documents/RFF-DP-10-62.pdf.

31. Tyler Priest, *Yes: The Risks Are Overstated, the Benefits Understated, in Should the U.S. Expand Offshore Oil Drilling?*, WALL ST. J. (Apr. 14, 2013), http://online.wsj.com/news/articles/SB10001424127887324020504578398610851042612.

32. *But see* Hobson, *supra* note 4 ("Some industry experts have predicted that Shell's setbacks, together with the shale oil and gas boom in the lower 48, have seriously damaged the prospects for Arctic exploration."). In recent years hydraulic fracturing or "fracking" has become increasingly popular as a means of extracting natural gas. Derek Thompson, *Shut Up and Drill: Why Fracking Could End the Age of Gas Price Spikes*, THE ATLANTIC (Aug. 8, 2013), http://www.theatlantic.com/business/archive/2013/08/shut-up-and-drill-why-fracking-could-end-the-age-of-gas-price-spikes/278494/. While the practice has become increasingly controversial, fracking, and other energy sources for that matter, directly affect the economic appeal and decision-making involved in whether or not to pursue drilling operations in Arctic Alaska. *See id.* (discussing the benefits to fracking, including the flexibility that fracking brings to the supply chain).

33. Priest, *supra* note 31.

If offshore drilling could be safely conducted on the Arctic Alaskan OCS, it could provide enormous benefits for the state of Alaska and greatly reduce both the United States' dependence on foreign oil and the need to invest in alternative energy sources.

C. Existing Offshore Drilling In Alaska

There have been about thirty offshore wells drilled in the Beaufort and Chukchi Seas since the 1980s and early 1990s,[34] however, these wells are located in shallow waters, close to shore.[35] Further, there has been little leasing activity since 1996, and no new wells have begun production since then.[36] However, after the 2008 USGS report, there has been a flurry of new leasing activity.[37]

Recent exploratory drilling attempts by Royal Dutch Shell PLC ("Shell") have highlighted the technical challenges of drilling far from shore on the Alaskan Arctic OCS.[38] In 2012, Shell began exploratory drilling, planning to drill two wells in the Beaufort Sea and three wells in the Chukchi Sea.[39] However, Shell ran into numerous complications and setbacks, resulting in its drilling operations being suspended—first until July 2013,[40] and more recently until summer 2015 at the earliest.[41] Shell's issues included groundings of its vessels, violations of environmental and safety regulations, weather delays, the collapse of its spill-containment equipment, and other failures.[42] After Shell's dismal

34. Beilinson, *supra* note 6.

35. *See id.* (stating that oil production has taken place just off the Alaska coast on artificial islands for years).

36. BUREAU OF OCEAN ENERGY MGMT., LEASE SALES ALASKA OCS REGION 1 (2014), *available at* http://www.boem.gov/uploadedFiles/BOEM/About_BOEM/BOEM_Regions/Alaska_Region/Leasing_and_Plans/Leasing/Historical_Alaska_Region_Lease_Sales.pdf.

37. *See id.* (showing that, in 2008, the United States sold hundreds of new leases).

38. Greg Rehmke, *Offshore Alaska Drilling: Private Effort Versus Regulatory Constraints*, MASTER RESOURCE (July 17, 2013), http://www.masterresource.org/2013/07/drilling-oil-alaska/.

39. Beilinson, *supra* note 6. *But see Shell Charts Return to Offshore Alaska Drilling in July*, REUTERS (Dec. 4, 2013), http://www.reuters.com/article/2013/12/04/shell-alaska-offshore-idUSL2N0JJ21920131204 (demonstrating Shell's plans to use new technology—a containment dome and relief drill—in 2015, which will be able to contain spills that may occur).

40. *Shell Charts Return to Offshore Alaska Drilling in July*, *supra* note 39.

41. Joanna M. Foster, *Shell Suspends 2014 Offshore Drilling Plans in Arctic*, CLIMATE PROGRESS (Jan. 30, 2014), http://thinkprogress.org/climate/2014/01/30/3225831/shell-arctic-drilling-2014/.

42. *See id.* ("Late permits, dangerous ice conditions and embarrassing equipment failures, all forced Shell out of the Arctic before a single well had been completed. Even as the company was moving equipment to warmer

performance in the Arctic in 2012, other Arctic OCS leaseholders Statoil ASA and ConocoPhillips[43] have suspended Arctic exploration until at least 2015.[44]

D. Risks Of Arctic Drilling

While the oil industry has been instrumental in the development of the state of Alaska, it has not been without disaster. The *Exxon Valdez* oil tanker spill off Prince William Sound in 1989 was the largest oil spill in United States history before *Deepwater Horizon*.[45] The tanker spilled more than 11 million gallons of crude oil when it crashed into a reef,[46] contaminating more than 1,200 miles of shoreline,[47] killing hundreds of thousands of seabirds and marine animals,[48] and illustrating the complexity of oil-spill cleanup in Alaska as local, national, and industrial organizations struggled to respond to the spill.[49] After more than twenty years of cleanup, the environmental impact of the *Exxon Valdez* spill is still felt in Prince William Sound, and may take centuries to completely disappear.[50]

More recently, the *Deepwater Horizon* blowout at the Macondo well in the Gulf of Mexico demonstrated the devastating effects of an offshore oil drilling disaster.[51] In April 2010, British Petroleum's (BP)

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waters, one of its drill ships, the Kulluk, ran aground."); John Broder, *With 2 Ships Damaged, Shell Suspends Arctic Drilling*, N.Y. TIMES (Feb. 27, 2013), http://www.nytimes.com/2013/02/28/business/energy-environment/shell-suspends-arctic-drilling-for-2013.html (demonstrating difficulties encountered by the drillships *Noble Discoverer* and *Kulluk*).

43. *Conoco Halts Offshore Drilling in Alaskan Arctic*, AGENCE FRANCE-PRESSE (Apr. 10, 2013), http://www.globalpost.com/dispatch/news/afp/130410/conoco-halts-offshore-drilling-alaskan-arctic.

44. Priest, *supra* note 31.

45. *Ten Largest Oil Spills in the U.S.*, INFOPLEASE (2013), http://www.infoplease.com/science/environment/largest-oil-spills-united-states.html.

46. *Exxon Valdez Spill Profile*, U.S. ENVIR. PROTECTION AGENCY, http://www.epa.gov/oem/content/learning/exxon.htm (last visited Sept. 13, 2014).

47. *Oil Plagues Sound 20 Years After*, NBC NEWS (Mar. 24, 2009), http://www.nbcnews.com/id/29838444/#.UtAmGWRDsqQ.

48. *Id.*

49. *See Exxon Valdez Spill Profile*, *supra* note 46 ("The size of the spill and its remote location, accessible only by helicopter and boat, made government and industry efforts difficult and tested existing plans for dealing with such an event.").

50. *Oil Plagues Sound 20 Years After, supra* note 47. Furthermore, many of the effects of the damage may not be felt until well after an incident. For example, the economic loss of the herring industry in Prince William Sound (about $400 million in discounted foregone profits) was not realized until nearly a decade after *Exxon Valdez*. KRUPNICK ET AL., *supra* note 30, at 25.

51. *See* RESOURCES FOR THE FUTURE, CENTER FOR ENERGY ECONOMICS & POLICY,

Macondo well blew out, killing 11 men and "spewing millions of barrels of oil into the Gulf."[52] The BP *Deepwater Horizon* oil spill was the largest blowout and spill in United States history, releasing at least "50,000 barrels a day for three months for a total of at least 205 million gallons (4.9 million barrels)."[53] The spill was 19 times the size of *Exxon Valdez*.[54]

While significant oil spills are rare, and catastrophes such as the *Exxon Valdez* and *Deepwater Horizon* are even rarer, the two disasters demonstrate the enormous levels of environmental pollution and damage that can occur, as well as the difficulties involved with spill response and cleanup.[55] However, both incidents still fall short of demonstrating the potential catastrophe that could ensue if factors from both spills were combined: an oil spill caused by an offshore rig operating on the Arctic OCS.[56] The *Exxon Valdez* was only a single-hulled tanker[57] and its spill occurred in Alaska's Prince William Sound, well south of the Arctic Chukchi and Beaufort seas and closer to available respondents. The *Deepwater Horizon* spill occurred in the temperate waters of the Gulf of Mexico, one of the most ideal offshore areas to contain an oil spill in the United States.[58] While the *Deepwater Horizon* explosion occurred at depths much deeper than projected drilling sites in the Chukchi and Beaufort,[59] the extreme conditions of

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DEEPWATER DRILLING: RECOMMENDATIONS FOR A SAFER FUTURE 1 (2011), *available at* http://www.rff.org/centers/energy_economics_and_policy/Documents/Deepwater_Reccomendations.pdf (describing a pre-*Deepwater Horizon* risk assessment of the Macondo well that estimated that the largest likely spill would be only 4,600 barrels of oil, compared with the actual release of nearly 5 million barrels).

