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Deepwater Horizon Oil Spill: Selected Issues for Congress

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Summary

On April 20, 2010, an explosion and fire occurred on the *Deepwater Horizon* drilling rig in the Gulf of Mexico. This resulted in 11 worker fatalities, a massive oil release, and a national response effort in the Gulf of Mexico region by the federal and state governments as well as BP. Based on estimates from the Flow Rate Technical Group, which is led by the U.S. Geological Survey, the 2010 Gulf spill is the largest oil spill in U.S. waters. The oil spill has damaged natural resources and has had regional economic impacts. In addition, questions have been raised as to whether offshore regulation of oil exploration has kept pace with the increasingly complex technologies needed to explore and develop deeper waters.

Crude oil has been washing into marshes and estuaries and onto beaches in Louisiana, Mississippi, and Alabama. Oil has killed wildlife, and efforts are underway to save oil-coated birds. The most immediate economic impact of the oil spill has been on the Gulf fishing industry: commercial and recreational fishing have faced extensive prohibitions within the federal waters of the Gulf exclusive economic zone. The fishing industry, including seafood processing and related wholesale and retail businesses, supports over 200,000 jobs with related economic activity of $5.5 billion. Other immediate economic impacts include a decline in tourism. On the other hand, jobs related to cleanup activities could mitigate some of the losses in the fishing and tourism industry.

The Bureau of Ocean Energy Management, Regulation, and Enforcement (BOEMRE), formerly known as the Minerals Management Service (MMS), and the U.S. Coast Guard are the primary regulators of drilling activity. The Coast Guard generally overseas the safety of systems at the platform level of a mobile offshore drilling unit. The Environmental Protection Agency (EPA) has multiple responsibilities, with a representative serving as the vice-chair of the National Response Team and Regional Response Teams. The Federal Emergency Management Administration (FEMA) has responsibilities with respect to the economic impacts of the spill; its role so far has been primarily that of an observer, but that may change once the scope of impacts can be better understood.

BOEMRE/MMS is also the lead regulatory authority for offshore oil and gas leasing, including collection of royalty payments. Its regulations generally require that a company with leasing obligations demonstrate that proposed oil and gas activity conforms to federal laws and regulations, is safe, prevents waste, does not unreasonably interfere with other uses of the outer continental shelf, and does not cause impermissible harm or damage to the human, marine, or coastal environments. Further attention to the internal organization of BOEMRE/MMS is an ongoing legislative and regulatory focus.

Several issues are developing for Congress as a result of the *Deepwater Horizon* incident. Questions include: What lessons should be drawn from the incident? What technological and regulatory changes may be needed to meet risks peculiar to drilling in deeper water? How should Congress distribute costs associated with a catastrophic oil spill? What interventions may be necessary to ensure recovery of Gulf resources and amenities? What does the *Deepwater Horizon* incident imply for national energy policy, and the trade-offs between energy needs, risks of deepwater drilling, and protection of natural resources and amenities? This report provides an overview of selected issues related to the *Deepwater Horizon* incident and is not intended to be comprehensive. It will be updated to reflect emerging issues.

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Introduction

On April 20, 2010, the *Deepwater Horizon* oil drilling rig—under contract to BP, the leaseholder of the tract approximately 50 miles offshore of Louisiana—was nearing completion of a deepwater oil well when an explosion occurred. An apparent equipment failure, perhaps of the blowout protector, at the wellhead released oil and natural gas; explosions and fire on the oil rig killed 11 of the crew, and the rig sank within days. In the aftermath, the oil spill became the largest in U.S. waters. Based on estimates from the Flow Rate Technical Group, which is led by the U.S. Geological Survey, it appears this oil spill would eclipse the 1989 *Exxon Valdez* spill several times over.[1] Crude oil has been washing into estuaries and onto beaches in Louisiana, Mississippi, and Alabama; affected fishing and shrimping areas in the Gulf of Mexico have been closed.

The former Minerals Management Service (MMS), now known as the Bureau of Ocean Energy Management, Regulation, and Enforcement (BOEMRE), in the Department of the Interior (DOI) is responsible for leasing the tract to BP.[2] (Because the name change is relatively recent, hereafter in this report this agency will be referred to as BOEMRE/MMS.) The U.S. Coast Guard oversees the fitness of the rig and efforts to control the leak. The Environmental Protection Agency (EPA) has multiple responsibilities, with a representative serving as the vice-chair of the National Response Team and Regional Response Teams. The Federal Emergency Management Administration (FEMA) has responsibilities with respect to the economic impacts of the spill; its role so far has been primarily that of an observer, but that may change once the scope of impacts can be better understood. Information about the *Deepwater Horizon* rig, its drilling operations, and the federal response to the oil spill is available from numerous sources, including BOEMRE/MMS and the Coast Guard, the two agencies with lead federal roles in governing response efforts. As the lessee of the area in which the offshore facility is located, BP is responsible for capping the leak and paying for removal costs.

Issues such as worker safety, economic and environmental impacts, and oil and gas leasing for exploration and development are the focus of congressional attention at this time. The incident has triggered numerous congressional hearings, including those investigating the causes of the blowout; impacts of the spill; liability for damages; and the administrative process of leasing and regulatory requirements concerning health, safety, and environmental protection in drilling.

Secretary Ken Salazar of DOI initiated changes in the administration of offshore oil drilling by splitting MMS functions into three new bureaus, one to conduct leasing, one to enforce safety and environmental requirements, and one to handle revenues. Congress will be evaluating this reorganization and examining the adequacy and effectiveness of statutes governing leasing and oil spills, including the Outer Continental Shelf Lands Act of 1953, as amended (OCSLA), and the Oil Pollution Act of 1990 (OPA).

This report provides an initial overview of *Deepwater Horizon*-related issues for Congress, and refers readers to in-depth CRS reports on specific issues. Congressional readers with questions

[1] For up-to-date estimates of the spill rate, see the most recent press releases from the Department of the Interior, at http://www.doi.gov/news/index.cfm/.

[2] Secretarial Order 3302, issued June 18, 2010, changed the name of the Minerals Management Service to the Bureau of Ocean Energy Management, Regulation, and Enforcement (BOEMRE). The name change was effective immediately.

about an issue discussed in this report should contact the experts listed in CRS Report R40883, *Oil Spill in the Gulf of Mexico: CRS Experts*.

Setting: Oil and Gas Recovery in the Gulf of Mexico

Sediments buried deep below the seafloor in the Gulf of Mexico host large quantities of oil and gas that have been the target of exploration activities for decades. Most of the undiscovered oil and gas on the U.S. outer continental shelf (OCS) is thought to occur in the Gulf, particularly in the central and western regions. The central and western Gulf account for about 48% of the undiscovered technically recoverable resource (UTRR)[3] for oil and about 50% of the UTRR for natural gas in the entire U.S. OCS, according to the Department of the Interior.[4] (In comparison, Alaska accounts for about 31% of the UTRR for oil and gas in the OCS.)

Recent attention has focused on oil and gas resources underlying deep water in the Gulf (i.e., deeper than 1,000 feet), because that is where the largest resource potential exists and where the majority of OCS leases are held.[5] Since 2006, there has been a 44% increase in proven deepwater discoveries in the Gulf, even though most of the deepwater leases are as yet undrilled. (For example, 272 of nearly 1,900 ultra-deepwater leases—those at a water depth greater than 5,000 feet—were drilled between 1996 and 2007.) Deepwater and ultra-deepwater exploration and development have been the focus of OCS oil and gas development in recent years, and the potential for new and large discoveries in that part of the Gulf has been viewed as key to slowing or stopping the decline in OCS oil and gas reserves. (For a more complete discussion of OCS oil and gas issues, see CRS Report R40645, *U.S. Offshore Oil and Gas Resources: Prospects and Processes*, by Marc Humphries, Robert Pirog, and Gene Whitney.)

Offshore Oil and Gas Drilling Technology[6]

In comparison with nearshore oil and gas activities, deepwater and ultra-deepwater exploration and production require technologies that can withstand high pressures and low temperatures at the seafloor, and require the operator to control the process remotely from a surface vessel thousands of feet above the actual well. Seawater temperatures are lower in these waters (for example, at 5,000 feet deep in the Gulf, the seafloor water temperature is about 40° F, or 4.4^{o} C); and pressures are greater (at 5,000 feet deep the seafloor pressure is about 2,500 psi). Consequently, equipment and operations at the seafloor are accessible only by remotely operated vehicles (ROVs). Drilling technologies built to withstand the harsher conditions in deep water and ultra-deep water are complicated, difficult to repair, and expensive. In addition, long lengths of pipe, or marine "riser," extending from the seafloor to the drill rig, are needed, requiring a large and complex surface platform to conduct operations through the longer pipe. One of the most common types of drilling platforms for deep water and ultra-deep water is a semisubmersible rig,

[3] The undiscovered technically recoverable resource (UTRR) is an estimate of the volume of oil or natural gas that is likely to be recovered using currently available technologies without considering price. UTRR changes as available technology changes, but not as price changes.

[4] Statement of Steven C. Allred, DOI/MMS, January 25, 2007.

[5] Thirty-five percent of active OCS leases are in water depths of less than 200 meters, while 51% of active OCS leases are in water depths of 1,000 meters and deeper.

[6] Prepared by Peter Folger, Specialist in Energy and Natural Resources Policy.

which has an upper and lower hull. During the drilling operation, the lower hull is filled with water, partially submerging the rig but leaving the upper hull floating above the drill site.[7] Transocean's *Deepwater Horizon* rig was a semisubmersible platform, kept in place above the drill site by a dynamic positioning system (i.e., not permanently anchored to the seafloor) and connected to the well by the marine riser.[8]

During drilling operations, the drill bit and drill pipe (or drill string) extend through the riser from the drill platform and through a subsea drilling template—essentially a large metal box embedded in the seafloor—into the marine sediments and rocks down to the hydrocarbon-bearing zone. A special fluid called drilling mud (a mixture of water, clay, barite, and other materials) is circulated down to the drill bit and back up to the drilling platform. The drilling mud, which has higher viscosity and density than water, serves several purposes: it lubricates the drill bit, helps convey rock cuttings from the drill bit back to the surface, and exerts a column of weight down the hole to control pressure against a possible blowout. A blowout can occur if the subterranean pressure encountered down the hole exceeds the pressure exerted by the weight of the drill assembly and drilling mud. The *Deepwater Horizon* rig experienced a blowout on April 20, 2010, and the role of the drilling fluid is under investigation.

Drilling a deepwater or ultra-deepwater well is a multi-step process. At different stages the drill string is removed and steel casing is inserted into the wellbore, telescoping down from the largest-diameter casing at the top of the well to the smallest diameter at the bottom. Casing serves, among other things, to stabilize the wellbore, prevent the formation from caving in, maintain control of fluid pressure, and prevent crossflow of fluids from one part of the formation to another. The bottommost interval of casing, usually called the production casing, is inserted through the interval in the formation containing hydrocarbons that the operator wishes to produce. The casing is cemented in place over various intervals; cement is injected between the well casing and the surrounding rock. In addition, cement may be injected into intervals of the casing itself when the well is to be temporarily or permanently plugged.[9] At the *Deepwater Horizon* well, Halliburton (as a contractor for BP) had finished cementing the final production casing string about 20 hours before the blowout on April 20, according to congressional testimony.[10]

As a last line of defense against a blowout, a blowout preventer (BOP) is installed at the seafloor and connected to the marine riser. The BOP is essentially a system of valves designed to be closed in the event of anomalous wellbore pressure (such pressure is sometimes referred to as a "kick"). At the depth and pressures encountered by the *Deepwater Horizon* well, BOEMRE/MMS regulations require at least four such valves, or rams, which must be remote-controlled and hydraulically operated during offshore operations.[11] During the *Deepwater Horizon* blowout, all of the rams on the BOP failed to close properly.

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[7] For a more detailed description of drilling rigs, see http://www.naturalgas.org/naturalgas/extraction_offshore.asp.

[8] For specifications about the *Deepwater Horizon*, see http://www.deepwater.com/fw/main/Deepwater-Horizon-56C17.html?LayoutID=17.

[9] For example, in the *Deepwater Horizon* well, casing intervals spanned nine different diameters, from 36-inch diameter casing at the top of the well, to 7-inch diameter casing at the bottom, according to congressional testimony. Also, the witness stated that there was no continuous cement column throughout the entire wellbore. Testimony by Tim Probert, President, Global Business Lines and Chief Health, Safety, and Environmental Officer, Halliburton, hearing to review current issues related to offshore oil and gas development, U.S. Congress, Senate Committee on Energy and Natural Resources, 111th Cong., 2nd sess., May 11, 2010.

[10] Testimony by Tim Probert, Halliburton, May 11, 2010.

[11] 30 C.F.R. § 250.442.

BOPs can have backup systems that would attempt to engage the rams in case of loss of direct communication to the drilling vessel at the surface. One type of backup system, referred to as a "deadman switch," is intended to operate automatically if communication to the surface is disrupted. A second type of backup system, referred to as an "autoshear," would automatically activate one of the rams if the lower marine riser pipe disconnected. Another form of backup system includes the use of remotely operated vehicles (ROVs), controlled from the surface, which can operate control panels on the BOP itself at the seafloor. In the *Deepwater Horizon* incident, the BOP was reportedly equipped with a deadman switch[12] and an autoshear device, and ROVs were used to attempt to activate the BOP after the blowout occurred. These systems appear to have failed to fully engage the BOP.

Methane Hydrates in the Gulf of Mexico[13]

At the temperatures and pressures of deepwater and ultra-deepwater drilling in the Gulf of Mexico, solid methane hydrates can occur. They constitute a potential natural gas resource as well as a possible risk to exploration activities. In a methane hydrate, frozen water molecules form a cage-like structure around molecules of methane, the primary component of natural gas. In 2007, BOEMRE/MMS released an estimate of methane hydrate resources in the Gulf with a mean value of 21,000 trillion cubic feet, although the report noted that the amount of hydrate commercially recoverable using current technology is likely just a fraction of that resource.[14] Methane hydrates also present a significant hazard for drilling and production operations.[15] Offshore drilling operations that disturb methane hydrate-bearing sediments could fracture or disrupt the bottom sediments and compromise the wellbore, pipelines, rig supports, and other equipment involved in oil and gas production from the seafloor.[16] Decreases in pressure and/or increases in temperature can cause a solid methane hydrate to dissociate and rapidly release large amounts of gas into the wellbore during a drilling operation. (For a more detailed discussion of methane hydrates, see CRS Report RS22990, *Gas Hydrates: Resource and Hazard*, by Peter Folger.)

Methane hydrates also have interfered with attempts to divert oil and gas from the *Deepwater Horizon* blowout. When BP first attempted to lower a steel "cofferdam" over the leaking riser pipe to intercept the oil and gas and divert it to the surface, methane hydrates formed and clogged valves and piping leading to the surface. This occurred because methane gas from the wellbore encountered cold seawater at 5,000 feet below the ocean surface, and methane converted from a gas to solid methane hydrate. Methane hydrates are stable at that depth and temperature.

[12] According to testimony by Steve Newman, President and CEO of Transocean Ltd., in response to questions during the House Committee on Energy and Commerce, Subcommittee on Oversight and Investigations, *Inquiry Into the Deepwater Horizon Gulf Coast Oil Spill*, hearing, 111th Cong., May 12, 2010.

[13] Prepared by Peter Folger, Specialist in Energy and Natural Resources Policy.

[14] U.S. Department of the Interior, Minerals Management Service, Resource Evaluation Division, "Preliminary Evaluation of In-Place Gas Hydrate Resources: Gulf of Mexico Outer Continental Shelf," OCS Report MMS 2008-004 (February 1, 2008), at http://www.mms.gov/revaldiv/GasHydrateFiles/MMS2008-004.pdf.

[15] Timothy S. Collett and Scott R. Dallimore, "Detailed Analysis of Gas Hydrate Induced Drilling and Production Hazards," Proceedings of the Fourth International Conference on Gas Hydrates, Yokohama, Japan, April 19-23, 2002.

[16] George J. Moridis and Michael B. Kowalsky, "Geomechanical Implications of Thermal Stresses on Hydrate-Bearing Sediments," *Fire in the Ice*, Methane Hydrate R&D Program newsletter, Winter 2006.

Weather and Ocean Currents in the Gulf of Mexico[17]

Oil and gas operations in the Gulf of Mexico face severe weather hazards, namely hurricanes during the summer and fall, that could disrupt operations and possibly cause leaks and spills from drilling rigs and production platforms. For example, disruptions to oil and gas operations occurred in 2005 during Hurricanes Katrina and Rita. As a result of the hurricanes, approximately 600,000 gallons were spilled from offshore oil platforms and associated pipelines in the Gulf.[18]

Hurricanes and the Gulf Oil Spill

A hurricane in the Gulf could have significant consequences for the oil spill's impacts. The National Hurricane Center (NHC) recently predicted an "active to extremely active" hurricane season in the Atlantic Ocean and Gulf. The season began June 1 and extends through November 30 (a NOAA FAQ website notes that the season's termination date has gradually extended over time). Although past hurricanes (e.g., Katrina in 2005) have led to oil spills, a hurricane interacting with a pre-existing, significant oil spill would be an unprecedented event.

Movement of oil would depend greatly on the track, wind speed, and size of a hurricane, and other factors in the evolution of the storm. The ultimate effects would be uncertain: some effects could be beneficial, others disastrous. High winds and seas are expected to mix and weather the oil, which can help accelerate biodegradation processes and dispersion. However, barrier islands that normally protect coastal wetlands from oil may be overtopped or destroyed by winds and water. Furthermore, heavy winds and storm surges could push oil further inland into areas that would not normally become oiled. Even after oil stops flowing from the *Deepwater Horizon* site, hurricane-strength winds could stir up oil that has penetrated sediments, thus releasing oil and causing renewed impacts on plants and wildlife.

In addition, as Hurricane Alex recently demonstrated, a hurricane could impede response efforts, requiring vessels and personnel to abandon oil containment and recovery activities.

Sources: National Oceanic and Atmospheric Administration, "NOAA Expects Busy Atlantic Hurricane Season," *NOAA News*, May 27, 2010, at http://www.noaanews.noaa.gov/stories2010/20100527_hurricaneoutlook.html; NOAA FAQ website, at http://www.aoml.noaa.gov/hrd/tcfaq/G1.html; NOAA, "NOAA's Oil Spill Response, Hurricanes and the Oil Spill," May 27, 2010, at http://www.nhc.noaa.gov/pdf/hurricanes_oil_factsheet.pdf.

