Deepwater Horizon Oil Spill: Selected Issues for Congress

Curry L. Hagerty, Coordinator
Specialist in Energy and Natural Resources Policy

Jonathan L. Ramseur, Coordinator
Specialist in Environmental Policy

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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 has become the largest oil spill in U.S. waters, eclipsing the 1989 *Exxon Valdez* spill several times over. The oil spill has damaged natural resources and has had regional economic impacts. In addition, questions have been raised as to whether the regulations and regulators of offshore oil exploration have 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 Minerals Management Service (MMS) and the U.S. Coast Guard are the primary regulators of drilling activity. 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.

MMS is also the lead regulatory authority for offshore oil and gas leasing, including collection of royalty payments. 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. On May 13, 2010, the Department of the Interior announced that Secretary Ken Salazar had initiated the process of reorganizing the MMS administratively to separate the financial and regulatory missions of the agency. The Coast Guard generally overseas the safety of systems at the platform level of a mobile offshore drilling unit.

Several issues for Congress have emerged as a result of the Deepwater Horizon incident. 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 drill rig, reportedly 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. Based on estimates from the Flow Rate Technical Group, which is led by the U.S. Geological Survey,[1] the 2010 Gulf spill has become the largest oil spill in U.S. waters, eclipsing the 1989 *Exxon Valdez* spill several times over. 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 Minerals Management Service (MMS) in the Department of the Interior (DOI) is responsible for leasing the tract to BP. 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 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 has 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 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*.

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

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. In fact, the central and western Gulf account for about 48% of the undiscovered technically recoverable resource (UTRR)[2] for oil and about 50% of the UTRR for natural gas in the entire U.S. OCS, according to the Department of the Interior.[3] (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.[4] Since 2006, there has been a 44% increase in proven deepwater discoveries in the Gulf, even though most of the deepwater leases are 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

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^{o} 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, 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.[5] Transocean's Deepwater Horizon rig was a semisubmersible platform, kept in place above the

[2] Undiscovered technically recoverable resources (UTRR) are estimates of the volume of oil or natural gas that are likely to be recovered using currently available technologies without considering price. UTRR changes as available technology changes, but not as price changes.

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

[4] 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.

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

drill site by a dynamic positioning system (i.e., not permanently anchored to the seafloor) and connected to the well by the marine riser.[6]

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.[7] 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.[8]

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, MMS regulations require at least four such valves, or rams, which must be remote-controlled and hydraulically operated during offshore operations.[9] During the Deepwater Horizon blowout, all of the rams on the BOP failed to close properly.

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

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

[7] 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.

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

[9] 30 C.F.R. § 250.442.

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[10] 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

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, 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.[11] Methane hydrates also present a significant hazard for drilling and production operations.[12] 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.[13] Decreases in pressure and/or increases in temperature can cause 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.

Weather and Ocean Currents in the Gulf of Mexico

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

[10] 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.

[11] 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 (Feb. 1, 2008), at http://www.mms.gov/revaldiv/GasHydrateFiles/MMS2008-004.pdf.

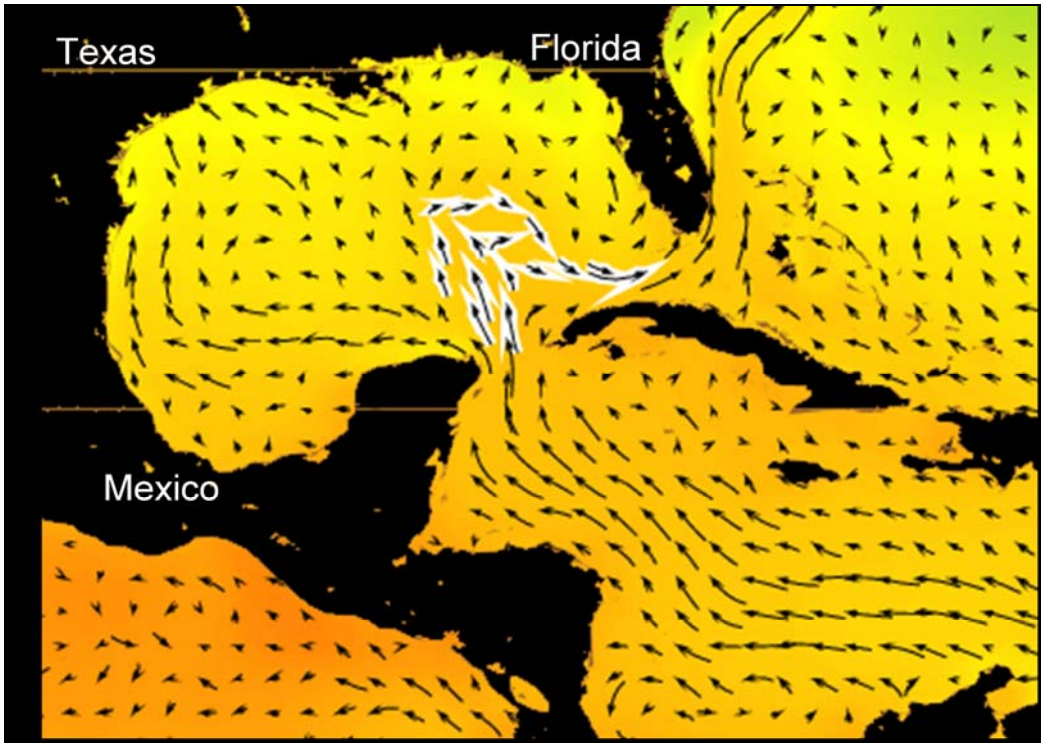
[12] Timothy S. Collett and Scott R. Dallimore, "Detailed Analysis of Gas Hydrate Induced Drilling and Production Hazards," Proceedings of the Fourth International Conference on Gas Hydrates, Yokohama, Japan, April 19-23, 2002.

