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Report to the Honorable Lynn Woolsey, House of Representatives

March 2011

FEDERAL OIL AND GAS

Interagency Committee Needs to Better Coordinate Research on Oil Pollution Prevention and Response

GAO-11-319

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Highlights

Highlights of GAO-11-319, a report to the Honorable Lynn Woolsey, House of Representatives

Why GAO Did This Study

Congress passed the Oil Pollution Act in 1990 (OPA). Among other things, OPA established the Interagency Coordinating Committee on Oil Pollution Research (interagency committee) to coordinate an oil pollution research program among federal agencies, including developing a plan, having the National Academy of Sciences review that plan, and reporting to Congress on the interagency committee's efforts biennially. The 2010 *Deepwater Horizon* explosion and fire led to the largest oil spill in U.S. history, raising new concerns about the effects of oil spills.

GAO was asked to assess the extent to which the interagency committee has facilitated the coordination of federal agencies' oil pollution research. (The Chairman, Subcommittee on Energy and Environment, House Committee on Science and Technology, now retired; and Representative Woolsey initiated this request.) In part, GAO analyzed committee documents and biennial reports and interviewed agency officials and nonfederal research entities.

What GAO Recommends

GAO recommends, among other things, that the interagency committee coordinate efforts to evaluate the contributions of completed research and provide, in its 2012 biennial report to Congress, an update of its efforts to revise its research plan. The Department of Homeland Security concurred with our recommendations.

View GAO-11-319 or key components.
For more information, contact Frank Rusco at (202) 512-3841 or ruscof@gao.gov.

What GAO Found

Federal agencies have conducted at least 144 research projects on oil pollution since 2003, but the interagency committee has played a limited role in coordinating this research, according to GAO's analysis of interagency committee reports and documents. For example, agencies conducted research on identifying the toxicity of nonpetroleum oils recovering oil from the sea floor. The interagency committee issued a research plan mandated by OPA in 1997 that set research priorities. This plan, however, did not fully address the recommendations on a draft plan made by the National Research Council, the organization through which the National Academy of Sciences provides most of its advice. For example, the National Research Council noted that the interagency committee should review and evaluate past and present oil pollution research to help guide federal efforts and to avoid duplication. The interagency committee has captured some member agencies' oil pollution research in its biennial reports to Congress, but it has not evaluated whether past research has advanced the 1997 research priorities; instead, the reports summarized projects. Without such an assessment, Congress may be less able to oversee the contributions of federal research to preventing and responding to oil spills. In addition, although OPA did not require that the interagency committee revise its 1997 plan, the National Research Council noted the need to continually reassess a comprehensive research plan. However, the interagency committee has not done so; consequently, the plan does not reflect changes in the oil production and transportation sectors since 1997, such as a significant increase in deepwater drilling. In September 2010, the interagency committee chair began to inventory completed research and categorize research projects according to the 1997 plan's research priorities, and the chair told GAO that the interagency committee will begin to update the 1997 plan in 2011.

OPA also directed the interagency committee to coordinate a comprehensive research program of oil pollution research among the member agencies, in cooperation with external stakeholders, such as industry, research institutions, state governments, and universities. An interagency member official told GAO that the committee helped foster interagency cooperation between two agencies comparing two types of testing to determine the effectiveness of certain chemicals in dispersing oil in sea water; However, more generally, the interagency committee took limited action to foster communication among member agencies between 1997 and 2009, when the chair proposed updating the 1997 plan, according to some member agency officials. Although the interagency committee's meetings have occurred once or twice annually for the past 2 years, they occurred irregularly before then. Additionally, member agencies were not consistently represented in the interagency committee. In October 2010, to better communicate with interagency committee member agencies, among others, the interagency committee launched a Web site, which provides transcripts from its past public meetings and biennial reports to Congress.