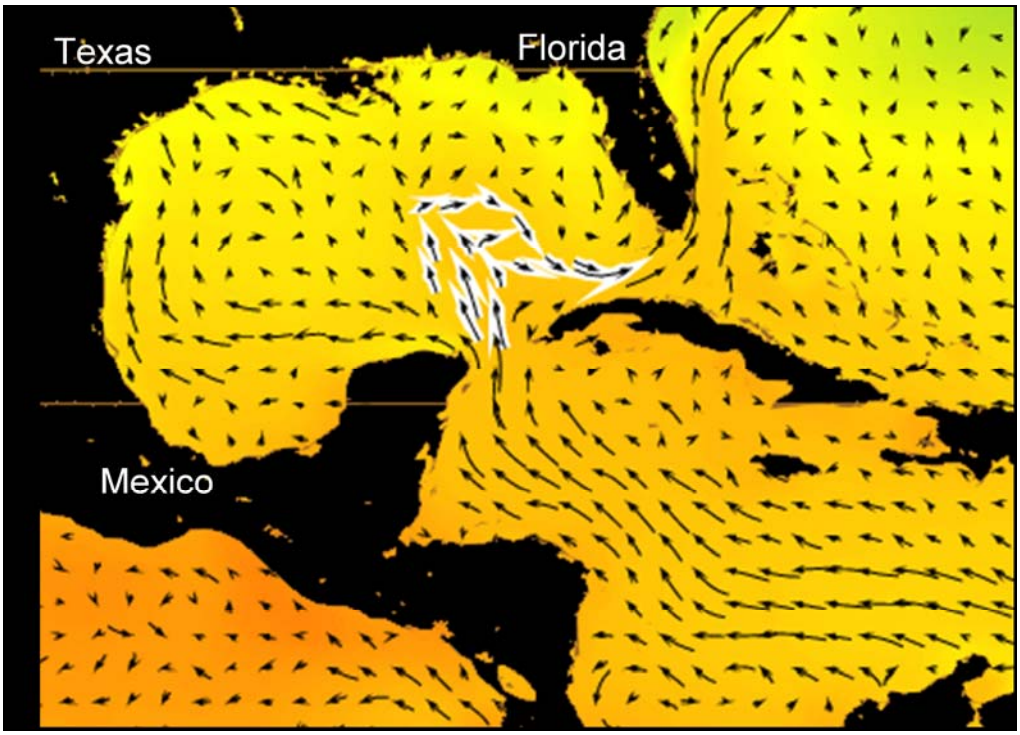
Winds and currents in the Gulf of Mexico also affect how oil will migrate away from the source of the spill. One key oceanographic feature of the Gulf that could possibly transport an oil spill into the Gulf Stream and up the Atlantic seaboard is called the Loop Current. The Loop Current is a clockwise flow that joins together the Yucatan Current to the south with the Florida Current to the east and flows through the Florida Straits. The Florida Current feeds into the Gulf Stream (see **Figure 1**). The position of the Loop Current is not static but varies over time in the Gulf. Its variability, combined with the location, size, and duration of an oil spill, will determine whether the Loop Current could entrain the spilled oil and how much oil it could transport toward the Florida Current. There is also the possibility that part of the Loop Current could break off and form a separate, temporary "anticyclonic" (i.e., clockwise-moving) ring, which could keep entrained oil circulating within the Gulf rather than connecting with the Florida Current.[19] In addition to the complicated flow pattern in the Loop Current, it is not clear how the *Deepwater Horizon* oil spill—which not only occurs at the surface but extends from the seafloor through the entire water column—might become entrained into the current and where it might migrate.

[17] Prepared by Peter Folger, Specialist in Energy and Natural Resources Policy.

[18] For more information about oil spills generally, see CRS Report RL33705, *Oil Spills in U.S. Coastal Waters: Background, Governance, and Issues for Congress*, by Jonathan L. Ramseur.

[19] E-mail from Robert H. Weisberg , Professor of Physical Oceanography, and colleagues, College of Marine Science, University of South Florida, May 19, 2010.

Figure 1.The Loop Current



Source: The Cooperative Institute for Marine and Atmospheric Studies, University of Miami Rosenstiel School, at http://oceancurrents.rsmas.miami.edu/atlantic/loop-current.html. Modified by CRS.
Notes: The arrows indicate the direction and magnitude of the current velocity. The Loop Current is shown by black arrows surrounded by white.

Biological Resources of the Gulf of Mexico[20]

The Gulf of Mexico is home to productive, diverse, and valuable living natural resources. Some major features of the U.S. Gulf include barrier islands, coastal wetlands, beaches, and coral reefs. The combined coastline of these areas, including islands and inland areas, is 47,000 miles. The coastal and ocean resources of the region provide commercial, recreational, ecological, historical, educational, and aesthetic benefits to local communities and the nation. Coastal wetlands and estuaries are nursery areas for many species, including those that support commercial fisheries, such as shrimp, oysters, and blue crab, and those that support recreational fishing, such as snappers, groupers, and drum. Attributes such as warm weather, white sand beaches, and seafood restaurants make the Gulf a popular tourist destination. Major tourist-related businesses include eating and drinking establishments, hotels and lodging, and amusement and recreation services.

Federal Statutory Framework

The development of offshore oil, gas, and other mineral resources in the United States is subject to a number of interrelated legal regimes, including international, federal, and state law. International law provides a framework for establishing national ownership or control of offshore

[20] Prepared by Harold F. Upton, Analyst in Natural Resources Policy.

areas, and U.S. domestic law has, in substance, adopted these internationally recognized principles. U.S. domestic law further defines U.S. ocean resource jurisdiction and ownership of offshore minerals, dividing regulatory authority and ownership between the states and the federal government based on the resource's proximity to the shore. Below is a broad summary of the framework.[21]

OCS Leasing[22]

The basis for most federal regulation is the Outer Continental Shelf Lands Act (OCSLA),[23] which provides a system for offshore oil and gas exploration, leasing, and ultimate development. The OCSLA establishes broad five-year planning periods for offshore leasing across the U.S. OCS as well as other processes for leasing, development, and production. It also authorizes the administration of health and safety requirements. All of these are administered by BOEMRE/MMS.[24] The OCSLA further provides for judicial review of agency actions alleged to be in violation of federal law, including violations of the act itself, its implementing regulations, and the terms of any permit or lease.[25]

Governance of offshore minerals and oil and gas development in the U.S. OCS is bifurcated between state and federal law. States generally have primary authority in the 3-geographical-mile area extending from their coasts pursuant to the Submerged Lands Act, with some exceptions.[26] Laws governing oil and gas development in state waters vary significantly from state to state. The federal government and its comprehensive regulatory regime govern those minerals located under federal waters, which extend from the states' offshore boundaries to at least 200 nautical miles from the shore.

Oil Spill Response[27]

The Oil Pollution Act of 1990 (OPA, P.L. 101-380) and the Clean Water Act (CWA)[28] are the primary federal statutes governing the federal response to oil spills. As amended by OPA, Section 311(d)[29] of the Clean Water Act authorized the President to develop a National Oil and Hazardous Substances Pollution Contingency Plan (National Contingency Plan or NCP) to specify the federal response actions and authorities related to an oil spill.[30] Although the NCP is the operative

[21] See CRS Report RL33404, *Offshore Oil and Gas Development: Legal Framework*, by Adam Vann.

[22] Prepared by Adam Vann, Legislative Attorney.

[23] 43 U.S.C. § 1331 et seq.

[24] As noted above, MMS is in the process of reorganization into three bureaus (the Bureau of Ocean Energy Management, the Bureau of Safety and Environmental Enforcement, and the Office of Natural Resource Revenue) pursuant to Secretarial Order No. 3299 issued by Secretary of the Interior Ken Salazar on May 19, 2010.

[25] 43 U.S.C. § 1349.

[26] U.S.C. § 1301(b).

[27] Prepared by Jonathan L. Ramseur, Specialist in Environmental Policy.

[28] 33 U.S.C. §§ 1251-1387.

[29] 33 U.S.C. § 1321(d).

[30] The first NCP was prepared in 1968 after U.S. policymakers observed the British government's response to a 37-million-gallon oil tanker spill (*Torrey Canyon*) off the coast of England. See EPA, "National Contingency Plan Overview," at http://www.epa.gov/emergencies/content/lawsregs/ncpover.htm.

framework for oil spill response, other frameworks and authorities may play a role in the Gulf spill response.

National Contingency Plan

The NCP establishes the National Response System (NRS), a multitiered and coordinated national response strategy for addressing oil spills and releases of hazardous substances. The NCP is codified in federal regulation at 40 C.F.R. Part 300. Subpart D specifically addresses response to oil spills.[31] Oil spill response actions required under the regulations of the NCP are binding and enforceable, per the enforcement authorities of the OPA and the CWA.

Key components of the NRS include:

- **National Response Team (NRT).** This team is composed of representatives from the federal departments and agencies assigned roles in responding to oil spills. The U.S. Coast Guard, in the Department of Homeland Security (DHS), chairs the NRT when a response is being mounted to a spill in a coastal region. According to statements by the Administration, the Secretary of DHS, Janet Napolitano, is leading the NRT in response to the Gulf spill.[32]
- **Regional Response Teams (RRTs).** RRTs are composed of regional representatives of each NRT member agency, state governments, and local governments. The Coast Guard leads the relevant RRT during responses to oil spills in coastal zone. The Gulf spill involves Regions IV and VI.[33]
- **Area Committees (ACs).** These include qualified personnel from federal, state, and local agencies. The primary function of each AC is to prepare an Area Contingency Plan (ACP) for its designated area.
- **On-Scene Coordinator (OSC).** The OSC directs the response efforts and coordinates all other efforts at the scene. In general, Coast Guard Captains of the Port serve as OSCs for their particular area.[34]

As amended by OPA, the CWA provides the President with the authority to ensure that an oil spill is effectively removed and actions are taken to prevent further discharge from the source.[35] Executive Order 12777 (signed by President George H. W. Bush on October 18, 1991) delegated response authority in the coastal zone to the Coast Guard OSC. The OSC is broadly empowered to direct and coordinate all response and recovery activities of federal, state, local, and private entities (including the responsible party), and will draw on resources available through the appropriate ACPs and RRTs.[36]

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[31] Subpart E addresses response to hazardous substances, which is beyond the scope of this report. The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) is the statute that authorizes response to hazardous substances. Combined, CERCLA, OPA, and the CWA provide the statutory authority for the NCP as a whole.

[32] See e.g., http://www.whitehouse.gov/deepwater-bp-oil-spill/.

[33] Information and documents from these regions can be accessed via the NRT website at http://nrt.org/.

[34] The corresponding role for spills in EPA's jurisdiction is the Remedial Project Manager (RPM).

[35] 33 U.S.C. § 1321(c).

[36] The Oil Pollution Act of 1990 (P.L. 101-180) strengthened and clarified the federal government's role in oil spill response and cleanup. OPA Section 4201 amended Section 311(c) of the CWA to provide the President with authority (continued...)

In addition, the OSC determines the level of cleanup required. Although the federal government must consult with designated trustees of natural resources and the governor of the state affected by the spill, the decision that cleanup is completed and can be ended rests with the OSC. States may require further work, but without the support of federal funding.[37]

Role of the Secretary of Homeland Security

The Secretary of the Department of Homeland Security (DHS) may be involved in an oil spill response either through her/his lead role in the department in which the Coast Guard operates[38] or as the "principal federal official for domestic incident management." This latter role was established in Homeland Security Presidential Directive (HSPD) 5.[39] The Secretary's role will depend on the nature and magnitude of the incident, but in most cases, the role will likely be minimal.

For the Gulf oil spill, Secretary Napolitano is coordinating the federal response activities. A specific role the Secretary has assumed in this regard is leading the NRT (discussed above). In addition, on April 29, 2010, Secretary Napolitano classified the event as a Spill of National Significance (SONS).[40] This designation does not provide additional funding or authority, but allows for the appointment of a National Incident Commander (NIC), whose role is to coordinate strategic communications, national policy, and resource support, and to facilitate collaboration with key parts of the federal, state, and local governments. On the same day, Secretary Napolitano named Coast Guard Admiral Thad Allen as the NIC.[41]

National Response Framework

The National Response Framework (NRF) is the federal government's broader administrative mechanism that is intended to coordinate the array of federal response plans.[42] As such, the NRF provides the administrative policies and guiding principles for a unified response from all levels of government, and all sectors of communities, to *all types of hazards* through the combined scope of the various federal response plans that it incorporates. However, the NRF itself is not an

(...continued)

(delegated to the USCG or EPA) to perform cleanup immediately using federal resources, monitor the response efforts of the responsible party, or direct that party's cleanup activities.

[37] OPA § 1011.

[38] The Coast Guard was transferred to DHS in 2003.

[39] The White House, *Management of Domestic Incidents*, Homeland Security Presidential Directive - 5, Washington, DC, February 28, 2003, http://www.fas.org/irp/offdocs/nspd/hspd-5.html.

[40] The predecessor to the National Response Framework—the National Response Plan (NRP)—contained a similar-sounding phrase, "Incident of National Significance." This term caused significant confusion and was subsequently eliminated in the NRF. For more information, see Department of Homeland Security, *National Response Framework: Frequently Asked Questions*, at http://www.fema.gov/pdf/emergency/nrf/NRF_FAQ.pdf.

[41] The authority for the SONS classification and NIC designation is found specifically in the NCP regulations at 40 CFR Section 300.323. However, this section authorizes the Commandant of the Coast Guard to classify a spill as a SONS and to name a NIC. It is unclear whether the DHS Secretary was employing the authority provided by HSPD 5 to take these actions.

[42] Authority for the creation of the NRF emanates from numerous sources. FEMA has described the NRF as being guided by 15 "principal emergency authorities," 48 other statutory authorities and regulations, 17 executive orders, and 20 presidential directives. U.S. Department of Homeland Security, *Federal Emergency Management Agency, National Response Framework: List of Authorities and References*, January 2008.

operational plan that dictates a step-by-step process for responding to a specific type of hazard, nor is the NRF a binding and enforceable regulation like the NCP.[43]

The NRF contains 15 "emergency support functions" (ESFs), which coordinate the capabilities and resources of various federal departments and agencies, state and local governments, and certain private-sector and nongovernmental organizations. ESF #10—Oil and Hazardous Materials Response—provides federal support in response to an actual or potential discharge and/or uncontrolled release of oil or hazardous materials.[44] In some cases, the ESFs point to existing response frameworks and authorities. Such is the case with ESF #10, which identifies the NCP as the operative structure for oil spill response. According to the DHS, ESF #10 has not been activated in response to the Gulf spill.[45] Regardless, the NCP is the operative framework, with or without ESF #10 activation.

Oil Spill Liability[46]

OPA liability provisions apply to any discharge of oil, or threat of discharge, from a vessel (e.g., oil tanker) or facility (e.g., offshore oil rig)[47] to navigable waters, adjoining shorelines, or the exclusive economic zone of the United States (i.e., 200 nautical miles beyond the shore).[48] Responsible parties, including owners/operators of vessels or facilities and/or lessees of offshore facilities,[49] are liable[50] for oil spill removal costs and for a range of other costs, including:

- injuries to natural resources (e.g., fish, animals, plants, and their habitats);
- loss of real personal property (and resultant economic losses);
- loss of subsistence use of natural resources;
- lost government revenues resulting from destruction of property or natural resource injury;
- lost profits and earnings resulting from property loss or natural resource injury; and
- costs of providing extra public services during or after spill response.[51]

[43] For more on the NRF, see CRS Report RL34758, *The National Response Framework: Overview and Possible Issues for Congress*, by Bruce R. Lindsay.

[44] Emergency Support Function #10—Oil and Hazardous Materials Response Annex, available at http://www.fema.gov/emergency/nrf/index.htm.

[45] Per telephone conversation with DHS personnel (July 13, 2010).

[46] Prepared by Jonathan L. Ramseur, Specialist in Environmental Policy, and James E. Nichols, Law Clerk.

[47] The definition of "facility" is broadly worded and includes pipelines and motor vehicles. 33 U.S.C. § 2701(9).

[48] Under OPA, the terms "liable" and "liability" are "construed to be the standard of liability which obtains under section 311 of the [Clean Water Act]." Courts have interpreted Section 311 of the Clean Water Act as imposing strict liability on parties responsible for the discharge of oil or other hazardous substances into the waters of the United States. See *United States v. New York*, 481 F.Supp. 4 (D.N.Y. 1979).

[49] See 33 U.S.C. § 2701(32).

[50] Responsible parties have several defenses from liability (33 U.S.C. 2703): act of God, act of war, and act or omission of certain third parties. These defenses are analogous to those of the Superfund statute (the Comprehensive Environmental Response, Compensation, and Liability Act, or CERCLA, commonly known as Superfund, P.L. 96-510) enacted in 1980 for releases of hazardous substances. See 42 U.S.C. § 9607(b).

[51] OPA § 1002(b)(2).

Compared to the pre-OPA liability framework, OPA significantly increased the range of covered damages.[52] Moreover, a responsible party is now liable (subject to the limits discussed below) for all cleanup costs incurred not only by a government entity but also by a private party.[53]

Limits (or Caps) to Liability

With some exceptions (identified below), the liability of the responsible party is limited or capped for each "incident."[54] Liability limits differ based on the source of the oil spill: some limits are simple dollar amounts; in other cases liability is unlimited for cleanup costs, but there are limits on other damages.

Mobile offshore drilling units (MODUs), like the *Deepwater Horizon* unit (owned by Transocean), are first treated as tank vessels for purposes of liability caps. Based on the *Deepwater Horizon* unit's gross tonnage, its liability cap would be approximately $65 million (per the National Pollution Funds Center).[55] If removal and damage costs exceed this liability cap, a MODU is deemed to be an offshore facility for the *excess* amount.[56] Offshore facilities, like the Gulf well leased to BP, have their liability capped at "all removal costs plus $75 million."

The National Pollution Funds Center described the liability for this incident as follows:

> The lessee of the area in which the offshore facility is located is *clearly a responsible party* for the reported discharge below the surface from the well, an offshore facility. The OPA liability limit, if it applies, is all removal costs plus $75 million. The owner of the MODU would also be a tank vessel responsible party for any oil discharge *on or above the surface of the water*. The MODU liability limit, if it applies, as a tank vessel, is approximately $65 million. If the OPA oil removal costs and damages resulting from the discharge on or above the water exceed this liability amount the MODU is treated as an offshore facility for the excess amount. In that case the lessee of the area in which the offshore facility is located would be a liable responsible party up to the offshore liability limit amount of all removal costs plus $75 million.[57] (emphasis added by CRS)

Loss of Liability Limit

Liability limits do not apply if the incident was "proximately caused" by "gross negligence or willful misconduct" or "the violation of an applicable Federal safety, construction, or operating regulation." If one of these circumstances is determined to have occurred, liability would be

[52] Congress recognized that "there is no comprehensive legislation in place that promptly and adequately compensates those who suffer other types of economic loss as a result of an oil pollution incident." U.S. Congress, House Committee on Merchant Marine and Fisheries, report accompanying H.R. 1465, Oil Pollution Prevention, Removal, Liability, and Compensation Act of 1989, H.Rept. 101-242, Part 2, 101st Cong., 1st sess., p. 31.

[53] OPA § 1002(b)(1).

[54] "Incident" means any occurrence or series of occurrences having the same origin, involving one or more vessels, facilities, or any combination thereof, resulting in the discharge or substantial threat of discharge of oil. 33 U.S.C. § 2701(14).

[55] See National Pollution Funds Center, "Oil Pollution Act Liabilities for Oil Removal Costs and Damages as They May Apply to the *Deepwater Horizon* Incident" (undated).

[56] 33 U.S.C. § 2704(b).