[13] 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.

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.[14]

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 towards 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.[15] 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.

Figure 1.The Loop Current



Source: The Cooperative Institute for Marine and Atmospheric Studies, University of Miami Rosenstiel School, modified by CRS, 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.

[14] 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.

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

Biological Resources of the Gulf of Mexico

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 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.[16]

OCS Leasing

The basis for most federal regulation is the Outer Continental Shelf Lands Act (OCSLA),[17] 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 MMS.[18] 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.[19]

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.[20] Laws governing oil and gas development in state waters vary significantly from state to state. The

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

[17] 43 U.S.C. § 1331 *et seq*.

[18] 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 Order No. 3299 issued by Secretary of the Interior Ken Salazar on May 19, 2010.

[19] 43 U.S.C. § 1349.

[20] U.S.C. § 1301(b).

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

The federal government's oil spill response framework is found in the National Contingency Plan.[21] Congress first established the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) in 1968, after U.S. policymakers observed the response to a 37-million-gallon oil tanker spill (*Torrey Canyon*) off the coast of England.[22] Subsequent laws have amended the NCP, including the Clean Water Act in 1972; the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA or Superfund) in 1980; and the Oil Pollution Act (OPA) in 1990.

The NCP establishes the National Response System (NRS), a multitiered and coordinated national response strategy for addressing oil spills and releases of hazardous substances. Key components of the NRS include:

- a National Response Team (NRT), composed of representatives from the federal departments and agencies assigned roles in responding to oil spills. The U.S. Coast Guard chairs the NRT when a response is being mounted to a spill in a coastal region.
- Regional Response Teams (RRTs), 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 waters.
- Area Committees (ACs), composed of 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.
- an On-Scene Coordinator (OSC), who 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.[23]

The NCP provisions specific to oil spill response are codified in 40 C.F.R. Part 300, Subpart D. As the primary response authority in coastal waters, the Coast Guard OSC has the ultimate authority to ensure that an oil spill is effectively removed and actions are taken to prevent further discharge from the source. 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.

Although the OSC must consult with designated trustees of natural resources and the governor of the state affected by the spill, the OSC has the authority and responsibility to determine when removal (i.e., cleanup) is complete.

[21] The NCP is codified at 40 C.F.R. Part 300.

[22] See EPA "National Contingency Plan Overview" at http://www.epa.gov/emergencies/content/lawsregs/ncpover.htm.

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

Oil Spill Liability and Compensation

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)[24] to navigable waters, adjoining shorelines, or the exclusive economic zone of the United States (i.e., 200 nautical miles beyond the shore).[25] Responsible parties, including owners/operators of vessels or facilities and/or lessees of offshore facilities,[26] are liable[27] for (1) oil spill removal costs and (2) 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.[28]

Compared to the pre-OPA liability framework, OPA significantly increased the range of covered damages.[29] 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.[30]

Limits (or Caps) to Liability

With some exceptions (identified below), the liability of the responsible party is limited or capped for each "incident."[31] 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.

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

[25] 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).

[26] See 33 U.S.C. 2701(32).

[27] 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).

[28] OPA Section 1002(b)(2).

[29] 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.

[30] OPA Section 1002(b)(1).

[31] "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).

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).[32] If removal and damage costs exceed this liability cap, a MODU is deemed to be an offshore facility for the *excess* amount.[33] 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.[34] (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 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.[35]

Oil Spill Liability Trust Fund

Before the passage of OPA, federal funding for oil spill response was widely considered inadequate,[36] and damage recovery was difficult for private parties.[37] To help address these issues, Congress established the Oil Spill Liability Trust Fund (OSLTF). Although Congress created the

[32] 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).

[33] 33 U.S.C. 2704(b).

[34] 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).

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

[36] 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.

[37] 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.

OSLTF in 1986,[38] 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.[39] 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.[40]

Compensation Process

Removal costs may be recovered from a responsible party by the United States, by affected states and Indian tribes, and by any person, to the extent that such person has undertaken removal actions pursuant to the National Contingency Plan mandated by the Clean Water Act, Section 311.[41] Persons may also recover damages[42] (discussed above) against a responsible party.

In general, claims for removal costs and damages must be presented first to the responsible party.[43] 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.[44]

The maximum amount that may be withdrawn from the fund is $1 billion per incident.[45] Currently, the fund may not receive advances from the U.S. Treasury, as its authority to borrow expired December 31, 1994.[46] The U.S. Attorney General, however, may commence an action on behalf of the fund, against a responsible party, to recover any compensation paid by the fund to any claimant pursuant to OPA.[47]

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

[39] 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.

[40] 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).

[41] 33 U.S.C. §§ 2702(b)(1)(A) and (B).

[42] Under OPA, the term "damages" means "damages specified in [33 U.S.C. § 2702(b)], *and includes the costs of assessing these damages.*" 33 U.S.C. § 2701(5) (emphasis supplied). The standards and procedures for conducting natural resource damage assessments are set forth in regulations promulgated by the National Oceanic and Atmospheric Administration pursuant to OPA. 33 U.S.C. § 2706(e); 15 CFR §§ 990.10 through 990.66.

[43] 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).

[44] 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).

[45] 26 U.S.C. § 9509(c)(2)(A).

[46] 26 U.S.C. § 9509(d)(3)(B).

[47] 33 U.S.C. § 2715(c).