52. Campbell Robertson & John Schwartz, *How a Gulf Settlement that BP Once Hailed Became Its Target*, N.Y. TIMES (Apr. 26, 2014), http://www.nytimes.com/2014/04/27/us/how-a-gulf-settlement-that-bp-once-hailed-became-its-target.html.

53. THE PEW ENVIRONMENT GROUP, *supra* note 7, at 2.

54. KRUPNICK ET AL., *supra* note 30, at 4.

55. *See* Leslie Holland-Bartels & Brenda Pierce, *Framing the Assignment and Process*, *in* USGS, CIRCULAR, *supra* note 5, at 1, 3 (noting that numerous federal, state, and local regional communities, organizations, and agencies have a hand in spill response).

56. *See* KRUPNICK ET AL., *supra* note 30, at 26 ("Damages . . . depend on factors such as distance to shoreline and water surface, water temperature, climate, spill volume, as well as the type and number of living things, property, and economic activity risk.").

57. *Oil Plagues Sound 20 Years After*, *supra* note 47.

58. *See* THE PEW ENVIRONMENT GROUP, *supra* note 7, at 2 ("The Gulf of Mexico—with its temperate waters, proximity to large population centers and ready access to necessary infrastructure and response resources—has some of the best conditions in the United States for offshore spill response. Yet even with these advantages, the spill response was woefully inadequate.").

59. *See Rig Data: Deepwater Horizon*, RIGZONE, https://www.rigzone.com/data/rig_detail.asp?rig_id=153 (last visited Sept. 13, 2014) (showing that the Deepwater Horizon drill was drilling 4,992 feet underwater);

Arctic Alaska could make adequate response efforts incredibly challenging, if not impossible. Additionally, the remote location[60] and unpredictable effects of climate change create added difficulties and unknowns to oil development in the region.[61] While speculating on the size and environmental impact of an Arctic drilling disaster is an exercise in conjecture, it is evident that a disaster even smaller than the *Exxon Valdez* could have catastrophic consequences.[62] As a result, oil drill operators must take the utmost precautions and operate with the best available spill response and containment technologies, or alternatively be forced to pay for the consequences.

E. Lacking The Necessary Infrastructure

Currently, the remoteness of the Alaskan Arctic OCS, its small resident population, and its limited community infrastructure would reduce the likelihood for an early community response after a spill, as was seen after both *Deepwater Horizon* and the *Exxon Valdez* spills.[63] After the *Deepwater Horizon* spill, local citizen engagement was vital to early spill response,[64] and such a response would be infeasible in the sparsely populated Alaskan Arctic.[65] Due to the harsh environment, it is untenable to assume that sufficient community interest could act to combat an oil spill, or that the local communities would have the resources, including the human capital, to do so. Furthermore, it would likely be prohibitively expensive for the United States or Alaska to develop the necessary spill response infrastructure in the frontier

USGS APPRAISAL, *supra* note 1 (showing that the majority of undiscovered hydrocarbons are offshore under 500 feet of water); RESOURCES FOR THE FUTURE, CENTER FOR ENERGY ECONOMICS & POLICY, *supra* note 51, at 1 ("In the Gulf of Mexico, the probability of a company-reported incident (such as fire damage, injuries, or pollution) increases significantly with water depth."). However, it is important to note that the *Resources for the Future* accident probability study only accounts for *reported* accidents in the Gulf of Mexico, and does not isolate pollution from other types of company-reported incidents. *Id.*

60. THE PEW ENVIRONMENT GROUP, *supra* note 7, at 3 ("The Arctic Ocean's coastal villages are remote, with no connecting roads. No airports or ports along the coast are capable of supporting the influx of equipment and personnel that would be required to respond to a catastrophic spill.").

61. *Id.* at 4.

62. *See* KRUPNICK ET AL., *supra* note 30, at 2 (noting that "[t]he types of impacts and the magnitude of each [spill] depend on a variety of factors").

63. *See* Holland-Bartles & Kolak, *supra* note 12, at 147 (discussing how the lack of infrastructure available on the Arctic OCS would limit the science response in terms of data collection as was seen during *Deepwater Horizon* and *Exxon Valdez*).

64. *Id.*

65. *Id.*

environment at this point.[66]

F. Inadequate Spill Response Technologies and Capabilities

The first step in minimizing the risk of oil spills is the invention and implementation of effective technologies.[67] However, the Arctic presents special technological challenges due to ice dynamics, extreme cold, and limited light in the winter—causing many of the current tools for spill response to be nonfunctional during extreme conditions.[68] As a result, new spill response technology development and testing is necessary to ensure that if a spill were to occur, response and cleanup could be effective in the Arctic, where even trace amounts of ice can significantly reduce the efficiency of mechanical oil recovery.[69] However, current United States regulations hinder the development and improvement of oil-spill-response technology, as the regulating agencies almost never grant spill-testing permits in the Arctic.[70] While such permits for experimentation are granted in Canada and Norway, their nonexistence in the United States has led to a decline in permit applications over the past ten years.[71] This could be counteracted simply by loosening testing regulations for oil companies. Additionally, the government could commission oil-response studies, although this would likely face a large amount of environmentalist backlash. While the United States could, and does, study the experiments of other Arctic nations through information sharing,[72] directly studying the oil spill response techniques

66. *See* UNITED STATES DEP'T OF THE INTERIOR, BUREAU OF OCEAN ENERGY MGMT., BUDGET JUSTIFICATIONS AND PERFORMANCE INFORMATION, FISCAL YEAR 2014 (2014) (showing that the Bureau of Ocean Management's (BOEM) budget is not scheduled to significantly increase in the near future).

67. Holland-Bartles & Kolak, *supra* note 12, at 111.

68. *Id.* at 130.

69. *Id.* at 133, 145.

70. *See id.* at 145 ("A major point regarding the near-term possibilities for new field trials with oil revolves around the likelihood of obtaining appropriate permits for such experimentation . . . [but] no spills in U.S. waters for experimental purposes have been allowed for nearly two decades.") (internal citations omitted).

71. *Id.*; *see also* Christina Nunez, *What Happens When Oil Spills in the Arctic?*, NAT'L GEOGRAPHIC (Apr. 23, 2014), http://news.nationalgeographic.com/news/energy/2014/04/140423-national-research-council-on-oil-spills-in-arctic/ ("[P]ermits to deliberately release oil into U.S. waters for research have become harder to obtain in the United States in the past 15 years.").

72. *See id.* ("The EPPR Working Group [consisting of Canada, Denmark, Greenland, Finland, Iceland, Norway, Russia, and Sweden,] provides a forum in which member governments and indigenous peoples work to better prevent, prepare for, and respond to environmental threats from discharges of pollution from activities which take place in the Arctic.").

in the Alaskan Arctic would have obvious benefits for developing and improving spill-response and technological techniques tailored to the Arctic environment.[73]

Currently, inadequate spill-response technology, coupled with the insufficient infrastructure in Arctic Alaska, creates a strong possibility that, in the event a large oil spill occurred, the results would be disastrous. Due to the enormous expense associated with improving the necessary infrastructure and technological improvements, United States laws and regulations should incentivize the oil industry to develop the research, technology, and infrastructure to ensure that drilling is conducted as safely as possible.

II. CURRENT REGULATORY APPROACHES

The United States employs a hybrid of statutory and regulatory requirements, along with civil liability devices, to regulate the offshore oil industry. These requirements employ both prescriptive commands[74] and management-based regulations,[75] and are monitored and enforced by federal and state agencies including the Bureau of Ocean Energy Management (BOEM) and the Bureau of Safety and Environmental Enforcement (BSSE).[76]

A. Statutes

The primary piece of legislation governing offshore operations is the Oil Pollution Act of 1990 (OPA).[77] In the event of a spill, OPA requires that the responsible party pay all cleanup costs, but limits further liability to $75 million for injuries to third parties.[78] The statute

73. *See* NORWEGIAN PETROLEUM DIRECTORATE, ENVIRONMENTAL AND CLIMATE CONSIDERATIONS IN THE NORWEGIAN PETROLEUM SECTOR 58 (2013) ("The environmental effects of any acute oil discharges depend on more factors than just the size of the discharge. Among other things, the discharge site, the season, wind speed, currents and the efficiency of the emergency preparedness are crucial for the scope of damage.").