[57] See National Pollution Funds Center, "Oil Pollution Act Liabilities for Oil Removal Costs and Damages as They May Apply to the *Deepwater Horizon* Incident" (undated).

unlimited. In addition, the responsible party must report the incident and cooperate with response officials to take advantage of the liability caps. According to the National Pollution Funds Center, liability limits are "not usually well defined until long after response," and litigation may be required to resolve the issue.[58]

Oil Spill Liability Trust Fund

Before the passage of OPA, federal funding for oil spill response was widely considered inadequate,[59] and damage recovery was difficult for private parties.[60] To help address these issues, Congress established the Oil Spill Liability Trust Fund (OSLTF). Although Congress created the OSLTF in 1986,[61] Congress did not authorize its use or provide its funding until after the *Exxon Valdez* incident.

The OSLTF is a federally administered trust fund that may be used to pay costs related to federal and state oil spill removal activities, costs incurred by federal, state, and Indian tribe trustees for natural resource damage assessments, and unpaid damages claims.[62] The fund is financed by a per-barrel tax on crude oil received at U.S. refineries and on petroleum products imported into the United States for consumption.[63]

OPA Compensation and Claims Process[64]

OPA established a compensation and claims process for removal costs and the costs/damages identified above.[65] In general, claims for removal costs and damages must be presented first to the responsible party (i.e., BP).[66] If the party to whom the claim is presented denies all liability, or if the claim is not settled by payment within 90 days after the claim was presented, the claimant may elect either to initiate an action in court against the responsible party or to present the claim directly to the OSLTF.[67]

The OSLTF managers are limited in the amount of payments that may be awarded for each incident.[68] Under current law, the per-incident cap is $1 billion. Some are now arguing that

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[58] National Pollution Funds Center, *FOSC Funding Information for Oil Spills and Hazardous Materials Releases*, April 2003, p. 4.

[59] Cynthia Wilkinson et al., "Slick Work: An Analysis of the Oil Pollution Act of 1990," *Journal of Energy, Natural Resources, and Environmental Law*, 12 (1992), p. 188.

[60] U.S. Congress, House Committee on Merchant Marine and Fisheries, report accompanying H.R. 1465, Oil Pollution Prevention, Removal, Liability, and Compensation Act of 1989, H.Rept. 101-242, Part 2, 101st Cong., 1st sess., p. 35.

[61] Omnibus Budget Reconciliation Act of 1986 (P.L. 99-509).

[62] 33 U.S.C. § 2712. The standards and procedural requirements for claims filed against the fund are set forth in the USCG's OPA regulations. See 33 C.F.R. §§ 136.1 through 136.241.

[63] 26 U.S.C. §§ 4611(a)(1) and (2). The Oil Spill Liability Trust Fund is also financed by a per-barrel tax on domestic crude oil "used in or exported from the United States." 26 U.S.C. § 4611(b)(1)(A).

[64] Prepared by Jonathan L. Ramseur, Specialist in Environmental Policy.

[65] OPA § 1013 (33 U.S.C. 2713). Implementing regulations are found in 33 C.F.R. Part 136.

[66] 33 U.S.C. § 2713(a). Under OPA, the term "claim" means "a request, made in writing for a sum certain, for compensation for damages or removal costs resulting from an [oil spill] incident." 33 U.S.C. § 2701(3).

[67] 33 U.S.C. § 2713(c). Claims for removal costs must be presented within six years after the date of completion of all removal activities related to the oil spill incident. 33 U.S.C. § 2712(h)(1).

[68] "Incident" means any occurrence or series of occurrences having the same origin, involving one or more vessels, (continued...)

increasing the per-incident cap would reduce the risk that parties (private citizens and governments) would not be fully compensated for losses associated with an oil spill. Statements from OPA's legislative history suggest that drafters intended the fund to cover "catastrophic spills."[69] However, $1 billion today does not have the same value as it did in 1990, when OPA was enacted. Although OPA requires the President to issue regulations to adjust liability limits at least every three years,[70] an analogous provision for the per-incident cap does not exist. As a point of reference, if the $1 billion figure had been adjusted for inflation, it would be approximately $1.6 billion in today's dollars.

On June 16, 2010, the President announced that BP had agreed to set aside $20 billion to pay economic damage claims to people and businesses that have been affected by the oil spill. The claims will be processed by an independent claims facility administered by Kenneth Feinberg. An accompanying factsheet stated that the facility will develop and publish standards for claims.[71] As of the date of this report, these standards are not yet available. It is uncertain whether these standards will mirror OPA's liability framework or to what degree they may differ. Further, it is uncertain how the independent claims facility will interact with the existing claims process or if the facility is simply a means by which BP is complying with the process.[72]

Although the $20 billion fund established by BP may render the per-incident cap a moot issue for the 2010 Gulf spill, a subsequent catastrophic spill could threaten the current per-incident cap threshold. As a reference point, the 1989 *Exxon Valdez* spill tallied approximately $2 billion in cleanup costs and $1 billion in natural resource damages in 1990 dollars. These combined figures equate to approximately $5 billion in today's dollars and would not include the wider array of claims for which responsible parties are now liable.

Federal Regulatory Framework

Regulations to implement federal statutes are promulgated by numerous federal authorities and vastly outnumber federal statutes. The bases for relevant federal regulation in this instance are, among other statutes, OCSLA[73] and the OPA.[74] The sheer number of regulations from these statutes and from other federal laws complicates the description of the regulatory framework. Frequently, case law, international measures, or other legal actions define the regulatory parameters that apply to the *Deepwater Horizon* events. The roles of the lead federal regulators, BOEMRE/MMS and the U.S. Coast Guard, are outlined below.

(...continued)

facilities, or any combination thereof, resulting in the discharge or substantial threat of discharge of oil. 33 U.S.C. § 2701(14).

[69] U.S. Congress, House Committee on Merchant Marine and Fisheries, report accompanying H.R. 1465, Oil Pollution Prevention, Removal, Liability, and Compensation Act of 1989, H.Rept. 101-242, part 2, 101st Cong., 1st sess., p. 36.

[70] 33 U.S.C. § 2704(d)(4).

[71] See http://www.whitehouse.gov/the-press-office/fact-sheet-claims-and-escrow.

[72] See http://www.bp.com/sectiongenericarticle.do?categoryId=9033791&contentId=7062345.

[73] 43 U.S.C. § 1331 et seq.

[74] 33 U.S.C § 2701.

Bureau of Ocean Energy Management, Regulation, and Enforcement (BOEMRE, Formerly MMS)[75]

BOEMRE/MMS is the agency within the Department of the Interior with lead regulatory authority for offshore oil and gas leasing. Regulatory authority in the OCS encompasses resource assessment and development, operational safety, and environmental considerations. BOEMRE/MMS regulations generally require that a company with leasing obligations demonstrate that proposed oil and gas activity conforms to federal laws and regulations, is safe, prevents waste, does not unreasonably interfere with other uses of the OCS, and does not cause impermissible harm or damage to the human, marine, or coastal environments.

Three types of regulatory authority govern OCS lease obligations: prescriptive requirements generally codified in the *Code of Federal Regulations*, performance-based goals, and consensus-based technical standards. BOEMRE/MMS regulations cover a wide range of equipment, procedures, and certifications. BOEMRE/MMS lease stipulations and regulations refer to maps, communications, and contingencies such as hurricanes and other emergencies. Many of the rules governing OCS exploration, development, and production are published in the *Code of Federal Regulations*.[76] The major statutes that govern the leasing process are discussed in the "OCS Leasing" section.

Once the agency has issued a lease for oil and gas exploration and development rights, a lessee or operator may submit an application to explore for oil and gas resources. Approval of the exploration plan by the BOEMRE/MMS regional office is a prerequisite for drilling. After the exploration phase, if the lessee decides to further develop the area governed by the lease, the lessee must submit another application, typically a Development and Production Plan or a Development Operations Coordination Document, for review and approval by BOEMRE/MMS. In water depths greater than 400 meters (1,312 ft.), a lessee would also submit a Deepwater Operations Plan and a Conservation Information Document. If a lessee seeks to use non-conventional production or completion technology such as floating or subsea production systems, BOEMRE/MMS may provide a different approval process. The agency is responsible for approving applications for a permit to drill (APDs), and subsequent BOEMRE/MMS approvals are typically required for further drilling actions to sidetrack, bypass, or deepen a well.

It is difficult to determine at what stage in the BOEMRE/MMS approval process applicants typically address financial assurances, precautionary actions to control development operations, compliance with design criteria, and compliance with casing and cementing requirements. Furthermore, it is difficult to determine the agency's approval process for diverter and blowout preventer systems in various exploration and development plans. Federal risk assessments are typically conducted at numerous stages of the exploration and development planning process and typically depend on risk assessments conducted at a previous stage in the leasing process. Congress is interested in when risk assessments are conducted, and hearings are underway to focus on the various stages of the BOEMRE/MMS leasing process. How the agency enforces regulations and assesses financial penalties for violations, and how it would suspend or shut down operations under certain conditions, have been raised as concerns since April 20, 2010.

[75] Prepared by Curry L. Hagerty, Specialist in Energy and Natural Resources Policy.

[76] See *Code of Federal Regulations* (30 C.F.R. Chapter 2, Minerals Management Service, Department of the Interior; 40 C.F.R., Protection of the Environment).

Phases of the OCS leasing process undergo review under the National Environmental Policy Act (NEPA),[77] unless specifically excluded. Generally speaking, NEPA requires an agency to consider the environmental impacts of its actions and prepare a document describing its analysis. BOEMRE/MMS prepared four documents describing its environmental analysis related to the BP lease: an environmental impact statement (EIS) for the five-year plan for all OCS leasing; an EIS for the combined lease sales in the western and central Gulf of Mexico; an environmental analysis for Lease Sale 206; and a categorical exclusion for the exploration plan for activity on the Mississippi Canyon block 252.

A categorical exclusion (CE) may be used under NEPA when an agency has determined that a type of project does not have significant impacts. A CE can be used unless certain exceptions—typically referred to as extraordinary circumstances—exist, such as the presence of endangered species or an archeological site. BOEMRE/MMS guidance provides that many exploration plans in the Gulf can be categorically excluded from further NEPA review. (For a more comprehensive discussion, see CRS Report R41265, *The 2010 Oil Spill: The Minerals Management Service (MMS) and the National Environmental Policy Act (NEPA)*, by Kristina Alexander.)

Wells

The operator is required, pursuant to provisions contained in 30 C.F.R. 250, to submit an APD and obtain approval for it. BOEMRE/MMS reviews applications for drilling wells. Once a permit is approved, the lessee is required to take precautions to keep all exploratory well drilling under control at all times. There is increased interest in what constitutes compliance with "best available and safest technology" (BAST) to address pressure conditions during drilling operations, and in the potential for uncontrolled well flow.[78] According to federal regulations, operators in the Gulf must use BAST whenever practical on all exploration, development, and production operations.[79] However, the regulations also state that, "[i]n general, we consider your compliance with [BOEMRE/MMS] regulations to be the use of BAST." The language of the regulation in effect defines BAST as whatever complies with the agency's regulation. Some observers question whether the regulations preclude a more effective approach to BAST.

Platforms

The lessee typically designs, fabricates, installs, uses, inspects, and maintains platforms and structures on the OCS to assure their structural integrity for the conduct of operations at specific locations.[80] BOEMRE/MMS program personnel typically use certified verification agents to provide third-party expertise and technical input in the verification process. After installation, platforms are required to be inspected.[81]

[77] 42 U.S.C. § 4321 et seq.

[78] Specific requirements for sundry notices for well workovers, completions, and abandonments are detailed in Subparts D-G of 30 C.F.R. Chapter II.

[79] 30 C.F.R. 250.107.

[80] 30 C.F.R. 250.901-904.

[81] 30 C.F.R. 250.912.

Equipment and Facilities

Equipment used on the OCS is regulated to assure the safety and protection of the human, marine, and coastal environments. Surface- and subsurface-controlled safety valves and locks must conform to federal requirements.[82] Facilities also have requirements concerning electrical systems, flow lines, engines, and firefighting systems.[83]

Role of U.S. Coast Guard[84]

The Coast Guard regulates certain activities at mobile offshore drilling units (MODUs) such as the *Deepwater Horizon*. The Coast Guard generally overseas the safety of systems at the platform level of a MODU, as opposed to the sub-platform drilling systems overseen by BOEMRE/MMS. The areas of Coast Guard oversight include a MODU's hull structure, navigation equipment, lifesaving equipment, and fire protection equipment and structures; the safety of the electrical system; and the safety and health of workers as they perform their routine tasks. The Coast Guard is to conduct an initial review of a unit before it is allowed to operate. Once a MODU is operating, the Coast Guard is to conduct a full survey of the rig every two years and an interim inspection annually.

The Coast Guard's regulatory framework for MODUs resembles that for ships calling at U.S. ports. The "checklist" the Coast Guard uses when inspecting a MODU depends on its "flag" or country of registration. Like ships engaged in international trade, MODUs on the OCS can be registered in foreign countries. The *Deepwater Horizon* was registered in the Marshall Islands.[85] Registering a rig or ship in the Marshall Islands or another "flag of convenience" (FOC) country (Panama, Liberia, and the Bahamas are other common ones) provides tax and other economic advantages. FOCs are also referred to as "open registries" or "international registries" because they do not require that a vessel be owned or crewed by citizens of the flag state.[86] For these reasons, the world shipping fleet is predominantly flagged in these countries. According to the regulatory compliance manager of the *Deepwater Horizon*, since MODUs can potentially be moved around the world, international registries provide more flexibility as to where repairs can be performed, the citizenship of the crew, and the timing of inspections.[87] Foreign-flagged rigs either must meet the design, equipment, and operating standards of the flag state, provided the Coast Guard determines they are equivalent to or more stringent than U.S. standards (promulgated at 46 C.F.R. parts 108 and 109), or they must meet the design and equipment standards contained in the International Maritime Organization (IMO) Code for the Construction

[82] 30 C.F.R. 250.801.

[83] The safety-system devices are tested by the lessee at specified intervals and must be in accordance with numerous certifications including API RP 14 C, Appendix D, and other measures.

[84] Prepared by John Frittelli, Specialist in Transportation Policy.

[85] This ship registry began in 1988 partly as a result of political instability in Panama and Liberia at the time. American interests were instrumental in its creation, as is the case with the Panamanian, Liberian, and other ship registries. The corporate headquarters of the Marshall Islands registry is located in Reston, VA, and the corporate headquarters of the Liberian registry is located in Vienna, VA.

[86] Elizabeth R. DeSombre, *Flagging Standards: Globalization and Environmental, Safety, and Labor Regulations at Sea* (Cambridge, MA: MIT Press, 2006).

[87] Oral and written testimony of Warren Weaver, Manager of Regulatory Compliance, Transocean, Ltd. before the House Committee on Transportation and Infrastructure, Subcommittee on the Coast Guard and Maritime Transportation, hearing on *Foreign Vessel Operations in the U.S. Exclusive Economic Zones*, June 17, 2010.

and Equipment of MODUs (2009 MODU Code, adopted by Resolution A.1023(26)).[88] The *Deepwater Horizon* was inspected and found to be in compliance with the MODU code.[89]

The International Maritime Organization (IMO)

The IMO is a U.N. body that has established international standards for the safety, security, and prevention of pollution from ships. Its first convention, the International Convention for the Safety of Life at Sea (SOLAS), was adopted in response to the *Titanic* disaster.[90] The MODU code was developed, beginning in the 1970s, to provide for a level of safety on MODUs equivalent to that provided by SOLAS for ships. Countries must ratify IMO conventions and enforce their requirements. The United States is a signatory to most IMO conventions, including the MODU IMO convention.[91] Like the Coast Guard's regulatory oversight, the IMO MODU code does not address the drilling-related equipment of an oil rig.

Classification Societies

The offshore oil industry has also adopted classification societies as an institution of shipping oversight. Classification societies are independent organizations that inspect a ship or oil rig and certify that it meets the construction requirements and standards for its intended purpose. They inspect only the physical elements of a rig, not the qualifications of the crew or how it is operated. Inspections are performed during the construction phase as well as throughout the operating life of a unit and become more thorough as the unit ages. Ship and oil rig owners pursue certification from these societies for mortgage, insurance, and marketing reasons. *Deepwater Horizon* was certified mostly by the American Bureau of Shipping (ABS), but also by Det Norske Veritas (DNV).[92] The Coast Guard checks for certification from approved classification societies when inspecting both foreign and U.S.-flagged vessels or rigs.

Some have questioned the credibility of classification societies, because the societies are paid by vessel owners. Classification societies typically have a for-profit side of their business, selling technical expertise to vessel owners, and they compete with each other.[93] They date back to the mid-18th century, when insurers would hire ex-sea captains to survey ships.[94] Their pragmatic knowledge of ships was useful for insurers assessing risk. Eventually, ex-captains were replaced by naval engineers and technicians and standards were formalized in writing. For marketing reasons, shipbuilders found it advantageous to build their ships to these standards and therefore sought and paid for classification. Thus, from an insurer's or banker's perspective, a classification society had a conflict of interest if it was being paid by a ship's owner. In response, insurers and banks began creating a separate method of inspection as their confidence in classification societies eroded. Some of the classification societies established a trade association in 1969 to set

[88] See http://www.imo.org/, and search under "MODU" for a brief description.

[89] The *Deepwater Horizon* was built in 2001 and thus the 1989 version of the MODU code was applicable.

[90] The convention has been updated since then.

[91] See http://www.imo.org/, and select "status of conventions by country."

[92] The *Deepwater Horizon*'s record of certification and inspection can be viewed at http://cgmix.uscg.mil/PSIX/PSIXSearch.aspx, searching under the vessel name or its number: 8764597.

[93] "Quality Stem to Stern: The Changing Role of Classification Societies," *Marine Technology and SNAME News*, vol. 34, no. 3 (July 1997).

[94] Philippe Boisson, "Classification Societies and Safety at Sea: Back to Basics to Prepare for the Future," *Marine Policy*, vol. 18, no. 5 (1994), pp. 363-377.

industry practices to address these concerns.[95] In 2004, Congress required that the Coast Guard not accept certifications by classification societies that are not a member of this trade association or that have not been approved by the Coast Guard under specified criteria.[96]

Oil Spill Response Issues

Use of Dispersants[97]

Dispersants are chemical agents that include surfactants, solvents, and other compounds. By reducing the connection (referred to as an interfacial tension) between oil and water, dispersants enhance the breakup of an oil slick into small oil droplets that mix with the water column. Oil spill dispersants do not reduce the amount of oil entering the environment; instead, dispersants alter the physical properties of oil, changing its transport, fate, and potential effects.[98]

In general, the decision to use dispersants poses trade-offs for oil spill responders. The objective of dispersant use is to minimize the amount of surface oil that reaches shoreline habitats, where it threatens a wide range of wildlife and organisms. The downside is that dispersants increase the exposure to oil of organisms living in the water column. As stated in a 2005 National Research Council study, "[d]ispersant application thus represents a conscious decision to increase the hydrocarbon load (resulting from a spill) on one component of the ecosystem (e.g., water column) while reducing the load on another (e.g., coastal wetland)."[99]

Section 311(d) of the Clean Water Act (33 U.S.C. 1251 et seq.) requires EPA, in cooperation with the states, to prepare a schedule of dispersants, other chemicals, and other spill-mitigating devices and substances. The Product Schedule[100] includes dispersants and other chemical or bioremediation products that may be authorized for use on oil discharges in accordance with the procedures set forth in the National Contingency Plan (NCP).