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[48] and the OPA.[49] 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, MMS and the U.S. Coast Guard, are outlined below

Role of Minerals Management Service

MMS is the agency within the Department of the Interior with lead regulatory authority for offshore oil and gas leasing. MMS leasing authority in the OCS encompasses resource assessment and development, operational safety, and environmental considerations. 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 MMS authority govern OCS lease obligations: prescriptive requirements generally codified in the *Code of Federal Regulations*, performance-based goals, and consensus-based technical standards. MMS regulations cover a wide range of equipment, procedures, and certifications. 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*.[50] The major statutes that govern the leasing process are discussed in the "OCS Leasing" section.

Once MMS 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 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 MMS. In water depths greater than 400 meters (1312 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, MMS may provide a different approval process. MMS is responsible for approving applications for a permit to drill (APDs) and subsequent 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 MMS approval process applicants typically address financial assurances, precautionary actions to control development operations, compliance with

[48] 43 U.S.C. § 1331 et seq.

[49] 33 U.S.C § 2701.

[50] 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).

design criteria, and compliance with casing and cementing requirements. Furthermore, it is difficult to determine the MMS 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 MMS leasing process. How MMS enforces regulations and assesses financial penalties for violations, and how MMS would suspend or shut down operations under certain conditions, have been raised as concerns since April 20, 2010.

Each step of the OCS leasing process undergoes a review under the National Environmental Policy Act (NEPA),[51] unless specifically excluded. Generally speaking, NEPA requires an agency to consider the environmental impacts of its actions and prepare a document describing its analysis. 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 exist, typically referred to as extraordinary circumstances, such as the presence of endangered species or an archeological site. 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 and obtain approval for an APD. MMS reviews applications for drilling wells before granting approval for drilling operations. 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.[52] According to MMS regulations, operators in the Gulf must use BAST whenever practical on all exploration, development, and production operations.[53] However, the regulations also state that, "[i]n general, we consider your compliance with MMS regulations to be the use of BAST." The language of the regulation in effect defines BAST as whatever complies with the MMS regulation. Some observers question whether the regulations preclude a more effective approach to BAST.

[51] 42 U.S.C. § 4321 et seq.

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

[53] 30 C.F.R. 250.107.

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.[54] 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.[55]

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.[56] Facilities also have requirements concerning electrical systems, flow lines, engines, and firefighting systems.[57]

Role of U.S. Coast Guard

The Coast Guard generally overseas the safety of systems at the platform level of a mobile offshore drilling unit (MODU), as opposed to the sub-platform drilling systems overseen by MMS. Among the areas of Coast Guard oversight are navigation equipment, lifesaving equipment, fire protection equipment and structures, and the safety and health of workers as they perform their routine tasks. Once a MODU is operating, the Coast Guard conducts 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. Registering a rig or ship in the Marshall Islands or another "flag of convenience" country (Panama, Liberia, and the Bahamas are other common ones) provides tax and other economic advantages. For this reason, the world shipping fleet is predominantly flagged in these countries. 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 and Equipment of MODUs (2009 MODU Code, adopted by Resolution A.1023(26)).[58] The Deepwater Horizon was inspected and found to be in compliance with the MODU code.

[54] 30 C.F.R. 250.901-904.

[55] 30 C.F.R. 250.912.

[56] 30 C.F.R. 250.801.

[57] 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.

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

Other Frameworks

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.[59] The MODU code was developed, beginning in the 1970s, to provide for an equivalent level of safety on MODUs as SOLAS does 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.[60] 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. 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).[61]

Oil Spill Response Issues

Use of Dispersants in the Gulf of Mexico

Dispersants are chemical agents that include surfactants, solvents, and other compounds. Oil spill responders use dispersants to redirect an oil slick from the surface of the water into the waters below. 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.[62]

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

[59] This convention has been updated since then.

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

[61] 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.

[62] For a more comprehensive discussion, see National Research Council, *Oil Spill Disperants: Efficacy and Effects*, National Academies Press, 2005.

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)."[63]

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[64] 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 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 have done so, including the regions in the Gulf.[65] 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 Interior.

An unprecedented volume of dispersants have 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.[66] 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.[67] On May 20, 2010, EPA and the Coast Guard directed BP to evaluate available, preapproved dispersants for toxicity and effectiveness. On May 25, 2010, EPA and the Coast Guard directed BP to "implement measures to limit the total amount of surface and subsurface dispersant applied each day to the minimum amount possible." Subsequent to this directive, EPA and the Coast Guard instructed BP to eliminate the surface application of dispersants. As of the date of this report, no further

[63] Ibid.

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

[65] See Figure 2-1 in National Research Council, *Oil Spill Disperants: Efficacy and Effects*, National Academies Press, 2005.

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

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

directives were available on EPA's website. For up-to-date information, see http://www.epa.gov/bpspill.

Louisiana Protective Berm Project

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.[68] 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.[69] Further, some scientists—including those from the National Oceanic and Atmospheric 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.[70] 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.[71] 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.

[68] 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).

[69] 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.

[70] 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/.

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

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 the 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.[72] 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.[73] 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.[74] BP announced support for this decision and estimated the cost for construction of the approved plan to be $360 million.[75] 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.[76]

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.[77] 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.

[72] The original request included 19 reaches of berm (15 reaches to the west of the Mississippi River Delta and four reaches to the east).

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

[74] See http://www.deepwaterhorizonresponse.com/go/doc/2931/585863/. Accessed June 3, 2010.

[75] 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.

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

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

Relief Wells

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 2**.) 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.[78]

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.