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Abbreviations

BOEMRE	Bureau of Ocean Energy Management, Regulation and Enforcement
EPA	Environmental Protection Agency
NASA	National Aeronautics and Space Administration
NOAA	National Oceanic and Atmospheric Administration
NRT	National Response Team
OPA	Oil Pollution Act of 1990
OSRI	Oil Spill Recovery Institute
PHMSA	Pipeline and Hazardous Materials Safety Administration

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United States Government Accountability Office
Washington, DC 20548

March 25, 2011

The Honorable Lynn Woolsey
House of Representatives

Dear Ms. Woolsey:

On April 20, 2010, an explosion and fire onboard the *Deepwater Horizon* drilling rig in the Gulf of Mexico led to the largest oil spill in U.S. waters. The total cost of cleaning up this massive spill, the extent of the damage to the environment, and the potential effect on the Gulf Coast states' economies will not be known for some time. However, current estimates suggest that spill cleanup and related damage claims will cost tens of billions of dollars—far more than the more than $2 billion that was spent to clean up the 1989 *Exxon Valdez* spill, which contaminated Alaska's south central coastline, including portions of national wildlife refuges, national and state parks, a national forest, and a state game sanctuary.

Following the *Exxon Valdez* spill, Congress passed the Oil Pollution Act of 1990 (OPA). Among other things, OPA addresses liability for the costs of cleaning up spills and damages to the environment. OPA also established the Interagency Coordinating Committee on Oil Pollution Research (the interagency committee) to coordinate a comprehensive program of oil pollution research, technology, development, and demonstration among federal agencies. OPA, as amended, requires the U.S. Coast Guard to chair the 13-member interagency committee. In addition, the chair is required to report every 2 years to Congress on the committee's past activities and future plans for oil pollution research.[1] OPA also directed the interagency committee to develop a comprehensive research and technology plan to lead federal oil pollution research. In response to this directive, the interagency committee issued a plan in 1997 to guide research on oil pollution prevention and response. Additionally, OPA authorized funds

[1]The agencies assigned to the interagency committee under OPA include the Department of Commerce's National Oceanic and Atmospheric Administration and National Institute of Standards and Technology; Department of Defense's U.S. Army Corps of Engineers and U.S. Navy; Department of Energy; Department of Homeland Security's U.S. Coast Guard and Federal Emergency Management Agency; Department of the Interior's Minerals Management Service (now the Bureau of Ocean Energy Management, Regulation and Enforcement) and U.S. Fish and Wildlife Service; Department of Transportation's Maritime Administration and Pipeline and Hazardous Materials Safety Administration; Environmental Protection Agency; and National Aeronautics and Space Administration.

from the Oil Spill Liability Trust Fund to, among other things, pay for certain oil pollution research.

In this context, you asked us to review the interagency committee's work concerning federal oil pollution research. (This request was originally made by the Chairman, Subcommittee on Energy and Environment, House Committee on Science and Technology, now retired; and Representative Woolsey.) Our objective was to assess the extent to which the interagency committee has facilitated the coordination of federal agencies' oil pollution research. To address this objective, we reviewed OPA to understand the interagency committee's purpose and charge. We reviewed the interagency committee's biennial reports to Congress for the fiscal years 2000 through 2009 to assess efforts to identify and set priorities for research needs. We focused on the period since 2000 because of Congress's interest in the interagency committee's current and recent activities. We interviewed cognizant agency officials on the extent of coordination among interagency committee member agencies and, in September 2010, attended a public meeting of the interagency committee to observe efforts to coordinate oil pollution research. We also obtained the views of stakeholders, such as state agencies and a nonprofit research organization. We reviewed interagency committee documentation and the National Research Council's report on the interagency committee's research plan to assess the committee's efforts to evaluate research projects and determine progress made toward completing research goals. We reviewed committee documentation and interviewed cognizant agency officials about any current and emerging oil pollution risks and discussed how they were identified. To determine the number of research projects conducted by member agencies, we reviewed the interagency committee's biennial reports to Congress. We intended to identify the number of projects conducted since the completion of the 1997 research plan but could not do so for fiscal years 1997 through 2002 because research projects were not reported separately during those years. Because of concerns about the availability and reliability of data, we were not able to identify all research projects completed during those years; however, we believe we captured the majority of the projects with our methodology.

We conducted this performance audit from June 2010 to March 2011 in accordance with generally accepted government auditing standards. These standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions

based on our audit objectives. A further discussion of our scope and methodology is presented in appendix I.