EPA may add products to the NCP Product Schedule after companies submit specific data to the agency. Data requirements include results from effectiveness and toxicity testing. Although EPA reserves the right to verify testing data (and to require additional information), the regulations do not establish a toxicity threshold for placement on the schedule. A decision that a product is eligible for listing on the Product Schedule does not constitute EPA approval of the product.

As part of their oil spill response preparations, Regional Response Teams (RRTs) and Area Committees address the desirability of using dispersants and other oil control agents in particular situations. Planners consider the potential sources and types of oil that might be spilled, the existence and location of environmentally sensitive resources that might be impacted by spilled

[95] The International Association of Classification Societies (IACS).

[96] The Coast Guard and Maritime Transportation Act of 2004 (P.L. 108-293, § 413). The Coast Guard issued a notice of proposed rulemaking on April 23, 2010; 75 *Fed. Reg.* 21212.

[97] Prepared by Jonathan L. Ramseur, Specialist in Environmental Policy.

[98] For a more comprehensive discussion, see National Research Council, *Oil Spill Dispersants: Efficacy and Effects* (National Academies Press, 2005).

[99] Ibid.

[100] EPA, National Contingency Plan Product Schedule, May 2010, http://www.epa.gov/emergencies/docs/oil/ncp/schedule.pdf.

oil, available product and storage locations, the availability of equipment and adequately trained operators, and the available means to monitor product application and effectiveness. Regional Contingency Plans and Area Contingency Plans may preauthorize dispersants and the specific contexts in which products should and should not be used, and many regions/areas have done so, including those in the Gulf.[101] Before authorizing dispersant use in an area without a preauthorization plan, an On-Scene Coordinator must (1) seek and receive "concurrence" with the RRT representative from EPA and representatives from states with jurisdiction, and (2), when practicable, consult with trustees from the Departments of Commerce and the Interior.

An unprecedented volume of dispersants (at least for U.S. waters) has been applied to the oil spill in the Gulf. While dispersants have proven effective in breaking up the oil on the surface, numerous questions remain regarding the fate of the dispersed oil and the chemical dispersants. Moreover, the application of undersea dispersants is essentially experimental.[102] Many have raised questions about the toxicity of the dispersant BP has been using in the Gulf. Although it is on the NCP schedule, other dispersants are listed as both more effective and less toxic.[103]

On May 20, 2010, EPA and the Coast Guard directed BP to evaluate available, preapproved dispersants for toxicity and effectiveness.[104] On May 22, BP responded by (generally) concluding that the dispersant being used (COREXIT) continued to be the best option.[105] On May 26, 2010, EPA and the Coast Guard directed BP to "eliminate the surface application of dispersants. In *rare cases* when there may have to be an exemption, BP must make a request in writing to the FOSC [the Coast Guard OSC] … to justify the use of surface application. The FOSC must approve the request and volume of dispersant prior to initiating surface application" (emphasis added).[106]

When this directive was made, BP had applied a reported 700,000 gallons of dispersants to the surface waters. Since the directive, responders have applied an additional (approximately) 300,000 gallons on the surface, at a fairly consistent daily rate (**Figure 2**). However, as of July 16, data indicated that July 6 was the last surface application. For up-to-date information from EPA, see http://www.epa.gov/bpspill; for more current dispersant application data, see http://www.deepwaterhorizonresponse.com.

[101] See Figure 2-1 in National Research Council, *Oil Spill Dispersants: Efficacy and Effects* (National Academies Press, 2005).

[102] Nancy Kinner (co-director of the Coastal Response Research Center), testimony before the House Committee on Transportation and Infrastructure, May 19, 2010.

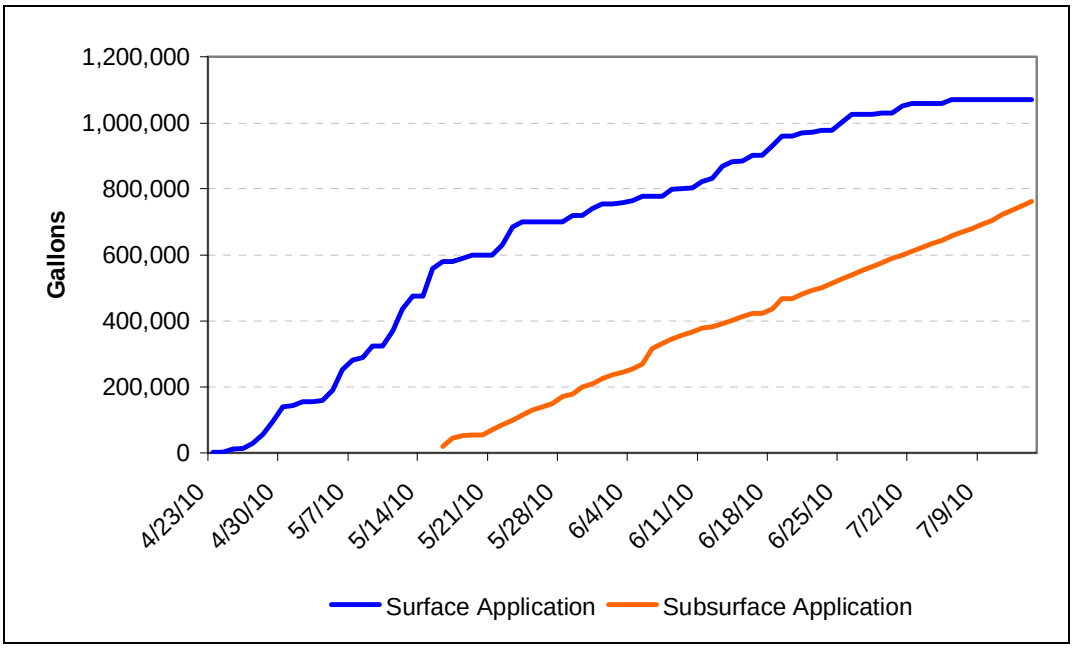
[103] More information is available at EPA's website, at http://www.epa.gov/bpspill/dispersants.html.

[104] See http://www.epa.gov/bpspill/dispersants/bp-hayward-dhs-epa.pdf.

[105] See http://www.epa.gov/bpspill/dispersants/5-21bp-response.pdf.

[106] See http://www.epa.gov/bpspill/dispersants/directive-addendum3.pdf.

Figure 2. Cumulative Dispersant Application in Gulf Oil Spill



Source: Prepared by CRS with data from daily "Current Operations" updates, available at http://www.deepwaterhorizonresponse.com.

Notes: Data for some days were not available. In these instances, the volume for the previous day was used.

Louisiana Protective Berm Project[107]

On May 11, 2010, the U.S. Army Corps of Engineers (Corps) received a request from the state of Louisiana's Coastal Restoration and Protection Authority (LCRPA) for an emergency permit to construct a project of approximately 86 miles of sand berms in order to protect Louisiana's barrier islands and coastal wetlands from damage by the *Deepwater Horizon* oil spill.[108] Supporters of the plan to construct the protective berms (including federal agencies and nongovernmental entities) argue that the project is a promising means to mitigate the effects of the oil spill in Louisiana. They note that the urgent situation associated with the oil spill requires that the project move forward with maximum speed and regulatory flexibility. These observers contend that, combined with other natural barriers in the Gulf, strategically placed berms of relatively small size and minimal cost will protect large areas of coastline and wetland habitat from oil pollution.

Some have expressed doubts regarding the barrier project. Specifically, agency and nongovernmental stakeholders have questioned the feasibility and effectiveness of the barriers.[109] Further, some scientists—including those from the National Oceanic and Atmospheric

[107] Prepared by Charles V. Stern, Analyst in Natural Resources Policy.

[108] Under 33 C.F.R. § 325(b), authorization (through a permit) by the Corps of Engineers is required to conduct certain regulated activities within waters of the United States. This requirement is maintained during emergencies, although the Corps has modified procedures to expedite permit processing during an emergency under 33 C.F.R. § 235.2(e)(4).

[109] One of the main critiques associated with feasibility of the project is timing. By some estimates, even if construction is initiated immediately, it would not be complete until the end of the calendar year. Additionally, questions have been raised as to the ability of the berms to withstand tidal fluctuations and storms, including hurricanes.

Administration (NOAA), the U.S. Geological Survey (USGS), and the Fish and Wildlife Service (FWS)—have expressed preliminary concerns about the potential of the barriers to disrupt tidal currents and ocean circulation patterns, and to have other long-term environmental impacts.[110] These observers note the unprecedented nature of large-scale berm construction of this type, and advocate for a significant degree of caution moving forward on this project.

The original request by LCPRA proposed to construct 86 miles of berms standing 6 feet above the mean high water line in and around areas near Louisiana barrier islands in the Gulf. The plan called for the berms to be built largely from dredge and fill materials taken from nearby areas (including some barrier islands), and to leave open certain deepwater channels for tidal influx. The State of Louisiana estimated the preliminary cost of this plan to be $350 million. After subsequent discussions between LCPRA and the Corps, the state submitted a new permit request that revised the location from which certain borrowed materials would be taken, as well as the coverage areas of the berms themselves. The revised request was submitted on May 14, 2010, and circulated by the Corps for interagency comment on May 17, 2010.[111] This revised version of the plan requested 128 miles of barriers over 19 separate areas (also known as reaches). Construction of the revised plan was estimated to take six to nine months, and no cost estimate was provided for this version of the plan.

Following interagency coordination and submission of comments, the Corps partially approved the LCPRA request on May 27, 2010. The Corps permit noted that approval of the project did not eliminate the need for a number of other associated requirements, including an FWS Special Use Permit, a Louisiana Coastal Use Permit, and approval from BOEMRE/MMS to dredge certain offshore borrow sites.

The Corps approved six reaches (four reaches to the west of the Mississippi River Delta, and two reaches to the east) of the revised request by the state.[112] The final Corps environmental analysis noted that the state's proposal was not selected in its entirety because of its potential to increase tidal circulation and reduce pathways for the oil to be flushed back out to sea.[113] Additionally, the Corps highlighted concerns with the longevity of the structures and the timing of construction. The Corps concluded that the selected six reaches would offer the greatest immediate benefits without adverse environmental impact. The Corps noted that subsequent construction decisions may be based on monitoring of the initial structures.

Responsibility for financing and construction of the approved reaches of berm is an ongoing concern. In early June, National Incident Commander Thad Allen announced that the federal government would direct BP to pay for all six reaches approved by the Corps.[114] BP announced support for this decision and estimated the cost for construction of the approved plan to be $360

[110] Concerns with the barriers are noted in the final permitting documents at http://155.76.147.200/news/Emergency%20Permit%20Documents%20Compressed%20FINAL.pdf. Additionally, Admiral Allen noted the initial concerns of Dr. Jane Lubchenco, NOAA Administrator, with the barriers at a press conference on June 2, 2010. See http://www.deepwaterhorizonresponse.com/go/doc/2931/581707/.

[111] The request was revised in part because the original proposal for a coastal restoration project did not qualify under Corps emergency authorization procedures.

[112] The original request's 19 reaches of berm included 15 reaches to the west of the Mississippi River Delta and four reaches to the east.

[113] See environmental analysis by the Corps at http://155.76.147.200/news/Emergency%20Permit%20Documents%20Compressed%20FINAL.pdf, pp. 88-89.

[114] See http://www.deepwaterhorizonresponse.com/go/doc/2931/585863/.

million.[115] Notably, while BP has agreed to make payments based on project milestones, it has also stated that it will not manage project construction or assume any liability associated with the project.[116]

Congress may consider what role, if any, the federal government should play in construction, upkeep, and monitoring of the Barrier Island Project. Responsibility for management of the barriers' construction has not been formalized, although National Incident Commander Thad Allen has previously asserted that the state will have primary responsibility.[117] Additionally, it is unclear who will assume ownership and liability of the barriers after they are constructed, and over what period of time the barriers will be maintained. Maintenance and monitoring requirements could result in additional costs beyond the original construction estimates, and BP has not indicated whether it will accept any additional responsibility for these elements. Finally, it is unclear whether other states in the Gulf region intend to pursue similar barrier strategies in response to the oil spill, and whether federal decisions on the Louisiana project would apply to these and other future efforts.

Relief Wells[118]

On May 2, 2010, 12 days after the *Deepwater Horizon* drill rig exploded and caught fire, BP began drilling the first of two relief wells, with the goal of intersecting the *Deepwater Horizon* well near the bottom and plugging it with heavy mud and cement. At the request of the Obama Administration, BP began drilling a second relief well on May 16 to provide a second chance at plugging the well if the first relief well failed. Both wells are being drilled vertically and then turned at an angle to intercept the *Deepwater Horizon* well just above the oil- and gas-producing reservoir at about 18,000 below sea level. (See **Figure 3**.) As of June 13, 2010, the first relief well had reached 13,973 feet and had begun to drill at an angle of 35 degrees; the second relief well had reached 9,022 feet and was still drilling vertically. BP and the Administration estimate that it will take several months, possibly until August, for the first relief well to reach the target area.[119]

What Are Relief Wells?

A relief well is drilled and constructed similarly to an exploration well but for a different purpose. Instead of drilling to intersect a petroleum-bearing horizon and to produce oil and gas, a relief well is drilled to intersect an out-of-control well that suffered a blowout. The relief well is guided to the blown-out well and drilled into the existing well casing, and then heavy drilling mud and cement are injected into the well to form a permanent plug. The plug is intended to prevent oil and gas from flowing from the petroleum-bearing reservoir into the wellbore of the blown-out well and up to the surface.

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[115] In light of questions raised about the original cost estimate by the state of Louisiana for the larger project during the interagency comment period, BP appears to have used a more conservative estimate for the six reaches approved by the Corps.

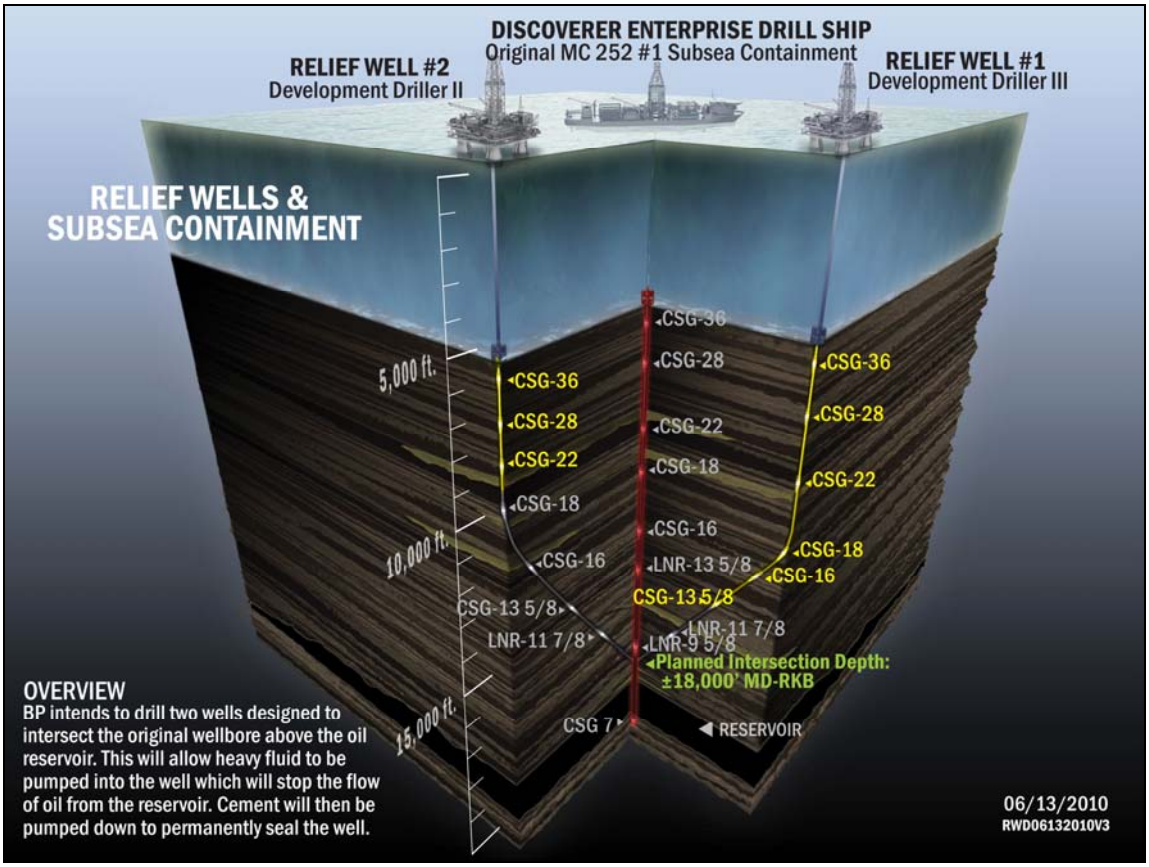
[116] See http://www.bp.com/genericarticle.do?categoryId=2012968&contentId=7062613.

[117] See, for example, June 2 press briefing by Admiral Thad Allen, at http://www.deepwaterhorizonresponse.com/go/doc/2931/581707/.

[118] Prepared by Peter Folger, Specialist in Energy and Natural Resources.

[119] *Deepwater Horizon* Response site, *Ongoing Response Timeline*, at http://www.deepwaterhorizonresponse.com/posted/2931/updated_timeline_June_10.594723.pdf. Greg Bluestein and Jason Dearen, "Spill Relief Well Draws Scrutiny," *Associated Press*, June 13, 2010., at http://news.yahoo.com/s/ap/20100613/ap_on_bi_ge/us_gulf_oil_spill_relief_wells.

Figure 3. Image of Two Relief Wells Being Drilled by BP to Plug the *Deepwater Horizon* Well



Source: BP, modified by CRS.

Notes: Relief well 1 had reached a depth of 13,973 feet below sea level and relief well 2 had reached 9,022 feet as of June 13, 2010. Numbers listed next to the trace of the relief well locations indicate the diameter of casing at that point (e.g., CSG-36 indicates 36-inch diameter casing).

Examples of Relief Wells Being Used to Stop Blowouts

On June 3, 1979, more than 30 years prior to the *Deepwater Horizon* disaster, the *Ixtoc I* exploration well blew out in the Bay of Campeche, Mexico, resulting in a rig fire and subsequent sinking of the rig into 167 feet of water in the southern Gulf of Mexico. According to NOAA, the blowout resulted in the release of 10,000 to 30,000 barrels of oil per day until the leak was stopped on March 23, 1980, 290 days later.[120] According to reports, two relief wells were drilled to intersect the well near the petroleum-bearing reservoir after other attempts to cap the well on the seafloor failed. Relief well *Ixtoc 1A* was spudded[121] in the middle of June and relief well *Ixtoc 1B* was spudded in the middle of July.[122] *Ixtoc 1A* reached the petroleum-bearing reservoir in the

[120] National Oceanic and Atmospheric Administration, National Ocean Service, Office of Response and Restoration, *Incident News*, at http://www.incidentnews.gov/incident/6250.