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.[79] 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[80] in the middle of June and relief well *Ixtoc 1B* was spudded in the middle of July.[81] *Ixtoc 1A* reached the petroleum-bearing reservoir in the 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.[82]

[78] 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.

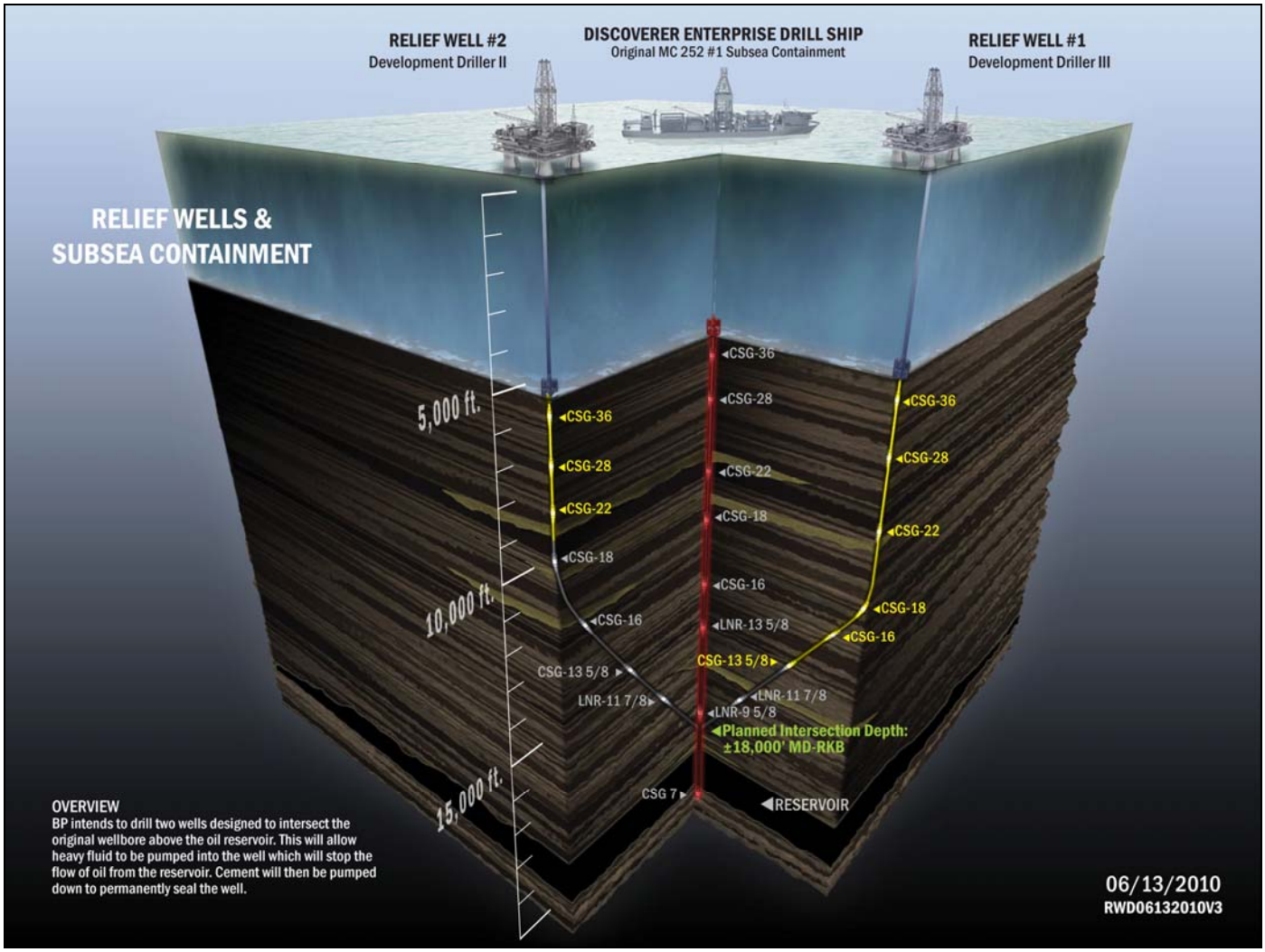
[79] National Oceanic and Atmospheric Administration, National Ocean Service, Office of Response and Restoration, *Incident News*, at http://www.incidentnews.gov/incident/6250.

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

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

[82] Ibid.

Figure 2. 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).

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.[83] 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.[84] A commission

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

[84] Ibid.

appointed by the Australian Minister for Resources and Energy is investigating the blowout, and is expected to release a report sometime in June 2010.[85]

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.[86] Under 30 C.F.R. § 250.213, an exploration plan (EP) approved by 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.[87] 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.

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.[88] 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.[89] Offshore drilling in Canada is also governed regionally by joint federal-provincial accord agreements, and regulated under the Canada-Newfoundland and Labrador Offshore Petroleum Board and the Canada-Nova Scotia Offshore Petroleum Board.[90] In a letter to

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

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

[87] 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.

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

[89] 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.

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

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.[91]

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. [92]

Issues for 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, Coast Guard Admiral 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.[93] On June 15, 2010, Senator Lautenberg introduced S. 3492, the Emergency Relief Well Act, that would require the concurrent drilling of at least one 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

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

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

[93] 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.

would still exist for anomalous gas "kicks"[94] 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.[95] 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.[96]

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 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.

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

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

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

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

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.

Environmental Impacts

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:[97]

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

Compensation for Damages to Businesses

The Oil Pollution Act of 1990 (OPA) established liability for natural resource damages and economic damages resulting from the discharge of oil in U.S. waters. Economic damages result from the disruption and loss of business activity, especially activities that depend 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.