74. *See* discussion *infra* Part III.C.

75. *Id.*

76. *See* Holland-Bartels & Pierce, *supra* note 55, at 3 ("[T]here are multiple Federal, State, and local and regional communities and organizations that influence the ultimate decision outcome, each of which has downstream responsibilities in the oil and gas leasing process and can have differing views of what science information is essential."); Clow et al., *supra* note 5, at 3 ("The public also provides input during the Federal leasing process at many points. In the larger public policy arena, public opinion also influences both the political domain and the use of litigation tools.").

77. 33 U.S.C. § 2701–61 (2012).

78. § 2704(a)(3) (demonstrating that for an offshore facility the responsible

further provides for the channeling[79] of strict liability—up to the $75 million cap—toward specific parties;[80] a requirement to prove financial responsibility of at least $35 million;[81] and a $1 billion Oil Spill Liability Trust Fund created by per-barrel taxes on oil to cover environmental and private damages if a polluter is unwilling or unable to pay,[82] or should damages exceed the $75 million cap.[83]

OPA's channeling and strict liability create an efficient system that reduces the number of determinations a court needs to make[84] and eases the litigation process for claimants.[85] While these mechanisms provide for a relatively seamless system of claims under the OPA, the $75 million cap is an insufficient amount to cover the environmental and private damages that can result from a spill.[86] However, there are exemptions to the cap. If a spill was caused by "gross negligence or willful misconduct

party is only accountable for damages up to $75,000,000 plus removal costs); *see also* § 2701(31) ("[R]emoval costs [are] the cost[s] of removal that are incurred after discharge of oil has occurred or, in any case in which there is a substantial threat of a discharge of oil, the costs to prevent, minimize, or mitigate oil pollution from such an incident.").

79. *See* MARK A. COHEN ET AL., RESOURCES FOR THE FUTURE, DEEPWATER DRILLING: LAW, POLICY, AND ECONOMICS OF FIRM ORGANIZATION AND SAFETY 28 (2011), *available at* http://www.rff.org/documents/RFF-DP-10-65.pdf ("Channeling is the identification, before litigation, of a particular party that will be the defendant in an action to recover spill-related damages . . . . [The] OPA [] makes the holder of the drilling permit the responsible party for spills from offshore platforms.").

80. *See* NATHAN RICHARDSON, RESOURCES FOR THE FUTURE, DEEPWATER HORIZON AND THE PATCHWORK OF OIL SPILL LIABILITY LAW 2 (2010) (showing that strict liability and channeling simplifies litigation as it is not necessary for courts to determine which party caused the spill).

81. 33 U.S.C. § 2716(c)(1)(A) (2012). Evidence of $35,000,000 in financial responsibility is necessary for offshore facilities located seaward of the seaward boundary of a state, § 2716(c)(1)(B)(i)., however, the President has the power to increase the level of financial responsibility up to $150,000,000, § 2716(c)(1)(C). Financial responsibility may be established by: evidence of insurance, surety bond, guarantee, letter of credit, qualification as self-insurer, or other evidence of financial responsibility. § 2716(e). In Alaska, the dollar amounts required to demonstrate financial responsibility changes every third year on October 1st based on the Consumer Price Index. ALASKA STAT. § 46.04.045 (2012).

82. *See* 33 U.S.C. § 2712(a)(1) (2012) (establishing that the Oil Spill Liability Trust Fund is to be used for "the payment of removal costs"); NICHOLAS LORIS ET AL., HERITAGE FOUNDATION, OIL SPILL LIABILITY: A PLAN FOR REFORM 2 (2010), *available at* http://www.heritage.org/research/reports/2010/08/oil-spill-liability-a-plan-for-reform ("The [Oil Spill Liability Trust Fund] is financed by an eight-cent-per-barrel tax on imported and domestic oil.").

83. RICHARDSON, *supra* note 80, at 3.

84. *Id.* at 5.

85. Strict liability also reduces a claimant's legal costs as the plaintiff need not show the defendant was negligent, only that they suffered some economic loss caused by the operator's spill. COHEN ET AL., *supra* note 79, at 28.

86. *See* discussion *infra* Part III.A.

or by violation of federal regulations," there is no liability cap.[87] For example, after the *Exxon Valdez* spill, "the federal government sought recovery of natural resource damages . . . by filing criminal charges under the Migratory Bird Treaty Act (because the spill caused the death of protected birds) and the Refuse Act (because the spill dumped "refuse" into the navigable waters of the United States)."[88] Exxon reached a $100 million settlement agreement for restitution damages payable to the federal and state government.[89] Similarly, many plaintiffs that brought claims against BP in the aftermath of *Deepwater Horizon* have done so under the Clean Water Act (CWA),[90] which allows penalties up to $1,100 per barrel, and up to $4,300 per barrel in the case of gross negligence or willful misconduct.[91] Furthermore, plaintiffs may be allowed to bring claims in state courts, as OPA does not preempt state laws governing oil spill liability and compensation.[92]

While these complementary or alternative statutes may allow plaintiffs to bring claims that greatly exceed the $75 million cap,[93] they may still not completely compensate aggrieved parties. Further, these other statutes generally do not include the efficiency of the channeled strict liability of OPA, resulting in drawn-out litigation.[94]

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87. 33 U.S.C. § 2704(c)(1) (2012) (stopping short of limiting liability for instances of "(A) gross negligence or willful misconduct of, or (B) the violation of an applicable Federal safety, construction, or operating regulation by, the responsible party, an agent or employee of the responsible party, or a person acting pursuant to a contractual relationship with the responsible party").

88. RICHARDSON, *supra* note 80, at 4.

89. *Settlement,* EXXON VALDEZ OIL SPILL TRUSTEE COUNCIL, http://www.evostc.state.ak.us/index.cfm?FA=facts.settlement (last visited Oct. 2, 2014). This figure does not include the hundreds of millions in Exxon's civil settlement and tens of millions involved in Exxon's criminal plea agreement. *Id.*

90. Pub. L. No. 92-500, 86 Stat. 816.

91. *Id.*; *see* KRUPNICK ET AL., *supra* note 30, at 44 ("For the BP Gulf oil spill, this could amount to $5 billion or $20 billion in fines.").

92. RICHARDSON, *supra* note 80, at 4; *see, e.g.*, ALASKA STAT. §§ 46.04.010, 46.04.020 (2012) (demonstrating that Alaska can, under state law, bring unlimited claims for reimbursement for removal and cleanup expenses incurred as a result of oil operations). However, the Alaska statute does not appear to speak in regards to private claims.

93. *See, e.g.*, KRUPNICK ET AL., *supra* note 30, at 44 (showing that BP may face more than $20 billion in fines under the Clean Water Act).

94. *See, e.g.*, Kiley Kroh, *25 Years After Exxon Valdez Oil Spill, Company Still Hasn't Paid For Long-Term Environmental Damages*, CLIMATE PROGRESS (July 15, 2013), http://thinkprogress.org/climate/2013/07/15/2301451/25-years-after-exxon-valdez-oil-spill-company-still-hasnt-paid-for-long-term-environmental-damages/. The original 1991 *Exxon Valdez* civil settlement contained a 'reopener window' during which the governments could make a claim for up to an additional $100 million for expenses related to the restoration of resources damaged by the spill. *Id.* In 2006 the Federal government and State of Alaska exercised this option claiming an additional $92 million needed for cleanup, but

B. Agencies

In the wake of the Deepwater Horizon disaster, and responding to allegations of agency capture, the regulatory agency responsible for policing offshore drilling was divided into two agencies: the Bureau of Ocean Energy Management (BOEM) and the Bureau of Safety and Environmental Enforcement (BSEE).[95] The creation of two independent regulatory agencies separated many of the functions that had been considered conflicts of interest under the previous agency, the Minerals Management Service (MMS), later renamed the Bureau of Ocean Energy Management, Regulation and Enforcement (BOEMRE). The division of BOEM and BSEE allows for "greater independence, more budgetary autonomy and clearer senior leadership focus" for both engineers and inspectors.[96] Furthermore, the structures of both new agencies "[s]trengthens the role of environmental review and analysis."[97] As it now stands, BOEM is responsible for managing environmentally and economically responsible development of the nation's offshore resources,[98] while BSEE is responsible for the oversight and regulation of safety and environmental protection.[99]

The creation of two independent agencies, paired with various

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Exxon has yet to pay. *Id.*; *see also* Mica Rosenberg, *Analysis: BP's U.S. Gulf Oil Spill Settlement Challenges May Backfire*, REUTERS (Jan. 15, 2014), http://www.reuters.com/article/2014/01/15/us-bp-settlement-analysis-idUSBREA0E16820140115 (showing that BP has begun to challenge many of the claims filed against it after Deepwater Horizon).