[121] To "spud" a well means to start drilling into the sediments and rock.

[122] Arne Jernelöv and Olof Lindén, "Ixtoc I: A Case Study of the World's Largest Oil Spill," *Ambio*, vol. 10, no. 6 (1981).

second week of February, approximately eight months after relief well drilling began. Mud pumped through the relief wells finally stopped the uncontrolled leak in *Ixtoc 1* five weeks later.[123]

On August 21, 2009, a drill rig operating in the Montara oil field about 140 miles northwest of the northern Australian coastline suffered a blowout and uncontrolled release of oil on the seafloor in water approximately 240 feet deep. It is still unclear how much oil was leaking per day, although the rig operator initially estimated that about 400 barrels per day were being released into the ocean. Other reports indicate that as many as 2,000 barrels per day were leaking.[124] A relief well was drilled to intersect the original well near the petroleum-bearing reservoir approximately 13,000 feet below the ocean bottom. After multiple attempts, mud injected into the leaking well finally stopped the leak on November 3, about 10 weeks after the initial blowout.[125] A commission appointed by the Australian Minister for Resources and Energy is investigating the blowout, and is expected to release a report soon.[126]

Relief Well Policies

Relief wells are mentioned in several places in federal regulations that govern offshore oil and gas development for the U.S. OCS, which includes the U.S. Gulf of Mexico.[127] Under 30 C.F.R. § 250.213, an exploration plan (EP) approved by BOEMRE/MMS for oil and gas operations in the OCS must show that a company has or will have the financial capability to drill a relief well or conduct other emergency well control operations. The EP must also indicate the availability of a rig to drill a relief well, and an estimate of the time it would take to drill a relief well. Under 30 C.F.R. § 250.243, a company's development and production plan, or development operations coordination documents, must also contain the same information: financial capability, rig availability, and estimated time to drill a relief well. The current regulations do not indicate that a drill rig must be on-site and ready to drill a relief well if a blowout occurs.

An exhaustive review of regulations governing relief wells in other countries is beyond the scope of this report. However, news reports have frequently cited Canadian policies regarding relief wells.[128] An issue for Canada that is not pertinent to the Gulf of Mexico is offshore drilling in regions where sea ice covers the ocean surface during the colder months, and the possible need to drill a relief well during the months when the sea is ice-free (a so-called "same-season" relief well). For example, if an offshore well suffers a blowout and uncontrolled leak at the end of the drilling season, a relief well drilled to curtail the blowout may not have sufficient time to reach the well and inject mud and cement before the winter ice forms and causes drilling operations to cease. The "same-season" relief well issue is of concern to offshore drilling in the Beaufort Sea (which also borders parts of Alaska), but may not necessarily be an issue for offshore drilling off the coasts of Newfoundland, Labrador, or Nova Scotia.

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[123] Ibid.

[124] Keith Bradsher, "Relief Well Was Used to Halt Australian Spill," *New York Times*, May 2, 2010.

[125] Ibid.

[126] See http://www.montarainquiry.gov.au/index.html for more information on the Montara oil spill.

[127] See 30 C.F.R. § 250 for the regulations covering oil and gas operations in the OCS.

[128] See, for example, Greg Bluestein and Jason Dearen, "Spill Relief Well Draws Scrutiny," *Associated Press*, June 13, 2010; and Peter Overby, "BP Sought to Ease Canada's Policy on Relief Wells," *NPR*, June 3, 2010, at http://www.npr.org/templates/story/story.php?storyId=127381814.

According to the Canadian National Energy Board, which governs offshore drilling in the Beaufort Sea, the regulations require project-specific contingency plans that must include all measures to respond to an emergency situation with an offshore well.[129] The Beaufort Sea regulations contain a definition for relief well ("a well drilled to assist in controlling a blow-out in an existing well"), but do not contain language specifically requiring a relief well as part of the contingency plan.[130] Offshore drilling in Canada is also governed regionally by joint federal-provincial agreements, and regulated under the Canada-Newfoundland and Labrador Offshore Petroleum Board and the Canada-Nova Scotia Offshore Petroleum Board.[131] In a letter to the editor of the *Ottawa Citizen*, the chairs of the Canada-Newfoundland and Labrador Offshore Petroleum Board, the Canada-Nova Scotia Offshore Petroleum Board, and the National Energy Board wrote:

> The new drilling and production regulations state that companies are required to provide contingency plans describing how they plan to mitigate the effects of any reasonably foreseeable event that might compromise safety or environmental protection, which absolutely would include mitigating the effects of a blowout. Relief wells are a proven method of regaining well control and none of the regulatory boards would authorize companies to conduct any drilling or production activities if the contingency plans did not adequately address the drilling of a relief well.[132]

In response to some statements that relief well regulations have been relaxed under the current Canadian government, Christian Paradis, Minister of Natural Resources for Canada, wrote:

> Drilling program guidelines pertaining to relief wells have remained the same since 1990. These guidelines specifically address the issue of relief wells, and explicitly state that "operators are expected to identify an alternate drilling installation for relief well purposes and provide a description of its operating capability, its location, contractual commitments, and state of readiness." The adequacy of these arrangements constitutes a crucial aspect of the board's decision of whether or not to issue an authorization to drill in the first place.[133]

Issues for Further Consideration

Establishing a new policy for relief wells has captured the interest of the Administration and Congress. In response to a question about requiring oil companies to drill relief wells simultaneously to the production of oil, National Incident Commander Thad Allen stated that it would be a legitimate point to be raised and put in front of the national commission on the BP oil spill established by President Obama.[134] On June 15, 2010, Senator Lautenberg introduced S. 3492, the Emergency Relief Well Act, that would require the concurrent drilling of at least one

[129] E-mail from Sarah Kiley, Communications Officer, National Energy Board (Canada), June 11, 2010.

[130] Under the Canada Oil and Gas Drilling and Production Regulations, Part 2—Management System, Application for Authorization and Well Approvals, Application for Authorization, the application for authorization "shall be accompanied by … contingency plans, including emergency response procedures, to mitigate the effects of any reasonably foreseeable event that might compromise safety or environmental protection." See http://laws.justice.gc.ca/PDF/Regulation/S/SOR-2009-315.pdf.

[131] E-mail from Sarah Kiley, Communications Officer, National Energy Board (Canada), June 11, 2010.

[132] Max Ruelokke, Diana Dalton, and Gaétan Carron, "Address Relief Wells," *Ottawa Citizen*, June 11, 2010.

[133] Christian Paradis, "Drilling Guidelines on Relief Wells the Same," *Ottawa Citizen*, June 14, 2010.

[134] White House Press Briefing by Press Secretary Robert Gibbs and National Incident Commander Admiral Thad Allen, June 7, 2010, at http://www.whitehouse.gov/the-press-office/press-briefing-press-secretary-robert-gibbs-and-national-incident-commander-admiral.

relief well whenever a new exploratory or development well is drilled. A requirement to drill a relief well concurrently with a new exploratory or development well would raise a number of safety and economic issues for offshore drilling.

A rationale for drilling a relief well concurrently with drilling and exploration or development well would be to shorten the time, possibly by months for deep wells, between a blowout and when a leak is plugged. For example, the two relief wells now being drilled to intercept the *Deepwater Horizon* well are expected to take several months to reach the target zone. Plugging a well in days or weeks instead of months could prevent large quantities of oil and gas from leaking from a blown-out well that otherwise would leak over the time it takes to drill a relief well. The actual drilling and completion of a relief well, however, would likely require the same or even greater attention to safety so as not to experience a similar blowout while drilling into the same geological formation. Thus drilling a relief well is not a risk-free proposal, and a possibility would still exist for anomalous gas "kicks"[135] in the well and for a blowout if the gas kicks are not prevented or controlled.

Drilling a relief well with the same equipment needed for an exploration and development well, such as semi-submersible drilling platforms, marine risers, casing, cement, and blowout preventers, would likely mean that the cost to drill an exploration or development well would rise significantly compared to current practices. Whether costs would double—twice the wells required compared to current practices—is unclear, and might depend on whether a simultaneously drilled relief well could ultimately also be used for exploration, development, or production in the same oil and gas field.

For deepwater and ultra-deepwater drilling requiring semisubmersible rigs or drill ships capable of drilling 4,000 feet or more below the seabed, the average daily rate for the drill rigs exceeds $400,000 per day.[136] The time to drill and complete a well depends on water depth and how deep the petroleum-bearing reservoir lies beneath the seabed. Deeper water and deeper reservoirs require more time to drill. For example, BP began drilling the *Deepwater Horizon* well in 5,000 feet of water on October 21, 2009. BP halted operations on November 28 because of damage to the rig caused by Hurricane Ida, resumed drilling on February 3, 2010, and was nearing completion of the well at a depth of 18,000 below sea level on April 20 when the blowout and fire occurred. Total time drilling until the disaster was approximately 114 days. Assuming drill rig costs of $400,000 per day, the *Deepwater Horizon* well rig costs were approximately $45 million when the April 20 accident occurred. Presumably, costs to drill a concurrent relief well would be approximately the same. Currently there are 31 drill rigs operating in 5,000 feet or deeper waters in the U.S. Gulf of Mexico.[137]

An option to have a drill rig "standing by" but not actually drilling a relief well unless the exploration or development well experienced a blowout might be less costly than drilling two concurrent wells. If a blowout occurred, then the relief well would be positioned to begin drilling immediately. During the *Deepwater Horizon* incident, 12 days elapsed before the first relief well was spudded. Nevertheless, the *Deepwater Horizon* relief wells will take months to drill, so

[135] A "kick" is the flow of reservoir fluids into the wellbore during drilling operations.

[136] Rigzone, *Offshore Rig Day Rates*, at http://www.rigzone.com/data/dayrates/.

[137] As reported by Rigzone, *Offshore Rig Search*, at http://www.rigzone.com/data/advanced_search.asp, as of June 17, 2010.

whether the time saved—and quantity of oil leaked—would be worth the expense of keeping a drilling operation on "stand-by" is another challenging policy issue.

Response Vessels and the Jones Act[138]

A law commonly known as the Jones Act requires that cargo transported between any two U.S. points be transported by a U.S.-built, -owned, and -documented vessel (requiring a U.S. crew).[139] This law applies to oil spill response vessels, such as skimmers, operating within 3 miles of the U.S. coastline. The law does not apply to response vessels outside the 3-mile limit, and as of June 15, 2010, 15 foreign-flagged vessels were engaged in oil spill cleanup activities.[140] Within the 3-mile limit, foreign oil spill response vessels can be used if there is an inadequate supply of U.S. oil spill response vessels and the foreign country has a reciprocal agreement with the United States.[141] The U.S. Maritime Administration is responsible for checking on the availability of U.S. vessels if a waiver is requested and in one instance with regard to the current spill found that U.S. vessels were available to perform the task.[142] Some contend that the Jones Act is hindering cleanup efforts by delaying or preventing foreign offers of assistance, while others contend that many U.S. oil spill response vessels are sitting idle. The National Incident Command Center has stated that no offers of foreign assistance have been declined because of the Jones Act.[143]

Dredging must also be performed by U.S. vessels, and thus this requirement would be applicable to the Louisiana Protective Berm Project.[144] For vessels not considered to be oil spill response vessels, a Jones Act waiver could be obtained pursuant to 46 U.S.C. § 501, which also requires a determination that not enough U.S. vessels are available.

Investigations and Commissions[145]

Several investigations and commissions have been initiated to look into various issues surrounding the *Deepwater Horizon* incident. For the most part, these examinations are still in their early stages.

- The President directed the Secretary of the Interior to provide a study of current safety measures for OCS activities. Made available on May 27, 2010,[146] the study—*Increased Safety Measures for Energy Development on the Outer*

[138] Prepared by John Frittelli, Specialist in Transportation Policy.

[139] 46 U.S.C. § 55102.

[140] Coast Guard press release dated June 15, 2010, at http://www.deepwaterhorizonresponse.com/go/doc/2931/660195.

[141] 46 U.S.C. § 55113.

[142] Written testimony of David T. Matsuda, Acting Maritime Administrator, before the Subcommittee on the Coast Guard and Maritime Transportation, House Committee on Transportation and Infrastructure, hearing on Foreign Vessel Operations in the U.S. Exclusive Economic Zones, June 17, 2010.

[143] National Incident Command, "Jones Act Fact Sheet," June 18, 2010, at http://www.deepwaterhorizonresponse.com/posted/2931/MARAD_revised_Jones_Act_Fact_Sheet.670991.pdf.

[144] 46 U.S.C. §§ 55109, 55110.

[145] Prepared by Jonathan L. Ramseur, Specialist in Environmental Policy.

[146] The May 27 study is available at http://www.doi.gov/deepwaterhorizon/loader.cfm?csModule=security/getfile&PageID=33598.

Continental Shelf—was the first of several formal investigatory measures related to the *Deepwater Horizon* accident and oil spill.

- The Secretaries from the Departments of the Interior and Homeland Security directed the Coast Guard and BOEMRE/MMS to conduct a joint investigation. The objective of the investigation is to develop conclusions and recommendations as they relate to the *Deepwater Horizon* explosion and loss of life on April 20, 2010.[147]
- President Obama established the Bipartisan National Commission on the BP *Deepwater Horizon* Oil Spill and Offshore Drilling. The commission is tasked with providing recommendations on how to prevent—and mitigate the impact of—any future spills that result from offshore drilling. The commission's first meeting was on July 12.

Many companies (including BP), trade groups, and industry standards organizations are conducting internal reviews. The focus of private-sector investigations tends to include testing the use of blowout preventers and other procedures, as well as testing other safety, communications, and operational procedures.

Environmental and Economic Impacts

Oil spills can cause significant harm to living organisms that inhabit ocean and coastal areas and may result in significant costs to businesses and the public. Coastal areas may be especially vulnerable because of oil stranding in wetlands and other coastal ecosystems. Oil coating, and absorption or ingestion of oil, result in direct mortality and sublethal effects that reduce the fitness of organisms. For example, oil can coat small animals and plants that inhabit shoreline areas and suffocate them. The uptake of dissolved components of oil may be toxic for fish, shellfish, and other invertebrates and plankton. Birds and fur-bearing marine mammals are among the most vulnerable species. When coated by oil, they lose protection and body heat maintained by their feathers and fur, and they may also ingest oil when preening. Coastal habitats may require years or decades to recover from lethal levels of oil exposure.[148]

Environmental Impacts[149]

When natural resources are affected by oil spills, services that benefit the public may be damaged. Services can be divided into different categories, depending on the nature of the benefits they provide:[150]

- **Supporting services**—processes that provide the foundation for all ecosystem services, such as nutrient cycling and primary production.

[147] More information is available at http://www.restorethegulf.gov/investigation.shtm.

[148] CRS Report R41311, *The Deepwater Horizon Oil Spill: Coastal Wetland and Wildlife Impacts and Response*, by M. Lynne Corn and Claudia Copeland.

[149] Prepared by Harold F. Upton, Analyst in Natural Resources Policy.

[150] Walter Reid et al., *Millennium Ecosystem Assessment: Ecosystems and Human Well-being* (Washington, DC: Island Press, 2005).

- **Provisioning services**—direct material benefits that humans receive from the products of ecosystems, such as food (fisheries), timber, and genetic resources.
- **Regulating services**—indirect benefits provided by natural systems, such as retaining and purifying of water in wetlands or mitigation of natural hazards (e.g., storms) by coastal marshes and mangrove forests.
- **Cultural services**—a broad category that includes the general values humans place on natural areas. Benefits may be gained through direct use, such as recreational activities (recreational fishing and swimming), or through the value placed by the public on the continued existence of natural resources, including aesthetic values, bequest or generational values, and community and spiritual connections to natural resources.

Natural Resource Damage Assessment and Compensation

OPA addresses natural resource damages and the restoration of resources that are injured and services that are lost as the result of an oil spill. Designated federal, state, tribal, and sometimes foreign trust agencies are responsible to act on behalf of the public. OPA directs trustees to undertake two main actions: (1) return injured natural resources to their baseline condition (the condition that existed prior to the spill), and (2) recover compensation for interim losses. Restoration actions focus on returning natural resources to the baseline level with as much certainty and as quickly as possible. Compensation includes actions to address interim losses of natural resources and services until resources have recovered. Compensatory actions provide services of the same type and quality and of comparable value as those lost or injured. Damage assessment is required to quantify the extent of injuries to natural resources and to determine the type and amount of restoration and compensatory actions needed. The process of recovery can be broken down into three main phases:[151]

- **Pre-assessment phase**—determines whether natural resource injuries have occurred or are expected and whether to continue to the next phase.
- **Restoration planning phase**—evaluates potential injuries to natural resources. This phase includes an assessment of the nature and extent of natural resource injuries and development of plans for restoring the resource and compensating the public for interim losses.
- **Restoration phase**—the final restoration plan is presented to responsible parties to implement or fund the plan. This provides the opportunity for settlement of damages claims without litigation. However, OPA authorizes trustees to bring civil action for damages.

In addition, natural resource impacts may disrupt business activity, especially sectors that depend directly (or indirectly) on natural resources and the environment. Direct economic losses may accrue from the closure of fishing grounds, effects on port operations, or the loss of tourist-related business. Unlike natural resource damages, which are considered by the appropriate natural resources trustees, costs to businesses are submitted as claims by the third parties that suffer the loss (as discussed above in "OPA Compensation and Claims Process").

[151] Department of Commerce, "Natural Resource Damage Assessments; Final Rule," 61 *Fed. Reg.* 441-442, January 5, 1996.

Environmental Recovery

NOAA regulations state that recovery means the return of injured natural resources and services to baseline.[152] Defining the baseline condition of the ecosystem is often hindered by limited scientific understanding of physical and biological processes in coastal and marine areas, natural variability of marine systems, and a paucity of related scientific data. These factors are coupled with uncertainties about acute and chronic effects of oil on marine organisms. In the face of these uncertainties, it is likely that many questions related to restoration and compensation will arise, including basic questions about what constitutes ecosystem recovery and when it has occurred.

Economic Impacts

Natural Resources and Related Economic Activity[153]

Natural resource-dependent sectors of the Gulf coastal economy that have been affected by the oil spill include commercial and recreational fisheries and the tourist industry. In 2008, the Gulf fishing industry landed 1.274 billion pounds of fish and shellfish with a dockside value of $659 million.[154] When related processor, wholesale, and retail businesses are included, the Gulf seafood industry supports over 200,000 jobs with related income impacts of $5.5 billion.[155] The top commercial species in terms of value are shrimp ($367 million), menhaden ($64 million), oysters ($59 million), and blue crab ($38 million).[156] Recreational fisheries also make significant contributions to the region's economy. In 2008, recreational anglers took 25.4 million fishing trips and spent over $12 billion on equipment and trips in the Gulf region.[157] Some of the most popular recreational species include snappers, several types of drum, sheepshead, and Spanish mackerel. Recreational fisheries support businesses such as charters and bait and tackle shops, and services such as restaurants and hotels. In 2000, 21.9 million people visited Gulf beaches and accounted for 177.2 million beach days.[158] The tourist industry contributed 620,000 jobs and over $9 billion in wages to the Gulf region. On the other hand, jobs related to cleanup activities could mitigate some of the losses in the fishing and tourism industry.