Compensation for Natural Resource Damages

OPA also 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

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

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:[98]

- **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.

NOAA regulations state that recovery means the return of injured natural resources and services to baseline.[99] 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

Two major sectors of the Gulf coast economy that have been put at risk by the oil spill are commercial and recreational fisheries, and coastal recreation and the related tourist industry. In 2008, the Gulf fishing industry landed 1.274 billion pounds of fish and shellfish with a dockside value of $659 million.[100] 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.[101] The top commercial species in terms of value are shrimp ($367 million), menhaden ($64 million), oysters ($59 million), and blue crab ($38 million).[102] 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.[103] Some of the most popular recreational species include snappers, several types of drum, sheepshead, and Spanish mackerel. Recreational fisheries support businesses such as charters, bait and tackle, and services such as restaurants and hotels. In 2000, 21.9 million people visited Gulf beaches and

[98] Department of Commerce, "Natural Resource Damage Assessments; Final Rule," 61 *Federal Register* 441-442, January 5, 1996.

[99] Ibid. p. 441.

[100] National Marine Fisheries Service, U.S. Departtment 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.

[101] Ibid.

[102] Ibid.

[103] Ibid.

accounted for 177.2 million beach days.[104] 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 June 14, 2010, NOAA had closed 78,264 square miles (**Figure 3**) of the Gulf to commercial and recreational fishing.[105] This is approximately 32% of the federally managed waters of the Gulf Exclusive Economic Zone.[106] 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 with BP for economic injuries, and claims are being paid out to individuals on a monthly basis. The seafood industry is also very concerned with consumers' perceptions of Gulf seafood and potential effects on demand for Gulf seafood products. Bookings and trips for recreational fishing charters have decreased, especially in Louisiana, and sportfishing tournaments have been cancelled.

Although many of the beaches on the Gulf of Mexico have not been closed, cancellations have been reported by businesses and state tourism officials. Tourism officials are concerned that reporting on the spill has affected people's perceptions. To counter this decline, tourist promotion programs have been launched in Alabama and Florida. Fishing and tourism have already been harmed by the Deepwater Horizon spill, but it is likely that the greatest impacts have not yet surfaced and may occur over years.

Impact on Oil and Natural Gas Prices

The Deepwater Horizon incident has had limited near-term impact on oil and natural gas supply and prices because production has not been significantly disrupted.[107] 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.[108] 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).[109]

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[104] 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.

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

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

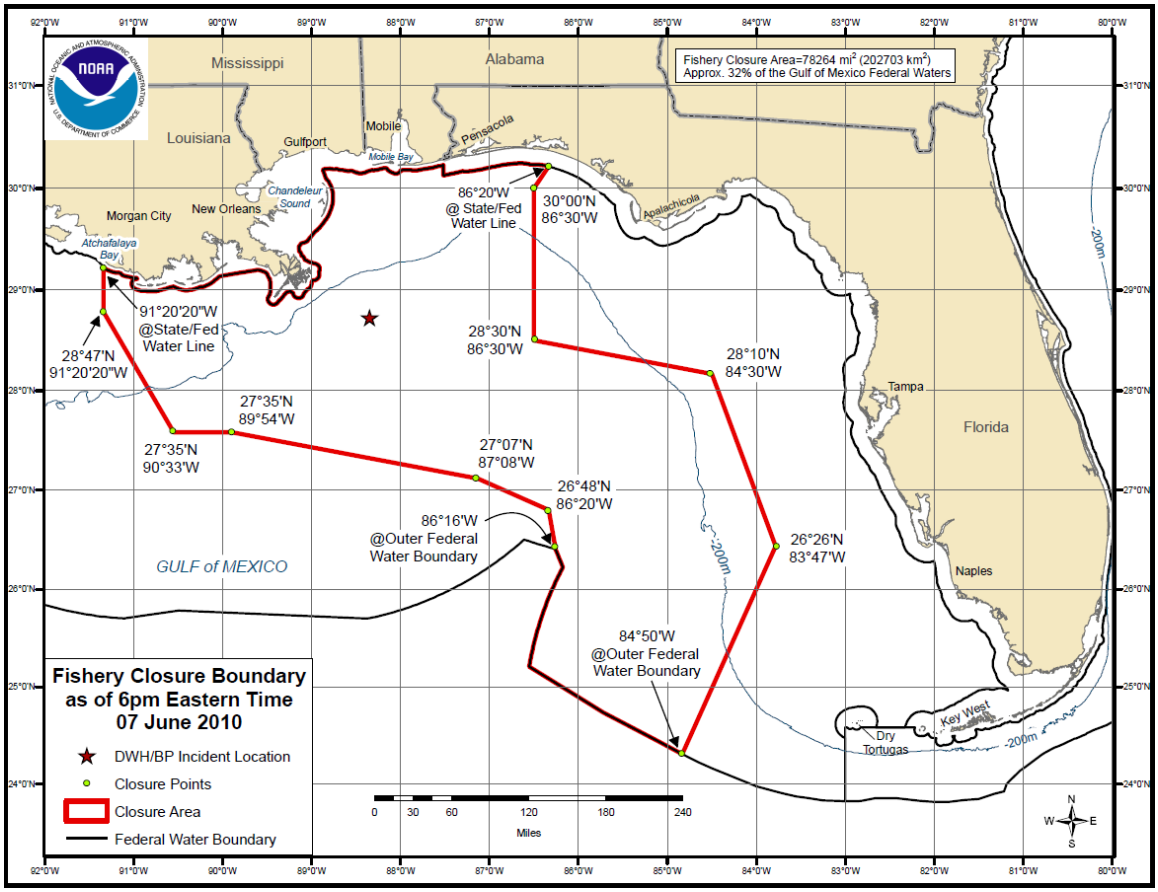
[107] Energy Information Administration, U.S. Department of Energy, "Deepwater Horizon Oil Spill, This Week In Petroleum," Washington, DC, May 19, 2010, http://tonto.eia.doe.gov/oog/info/twip/twip.asp.