95. Press Release, Dep't of the Interior, Salazar Receives Implementation Plan for Restructuring the Department's Offshore Energy Missions, (July 9, 2010), *available at* http://www.doi.gov/news/pressreleases/Salazar-Receives-Implementation-Plan-for-Restructuring-the-Departments-Offshore-Energy-missions.cfm ("The reform and reorganization is based on the premise that the missions formerly carried out by the Minerals Management Service must be clearly defined and distinct from each other. In short, we must eliminate real and perceived conflicts within the organization."). A third agency was also created; the Office of Natural Resources Revenue is now responsible for the function of revenue collection and resides under the jurisdiction of the Department of Interior's Office of Policy, Management and Budget. *The Reorganization of the Former MMS*, BUREAU OF OCEAN ENERGY MGMT., http://www.boem.gov/About-BOEM/Reorganization/Reorganization.aspx (last visited Nov. 9, 2014).

96. *The Reorganization of the Former MMS*, *supra* note 101.

97. *Id.*

98. *Fact Sheet: The BSEE and BOEM Separation,* DEP'T OF INTERIOR 1 (Jan. 19, 2011), http://www.doi.gov/news/pressreleases/upload/01-19-11_Fact-Sheet-BSEE-BOEM-separation-2.pdf. ("Functions [of BSEE] will include: All field operations including Permitting and Research, Inspections, Offshore Regulatory Programs, Oil Spill Response, and newly formed Training and Environmental Compliance functions.").

99. *Id.*

initiatives such as Implementation Teams and a new recusal policy to help employees deal with conflicts of interest,[100] has increased confidence in the government's ability to properly regulate the offshore oil industry.[101] However, the agencies responsible for regulating offshore drilling are still plagued with many of the same issues that previously existed, such as insufficient financing, under-staffing, and the inability to recruit qualified staff.[102] Due to funding restrictions, it is unlikely that these agencies will be able to hire the number of qualified individuals necessary to properly inspect and regulate the oil industry, which can pay top dollar for the best engineering talent.[103] Because government agencies simply do not have the resources to adequately regulate the offshore oil industry, it is necessary that regulations incentivize the oil industry to operate in the safest manner possible by forcing them to pay the price when something goes wrong.

C. Regulatory Schemes

While there are numerous regulatory approaches to offshore drilling, most of these tools are parts within larger regulatory schemes. The current regulatory regime in the United States integrates command-and-control (prescriptive) regulations, inspections and fines,[104] strict liability on damages (up to a cap of $75 million),[105] and management-based regulations—which were added in the aftermath of *Deepwater Horizon*.[106]

1. Command and Control Technical Standards

The *Deepwater Horizon* accident at the Macondo well on April 20,

100. *Statement of Michael R. Bromwich*, BUREAU OF SAFETY AND ENV'T ENFORCEMENT 1, 5 (Sept. 15, 2011), http://www.bsee.gov/uploadedFiles/BSEE/Newsroom/Congressional_Testimony/MRBtestimony110915.pdf.

101. ST Conference Preview, *NOIA 2013 Annual Meeting Review*, SEA TECH. MAGAZINE, http://www.sea-technology.com/features/2013/0613/5_NOIA13_Review.php (last visited May 16, 2014).

102. John M. Broder & Clifford Krauss, *Regulation of Offshore Rigs is a Work in Progress*, N.Y. TIMES (April 17, 2011), *available at* http://www.nytimes.com/2011/04/17/us/politics/17regulate.html?pagewanted=all&_r=0.

103. *See id.* (noting that oil companies in some cases pay twice the government salary for their petroleum engineers).

104. *See* discussion *infra* Part III.C.

105. 33 U.S.C. § 2704(a)(3) (2012).

106. Lori S. Bennear, *Beyond Belts and Suspenders, Promoting Private Risk Management in Offshore Drilling* 1 (Duke Env't Econ. Working Paper Series, Working Paper EE 11-11, 2011), *available at* http://sites.nicholasinstitute.duke.edu/environmentaleconomics/files/2013/01/WP-EE-11-11.pdf.

2010 was the result of multiple safety-system failures. The explosion, and subsequent oil spill that occurred, resulted from a perfect storm of what could go wrong. "The key failure at the Macondo well was that the cement job failed to properly seal the hydrocarbons from the well."[107] This was caused by disagreements about the design of the production casing, disagreements over how many centralizers were necessary to keep the casing centered in the well, and arguments over the makeup of the cement slurry.[108] While these decisions contributed to the initial leakage, there were a number of safety systems in place that should have recognized the leakage, and prevented the explosion and subsequent spill.[109] Further, the blowout preventer (BOP) should have been activated first manually, and if that failed, by a deadman system. Neither system activated the sheer rams in this instance, which would have closed the well and blocked the massive oil spill that ensued.[110]

Before the *Deepwater Horizon* disaster, the United States' oil industry was regulated by a set of "highly prescriptive command-and-control regulations requiring significant redundancy in safety systems,"[111] coupled with the current $75 million strict liability regime against the operator.[112] Additional damages were covered by the $1 billion supplemental fund.[113] In theory, this combination was thought to prescribe the proper technical specifications, while also providing the oil companies the incentive to manage risk.[114] The redundant technologies were intended to prevent an accident if one or more technical or human errors should occur.[115] However, while these multi-safety mandates sound good on paper, insufficient government oversight may have incentivized industry managers to cut corners when implementing safety procedures because the chance of a major accident is slight. More importantly, even if these prescriptive safety-devices are in place, they

107. *Id.* at 5
108. *Id.* at 6.
109. *Id.* at 7.
110. *Id.* at 4–8. A full description of elements that led to the Deepwater Horizon disaster are beyond the scope of this Note but can be found elsewhere. *E.g.*, *Investigative Report – Island Operating Company*, UNITED STATES DEP'T OF THE INTERIOR, (May 24, 2010), http://www.govexec.com/pdfs/052510ts1.pdf.
111. Bennear, *supra* note 106, at 2.
112. 33 U.S.C. § 2704(a)(3) (2012).
113. § 2712(a)(1); *Testimony of National Pollution Funds Center Director Craig A. Bennett*, UNITED STATES DEP'T OF HOMELAND SECURITY (Dec. 6, 2011), http://www.dhs.gov/news/2011/12/06/testimony-craig-bennett-director-national-pollution-funds-center-house-committee (discussing the supplemental Oil Spill Liability Trust Fund).
114. Bennear, *supra* note 106, at 2–3.
115. *Id.* at 9–10.

are certainly not foolproof.[116]

2. Risk Management Plans / Management Based Regulation

While specific technical regulations are encouraged and still required,[117] the United States shifted to a more management-based regulatory (MBR) approach in the wake of *Deepwater Horizon*: "MBR does not mandate specific means to achieving regulatory ends, but instead mandates that firms engage in systematic planning efforts designed to better achieve the regulatory end."[118] Through such a scheme, many activities are left unregulated, incentivizing the industry to operate safely in order to avoid fines and penalties associated with environmentally detrimental activities.[119] Many other countries—including the United Kingdom, Norway, and Canada—regulate offshore drilling through MBRs using safety regulations with similar basic requirements (prescriptive commands) that each drilling facility installation must provide. For example, in the United Kingdom each drilling installation must provide the following:

- Basic narrative description of the ways in which the installation was designed and will be operated to minimize risk.
- Descriptions and diagrams of the installation and all connections and wells that are planned for the installation.
- Information on the meteorological and oceanographic conditions as well as geologic conditions of the seabed.
- Descriptions of the types of operations and the number of people onboard the installation.
- Description of methods to control pressure, prevent leaks and blowouts, and minimize the effects on the subsea beds.
- A description of any pipeline capable of causing an accident with information on the dimensions and layout, the

116. *See* discussion *infra* Part III.A. (describing what went wrong at the Macondo well).