Immediate economic injuries of the oil spill have been incurred by the Gulf of Mexico fishing industry. As of July 14, 2010, NOAA had closed 83,927 square miles of the Gulf to commercial and recreational fishing (**Figure 4**).[159] This is approximately 35% of the federally managed waters of the Gulf exclusive economic zone.[160] Portions of Louisiana, Alabama, Mississippi, and Florida state waters have also been closed. These areas are some of the richest fishing grounds in the Gulf for major commercial species such as shrimp, blue crab, and oysters. Fishermen have filed claims

[152] Ibid., p. 441.

[153] Prepared by Harold F. Upton, Analyst in Natural Resources Policy.

[154] National Marine Fisheries Service, U.S. Department of Commerce, *Fisheries Economics of the United States*, Silver Spring, MD, 2008, http://www.st.nmfs.noaa.gov/st5/publication/econ/2008/FEUS%202008%20ALL.pdf.

[155] Ibid.

[156] Ibid.

[157] Ibid.

[158] Brent Ache, David Bylsma, and Kristen Crossett, et al., *The Gulf of Mexico at a Glance*, National Ocean Service, NOAA, A Tool for the Gulf of Mexico Alliance and the American Public, Washington, DC, 2008, http://gulfofmexicoalliance.org/pdfs/gulf_glance_1008.pdf.

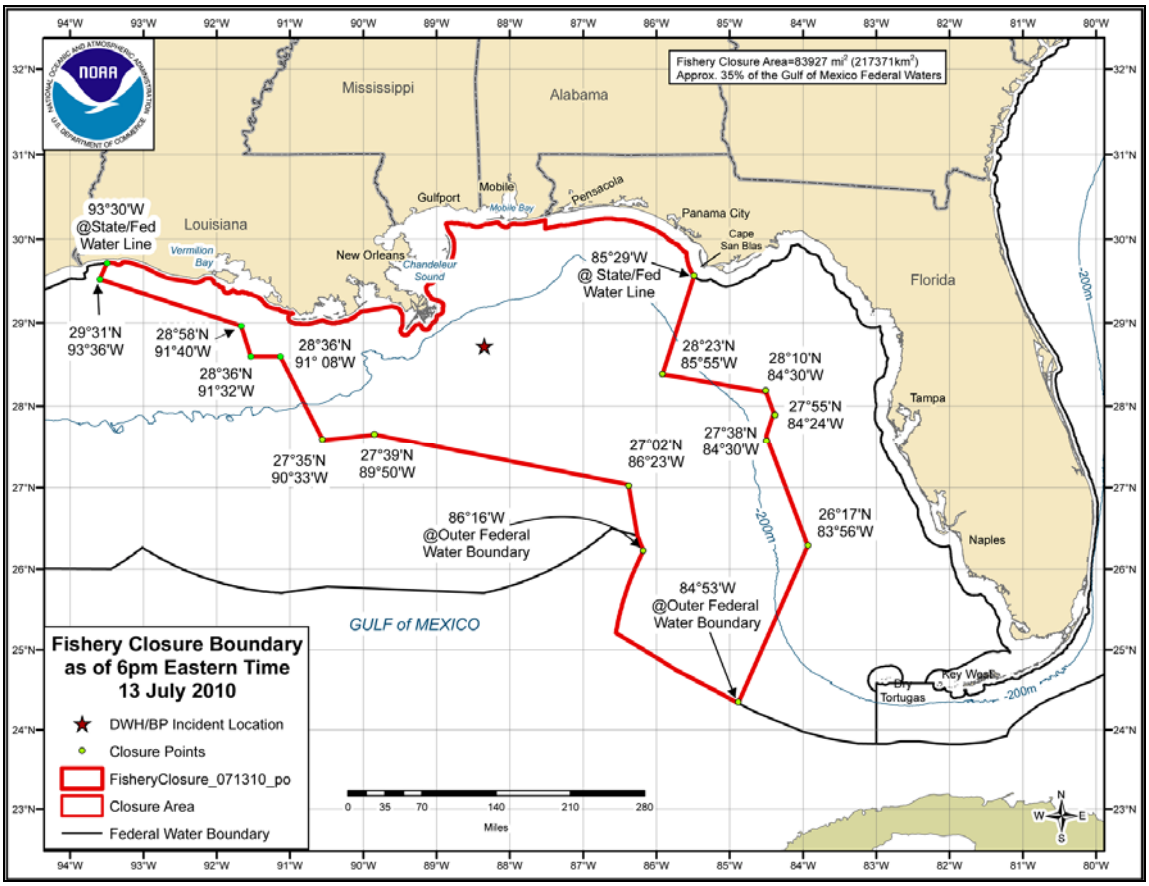
[159] See http://sero.nmfs.noaa.gov/deepwater_horizon_oil_spill.htm.

[160] The exclusive economic zone includes the area between 3 and 200 nautical miles from shore.

with BP for economic injuries, and claims are being paid out to individuals on a monthly basis. As the supplies of Gulf oysters, shrimp, and crabs have decreased, prices for these items have increased. Imports of shrimp are likely to increase to substitute for lost domestic production.[161] The seafood industry is also very concerned with consumers' perceptions of Gulf seafood and potential effects on demand for Gulf seafood products. To ensure seafood safety, NOAA and FDA are monitoring fish caught just outside closed areas and testing them for oil compounds. Bookings and trips for recreational fishing charters have decreased, especially in Louisiana, and sportfishing tournaments have been cancelled.

Figure 4. Gulf of Mexico Fishery Closure

(as of July 14, 2010, unchanged from July 12, 2010))



Source: NOAA, http://sero.nmfs.noaa.gov/deepwater_horizon_oil_spill.htm.

Notes: For more recent closing announcements, see NOAA's website, at http://sero.nmfs.noaa.gov/deepwater_horizon_oil_spill.htm.

Oil has reached many central Gulf of Mexico beaches, and visits to these areas have decreased significantly. Cancellations have also been reported for areas that are still clear of oil. Tourism officials are concerned that reporting on the spill has contributed to negative perceptions of the entire Gulf region. To counter these perceptions, BP has funded tourism promotion programs in Alabama, Mississippi, and Florida. Fishing and tourism have already been harmed by the

[161] The United States imports 90% of the shrimp it consumes.

Deepwater Horizon spill, but it is likely that the largest impacts have not yet surfaced and may occur over years.

Impact on Oil and Natural Gas Prices[162]

The *Deepwater Horizon* incident has had limited immediate impact on oil and natural gas supply and prices because production has not been significantly disrupted.[163] Longer-term impacts are uncertain and depend at least in part on policy and regulatory responses, which may affect the production of offshore oil and natural gas.

At the time of the incident, the oil and gas formation was still being explored, and was not yet in the production phase of the project.[164] Stopping production activity near the spill location for safety reasons has so far resulted in a relatively small reduction in energy supply. MMS reported that five offshore platforms were evacuated, halting—at least temporarily—approximately 2,300 barrels a day (0.14% of the Gulf's oil production) and 1.2 million cubic feet of natural gas (0.02% of the Gulf's natural gas production).[165]

Further, currently high commercial oil inventories and the availability of the Strategic Petroleum Reserve would likely help insulate the domestic oil market against short-term disruptions.[166] After the incident, the price for West Texas Intermediate crude oil fell as low as $64.78/barrel (May 25, 2010), versus $81.52/barrel on April 19, the day before the spill. Prices have recovered somewhat, closing at $74.05/barrel on July 7, but remain below their level prior to the incident.[167] Other oil market drivers softened prices, offsetting near-term support to prices from spill-related uncertainty about adequate supply. Natural gas prices have climbed since the incident, from $3.94/million btu to $4.57/million btu,[168] but this too is likely primarily due to other drivers, such as stronger weather-related natural gas demand in parts of the United States and concerns about potential hurricane-related production disruptions in coming months.[169]

Longer-term impacts on U.S. oil production are uncertain and depend at least in part on the response to the spill from Congress, federal regulators, and state governments. The Energy Information Administration projects that the six-month moratorium on deepwater drilling announced May 27 could reduce Gulf production by roughly 31,000 barrels per day in the fourth

[162] Prepared by Neelesh Nerurkar, Specialist in Energy Policy.

[163] Energy Information Administration, U.S. Department of Energy, "*Deepwater Horizon* Oil Spill, This Week In Petroleum," Washington, DC, May 19, 2010, http://tonto.eia.doe.gov/oog/info/twip/twip.asp.

[164] The *Wall Street Journal* cited an anonymous source who claimed that before the spill, BP had been days away from announcing the discovery was "commercially attractive," and that the Macondo Prospect held "tens of millions of barrels" in potentially recoverable oil reserves (Russell Gold, Ben Casselman, and Guy Chazan, "Missing Workers Feared Dead as Gulf Rig Sinks—One of the Industry's Worst Disasters in Decades Occurred Days Before BP Was Going to Disclose Significant Oil Find at Site," *Wall Street Journal*, April 23, 2010). However, it would have taken some years to develop the project into a producing facility.

[165] See http://www.deepwaterhorizonresponse.com/go/doc/2931/550055/ .

[166] Energy Information Administration, U.S. Department of Energy, "Deepwater Horizon Oil Spill," *This Week In Petroleum*, Washington, DC, May 19, 2010, http://tonto.eia.doe.gov/oog/info/twip/twiparch/100519/twipprint.html.

[167] Energy Information Administration, U.S. Department of Energy, *Petroleum Navigator*, Washington, DC, July 8, 2010, http://www.eia.doe.gov/dnav/pet/pet_pri_spt_s1_d.htm.

[168] Energy Information Administration, U.S. Department of Energy, *Natural Gas Navigator*, Washington, DC, June 15, 2010, http://www.eia.doe.gov/dnav/ng/hist/rngc1d.htm.

[169] Eileen Moustakis, "US Henry Hub gas at 4-mth high, other prices slip," *Reuters*, June 16, 2010.

quarter of 2010 and 82,000 barrels a day in 2011.[170] Some experts suggest that reactions from government and industry that limit investment or slow new project development could impact potential domestic oil and natural gas production. Employment and taxes from the oil and gas industry may be negatively impacted.[171] Concerns about the environmental risks of offshore drilling in the wake of the *Deepwater Horizon* incident may also affect how much acreage is offered for offshore exploration and development in the future.

The longer-term impact on oil prices or U.S. oil imports is also uncertain. Any policy changes that would affect U.S. oil supply would have to be factored into the context of the global oil market, where oil prices are determined. U.S. offshore crude oil production in 2009 was 1.7 million barrels a day, of which 1.6 million barrels a day came from the U.S. section of the Gulf of Mexico (including state and federal areas). This is about 2% of the roughly 84 million barrel-per-day global oil market in 2009 (of which the United States consumed about 19 million barrels daily).[172] However, the *Deepwater Horizon* incident is also influencing policy and practices abroad. Around 26 million barrels per day are produced offshore around the world.[173] Regulators and oil companies in other countries are likely to learn from this incident and make changes in their offshore sectors as well, which could potentially impact a broader portion of global oil supply and oil prices.

As with oil, measures affecting the pace, cost, and scope of offshore drilling can affect the supply and price of natural gas. EIA projects that the six-month deepwater drilling moratorium could reduce U.S. gas production by 0.05 billion cubic feet per day in the second half of 2010 and 0.25 billion cubic feet per day in 2011.[174] Unlike the global oil market, natural gas markets are generally more regional. (Global liquefied natural gas trade is growing and interlinking regions but remains relatively small.) North America has a continent-wide market that is integrated through a pipeline network connecting the lower 48 states, the most populous provinces of Canada, and parts of Mexico.[175] The United States produces 2.8 trillion cubic feet per year from offshore sources, of which 2.7 trillion cubic feet come from the U.S. section of the offshore Gulf of Mexico. The total North American natural gas market was 28.5 trillion cubic feet per day in 2008, of which U.S. consumption was 23.2 trillion cubic feet.[176] Because U.S. offshore natural gas supply has a higher share of a smaller market, there is potential for lower offshore supplies to have a greater impact on U.S. natural gas prices than on oil prices. However, there are again a number of uncertainties involved, such as to what degree unconventional onshore natural gas production can compensate for losses in offshore production.[177]

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[170] Energy Information Administration, U.S. Department of Energy, *Short-Term Energy Outlook*, Washington, DC, July 7, 2010, http://www.eia.doe.gov/emeu/steo/pub/contents.html.

[171] Julie Wilson et al., *Deepwater Horizon Tragedy: Near-Term and Long-Term Implications in the Gulf of Mexico*, Wood Mackenzie, Upstream Insights, Houston, TX, May 11, 2010.

[172] Energy Information Administration, U.S. Department of Energy, http://www.eia.gov/oog/special/gulf/gulf_fact_sheet.html?featureclicked=5& and http://www.eia.doe.gov/oil_gas/petroleum/info_glance/petroleum.html.

[173] International Energy Agency, *Monthly Oil Market Report*, Paris, June 23, 2010.

[174] Energy Information Administration, *Short-Term Energy Outlook*, U.S. Department of Energy, Washington, DC, July 7, 2010, http://www.eia.doe.gov/emeu/steo/pub/contents.html.

[175] CRS Report R40487, *Natural Gas Markets: An Overview of 2008*, by Robert Pirog.

[176] Energy Information Administration, U.S. Department of Energy, *International Energy Statistics*, Washington, DC, http://tonto.eia.doe.gov/cfapps/ipdbproject/IEDIndex3.cfm.

[177] For further reading on offshore production and oil and natural gas prices, see CRS Report R40645, *U.S. Offshore Oil and Gas Resources: Prospects and Processes*, by Marc Humphries, Robert Pirog, and Gene Whitney.

Possible Impacts on Shipping[178]

The Lower Mississippi River is one of the busiest waterways in the country in terms of commercial ship traffic. Ports along the river serve as the major gateway for U.S. exports of agricultural commodities, whose peak season generally begins in late summer, and imports of a wide variety of commodities. During past oil spills, the Coast Guard has closed ports or severely restricted ship traffic to prevent vessel traffic from spreading the oil. This oil spill has thus far not affected ship traffic, as most of the oil has stayed east of the major shipping lanes. The Coast Guard has set up cleaning stations at various points to clean hulls before vessels enter the river, but only one ship has had to be cleaned so far.

Labor Issues

National attention to the 11 worker fatalities is reflected in Congress's interest in federal agency jurisdiction over worker safety at oil drilling rigs on the OCS, and the prevalence of accidents, injuries, and fatalities at these locations.

Safety and Health of OCS Workers[179]

The Occupational Safety and Health Act (OSH Act) provides for the establishment of workplace safety standards for most private employers, including those that operate offshore oil and gas facilities.[180] Section 4(a) of the OSH Act indicates explicitly that the statute applies to employment performed on OCS lands.[181] Section 4(b)(1) of the OSH Act, however, clarifies that the statute shall not apply when workplace safety standards have been established by other federal agencies that have been granted the authority to promulgate such standards: "Nothing in this Act shall apply to working conditions of employees with respect to which other Federal agencies ... exercise statutory authority to prescribe or enforce standards or regulations affecting occupational safety or health."[182]

In two sections of the Outer Continental Shelf Lands Act (OCSLA), the "Secretary of the Department in which the Coast Guard is operating" (currently, the Secretary of the Department of Homeland Security) has been authorized to promulgate regulations or standards involving workplace safety. Section 4(d)(1) authorizes the Secretary to promulgate and enforce regulations with respect to lights and other warning devices, safety equipment, and "other matters relating to the promotion of safety of life and property on the artificial islands, installations, and other devices" attached to the seabed of the OCS or on adjacent waters.[183] In addition, Section 21(c) authorizes the Secretary to promulgate regulations or standards "applying to unregulated

[178] Prepared by John Frittelli, Specialist in Transportation Policy.

[179] Prepared by Linda Levine, Specialist in Labor Economics.

[180] 29 U.S.C. § 651 et seq.

[181] 29 U.S.C. § 653(a).

[182] 29 U.S.C. § 653(b)(1).

[183] 43 U.S.C. § 1333(d)(1).

hazardous working conditions related to activities on the outer Continental Shelf when he determines such regulations or standards are necessary."[184]

In 1979, the Coast Guard and the Occupational Safety and Health Administration (OSHA) signed a memorandum of understanding (MOU) to establish procedures for increasing consultation and coordination between the two agencies.[185] The MOU appears to elaborate on the relationship between the Coast Guard and OSHA in light of the authority granted by the OCSLA:

> The Coast Guard will develop and promulgate necessary regulations to assure safe and healthful working conditions on the OCS. OSHA will continue to promulgate general standards, which may apply to working conditions on the OCS not being regulated by the Coast Guard. In developing regulations and standards, the two agencies will cooperate to the maximum extent possible.[186]

Since the signing of the MOU, the Coast Guard has issued various regulations with regard to OCS activities.[187] Part 142 of Title 33, *Code of Federal Regulations*, includes regulations relating to workplace safety and health on the OCS.

DOI is also involved in workplace safety. Under Section 22(a) of the OCSLA, the Secretary of the Interior, the Secretary of Homeland Security, and the Secretary of the Army are authorized to enforce safety and environmental regulations promulgated pursuant to the statute.[188] Regulations that address the inspection of OCS facilities have been issued by the Coast Guard. Section 140.101(b) of Title 33, *Code of Federal Regulations*, states: "On behalf of the Coast Guard, each fixed OCS facility engaged in OCS activities is subject to inspection by the Minerals Management Service (MMS)."[189]

Oil and Gas Industry Safety Statistics[190]

Data from the U.S. Bureau of Labor Statistics' (BLS's) Census of Fatal Occupational Injuries (CFO) indicates that, in 2008, the latest year for which CFO data are available, 18 of the 174 fatalities at all U.S. workplaces that resulted from fires and explosions occurred in the oil and gas industry. The oil and gas industry is defined in the CFO to include oil and gas extraction (NAICS 211), contract drilling of oil and gas wells (NAICS 213111), and support activities for oil and gas operations (NAICS 213112), and includes both onshore and offshore activities.[191] Data are not

[184] 43 U.S.C. § 1347(c).

[185] Memorandum of Understanding Between the U.S. Coast Guard and OSHA Concerning Occupational Safety and Health on the Outer Continental Shelf (OCS) (December 19, 1979), available at http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=MOU&p_id=223.

[186] Ibid.

[187] See 33 C.F.R. subchapter N.

[188] 43 U.S.C. § 1348(a).

[189] On May 19, 2010, the Secretary of the Interior issued Order No. 3299, which reassigned the safety and environmental enforcement functions of the Minerals Management Service to a new Bureau of Safety and Environmental Enforcement. See U.S. Dept. of the Interior, Order No. 3299, available at http://www.mms.gov/ooc/pdfs/DOI_pressrelease/SecretaryOrder3299.pdf.

[190] Prepared by Linda Levine, Specialist in Labor Economics.