[108] The *Wall Street Journal* citied 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.

[109] See http://www.deepwaterhorizonresponse.com/go/doc/2931/543771/.

Figure 3. Gulf of Mexico Fishery Closure

(as of June 15, 2010, unchanged from June 7, 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.

Further, currently high commercial oil inventories and the availability of the Strategic Petroleum Reserve are likely to insulate the domestic oil market against short term disruptions.[110] As of May 18, the price of West Texas Intermediate crude oil had declined to $69.38/barrel from $81.52/barrel on April 19, the day before the Deepwater Horizon spill.[111] Other market drivers softened prices, offsetting any support to prices from spill-related uncertainty about adequate supply. Natural gas prices have climbed since the incident, from $3.94/million btu to $4.34/million btu,[112] but this too is likely due to other drivers, such as stronger weather-related natural gas demand in parts of the United States. DOI's current suspension of new approval for

[110] 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.

[111] Energy Information Administration, *Petroleum Navigator*, Washington, DC, May 19, 2010, http://www.eia.doe.gov/dnav/pet/pet_pri_spt_s1_d.htm.

[112] Energy Information Administration, *Natural Gas Navigator*, Washington, DC, May 19, 2010, http://www.eia.doe.gov/dnav/ng/hist/rngc1d.htm

drilling permits is expected to be temporary, and DOI is expected to report on the status of this suspension by May 28, 2010.[113]

Long-term impacts are uncertain and depend at least in part on the response to the spill from Congress, federal regulators, and state governments. Some experts suggest that reactions from government and industry that slow project development in the Gulf and elsewhere could impact potential oil and natural gas supply. Corresponding tax and royalty receipts may be impacted as well as the result of any such slowdown.[114] Concerns about the environmental risks of offshore drilling in the wake of the Deepwater Horizon incident may affect how much acreage is offered for offshore exploration and development in the future. DOI is reviewing an earlier national plan to expand offshore drilling that was announced on March 31, 2010.

While the Deepwater Horizon incident appears to have had a negligible impact on oil prices and supply in the short term, it is too early to determine if it could possibly impact oil prices or U.S. oil imports in the long run. Many factors influence such impacts, making them difficult to predict. Also, 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. Total 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, of which the United States consumed about 19 million barrels daily in 2009.[115]

As with oil, measures affecting the pace, cost, and scope of offshore drilling can affect the supply of natural gas. 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.[116] 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.[117] 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.[118]

[113] The Department of the Interior, "Salazar Meets with BP Officials and Engineers at Houston Command Center to Review Response Efforts, Activities," press release, Washington, DC, May 6, 2010, http://www.doi.gov.

[114] 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.

[115] Energy Information Administration, , http://www.eia.doe.gov/oil_gas/petroleum/info_glance/petroleum.html.

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

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

[118] 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.

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

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.[119] Section 4(a) of the OSH Act indicates explicitly that the statute applies to employment performed on OCS lands.[120] 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."[121]

In two sections of the Outer Continental Shelf Lands Act (OCSLA), the "Secretary of the Department in which the Coast Guard is operating" (e.g., 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.[122] In addition, Section 21(c) authorizes the Secretary to promulgate regulations or standards "applying to unregulated hazardous working conditions related to activities on the outer Continental Shelf when he determines such regulations or standards are necessary."[123]

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.[124] 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

[119] 29 U.S.C. § 651 *et seq*.

[120] 29 U.S.C. § 653(a).

[121] 29 U.S.C. § 653(b)(1).

[122] 43 U.S.C. § 1333(d)(1).

[123] 43 U.S.C. § 1347(c).

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

> developing regulations and standards, the two agencies will cooperate to the maximum extent possible.[125]

Since the signing of the MOU, the Coast Guard has issued various regulations with regard to OCS activities.[126] 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.[127] 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)."[128]

Oil and Gas Industry Safety Statistics

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.[129] Data are not 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 extraction 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.[130]

[125] Ibid.

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

[127] 43 U.S.C. § 1348(a).

[128] 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.

[129] 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 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.

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

Injury rates in two of the three industries were below average in 2007, according BLS's annual Survey of Occupational Injuries and Illnesses.[131] 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. [132] 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.[133]

The Minerals Management Service (MMS) requires firms operating on the Outer Continental Shelf (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 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 the MMS in 2009 may or may not have caused fatalities or injuries.[134]

Coast Guard Oversight of OCS Safety

Technical Competence

The Coast Guard's technical expertise in providing effective safety oversight of certain maritime operations has been a recent congressional concern.[135] 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.[136] 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.

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

[132] 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.

[133] 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.

[134] MMS incident statistics at http://www.mms.gov/incidents/IncidentStatisticsSummaries.htm.

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

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

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.[137] Some of the regulatory sections covering 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 regarding Parts 140-147, noting that the last major revision of the OCS regulations occurred in 1982.[138] In the 1999 notice, the Coast Guard stated that offshore facilities had moved much farther offshore (127 miles) and into much deeper water (7,500 feet), and therefore it needed to update its safety regulations. 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 September 2010, according to an industry trade association report dated December 31, 2009.[139]

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.[140] 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."[141] 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.[142]

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. It can be argued that the IMO, whose primary concern has been cargo and cruise ships, does not have the expertise to prescribe technical standards for offshore oil rigs. Detailed standards do exist on a regional basis (examples

[137] 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/

[138] 64 *Fed. Reg.* 68416, December 7, 1999.