Background

This section provides information on OPA requirements, expenditures for oil pollution research conducted by interagency committee member agencies, and certain other organizations that conduct or coordinate research.

The Interagency Committee on Oil Pollution Research

Through OPA Congress established the interagency committee to coordinate a comprehensive oil pollution research program among federal agencies and in cooperation with industry, universities, research institutions, state governments, and other nations, as appropriate. It also designated member agencies, authorized the President to designate other federal agencies, and directed that a representative of the Coast Guard chair the interagency committee. The chairman's duties include reporting biennially to Congress on the interagency committee's member agencies' activities related to oil pollution research.

As also directed by OPA, the interagency committee was to develop a research plan that:

- identified member agencies' roles and responsibilities;
- assessed the current status of knowledge on oil pollution prevention, response and mitigation technologies, and effects of oil pollution on the environment;
- identified significant oil pollution research gaps, including an assessment of major technological deficiencies in responses to past oil discharges;
- established research priorities and goals for oil pollution technology development related to prevention, response, mitigation, and environmental effects;
- estimated the resources needed for federal agencies to conduct the oil pollution research and development program and timetables for completing research tasks; and
- identified, in consultation with the states, regional oil pollution research needs and priorities for a coordinated, multidisciplinary program of research at the regional level.

OPA also directed the chair of the interagency committee to contract with the National Academy of Sciences to (1) provide advice and guidance in the preparation and development of the research plan and (2) assess the adequacy of the plan as submitted and submit a report to Congress on the conclusions of that assessment.[2] The interagency committee prepared the original research plan and, in 1992, submitted it to Congress and the National Research Council—created under the auspices of the National Academy of Sciences and through which the academy provides most of its advice—for their review and comment. The second edition of the research plan was submitted to Congress on April 1, 1997.

Interagency Committee Member Agencies' Expenditures for Oil Pollution Research

According to agency officials, since fiscal year 2000, member agencies have spent about $163 million on oil pollution research. Of this total, approximately $145 million came from the Oil Spill Liability Trust Fund authorized by OPA.[3] The largest source of revenue for the trust fund has been a tax collected from the oil industry on petroleum produced in or imported into the United States. The tax, which was $0.05 per barrel when OPA was enacted, expired in 1994 but was reinstated in 2005 and increased to $0.08 per barrel in 2008.

Member agencies spent an additional $18 million on oil pollution. Table 1 shows the sources of funding for oil pollution research among seven interagency committee member agencies who reported that they conducted oil pollution research: the Bureau of Ocean Energy Management, Regulation and Enforcement (BOEMRE); the Coast Guard; the Environmental Protection Agency (EPA); the National Aeronautics and Space Administration (NASA); the U.S. Navy; the National Oceanic and

[2]The National Academy of Sciences, chartered by Congress in 1863 to advise the federal government on subjects of science and art, is a quasi-public honorary organization to which scientists are elected annually by vote of the membership. The academy in turn created the National Research Council, which can call upon respected scientists and engineers—who are not necessarily academy members—to serve on voluntary committees.

[3]In addition to research and development, OPA allows the fund to be used for, among other things, oil spill removal costs; payments to federal, state, and Indian tribe trustees to conduct natural resource damage assessments; and payment of claims for certain uncompensated removal costs and damages.

Atmospheric Administration (NOAA); and the Pipeline and Hazardous Materials Safety Administration (PHMSA).[4]

Table 1: Interagency Committee Member Agencies' Funding for Oil Pollution Research, Both Trust and Agency Funds, Fiscal Years 2000 through 2010