[191] NAICS stands for the North American Industry Classification System, which federal statistical agencies use to categorize establishments into industries. Establishments primarily engaged in oil and gas extraction as well as those chiefly providing support services for oil and gas operations are categorized in the mining sector (NAICS 21). The oil (continued...)

currently available for offshore operations alone. Of the 18 deaths reported, 11 (61%) occurred at firms performing support activities for oil and gas operations; 4 (22%) at establishments engaged in oil and gas extraction; and 3 (17%) at contract oil and gas well drillers. Looked at in a different way, it appears that 15%, or 18, of the oil and gas industry's 120 fatalities in 2008 were due to fires and explosions. Among the 120 deaths, almost three out of five (69) took place in the support activities for oil and gas operations industry. Another one out of four (30) fatalities were in the contract oil and gas well drilling industry. Fewer than one in five (21) fatalities caused by fire and explosions took place in the oil and gas extraction industry.[192]

Injury rates in two of the three industries were below average in 2007, according BLS's annual Survey of Occupational Injuries and Illnesses.[193] In 2007, when there were 4.0 cases of nonfatal injuries per 100 full-time workers, the injury rate in the oil and gas extraction industry was 1.6; in support activities for oil and gas operations, it was 2.6. In contrast, the injury rate among contract oil and gas drillers was 4.5 cases per 100 full-time workers. [194] With regard specifically to injuries and illnesses associated with fires and explosions, there were 1,870 such cases in 2007, of which 50 occurred in the oil and gas extraction industry; the other two industries had no reported cases.[195]

BOEMRE/MMS requires firms operating on the OCS to report on the occurrence of unsafe incidents. Firms must report on incidents involving fatalities; injuries that require evacuation of persons for medical treatment or that result in one or more days away from work, restricted work, or job transfers; fires and explosions; and uncontrolled flows, among other types of incidents. In 2009, according to BOEMRE/MMS's database, there were four incidents on facilities in the Gulf of Mexico associated with deaths. There were 290 incidents in the Gulf and 16 in the Pacific OCS region linked to injuries. The 145 incidents of fires/explosions reported to BOEMRE/MMS in 2009 may or may not have caused fatalities or injuries.[196]

(...continued)

and gas extraction subsector (NAICS 211) includes firms that explore, develop, and produce oil or gas wells that they operate for themselves or under contract to others. The support activities for mining subsector (NAICS 213) includes companies that primarily drill oil and gas wells for others on a contract or fee basis (NAICS 213111) and perform other support services on a contract or fee basis for oil and gas operations (NAICS 213112) such as cementing and shooting wells.

[192] CFO data at http://stats.bls.gov/iif/oshwc/cfoi/cftb0232.pdf.

[193] Data are from 2007 because statistics are not available separately in 2008 for the oil and gas drilling industry.

[194] The Survey of Occupational Injuries and Illnesses' data chiefly is from the occupational safety and health logs that OSHA requires employers to maintain. Total recordable cases are the sum of cases with days away from work, job transfer, or restriction and other cases. Survey of Occupational Injuries and Illnesses data at http://stats.bls.gov/iif/oshwc/osh/os/ostb1909.pdf.

[195] These cases are limited to those involving days away from work, which are regarded as the most serious nonfatal injuries and illnesses. Survey of Occupational Injuries and Illnesses data at http://stats.bls.gov/iif/oshwc/osh/case/ostb1946.pdf.

[196] BOEMRE/MMS incident statistics at http://www.boemre.gov/incidents/IncidentStatisticsSummaries.htm.

Coast Guard Oversight of OCS Safety[197]

Technical Competence

The Coast Guard's technical expertise in providing effective safety oversight of certain maritime operations has been a recent congressional concern.[198] Some have asserted that the Coast Guard's practice of regularly rotating staff geographically or by activity, as military organizations typically do, has hindered the agency's ability to develop a cadre of staff with the technical expertise that certain segments of the maritime industry require. The offshore industry appears to be one of those segments. In addition to moving farther from shore and into deeper water, this industry is designing new "hybrid systems" with "novel configurations" that no longer fit into a single vessel category, requiring the classification societies to amend their rules.[199] Some have suggested that a separate, civilian agency be created to oversee maritime safety matters. The Coast Guard recently revamped its safety program. Among other things, it created additional civilian safety positions, converted military positions into civilian ones, and developed a long-term career path for civilian safety inspectors and investigators.

Regulatory Issues

In testimony before the Coast Guard and MMS joint investigation hearing, a Coast Guard official from the local district that oversees the Gulf of Mexico testified that "regulations governing Coast Guard inspections of mobile drilling rigs date to 1978" and that the regulations do not cover some rig equipment because that equipment was not in use when these regulations were written.[200] Some of the regulatory sections specific to MODUs in 46 C.F.R. Parts 107-109 cite a rulemaking from 1978. In 1999, the Coast Guard issued a notice of proposed rulemaking (NPRM) regarding updating regulations under 33 C.F.R. Parts 140-147, which implement the Coast Guard's authority under OCSLA. In this NPRM, the Coast Guard stated that the last major revision of these regulations had occurred in 1982 and noted that offshore facilities had moved much farther offshore (127 miles) and into much deeper water (7,500 feet) since then, and therefore it needed to update its safety regulations.[201] The Coast Guard also stated that one intent in updating the regulations was to align the requirements of foreign OCS units with those of U.S. OCS units, and it indicated that dramatic changes to the nature of the work and the technology used in OCS units had made its current regulations deficient. The comment period has been repeatedly extended. The Coast Guard plans on issuing a supplemental notice of proposed rulemaking on OCS activities in November 2010.[202]

The foreign flagging of the *Deepwater Horizon* is an issue raised by some Members of Congress, who cite safety concerns, among other reasons, for their preference for U.S. flagging of offshore

[197] Prepared by John Frittelli, Specialist in Transportation Policy.

[198] House Committee on Transportation and Infrastructure, Subcommittee on Coast Guard and Maritime Transportation, *Challenges Facing the Coast Guard's Marine Safety Program*, hearing, July 27, 2007.

[199] "Hurricane Lessons Bring New Rules, Floating System Designs," *Offshore*, June 2007, pp. 84-87.

[200] Brett Clanton, "Federal Testing of Rigs Can Have Limits," *Houston Chronicle*, May 13, 2010. The website of the joint investigation states that transcripts of hearing testimony will not be available until January 2011; http://www.deepwaterinvestigation.com/go/page/3043/46731/.

[201] 64 *Fed. Reg.* 68416, December 7, 1999. Comments can be viewed under ID # USCG-1998-3868 at http://www.regulations.gov.

[202] OMB, Spring 2010 Unified Agenda, RIN: 1625-AA18.

rigs.[203] The Coast Guard contends that foreign-flagged and U.S.-flagged rigs are held to the same level of safety oversight.[204] While the oversight is considered substantively equivalent, the Coast Guard relies more on classification societies (see "Classification Societies" section) to perform inspections in the case of foreign-flagged rigs than it does for U.S.-flagged rigs.[205] In the past, lower safety standards were associated with ships registered in "flag of convenience" (FOC) countries, but long-established FOC countries have raised their standards. IMO conventions and better enforcement by coastal states that share the results of boarding inspections are also credited with raising standards. The Coast Guard has included the Marshall Islands (the flag state of the *Deepwater Horizon*) on the list of 16 flag states it recognizes as having high standards based on the results of its boarding inspections.[206] This list, as well as the Coast Guard's list of the 20 worst performers,[207] is roughly evenly divided between FOC countries and traditional maritime powers, suggesting that FOC designation in and of itself is not an indicator of safety performance. As mentioned earlier, the Coast Guard, the flag state, IMO conventions, and classification societies are primarily concerned with the seaworthiness of a floating rig, not the drilling aspects of a rig.

IMO Convention Issues

In addition to the IMO MODU code, other IMO conventions have at least some applicability to foreign-flagged offshore drilling rigs. The International Convention on Oil Pollution Preparedness, Response and Co-operation, 1990 (OPRC 1990), requires that both fixed and floating structures engaged in exploration, production, loading, and unloading of oil (in addition to ships more generally) prepare oil pollution emergency response plans.[208] This convention contains very specific and detailed provisions that one observer describes as "probably the most important international legal document that regulates pollution of the marine environment resulting from offshore oil and gas activities."[209] Other IMO conventions, while providing a comprehensive set of detailed and specific safety and pollution prevention requirements for ships, either do not mention oil rigs or mention them only briefly and under vague pronouncements.[210]

Congress might consider whether a comprehensive international regime is warranted, considering plans for oil exploration in especially life-threatening and environmentally sensitive areas like the Arctic. While drafts of conventions have been issued and other nations support a comprehensive IMO regime for oil rigs, the United States is opposed.[211] It can be argued that the IMO, whose

[203] U.S. Congress, House Committee on Transportation and Infrastructure, Subcommittee on Coast Guard and Maritime Transportation, *Foreign Vessel Operations in the U.S. Exclusive Economic Zone*, hearing, 111th Cong., 2nd sess., June 17, 2010.

[204] Oral and written testimony of Kevin Cook, Coast Guard Director of Prevention Policy, U.S. Congress, House Committee on Transportation and Infrastructure, Subcommittee on Coast Guard and Maritime Transportation, *Foreign Vessel Operations in the U.S. Exclusive Economic Zone*, hearing, 111th Cong., 2nd sess., June 17, 2010.

[205] Ibid.

[206] The Coast Guard's "Qualship 21 Initiative."

[207] The Coast Guard's "Annual Targeted Flag List."

[208] The United States is a party to this convention.

[209] Hossein Esmaeili, *The Legal Regime of Offshore Oil Rigs in International Law* (Aldershot, UK: Ashgate Dartmouth, 2001), pp. 157-158.

[210] The only other detailed conventions regarding offshore rigs are one seeking to prevent ships from colliding with them and one to prevent terrorist acts against them.

[211] Mikhail Kashubsky, "Marine Pollution from the Offshore Oil and Gas Industry: Review of Major Conventions and Russian Law (Part 1), *Maritime Studies*, November-December 2006, pp. 6 and 8, at http://www.customscentre.canberra.edu.au/librarymanager/libs/17/Marine_Pollution_part1.pdf.

primary concern has been cargo and cruise ships, does not have the expertise to prescribe technical standards for offshore oil rigs.[212] Detailed standards do exist on a regional basis (examples include the Mediterranean Sea, the Baltic Sea, and the Persian Gulf), and one could argue that different environments dictate different requirements.[213] However, the global nature of the oil industry raises the question of whether an international convention on offshore rigs of all types would enhance their safety.

Reorganization of BOEMRE/MMS[214]

Some observers and government officials have raised concerns about management shortcomings and mission conflicts at BOEMRE/MMS and, in some instances, perceived capture of portions of the agency by the industry it has regulated. Such concerns have been raised in a number of oversight hearings,[215] for example, as well as the reports and testimony of the DOI inspector general[216] and the Government Accountability Office.[217] President Obama gave voice to these concerns during oil spill-related remarks he delivered on May 14, 2010:

> For too long, for a decade or more, there has been a cozy relationship between the oil companies and the federal agency that permits them to drill. It seems as if permits were too often issued based on little more than assurances of safety from the oil companies. That cannot and will not happen anymore. To borrow an old phrase, we will trust but we will verify.[218]

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[212] Canadian Maritime Law Association, "Discussion Paper on the Need for an International Legal Regime for Offshore Units, Artificial Islands and Related Structures Used in Exploration for and Exploitation of Petroleum and Seabed Resources," 1996, at http://www.cmla.org/papers/MAR96.htm.

[213] Maria Gavouneli, *Pollution from Offshore Installations* (London: Graham and Trotman Ltd., 1995).

[214] Prepared by Henry B. Hogue, Analyst in American National Government.

[215] See, for example, U.S. Congress, Senate Committee on Energy and Natural Resources, *Oil and Gas Royalty Management at DOI*, 110th Cong., 1st sess., January 18, 2007, S.Hrg. 110-7 (Washington: GPO, 2007); U.S. Congress, House Committee on Natural Resources, Subcommittee on Energy and Mineral Resources, *Getting Royalties Right: Recent Recommendations for Improving the Federal Oil and Gas Royalty System*, 110th Cong., 2nd sess., March 11, 2008, Serial No. 110-64 (Washington: GPO, 2008); U.S. Congress, House Committee on Appropriations, Subcommittee on Interior, Environment, and Related Agencies, *Minerals Management Service Oversight*, 111th Cong., 1st sess., April 2, 2009, transcript available at http://appropriations.house.gov/images/stories/pdf/ienv/Hearing_Volumes/Interior-FY10-Pt5.pdf#page=307; U.S. Congress, House Committee on Natural Resources, Subcommittee on Energy and Mineral Resources, *Leasing and Development of Oil and Gas Resources on the Outer Continental Shelf*, 111th Cong., 1st sess., March 17, 2009; and U.S. Congress, House Committee on Oversight and Government Reform, *Offshore Drilling: Will Interior's Reforms Change Its History of Failed Oversight*, 111th Cong., 2nd sess., July 22, 2010, webcast available at http://oversight.house.gov/index.php?option=com_content&task=view&id=5038&Itemid=2.

[216] See, for example, U.S. Department of the Interior, Office of Inspector General, *Evaluation Report: Minerals Management Service Royalty-In-Kind Oil Sales Process*, Report No. C-EV-MMS-0001-2008, Washington, DC, May 2008, http://www.doioig.gov/images/stories/reports/pdf//2008-G-00212.pdf; U.S. Department of the Interior, Office of Inspector General, *Investigative Report: Island Operating Company et al*, Case No. PI-GA-09-0102-I, Washington, DC, March 31, 2010, http://www.doioig.gov/images/stories/reports/pdf//IslandOperatingCo.pdf; and U.S. Department of the Interior, Office of Inspector General, *Investigative Report: MMS Oil Marketing Group - Lakewood*, Washington, DC, August 19, 2008, http://www.doioig.gov/images/stories/reports/pdf//RIKinvestigation.pdf.

[217] GAO has summarized its recent work in this area in U.S. Government Accountability Office, *Oil and Gas Management: Past Work Offers Insights to Consider in Restructuring Interior's Oversight*, GAO-10-888T, July 22, 2010, http://www.gao.gov/new.items/d10888t.pdf.

[218] U.S. President (Obama), "Remarks on the Oil Spill in the Gulf of Mexico," *Daily Compilation of Presidential Documents*, 2010 DCPD No. 201000384 (May 14, 2010), p. 2.

During the unfolding of the Deepwater Horizon oil spill, both the Administration and Members of Congress have sought to address this issue, in part, through a reorganization that would divide BOEMRE/MMS into multiple units and distribute the agency's functions among them.

This section provides background and context on the organization of BOEMRE/MMS, discusses Secretary Salazar's use of his administrative reorganization authority to address perceived conflicts among the agency's missions, and identifies legislation under consideration in Congress that would similarly reorganize BOEMRE/MMS.

Establishment of the Minerals Management Service

MMS was established in 1982 after congressional committees held a number of hearings in 1981 documenting persistent systemic problems with management of OCS leasing programs.[219] These hearings built on the findings of the General Accounting Office (GAO)[220] and the inspector general of DOI (OIG), among others. On July 8, 1981, Secretary of the Interior James Watt established a commission charged with looking into allegations of failures and advising him on potential remedies. In particular, the commission focused on underpayment and inadequate collection of royalties owed to the United States and on inadequate protection against physical theft of resources in the field. The commission recommended, among other things, that leasing-related functions be consolidated into a new agency within the department.[221] On January 19, 1982, two days prior to the public release of the commission's report, Secretary Watt issued a secretarial order establishing MMS.[222] A series of other secretarial orders transferred certain functions to it from other organizational units within DOI.[223]

Congress appropriated funds for this new entity for the following fiscal year.[224] The conference report did not specifically address the reorganization, but the House report stated, with reference to MMS, the following:

> This organization was established by Secretarial Order 3071 which transferred resources from the Geological Survey, the Bureau of Land Management, and the Office of the Secretary. The reorganization was the result of the underreporting of oil and gas production from Federal and Indian lands, theft of oil from those lands, and underpayment and inadequate collection of royalties owed to the United States.... The bulk of the appropriation ... is associated with the Outer Continental Shelf Leasing program, evaluation of resources, regulations, and activities associated with Federal and Indian lands. These are functions formerly divided between the Geological Survey and the Bureau of Land Management. That division of function often caused problems of neglect, duplication, and turf wars. The Committee agrees with the consolidation. This consolidation places the responsibility and accountability for the off-shore mineral leasing program in one spot, thus making oversight easier. The Committee will be looking carefully at

[219] United States Commission on Fiscal Accountability of the Nation's Energy Resources, *Fiscal Accountability of the Nation's Energy Resources* (Washington, GPO, 1982).

[220] Now the Government Accountability Office.

[221] United States Commission on Fiscal Accountability of the Nation's Energy Resources, *Fiscal Accountability of the Nation's Energy Resources* (Washington, GPO, 1982).

[222] Secretarial Order No. 3071, January 19, 1982. Amendment No. 1 to this order was issued on May 10, 1982. Copies of these documents are available from Henry B. Hogue, Analyst in American National Government.

[223] The organization and functions of the Minerals Management Service are identified in Part 118 of the *Department of the Interior Departmental Manual*, available at http://elips.doi.gov/app_DM/index.cfm?fuseaction=home.

[224] P.L. 97-394, 96 Stat. 1973.

> the progress this organization makes to make sure that the people of the United States get the maximum protection of their resources, including a proper return on their ownership.[225]

Organizationally, BOEMRE/MMS has been located under the Assistant Secretary for Land and Minerals Management. The leaders of the Bureau of Land Management and the Office of Surface Mining Reclamation and Enforcement have also reported to this assistant secretary. Whereas these two leaders are appointed by the President, by and with the advice and consent of the Senate, BOEMRE/MMS has been led by a director who is appointed by the Secretary. The BOEMRE/MMS directorship has been a non-career (political) Senior Executive Service (SES) position.

Administrative Reorganization by Secretary Salazar

On May 13, 2010, the Department of the Interior announced that Secretary Salazar had initiated the process of reorganizing the Minerals Management Service administratively.[226] The announcement indicated that the reorganization would be overseen by Assistant Secretary for Policy, Management, and Budget Rhea Suh and Senior Advisor Chris Henderson. The Secretary reportedly sent a letter to congressional leaders seeking input on the reorganization. The prospective organizational changes were to "achieve the following principles: Independent safety enforcement function; Full enforcement authority; Priority attention to safety and environmental values; and Application of best technology and cutting edge science."[227]

On May 19, 2010, Secretary Salazar issued Order No. 3299, which divided MMS into three new offices. [228] At the time, he noted that the reorganization was intended to address the perceived problem of conflicting missions at the agency:

> The Minerals Management Service has three distinct and conflicting missions that—for the benefit of effective enforcement, energy development, and revenue collection—must be divided.... The reorganization I am ordering ... will enable us to carry out these three separate and equally-important missions with greater effectiveness and transparency. These reforms will strengthen oversight of offshore energy operations, improve the structure for revenue and royalty collections on behalf of the American people, and help our country build the clean energy future we need.[229]

Under the provisions of the order, two of the new organizations, the Bureau of Ocean Energy Management and the Bureau of Safety and Environmental Enforcement, were to be

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[225] U.S. Congress, House Committee on Appropriations, *Department of the Interior and Related Agencies Appropriation Bill, 1983*, report to accompany H.R. 7356, 97th Cong., 2nd sess. (Washington: GPO, 1982), p. 40.