[139] International Association of Drilling Contractors, "Federal Regulatory Actions Impacting Offshore Drilling," December 31, 2009, pp. 18-19.

[140] The U.S. is a party to this convention.

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

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

include the Mediterranean Sea, the Baltic Sea, and the Persian Gulf) and one could argue that different environments dictate different requirements. 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.[143]

DOI Initiative to Reorganize MMS

Congress has expressed concern that the numerous aspects of OCS management responsibility, specifically tasks to manage both the operational aspects and the revenue aspects of the leasing program, may be a source of conflicts of interest within MMS. To address claims that the current organization of MMS fosters systemic weaknesses in MMS regulatory actions, Secretary Salazar issued a secretarial order on May 19, 2010, establishing three new organizational units within the Department of the Interior and redelegating the functions of MMS to these new entities.

In general, agency heads have implied authority to organize and manage the agencies and departments they head.[144] In addition, since the 1950s, the powers, duties, and functions of the component offices of most agencies have been vested in the agency head, who is, in turn, empowered to delegate these powers, duties, and authorities. Furthermore, Section 301 of Title 5 of the *U.S. Code* provides that the "head of an Executive department or military department may prescribe regulations for the government of his department, the conduct of its employees, the distribution and performance of its business." The agency head's authority does not, however, supersede congressional authority to provide for specific organizational arrangements or to vest powers, duties, or authorities in particular offices established in this way.[145]

Reorganization Authority of the Secretary of the Interior

Reorganization Plan No. 3 of 1950 provided that, except with regard to the functions vested by the Administrative Procedure Act in hearing examiners and the functions of the Virgin Islands Corporation or of its board of directors or officers, functions that had previously been vested in the heads of DOI's component entities were transferred to the Secretary of the Interior, thus centralizing authority over the department.[146] The Secretary was also authorized, by the

[143] Sources discussing this topic further include, 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, http://www.cmla.org/papers/MAR96.htm; Mikhail Kashubsky, "Marine Pollution from the Offshore Oil and Gas Industry: Review of Major Conventions and Russian Law (Part 1), *Maritime Studies*, Nov.-Dec. 2006, http://www.customscentre.canberra.edu.au/librarymanager/libs/17/Marine_Pollution_part1.pdf; and Maria Gavouneli, *Pollution from Offshore Installations*, Graham and Trotman Ltd., London, 1995.

[144] See Basil J. Mezines, Jacob A. Stein, and Jules Gruff, Administrative Law, vol. 1 (New York: Matthew Bender, 2006), pp. 4-18 to 4-27.

[145] In *Myers v. United States*, 272 U.S. 52, 129 (1926), the Supreme Court declared: "[t]o Congress under its legislative power is given the establishment of offices, the determination of their functions and jurisdiction...." Subsequent to the decision in Myers, the Court has consistently recognized the authority of Congress to create and abolish offices within the executive branch, to the extent that it is generally considered settled that the transfer or abolition of statutorily vested functions may only be accomplished pursuant to congressional authorization. See, e.g., *Buckley v. Valeo*, 424 U.S. 1, 138 (1976); *INS v. Chadha*, 462 U.S. 919, 954 (1983).

[146] 43 U.S.C. § 1451, note.

reorganization plan, to redelegate these functions to any department agency, employee, or officer, unless otherwise prevented by law from doing so.

Establishment of the Minerals Management Service

MMS was established administratively by Secretary of the Interior James Watt in 1982. A series of secretarial orders established the unit and transferred certain functions to it from other organizational units within DOI.[147] Congress appropriated funds for this new entity for the following fiscal year.[148] 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 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.[149]

Organizationally, 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 also report to this assistant secretary. Whereas these two leaders are appointed by the President, by and with the advice and consent of the Senate, MMS is led by a director who is appointed by the Secretary. The MMS directorship has been a non-career (political) Senior Executive Service (SES) position.

Redelegation of Minerals Management Service Functions

It could be argued that the numerous aspects of OCS management responsibility, specifically tasks to manage both the operational aspects and the revenue aspects of the leasing program, are a source of conflicts of interest within MMS. It could be claimed, in other words, that the current organization of MMS fosters systemic weaknesses in MMS decision-making. To the degree that such deficiencies exist, they might be addressed through a reorganization that separates incompatible functions and vests them in different entities that are independent from one another, either within DOI or in different parts of the federal government.

[147] 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.

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

[149] 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.

On May 13, 2010, the Department of the Interior announced that Secretary Salazar had initiated the process of reorganizing the Minerals Management Service administratively.[150] 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."[151]

On May 19, 2010, Secretary Salazar issued Order No. 3299, which divided MMS into three new offices. Under the provisions of the order, two of these new organizations, the Bureau of Ocean Energy Management and the Bureau of Safety and Environmental Enforcement, will be organizationally housed under the Assistant Secretary for Land and Minerals Management, which has been the location of MMS. The third unit, the Office of Natural Resources Revenue, will be under the Assistant Secretary for Policy, Management, and Budget.

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

The Bureau of Safety and Environmental Enforcement will carry out the functions of 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 will be responsible for royalty and revenue management functions of 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 provides that the two Assistant Secretaries mentioned above will "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 are charged with developing the implementation details and reporting those details to the Secretary. They are 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.

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

[150] 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#.