117. *Fact Sheet: The Drilling Safety Rule,* BUREAU OF OCEAN ENERGY MGMT., REGULATION AND ENFORCEMENT 1–2, http://www.doi.gov/news/pressreleases/upload/093010_fact-sheet_drilling-safety-rule.pdf (listing requirements for various practices to isolate potential flows during well construction).

118. Bennear, *supra* note 106, at 13.

119. There are numerous types of policies that can be considered "management-based," such as: "firms must review their production process, identify alternative production techniques or input mixes that would achieve the public goal, evaluate the feasibility of these alternatives and report on these evaluations"; "firms must review supply chains and distribution chains including all subcontractors, identify changes in all operations that could promote the public goal, evaluate the feasibility of these alternatives and report on these evaluations"; and "regulated firms must obtain periodic third-party review and certification of their management plans and evaluations." *Id.* at 12–14.

evacuation plan and location of temporary refuge for workers.
- A completed risk assessment with respect to pipelines capable of causing an accident.
- Plans for the detection of toxic and flammable gases and plans to detect, mitigate and prevent fires.[120]

Echoing the United Kingdom's policies, after *Deepwater Horizon* the United States implemented similar MBRs intended to coexist with both pre-existing and newly-added command-and-control regulations.[121]

MBRs work well in industries, such as the oil drilling industry, in which it is difficult for regulators to notice violations because of low accident rates.[122] MBRs are particularly well-suited for offshore oil regulation because they put the impetus on the oil companies to either operate safely or face the risk of penalties if they cause an accident. However, under the current United States regulations, there is little to ensure that management-based plans are fully implemented, and they may not actually drive industry technological improvement.[123] One cause of this is the low $75 million liability cap for violators.[124]

3. New Tools, Same Old Issues

While regulations have become more comprehensive and regulatory agencies have improved since the *Deepwater Horizon* spill, industry regulation still suffers from a number of shortcomings. The regulatory agencies simply do not have the resources, manpower, or expertise to adequately monitor the behemoth offshore drilling industry.[125] The United States' shift toward an MBR system curbs much of the need for a comprehensive regulatory enforcement agency, as it places larger incentives on operators to undertake their own safety planning. However, the underlying issue remains: the penalties for accidents are insufficient to truly incentivize operators to take the

120. *Id.* at 15–16.

121. *Id.* at 16.

122. *Id.* at 17; *see* 30 CFR § 250.401(a) (2014) (requiring operators to "use the best available and safest drilling technology to monitor and evaluate well conditions").

123. Bennear, *supra* note 106, at 3.

124. BOEM has proposed to increase the $75 million cap to $134 million. *BOEM Publishes Proposed Adjustment to Limit of Liability for Offshore Facilities that Cause Oil Spills*, BUREAU OF OCEAN ENERGY MGMT., http://www.boem.gov/press02212014/ (last visited May 16, 2014) [hereinafter *BOEM Publishes Proposed Adjustment*]. One hundred thirty-four million dollars in 2014 is roughly seventy-five million dollars in 1990, adjusted for inflation based on the Consumer Price Index. *CPI Inflation Calculator*, U.S. DEP'T OF LABOR, BUREAU OF LABOR STATISTICS, http://data.bls.gov/cgi-bin/cpicalc.pl?cost1=75%2C000&year1=1990&year2=2014 (last visited October 3, 2014).

125. Broder & Krauss, *supra* note 102.

utmost safety precautions, to make environmentally-conscious decisions, and to drive technological improvement. It is safe to assume that oil industry decision makers are profit-maximizers and will make their respective decisions through a cost-benefit analysis examining potential safety and environmental considerations, and weighing a "safety-focused approach [versus] the expected costs of more aggressive decisions."[126] Because OPA sets a liability cap of $75 million,[127] operators may be incentivized to forego the safest course of action (as long as they do not violate another statute). Additionally, the limit on liability may stunt industry incentives to develop safer technologies, as operators may be more willing to simply pay a fine rather than make efforts to avoid one. Developing safety technologies is especially important in the Arctic OCS due to the extreme conditions, its remote location, and a lack of existing infrastructure available for response in case of an accident.[128]

Furthermore, while the limited liability cap may cause operators to avoid taking the safest course of action or investing in better technologies, it also creates the potential for situations where damaged parties may not be fully compensated for their damages (even with the supplementary fund of $1 billion).[129] Even if claimants are able to eliminate an operator's protection under the cap by demonstrating gross negligence or violations under other federal statutes,[130] the issue of payment remains. Under the OPA, operators may only be required to demonstrate financial responsibility of $35 million.[131] Even with the $1

126. Bennear, *supra* note 106, at 11 (observing that the expected costs of a more conservative safety-based approach may include time spent waiting for second opinions, additional analysis, or additional materials and equipment, and that the cost of more aggressive decisions are expectations of fines for either violations, accidents, or property damage).

127. 33 U.S.C. § 2704(a)(3) (2012).

128. *See* THE PEW ENVIRONMENT GROUP, *supra* note 7, at 2–4 (detailing that the Alaskan Arctic is a harsh and unforgiving environment, characterized by sea ice for most of the year, freezing temperatures, months of darkness, extended periods of heavy fog, and weeklong storms approaching hurricane strength; and furthermore, that the Alaskan Arctic's remote location is sparsely populated and the necessary infrastructure needed in the case of an accident is virtually non-existent).

129. For example, spill damages could greatly exceed a firm's ability to pay out even with the additional security blanket of the $1 billion supplementary fund. Oil Spill Liability Trust Fund, 26 U.S.C. § 9509 (2012) (establishing the $1 billion trust fund).

130. *See* 33 U.S.C. § 2704(c)(1) (2012) (explaining that liability is not limited in instances of "(A) gross negligence or willful misconduct of, or (B) the violation of an applicable Federal safety, construction, or operating regulation by, the responsible party, an agent or employee of the responsible party, or a person acting pursuant to a contractual relationship with the responsible party").

131. § 2716(c)(1)(B)(i). This amount may be increased to $150 million if a facility's estimated worst-case discharge volume exceeds 105,000 barrels. *See Oil*

billion supplementary fund, such a low level of financial responsibility could prove highly troublesome in the instance of a major accident or insolvent operator[132]—resulting in damaged parties or federal and state governments being left to clean up an operator's mess and pay the bill.

III. RECOMMENDED REGULATORY APPROACH

The United States' current regulatory scheme does not properly incentivize operators to invest in improved safety and response technologies, nor does it ensure that injured third parties are adequately compensated.[133] While there are a number of regulatory changes that could incentivize the industry to operate safer and invest in technological improvements, it is first necessary to increase the existing limited liability of operators in order to properly align industry safety incentives with the risk of operation. It is also necessary for the United States to create an adequate payment scheme to compensate innocent victims in the event that an operator cannot pay. To accomplish these goals, the United States should adopt a regulatory regime that: (1) significantly increases the liability cap; (2) requires increased financial responsibility in the form of an upfront deposit-bond or third-party insurance; (3) establishes a risk-based premium fund; and (4) creates a supplementary fund made up of contributions from firms that produce above a specified level. These proposals are interconnected and compliment each other to form a comprehensive regime to incentivize industrial investments in safety and technological improvements, and to ensure that damaged third parties are more adequately compensated.

A. Increase The Limited Liability Cap

Strict liability creates an efficient and cost-effective system because plaintiffs only need to prove that they suffered damage as a result of the defendant's conduct, rather than defendant's negligence.[134] "Strict liability therefore has the advantage of greatly simplifying litigation and

Spill Financial Responsibility for Offshore Facilities, 63 Fed. Reg. 42,699, 42,714 (to be codified at 30 C.F.R. pts. 250 & 253). However, "firms with more than one facility need to show financial responsibility for *only* the facility with the highest requirement. A firm with 10 offshore drilling platforms, for example, must demonstrate only $35 million, not $350 million." COHEN ET AL., *supra* note 79, at n.23 (emphasis added).

132. *See* KRUPNIK, ET. AL, *supra* note 30, at 38 (noting a firm may declare bankruptcy or have inadequate resources to fully absorb the damages it is responsible for under the law).

133. *See* discussion *infra* Part III.D.