[226] U.S. Department of the Interior, "Salazar Names Senior Interior Officials to Lead Minerals Management Service Restructuring," press release, May 13, 2010, http://www.doi.gov/news/pressreleases/Salazar-Names-Senior-Interior-Officials-to-Lead-Minerals-Management-Service-Restructuring.cfm#.

[227] Ibid.

[228] U.S. Department of the Interior, Secretarial Order 3299, "Establishment of the Bureau of Ocean Energy Management, the Bureau of Safety and Environmental Enforcement, and the Office of Natural Resources Revenue," issued May 19, 2010. This order was amended, on June 18, 2010, to extend the deadline for development of a schedule for implementing the reorganization from "within thirty (30) days," or by June 19, 2010, to "by July 9, 2010." This amended order, numbered 3299A1, is available at http://elips.doi.gov/app_so/act_getfiles.cfm?order_number=3299A1.

[229] U.S. Department of the Interior, "Salazar Divides MMS's Three Conflicting Missions: Establishes Independent Agency to Police Offshore Energy Operations," press release, May 19, 2010, http://www.doi.gov/news/pressreleases/Salazar-Divides-MMSs-Three-Conflicting-Missions.cfm.

organizationally housed under the Assistant Secretary for Land and Minerals Management, which has been the location of BOEMRE/MMS. The third unit, the Office of Natural Resources Revenue, was to be under the Assistant Secretary for Policy, Management, and Budget.

According to the order, the Bureau of Ocean Energy Management was to "exercise the conventional (e.g., oil and gas) and renewable energy-related management functions of [BOEMRE/MMS] not otherwise transferred [by the order] including ... activities involving resource evaluation, planning, and leasing."

The Bureau of Safety and Environmental Enforcement was to carry out the functions of BOEMRE/MMS related to safety and environmental enforcement, including "the authority to inspect, investigate, summon witnesses and produce evidence, levy penalties, cancel or suspend activities, and oversee safety, response, and removal preparedness."

The Office of Natural Resources Revenue was to be responsible for royalty and revenue management functions of BOEMRE/MMS, including "royalty and revenue collection, distribution, auditing and compliance, investigation and enforcement, and asset management for both onshore and offshore activities."

The order also provided that the two Assistant Secretaries mentioned above were to "ensure that this reorganization will provide that agency decisions are made in compliance with all applicable safety, environmental, and conservation laws and regulations, and that all reviews and consultations are conducted in an independent, comprehensive, and scientifically-sound manner."

The two Assistant Secretaries were charged with developing the implementation details and reporting those details to the Secretary. Initially, they were to "develop a schedule within [30] days for the implementation" of the order in consultation with the Office of Management and Budget and relevant congressional committees. The order was later amended to change the deadline to July 9, 2010.

The implementation plan for the reorganization of BOEMRE/MMS was submitted to Secretary Salazar on July 14, 2010, and the plan was also sent to congressional leaders.[230] Noting that the "reorganization of MMS is a substantial endeavor that will pose significant challenges," the plan envisioned a phased implementation schedule.[231] The transfer of "the largely intact Minerals Revenue Management function" to the newly created Office of Natural Resources Revenue, under the Assistant Secretary for Policy, Management, and Budget, would be carried out first, with an effective date of October 1, 2010.[232] The report indicated that the other "two Bureaus will be created from a single bureau in which functions and process are tightly interconnected, making the separation complicated and demanding."[233] Consequently, implementation of this part of reorganization was expected to take longer and require more resources. The plan called for "6 months of employee engagement and communication, detailed analysis, and planning … with a

[230] U.S. Department of the Interior, "Salazar Receives Implementation Plan for Restructuring the Department's Offshore Energy Missions," press release, July 14, 2010, http://www.doi.gov/news/pressreleases/Salazar-Receives-Implementation-Plan-for-Restructuring-the-Departments-Offshore-Energy-Missions.cfm#.

[231] U.S. Department of the Interior, "Implementation Report: Reorganization of the Minerals Management Service," issued July 14, 2010, p. 2. Available at http://www.doi.gov/deepwaterhorizon/loader.cfm?csModule=security/getfile&PageID=38543.

[232] Ibid., p. 4.

[233] Ibid., p. 6.

phased implementation beginning in January 2011 and continuing for at least the following 12 months."[234]

As previously noted, a month after issuing the reorganization order, the Secretary ordered the name of the Minerals Management Service (MMS) changed to the Bureau of Ocean Energy Management, Regulation, and Enforcement (BOEMRE).[235] The name change was effective immediately.

Call for Organic Legislation

Secretary Salazar has also called for Congress to enact organic legislation for BOEMRE/MMS. During his testimony before the Senate Committee on Energy and Natural Resources, the day before he issued the reorganization order, Salazar stated:

> [T]he Department of Interior has its responsibility. But I would say this Congress also has its responsibility. And I was proud to be a member of the Senate with, I think, everyone who is currently sitting in this committee today. From this Congress I would expect that we would move forward, and we would see thoughtfully crafted, organic legislation for the Minerals Management Service. Some of you, Senator Wyden, have pushed that effort for a while. I have supported that effort. It should be something that gets done. An agency the size of the Minerals Management Service that collects, on average, $13 billion a year, that has these responsibilities for the Outer Continental Shelf in terms of the energy production and future of the United States of America, should not exist by fiat of a secretarial order that was signed almost 30 years ago. It is important that there be thoughtfully crafted, organic legislation for the new agency to be created. I will do—I will continue to do the efforts that I can do within the authority that I have as secretary to redo the Minerals Management Service. But at the end of the day, it's going to be important that Congress take up that responsibility.[236]

Agency Reorganization Legislation During the 111th Congress

During the 111th Congress, both prior to and after the *Deepwater Horizon* oil spill, bills were introduced that would reorganize BOEMRE/MMS and its functions. On September 9, 2009, Representative Nick J. Rahall introduced H.R. 3534, the Consolidated Land, Energy, and Aquatic Resources Act of 2009. The bill was referred to the House Committee on Natural Resources. Hearings were held on the bill and a markup session was held on July 14 and 15, 2010. An amendment in the nature of a substitute, as amended, was agreed to and the bill was ordered to be favorably reported. The bill, as ordered reported, would, among other effects, abolish MMS and establish three new units within DOI. A Bureau of Energy and Resource Management would "manage the leasing and permitting for renewable energy, non-renewable energy, and mineral resources on all onshore and offshore Federal lands in the United States," except for Indian

[234] Ibid., p. 6.

[235] U.S. Department of the Interior, Secretarial Order 3302, "Change of the Name of the Minerals Management Service to the Bureau of Ocean Energy Management, Regulation, and Enforcement," issued June 18, 2010. Available at http://elips.doi.gov/app_so/act_getfiles.cfm?order_number=3302.

[236] U.S. Congress, Senate Committee on Energy and Natural Resources, hearing on issues involving offshore oil and gas exploration including the *Deepwater Horizon* accident, 111th Cong., 2nd sess., May 18, 2010, archive webcast available at http://energy.senate.gov/public/index.cfm?Fuseaction=Hearings.LiveStream&Hearing_id=69f3a508-9c1a-a3d4-ffa5-fd397b02c93b. Excerpted comments at approximately 35:30.

lands.[237] A Bureau of Safety and Environmental Enforcement would "carry out all the safety and environmental regulatory activities, including inspections, on all onshore and offshore Federal lands in the United States."[238] The third unit that would be established by the legislation, an Office of Natural Resources Revenue, would collect and disburse "all royalties and other revenues from energy and mineral related activities on onshore and offshore federal lands, [audit] such collections, and [promulgate] regulations relevant to revenue collection and management."[239]

On June 21, 2010, Senator Jeff Bingaman introduced S. 3516, the Outer Continental Shelf Reform Act of 2010, and it was referred to the Senate Committee on Energy and Natural Resources. Hearings were held on the bill, and the committee voted to report it, as amended, favorably, on June 30, 2010. The bill, as reported, would direct the Secretary of the Interior to use his administrative authority to establish three new entities within the department. Two of the new organizations would carry out OCS leasing, permitting, and safety and environmental regulatory functions. The Secretary would be directed to eliminate conflicts of interest related to these functions, to the maximum extent practicable. The third entity would be responsible for revenue and royalty management functions.

On October 7, 2009, Representative Darrell E. Issa introduced H.R. 3736, the Minerals Management Service Reform Act. This bill would establish MMS as an independent establishment in the executive branch, outside of the Department of the Interior. It would vest in the MMS Director all powers and duties of the present MMS as well as all functions, powers, and duties that have been vested in DOI relating to bidding, leasing, and managing all offshore oil and gas, including with respect to the Gulf of Mexico and other areas of the outer continental shelf; and collection of revenue (other than taxes) generated by such oil and gas.

Each of these bills would establish the heads of newly established entities as positions to be filled through appointment by the President with the advice and consent of the Senate.

On June 22, 2010, Representative Vern Buchanan introduced H.R. 5572, the Oil Spill Prevention Act of 2010. This bill would, among other things, establish a Minerals Management Service in the Department of the Interior that would carry out functions formerly performed by MMS. The agency would comprise an Office of Leasing and Permitting, which would carry out the named functions with regard to the OCS; an Office of Inspection, which would carry out vessel and facility inspection; and an Office of Revenue, which would collect OCS lease revenue. The bill does not specify how the leader of these entities would be appointed.

[237] U.S. Congress, House Committee on Natural Resources, "Consolidated Land, Energy, and Aquatic Resources (CLEAR) Act; H.R. 3534; Section-by-Section of the Amendement in the Nature of a Substitute Offered by Chairman Rahall," July 12, 2010, pp. 2-3; available at http://resourcescommittee.house.gov/images/Documents/clear%20act%20-%20section-by-section%20-%20july%2012%202010.pdf.

[238] Ibid., p. 3.

[239] Ibid., p. 3.

FEMA Issues[240]

The Robert T. Stafford Disaster Relief and Emergency Assistance Act (referred to as the Stafford Act, 42 U.S.C. 5721 et seq.) authorizes the President to issue "major disaster" or "emergency" declarations before or after catastrophes occur. The Gulf oil spill is currently being addressed by a law fashioned for that purpose, the Oil Pollution Act of 1990 (OPA), P.L. 101-380.[241] When certain events occur that carry with them such specific response authorities as pertain to oil spills or plane crashes, the President generally does not use his authority to issue a declaration and activate FEMA's authorities. Given the current circumstance of the OPA authority being in place and the existence of the Oil Spill Liability Trust Fund, FEMA has been playing an auxiliary role. It includes assisting the lead agency in the response, the U.S. Coast Guard (like FEMA, an entity within the Department of Homeland Security), in staffing and related support areas. If some factors change, such as the scope of the impact on the coastal states, or the need to provide supplemental federal funding, FEMA's role could expand. In that event, the Stafford Act, P.L. 93-288, would present several options, and could provide a number of programs, to address the oil spill.

An emergency declaration under the Stafford Act is a potential approach to the current situation since it is intended to lessen the impact of an imminent disaster. Another option is a major disaster declaration, which would open up more Stafford Act programs that might be appropriate for the needs generated by the spill.[242]

Federal Duplication/Federal Coordination

FEMA assistance can be rapid and flexible, but it also would need to be carefully delineated to avoid duplication of benefits and general confusion when working in conjunction with the OPA. Under that law, which provides both authorities and a fund for compensation, the incident is currently being addressed and the federal response coordinated. FEMA and other federal agencies are now seeking to maintain a delicate balance as they begin to coordinate assistance for small businesses and social services. It appears that the federal government is attempting to accomplish the provision of assistance, and a structure for response and recovery, without formally declaring an emergency or a disaster. The Obama Administration announced that FEMA would establish a task force by May 27, 2010, to develop a Social Services and Small Businesses Coordination Plan. As an Office of Management and Budget memorandum explains:

> The plan is not intended to disrupt ongoing, day-to-day communications between operational agencies and their State, local and tribal partners. Rather, it will be a critical and timely resource to these partners to help provide a rapid Federal response to the evolving situation and to reinforce the cooperation of the responsible parties. This effort to ensure more seamless delivery of claims and benefits to individuals and small businesses is an important step of the

[240] Prepared by Francis X. McCarthy, Analyst in Emergency Management Policy. For additional information, see CRS Report R41234, *Potential Stafford Act Declarations for the Gulf Coast Oil Spill: Issues for Congress*, by Francis X. McCarthy.

[241] For a detailed discussion of the OPA, see CRS Report RL33705, *Oil Spills in U.S. Coastal Waters: Background, Governance, and Issues for Congress*, by Jonathan L. Ramseur.

[242] For more information on the declarations process, see CRS Report RL34146, *FEMA's Disaster Declaration Process: A Primer*, by Francis X. McCarthy.

> administration's response to the oil spill. Further steps include anticipating and preparing for the post-incident recovery needs of the Gulf Coast.[243]

The reluctance to use the presidential authority for a disaster declaration is understandable given the existing authorities and the desire not only to allow the OPA to work but also to maintain public pressure on the "responsible parties" to pay for the costs of the oil spill. It is not clear if the intent is to move the coordination work forward and later seek compensation from the responsible parties, or if this work is assumed to be a relatively low-cost task that will not require the statutory authority of the Stafford Act or the financial resources of the President's Disaster Relief Fund.

Exxon Valdez

During the previous large spill, the *Exxon Valdez* spill in 1989, President George H. W. Bush turned down the governor of Alaska's two requests for an emergency declaration. The rationale for the turndowns was that a declaration by the President would hinder the government's litigation against Exxon that promised substantial compensation for the incident. One FEMA attorney from that period offered an explanation for the turndown:

> The Department of Justice opposed a declaration of disaster by then-President George H. W. Bush on the basis that it might impact adversely the case of the United States against Exxon. When asked at a Senate Appropriations Committee hearing by Senator Ted Stevens (R-Alaska) why no declaration of disaster had occurred, the then-Acting General Counsel of FEMA, George Watson, said on the record that he had issued a legal opinion stating that no declaration of an oil spill could be made under the Stafford Act.
>
> When Sen. Stevens asked for a copy of the opinion, Mr. Watson said he would furnish one. Instead of an opinion, a somewhat garbled statement was given by FEMA's congressional liaison for insertion in the record. The statement basically concluded that where a parallel statutory scheme offered both compensation and better litigation rights to the United States than the Stafford Act, then the president would not declare a disaster or emergency.[244]

FEMA's position or interpretation may be defensible because the *Exxon Valdez* shipwreck that resulted in the oil spill arguably did not constitute a major disaster as defined in the Stafford Act. However, the current situation on the Gulf Coast caused by the explosion on the *Deepwater Horizon* drilling platform arguably may fall within the Stafford Act statutory language. Section 102 of the act defines a disaster in part as

> any fire, flood, or explosion, in any part of the United States, which in the determination of the President causes damage of sufficient severity and magnitude to warrant major disaster assistance under this Act to supplement the efforts and available resources of states, local governments, and disaster relief organizations in alleviating the damage, loss, hardship, or suffering caused thereby.[245]

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[243] Jason Miller, "Feds to Help Small Businesses Affected by Oil Spill," *Federal News Radio,* May 18, 2010, http://www.federalnewsradio.com/?nid=35&sid=1959850.

[244] William R. Cumming, letter to the editor, *Natural Hazards Observer*, January 2009, http://www.colorado.edu/hazards/o/archives/2009/jaan_observerweb.pdf.

[245] 42 U.S.C. § 5122.

Recent Regional Disaster History

Using a Stafford Act emergency or major disaster declaration for the Gulf oil spill, for Gulf Coast states that are now approaching the fifth anniversary of the Hurricane Katrina landfall, could remind them of difficult, lingering issues from that disaster in 2005. A declaration could also, however, present a second chance for long-term recovery assistance to that region, administered by new leadership at DHS and FEMA.

Managing public expectations is difficult even in the smallest disaster event. Working with a region that is aware of the potential aid under Stafford and mistrustful of its delivery would be a hard challenge. FEMA's attempt to work in coordination with another set of authorities being carried out by other agencies and departments would only add to the complexity.

It could be argued that the absence of increased federal involvement could serve to simplify the response. At least one area, long-term recovery, is not directly addressed in the OPA. Some might argue that it is also an area the federal government did not address in the aftermath of Katrina. At congressional direction, FEMA has published a draft National Disaster Recovery Framework.[246] Perhaps amid the current complications of overlapping authorities and funds, implementing that framework could provide a viable and limited option for the use of Stafford Act authorities.

Others might argue that a smaller role for the federal government might be the correct role, to encourage local initiative, private-sector renewal, and continuing involvement by the "responsible parties." Within the context of a general distrust of government activity, possibly accentuated in the Gulf region, as well as the current strains on the Disaster Relief Fund, perhaps less government involvement and a lower federal profile would be a preferable option for the region's recovery.[247]

Conclusion

The *Deepwater Horizon* explosion and oil spill have set in motion a series of questions and concerns about oil exploration and recovery in the Gulf of Mexico generally, about the federal offshore oil and gas program, and about the risks of deepwater drilling in particular. The incident has raised many issues; this report provides a set of selected descriptions to give the reader a baseline and context for pursuing topics of interest.

Several themes trace through the diverse aspects of the incident:

- The explosion and oil spill having occurred, what lessons should be drawn from the incident? Such lessons may involve the appropriateness and capabilities of the technologies used in drilling and in trying to stop the spill; the adequacy of the regulatory regime and how it was administered and enforced; possible implications of corporate cultures of the companies involved; and the adequacy

[246] DHS/FEMA, "National Disaster Recovery Framework—Draft", February 10, 2010, http://www.disasterrecoveryworkinggroup.gov/ndrf.pdf.

[247] For more information on the Disaster Relief Fund, see CRS Report R40708, *Disaster Relief Funding and Emergency Supplemental Appropriations*, by Bruce R. Lindsay and Justin Murray.

of cleanup technologies and of the safety net for impacted businesses and communities.

- As oil and gas exploration and recovery moved into the deepwater frontier, were technologies and regulatory capacities keeping pace with new and/or heightened risks? Technologies and regulations appropriate to onshore and shallow-water exploration and recovery may not be adequate to address risks in deep water. There are economic incentives to develop technologies to find and recover deepwater oil and gas, but the question arises of whether concomitant incentives exist to ensure that those technologies are safe in this more challenging environment. Likewise, it might be asked if administrative and regulatory requirements appropriate to the less-challenging onshore and shallow-water environments have been, or need to be, strengthened to address deepwater risks.
- What interventions may be necessary to ensure recovery of Gulf resources and amenities? The spilled oil will surely degrade over time; intervention might accelerate cleanup, but may have its own costs.
- What does the *Deepwater Horizon* incident imply for national energy policy, and the tradeoffs between energy needs, risks of deepwater drilling, and protection of natural resources and amenities?

Diverse stakeholders will find different lessons in the *Deepwater Horizon* incident. Some will focus on the risks to the environment and the economic impacts on fishermen and communities; others will focus on the value of the oil that fuels the U.S. economy. Some will find the risks unacceptable; others will say that the risks can be overcome. In the end, the focal issue may be the management of risk: even with robust efforts to prevent oil-related incidents, they can and will happen—at which point the crucial question is how to cope with the consequences.

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