[151] Ibid.

> [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.[152]

Potential Congressional Activity Related to MMS Reorganization

Constitutionally, the establishment, organization, and reorganization of governmental entities is the province of Congress. Congress, through law, determines the need for, creates, and locates offices; establishes their missions, powers, duties, and functions; defines the parameters of personnel systems; confirms certain executive officials; provides funding; and ultimately evaluates whether a government unit shall continue in existence. In exercising this authority, Congress has sometimes changed organizational arrangements by enacting new statutes, and at other times has delegated reorganization authority to the President or to agency heads.

Congress might elect to establish the previous or new DOI organizational arrangements in statute, or to establish some other entity or entities that would carry out the functions previously vested in MMS. Such an reorganization by statute could differ from the administrative reorganization carried out by the Secretary in several ways. First, whereas the Secretary's order redelegates functions and resources within DOI, Congress might elect to redelegate functions and resources among DOI and other federal agencies. Second, if Congress were to establish existing or new organizational arrangements in statute, these arrangements would not be subject to further reorganization by this Secretary or a future Secretary, unless otherwise specified in statute. Third, Congress might elect to establish leadership positions for the associated entities that would be subject to the advice and consent of the Senate. Absent the establishment of such requirements, these leaders would be appointed by the Secretary, without formal congressional involvement.

When an agency head has reorganized a portion of his or her agency administratively, Congress has, on occasion, endorsed the action without giving it statutory underpinnings. For example, Congress has sometimes validated an agency reorganization through the appropriations process, by adjusting the agency's appropriation to match the new configuration or by addressing the action in the conference report.[153] Similarly, Congress has recognized some newly created entities

[152] 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.

[153] U.S. Government Accountability Office, *Principles of Federal Appropriations Law, Third Edition Volume I*, GAO-04-261SP (Washington: Jan. 2004), pp. 2-61 through 2-65. This report summarizes the principles to be applied in this situation by quoting a Comptroller General's opinion as follows: "'To conclude that Congress through the appropriations process has ratified agency action, three factors generally must be present. First, the agency takes the action pursuant to at least arguable authority; second, the Congress has specific knowledge of the facts; and third, the (continued...)

by delegating to them specific authorities, or otherwise making reference to them in statute. Of course, Congress can also register its disapproval of a reorganization by appropriating little or no funding for a new entity, by condemning the action in conference report language, or by redelegating authority to competing organizations.

Introduced Legislation Related to MMS Reorganization

During the 111th Congress, prior to the Deepwater Horizon oil spill, bills were introduced that would reorganize 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. This bill would, among other effects, establish in DOI an Office of Federal Energy and Minerals Leasing. The bill would transfer to this new office certain functions of MMS as well as the Oil and Gas Management program of the Bureau of Land Management.

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 head of the new entity as a position filled through appointment by the President with the advice and consent of the Senate.

FEMA Issues[154]

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 Coast oil spill is currently being addressed by a law fashioned for that purpose, the Oil Pollution Act of 1990 (OPA), P.L. 101-380.[155] 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,

(...continued)

appropriation of funds clearly bestows the claimed authority'" (p. 2-65).

[154] For additional information, see CRS Report R41234, *Potential Stafford Act Declarations for the Gulf Coast Oil Spill: Issues for Congress*, by Francis X. McCarthy.

[155] 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.

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.[156]

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 P.L. 101-380. 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 will 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 administration's response to the oil spill. Further steps include anticipating and preparing for the post-incident recovery needs of the Gulf Coast. [157]

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:

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

[157] 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.

> 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.[158]

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.[159]

Recent Regional Disaster History

Using a Stafford Act emergency or major disaster declaration for the Gulf Coast 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 P.L. 101-380. 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.[160] Perhaps amidst the current complications of overlapping authorities and funds,

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

[159] 42 U.S.C. 5122.

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

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.[161]

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 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 robust enough to provide a reasonable margin of safety 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.

[161] 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.

- 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 well prepared one is to cope with the consequences.

Author Contact Information

Curry L. Hagerty, Coordinator
Specialist in Energy and Natural Resources Policy
chagerty@crs.loc.gov, 7-7738

Jonathan L. Ramseur, Coordinator
Specialist in Environmental Policy
jramseur@crs.loc.gov, 7-7919

Peter Folger
Specialist in Energy and Natural Resources Policy
pfolger@crs.loc.gov, 7-1517

Kristina Alexander
Legislative Attorney
kalexander@crs.loc.gov, 7-8597

Harold F. Upton
Analyst in Natural Resources Policy
hupton@crs.loc.gov, 7-2264

Henry B. Hogue
Analyst in American National Government
hhogue@crs.loc.gov, 7-0642

Adam Vann
Legislative Attorney
avann@crs.loc.gov, 7-6978

Jon O. Shimabukuro
Legislative Attorney
jshimabukuro@crs.loc.gov, 7-7990

James E. Nichols
Law Clerk
jnichols@crs.loc.gov, 7-5812

Linda Levine
Specialist in Labor Economics
llevine@crs.loc.gov, 7-7756

John Frittelli
Specialist in Transportation Policy
jfrittelli@crs.loc.gov, 7-7033

Neelesh Nerurkar
Specialist in Energy Policy
nnerurkar@crs.loc.gov, 7-2873

Marc Humphries
Analyst in Energy Policy
mhumphries@crs.loc.gov, 7-7264

Francis X. McCarthy
Analyst in Emergency Management Policy
fmccarthy@crs.loc.gov, 7-9533

Charles V. Stern
Analyst in Natural Resources Policy
cstern@crs.loc.gov, 7-7786