134. COHEN ET AL., *supra* note 79, at 28.

the cost to the government in particular."[135] However, it is hard to defend OPA's strict liability cap of only $75 million.[136] It is almost universally accepted that the cap is insufficient to cover the potential third party damages caused by a large spill.[137] Recently, the United States Department of Interior proposed raising the strict liability cap to $134 million.[138] However, this proposed cap merely keeps with inflation,[139] and would be insufficient to cover the damages created by a large spill in the Alaskan Arctic.[140] While some have called for the removal of the cap and to install unlimited strict liability for operators,[141] an unlimited cap would be unadvisable, as it would deter industry activity in the Arctic and make it nearly impossible for some operators to find insurance.[142] As a result, an unlimited cap could lead to a de facto moratorium on offshore activities.[143]

However, while unlimited liability may be untenable, and even undesirable, the United States should still raise its liability cap to a level

135. *Id.* at 29.

136. Nathan Richardson, Presentation at Duke University Energy Initiative's Panel on Arctic Oil/Gas Drilling: Lessons from the Past and Implications for the Future (Apr. 25, 2014).

137. *Id.*; *see also* LORIS ET AL., *supra* note 82 ("Nearly everyone agrees that the cap is too low . . . ."); Jennifer Larino, *Obama Administration to Raise Oil Spill Liability Cap*, THE TIMES-PICAYUNE (Feb 21, 2014), http://www.nola.com/business/index.ssf/2014/02/obama_administration_set_to_ra.html (describing how, in 2010, Senators Bill Nelson, Robert Menendez, and the late Frank Lautenberg introduced a bill that would have increased the liability cap to $10 billion, but it was shot down as opposition argued that such a sharp increase would decrease oil and gas exploration investment).

138. *BOEM Publishes Proposed Adjustment*, *supra* note 124.

139. *Id.*

140. *See* discussion *supra* Part I.D. (describing the massive amounts of environmental damages from both the *Exxon Valdez* spill, which spilled 11 million barrels, and *Deepwater Horizon* oil spill, which spilled 4.9 million barrels—both of which resulted in billions of dollars in damages).

141. *See* Mark A. Cohen, Professor at Vanderbilt University, Presentation at Duke University Energy Initiative's Panel on Arctic Oil/Gas Drilling: Lessons from the Past and Implications for the Future: Law, Policy & Incentives for Firms to Reduce Risk of Spills (Apr. 25, 2014) [hereinafter Cohen, Presentation at Duke University] ("As an economist, if you have unlimited liability then you're done, but that's not politically reasonable.")

142. *See id.*; Michael Faure, Maastricht University, Comment at Duke University Energy Initiative's Panel on Arctic Oil/Gas Drilling: Lessons from the Past and Implications for the Future: U.S. Offshore Spill Liability (Apr. 25, 2014) ("The price [the public] pay[s] for strict liability, is capped liability.")

143. One could certainly argue that until sufficient spill response technology is developed, the United States should implement an unlimited liability scheme that is specific to the Arctic. However, this may have the effect of causing even the largest energy companies to forego Arctic offshore drilling and instead focus on alternative energy sources.

on par with its offshore drilling international peers.[144] Under the Offshore Pollution Liability Agreement (OPOL), the United Kingdom imposes strict liability up to a cap of $250 million.[145] Canada has recently proposed raising its strict liability cap from $40 million to $1 billion.[146] Raising the cap to at least $1 billion,[147] and subsequently raising a firm's financial responsibility requirement,[148] would provide a greater safety net for those damaged and would not unduly burden oil companies. Furthermore, boosting the amount for which a firm can be strictly liable by $925 million should provide a greater incentive for operators to conduct operations in a safer manner and invest in prevention and response technologies. The cost of raising the cap may, however, be transferred to the public via higher prices, and would likely make it infeasible for some non-major operators to enter the Arctic.[149]

While increasing the amount of strict liability is a productive first step in inducing operators to increase safety and in ensuring that injured

144. Mark A. Cohen suggests that the liability cap should be set for each individual well—set at an amount equal to the calculated worst-case scenario cost. Cohen, Presentation at Duke University, *supra* note 141. While interesting and certainly possible, such a scheme has the potential for a number of issues such as over- or under-valuing. For example, estimating the potential damage of a spill beforehand could grossly underestimate the damages (and coverage). This is currently one of the issues with OPA's financial responsibility requirement that sets a firm's financial responsibility at between $35 million and $150 million based on potential estimated damages. 33 U.S.C. § 2716(c) (2012). Further, valuing each well individually could create a prohibitive system where industry would avoid certain wells due to the enormous strict liability caps attached. The former point would be of a particular concern in the Arctic as it is almost impossible to accurately estimate spill damages at this juncture. *See generally* Holland-Bartles & Kolak, *supra* note 12.

145. THE OFFSHORE POLLUTION LIAB. ASS'N LTD., OPOL (2010), *available at* http://www.opol.org.uk/downloads/opol-guidelines-oct10.pdf.

146. *Oil Spill Liability and Regulatory Regime: Canada*, LIBRARY OF CONGRESS, http://www.loc.gov/law/help/oil-spill-liability/canada.php (last visited May 16, 2014). Canada's Bill C-22, titled "The Energy Safety and Security Act" would raise strict liability for offshore drilling to one billion dollars and operators would have to demonstrate financial responsibility of one billion dollars. H. Commons C-22, 41st Parl., 2d Sess. (Can. 2014), *available at* http://www.parl.gc.ca/HousePublications/Publication.aspx?Language=E&Mode=1&DocId=6395896&File=4.

147. This is a theoretical, rather than a hard number, as one billion dollars would be manageable for many oil companies and would greatly increase the strict liability protection under OPA.

148. Firms only need to demonstrate financial responsibility of $35 million to $150 million. 33 U.S.C. § 2716(c) (2012); s*ee also* discussion *infra* Part III.B.

149. *See* COHEN ET AL., *supra* note 79, at 2 ("Significantly increasing liability caps and financial responsibility may push some non-major oil exploration companies out of the Gulf if they were unable to afford liability insurance. These effects are likely outweighed by small firms' failure to fully internalize social costs.").

third parties can recover damages, it is also necessary to increase the level of required financial security.[150]

B. Increase Proof Of Financial Responsibility & Third-Party Insurance

The basic idea of financial responsibility is simple: "to engage in activities that expose outside parties to risks, a firm must demonstrate that it has sufficient resources—either its own (self-insurance) or third-party insurance coverage—to compensate injured parties in the event of an accident."[151] In principle, the financial requirement "should be sufficiently high to cover the costs of the worst-case spill."[152] Under OPA, firms are only required to demonstrate financial responsibility of between $35 million and $150 million, depending on the size of potential worst-case discharge volume.[153] As OPA currently has a strict liability cap of $75 million, it is inconsistent that some operators may be required to have only $35 million in financial responsibility, as those operators may be unable to cover the liability they are legally obligated to if a spill causes significant damage.[154] At a minimum, firms should be required to demonstrate financial responsibility up to the adjusted cap ($1 billion, as suggested above). In theory, simply increasing the responsibility requirement should increase firms' incentives to operate in a safer manner, as they are putting more resources on the line. However, two financial responsibility instruments—(1) an upfront deposit-refund system and (2) third-party insurance—each provide additional incentives for operators to invest in safety in addition to providing money to compensate for damages. Of these, third-party insurance is preferable.

150. *See id.* ("Liability caps . . . are particularly effective when complemented by financial responsibility requirement or third-party insurance; raising liability caps without raising financial responsibility requirements or requiring insurance would have little effect on safety culture at small firms that would declare bankruptcy because of an inability to pay damages.").

151. *Id.* at 32.

152. *Id.*

153. 33 U.S.C. § 2716(c) (2012).

154. For example, if a firm is required to have only $35 million in financial responsibility, but is strictly liable for $60 million in damages in the instance of a spill and goes bankrupt, the firm may be unable to adequately compensate the damages it is responsible for under OPA. In such an instance, the liability cap is effectively reduced to the amount of financial responsibility.

1. Deposit-Refund (Bond)

A deposit-refund device, or bond, is a system in which "the regulated entity (consumer, firm, etc.) pays an upfront deposit that is refunded, if and only if, the entity follows through on required actions."[155] The deposit-bond system "is frequently used when there are many regulated entities, so enforcement of standards is expensive and when costs of mitigating damage are high . . . . For economic efficiency the deposit is set equal to the marginal social costs of improper disposal."[156]

If such a system were implemented for offshore drilling it would "involve an upfront 'security deposit' for all well operations"[157] which would be refunded upon drilling completion and a satisfactory safety inspection.[158] Operators that consistently receive strong safety scores from third party auditors would be rewarded with a discount on future security deposits.[159]

While the incentives created by an upfront deposit are similar in theory to the incentives provided by strict liability, behavioral economics suggest that "shifting payment upfront makes safety more salient and may result in increased attention to safety even if the monetary costs are not changed."[160] Furthermore, paying upfront reduces the chance that an operator will be unable to pay for damages from securitized collateral that is no longer available.[161] The deposit refund system provides a further incentive for firms over pure strict liability in the sense that it rewards firms with strong safety records by reducing future deposit payments, or conversely punishes firms with poor performance records by increasing the cost of operation.[162]

2. Third-Party Insurance

Under the current financial responsibility requirements, operators are not required to have insurance if they can demonstrate financial responsibility through other means such as surety bonds, guarantees, letters of credit, qualification as a self-insurer, or other evidence of

155. Bennear, *supra* note 106, at 24.
156. *Id.* (citations omitted).
157. *Id.*
158. *Id.*
159. *Id.* at 25.
160. *Id.* at 24–25 (discussing behavioral economics studies on cheating).
161. For example, where an operator had securitized some of its equipment to prove financial responsibility as required under OPA and that equipment was lost in an accident.
162. Bennear, *supra* note 106, at 25.

financial responsibility.[163] Most of the major operators have their own captive insurance, while smaller operators may have to demonstrate that their assets are at least enough to cover expected damages from a spill. While it is most important that firms are able to demonstrate financial responsibility, insurance from an independent third party adds additional incentives for operators to perform safely through adjustable premiums and a third-party monitoring role.[164]

Third-party insurers can incentivize operator safety by instituting a risk-based pricing model where "firms with identifiably higher risk exposures pay higher rates (creating an incentive to reduce risk)."[165] The insurer would undertake the role of a third-party monitor to assess the level of risk—incentivizing firms to increase safety in order to reduce their insurance premiums.[166] Monitoring by third-party insurance agencies is preferable to government monitoring because insurance agencies have greater resources to hire more qualified monitors and, more importantly, have a stronger incentive to adequately monitor operations as they will be responsible for footing the bill in the case of an accident.[167]

Increasing the strict liability cap (for example, to the proposed $1 billion above) would further incentivize third-party insurers to conduct more comprehensive monitoring.[168] As governmental oversight capacity of offshore regulation is not likely to increase in the near future,[169] third-party oversight capacity and monitoring may result in a more effective monitoring system than purely governmental oversight.[170]

Moreover, while both the deposit-refund system and mandating third-party insurance add additional incentives for industry to operate safely through "rewards" for safe operations (lower bond deposits or lower insurance premiums), the additional third-party monitoring aspect of third-party insurance creates a greater incentive than the mere psychological motivation of having "paid up-front." Therefore, the United States should mandate third-party insurance instead of a deposit-refund system or the existing flexible "financial responsibility

163. 33 U.S.C. § 2716(e) (2012).
164. *See* COHEN ET AL., *supra* note 79, at 36.
165. *Id.*
166. *Id.*
167. *Id.* at 36–37; *see also* Broder & Krauss, *supra* note 102 (noting oil companies in some cases pay twice the government salary for their petroleum engineers).
168. COHEN ET AL., *supra* note 79, at 37 (observing that if liability is high for operators, this should incentivize insurers to effectively monitor their clients).
169. *BOEM Publishes Proposed Adjustment*, *supra* note 124.
170. COHEN ET AL., *supra* note 79, at 37.

requirement."[171] The instituted third-party insurance requirement should be at least equal to the strict liability cap. While this may make it nearly impossible for some non-major firms to enter the Arctic, it is the best course of action due to the extreme Arctic environment that makes spill response and cleanup incredibly difficult. These challenges could contribute to enormous damages—which major firms can more readily compensate.[172]

C. Establish A Risk-Based Premium Fund

The current Oil Spill Liability Trust Fund under OPA provides an additional $1 billion to cover additional damages that an operator is not legally required to pay, or is unable to pay.[173] The current fund is maintained by an eight-cent-per-barrel tax on imported and domestic oil.[174] Such a fund structure can create a "classic moral hazard problem in which . . . there is a stronger incentive to (1) adopt a weaker safety culture and (2) drill wells that the firm knows, *ex ante*, are riskier."[175] The fund exasperates this problem because firms are equally protected under the blanket of the fund, despite varying levels of operational safety and preparedness. A way to incentivize firms to adopt a stronger safety culture and "simultaneously address the perverse incentives created by an insurance pool" is to impose "risk-based drilling fees," requiring a firm to pay premiums into the fund based on "the number of wells and the safety score at each operation."[176] Government regulators,

171. *See* 33 U.S.C. § 2716(e) (2012) ("Financial responsibility . . . may be established by . . . evidence of insurance, surety bond, guarantee, letter of credit, qualification as a self-insurer, or other evidence of financial responsibility.").

172. *See Compensating the People and Communities Affected*, BP, http://www.bp.com/en/global/corporate/gulf-of-mexico-restoration/deepwater-horizon-accident-and-response/compensating-the-people-and-communities-affected.html (last visited Oct. 27, 2014) (describing a $20 billion trust fund voluntarily set up by BP to satisfy claims related to the *Deepwater Horizon* spill).

173. 26 U.S.C. § 9509 (2012).

174. LORIS ET AL., *supra* note 82.

175. COHEN ET AL., *supra* note 79, at 38.

176. *Id*. Alternatively, the *Price-Anderson Act* provides no-fault insurance in the instance of a nuclear accident. *See Insurance: Price-Anderson Act Provides Effective Liability Insurance at No Cost to the Public*, NUCLEAR ENERGY INST. (2014), http://www.nei.org/Master-Document-Folder/Backgrounders/Fact-Sheets/Insurance-Price-Anderson-Act-Provides-Effective-Li. Power reactor licensees are required to obtain the maximum amount of insurance available in the insurance market ($375 million per plant as of 2012). *Id.* This individual insurance acts as a first tier of protection. The second tier of insurance protection is the *Price-Anderson fund*, which functions as a shared pool of protection financed by the reactor companies to be used in the instance of an accident causing more than $375 million in damages. *Id.* As of 2013, the maximum amount of the fund is approximately $12.61 billion ($121,255,000 X 104 reactors). *Id.* While the *Price-*

insurance companies, or industry organizations would rate a firm's level of safety at each well and "the fee would be based on the *ex ante* probability and severity of a spill from each well."[177] Such a risk-based premium fund could be effective to incentive firms to adopt a stronger safety culture and invest in response technology, as firms would have to pay a greater sum for riskier operations[178] or would be rewarded for investing in safety.[179]

D. Supplementary Fund Based On Production Levels

Increasing the strict liability cap, mandating third party insurance, and establishing a risk-based premium fund would work as complements with each other to incentivize the industry to invest in safety, and would provide additional assurance that damaged third parties will receive compensation in the event of a spill.[180] However, the threat of a large spill such as *Exxon Valdez* or *Deepwater Horizon* still exists, leaving the potential for third parties to go undercompensated or even uncompensated.[181]

Anderson Act and fund are successful in the nuclear industry due to the enormous fund-pool ($12.61 billion), such a successful pool requires intense monitoring to ensure that all members of the pool are operating within the industry-mandated guidelines. *Id.* This level of monitoring is currently not feasible for the offshore oil industry. *See* discussion *supra* Part III.B.

177. COHEN ET AL., *supra* note 79, at 38–39. The task of measuring risk-based fees is beyond the scope of this note. However, "[a]t the outset, it seems reasonable to set the fee based on (1) the firm's past safety record; (2) observable characteristics of the well (depth, pressure, etc.); and (3) the adoption of certain safety culture policies (such as compensation schemes or promotion criteria that reward safety)." *Id*. at 39.

178. While, increasing the size of the fund would be beneficial in the sense of increasing the level of assurance innocent third parties would receive in the instance of a spill, developing the approximate size of the fund is beyond the scope of this note. Further, the fund would not be a set number, as it would fluctuate based on the number of active wells and the safety ratings of the respective wells. However, to have its intended effect, the fund should be a sizeable amount. The current $1 billion fund could serve as a starting point.

179. Firms would earn a "dual-reward" for safe operational practices as they pay less into the risk based premium fund and would also pay a reduced third-party insurance premium. *See* discussion *supra* Part III.B.

180. Under this note's proposed regime there would be at least $2 billion immediately available for damaged third parties in the event of a spill ($1 billion in strict liability back by mandatory third-party insurance as financial responsibility, plus $1 billion from the risk-based fund).

181. While most large spills will violate multiple federal regulations, thus removing OPA's liability cap and allowing injured parties to bring unlimited claims under another statute (e.g., the Clean Water Act), the injured party may forego this route or settle for less than their damages to avoid the time and cost of a lengthy litigation process against a sophisticated oil firm. *See* 33 U.S.C. §

To add an additional tier of compensation assurance for innocent third parties, the United States should implement a second insurance-pool fund, called the Arctic Supplementary Fund (ASF). This fund would be an additional fund, separate from the risk-based premium fund described above. The ASF would tax only the largest oil producers, identified by the total volume extracted from all Arctic offshore leases in a given time period.[182] Once a firm reaches an established threshold of extraction, the firm would be required to pay a small tax on each additional unit of hydrocarbons extracted.[183] Extraction undertaken by a firm's subsidiary or subcontractor would count against a firm's extraction total to prevent behaviors aimed at avoiding the tax.[184]

The proposal for the Arctic Supplementary Fund is based on the International Convention on Civil Liability for Oil Pollution Damage (CLC) and its "supplementary fund," which provides compensation for oil pollution damage resulting from tanker spills.[185] The CLC and its supplementary protocols create a system of compulsory strict-liability insurance and third-party protection.[186] The CLC contains a three-tiered system: Tier 1: strict limited liability for a ship owner, capped based on the gross tonnage of the ship; Tier 2: a 203 million Special Drawing Right (SDR)[187] fund financed by contributions levied on states that receive more than 150,000 tons of a combination of crude and heavy oil fuel within a year;[188] and Tier 3: a "supplementary fund" to provide for damages not covered by Tiers 1 and 2, that increases the total amount

2704(c)(1) (2012) (allowing unlimited liability in instances of negligence or willful misconduct or a relevant federal regulation).

182. For example, one drilling season or year.

183. The tax on additional units of extraction past the threshold should be set at a level that would allow firms to continue to extract at cost effective levels (i.e., the tax must be set at a level where firms would remain profitable and not simply stop extracting once they reached the threshold).

184. For example, if a firm approaching the threshold subcontracted one of its leases in an effort to avoid the ASF's tax.

185. ARCTIC COUNCIL, ARCTIC MARINE SHIPPING ASSESSMENT 2009 REPORT 65 (2009), *available at* www.arctic.noaa.gov/detect/documents/AMSA_2009_Report_2nd_print.pdf.

186. INTERNATIONAL OIL POLLUTION COMPENSATION FUNDS, LIABILITY AND COMPENSATION FOR POLLUTION DAMAGE, TEXTS OF THE 1992 CIVIL LIABILITY CONVENTION, THE 1992 FUND CONVENTION, AND THE SUPPLEMENTARY FUND PROTOCOL 3 (2011), *available at* http://www.iopcfunds.org/uploads/tx_iopcpublications/Text_of_Conventions_e.pdf.

187. *Special Drawing Rights (SDRs)*, INTERNATIONAL MONETARY FUND (Oct. 3, 2014), .http://www.imf.org/external/np/exr/facts/sdr.htm.

188. *International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage (FUND)*, INTERNATIONAL MARITIME ORGANIZATION, www.imo.org/About/Conventions/ListOfConventions/Pages/International-Convention-on-the-Establishment-of-an-International-Fund-for-Compensation-for-Oil-Pollution-Damage-(FUND).aspx (last visited Oct. 4, 2014).

payable for one incident to 750 million SDRs.[189] The supplemental fund is financed by contributions from states that receive a minimum of one million tons of oil each year.[190] The goal of the CLC and its funds is to ensure that innocent third parties can be readily compensated for damages.[191] The CLC and its funds operate similarly to a progressive tax—increasing a party's financial responsibility in relation to the benefit it receives from oil transportation.

The proposed ASF is similar to the CLC in the sense that it is funded by the parties who most benefit from drilling activities (major operators), and are in the best financial position to compensate third parties for their damages.[192] Unlike the CLC, however, the ASF does not have a set fund limit, but would be proportional to the relative levels of extraction firms undertake. As a result, the ASF would, in effect, not come into existence until a firm or firms reached the extraction threshold, but would, in theory, grow in proportion to the level of extraction activities in the Arctic OCS. Consequently, the ASF would automatically increase the level of third-party damage protection as oil extraction efforts intensify. As constructed, only firms that successfully extract large amounts of hydrocarbons would pay into the ASF, so the "extraction tax" would be unlikely to serve as a deterrent for oil producers already dedicated to offshore Arctic drilling.

Creating the ASF, along with increasing the strict liability cap, mandating third party insurance, and establishing a risk-based premium fund, should function to provide the appropriate incentives to ensure operators take the necessary safety precautions and invest in spill response technology, as well as provide an appropriate scheme for injured third parties to recover a large portion of damages.

CONCLUSION

Offshore oil drilling in the Alaskan Arctic presents an enormous opportunity for energy firms, the State of Alaska, and the United States

189. INTERNATIONAL OIL POLLUTION COMPENSATION FUNDS, *supra* note 186.

190. *International Convention on the Establishment of an International Compensation for Oil Pollution Damage (FUND)*, *supra* note 188.

191. INTERNATIONAL OIL POLLUTION COMPENSATION FUNDS, *supra* note 186.

192. The ASF, as structured, is by no means the only option for a supplementary fund. For example, the ASF could include a provision where a firm that is responsible for a major accident that drained the supplementary fund would be required to refill the fund to its pre-spill level before the firm would be allowed to reconvene drilling activities. Another option is to create a fund based on the number of active drills a firm has in the Arctic (e.g., a firm would pay into the fund an amount in proportion to the number of drills it operates in a given season).

federal government. If drilling can be conducted safely, it could greatly reduce the United States' reliance on foreign oil and would allow Alaska to remain one of the top energy-producing states in the country. However, drilling in the extreme conditions of the Arctic presents enormous technological challenges, as demonstrated by Shell's struggles over the past few years.[193] These technological challenges are further compounded by the Arctic's remote location, lack of local infrastructure, and unique environment. In the event of a spill, environmental and innocent third-party damages can be enormous, as the *Exxon Valdez* and *Deepwater Horizon* accidents have demonstrated.

While post-*Deepwater Horizon* regulatory reforms have, to a degree, improved the federal government's ability to regulate the offshore oil industry, the agencies responsible for this task remain ill-equipped to do so. As a result, it is imperative that the United States' regulatory regime properly incentivize firms to invest in the technological improvements that are necessary to safely drill in the extreme Arctic conditions. Additionally, even if an operator is taking the utmost safety precautions, accidents can still happen, and United States regulations need to more adequately ensure that innocent third parties are fully compensated for their damages.

While there are a number of regulatory changes that could incentivize industry to operate safer and invest in technological improvements, it is first necessary for the existing limited liability to be increased to properly align industry safety incentives with the risk of operation. Second, the United States needs to create an adequate payment scheme to compensate innocent victims in the instance an operator cannot pay. To accomplish these goals, the United States should adopt a regulatory regime that: (1) significantly increases the liability cap; (2) requires increased financial responsibility in the form of third-party insurance (or an upfront deposit-bond); (3) establishes a risk-based premium fund; and (4) creates a supplementary fund from contributions from firms that produce above a specific level. These proposals are interconnected, complementing each other to form a more comprehensive regime to ensure that industry is properly incentivized to invest in safety and technological improvements through increased strict liability and financial responsibility. They also ensure that damaged third parties are more adequately compensated through the increased strict liability and multiple funds.

While the proposed regulations may make it nearly impossible for

193. *See* Hobson, *supra* note 4 (describing Shell's setbacks while attempting to drill in the Arctic).

non-major firms to enter the Arctic, this may be for the best, as major firms can more readily compensate the enormous costs that could result if an accident were to occur. Overall, an increased liability cap and matching financial security requirement in the form of third-party insurance, coupled with two adjustable pooled-insurance funds, should adequately incentivize firms to invest in operating safely and should not be so unduly coercive to prevent major oil companies from investing in offshore drilling in Arctic Alaska.