Fiscal year 2010 dollars in millions

	Fiscal year											
Member agency	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**Agency total**
BOEMRE[a]	$7.1	$6.9	$6.8	$6.7	$7.5	$7.9	$7.5	$7.5	$7.1	$6.6	$6.2	**$77.8**
Coast Guard	4.7	4.8	4.8	4.3	4.1	2.3	2.8	2.1	2.1	0.6	0.7	**$33.3**
EPA	1.1	1.1	1.1	1.1	1.0	1.0	0.9	0.8	0.9	0.7	0.6	**$10.3**
NASA	0	0	0	0	0	0	0	0	0.4	0	0	**$0.4**
Navy	4.3	3.5	1.2	0.4	0.3	0.3	0.2	0.3	0.6	0.4	0.6	**$12.1**
NOAA	0	0	0	0	2.3	2.2	3.3	3.2	0	0	0	**$11.0**
PHMSA	0	0	0	0	3.4	3.3	2.1	2.0	3.4	2.2	2.2	**$18.6**
Annual total	**$17.2**	**$16.3**	**$13.9**	**$12.5**	**$18.6**	**$17.0**	**$16.8**	**$15.9**	**$14.5**	**$10.5**	**$10.3**	**$163.5**

Source: GAO analysis of data provided by interagency committee member agencies.

[a]Expenditures for BOEMRE include about $3 million per year for the operation and maintenance of the National Oil Spill Response Research and Renewable Energy Test Facility located in Leonardo, New Jersey. This facility is used for both full scale equipment testing and responder training.

Other Organizations that Conduct or Coordinate Oil Pollution Research

After the 1989 *Exxon Valdez* spill in Prince William Sound, Alaska, at least four states created or expanded their own oil pollution research programs and Congress created an oil pollution research institute.

- *Alaska Division of Spill Prevention and Response.* This division was established in 1991, although an official from the Alaska Division of Spill Prevention and Response told us that the state has had an oil pollution control program, which included research, since the 1970s. According to the agency's Web site, Alaska appropriated a total of $2.5 million in the wake of the *Exxon Valdez* oil spill to enhance the ability of the state and industry to respond to oil spills. The funds were to be used for research programs directed toward the prevention, containment, cleanup, and

[4]Six agencies reported that they did not conduct oil pollution research: the Army Corps of Engineers, Department of Energy, Federal Emergency Management Agency, Fish and Wildlife Service, Maritime Administration, and National Institute of Standards and Technology.

amelioration of oil spills in Alaska. To date, more than 30 research and development projects have been completed.

- *California Office of Spill Prevention and Response*. This office was created in 1990 and has a variety of responsibilities related to spill prevention and response, including oil spill contingency planning. The office's research program operated from 2004 through 2010 and supported a total of 38 research projects with a budget of $430,000 annually during this 6-year period.

- *Louisiana Applied and Educational Oil Spill Research and Development Program*. Louisiana's program was established after the *Exxon Valdez* oil spill. The state created the Louisiana Oil Spill Coordinator's Office, which, with Louisiana State University, formed the Oil Spill Research and Development Program. The program's mission was to provide the state of Louisiana with tools related to oil spill prevention, detection, response, and cleanup. According to a program official, from 1993 through 2007, the program provided more than $500,000 per year to public colleges and universities to support a range of research.

- *Texas General Land Office Oil Spill Prevention and Response Program*. According to a state official, the Texas General Land Office's Oil Spill Prevention and Response Program has spent $1.25 million per year for oil spill research since 1991. Its research is funded by a fee on oil loaded or unloaded in Texas.

- *Oil Spill Recovery Institute (OSRI)*. OPA established OSRI for research, education, and demonstration projects to respond to and understand the effects of oil spills in the Arctic and sub-Arctic marine environments, amongst other purposes. OSRI is administered through and housed at the Prince William Sound Science Center, a nonprofit research and education organization in Cordova, Alaska. Funding for OSRI comes from interest on $22.5 million in the Oil Spill Liability Trust Fund. OSRI received more than $1 million from the fund in 2009 and $225,000 in 2010 and expects to receive between $560,000 and $1.3 million in 2011, according to an agency official.

In addition, the National Response Team (NRT) coordinates some oil pollution research. NRT is an interagency organization responsible for, among other things, coordinating emergency preparedness and response

to oil and hazardous substance pollution incidents.[5] EPA and the Coast Guard serve as its Chair and Vice Chair, respectively. One of NRT's responsibilities is to monitor "response related research and development, testing and evaluation activities of NRT agencies to enhance coordination, avoid duplication of effort and facilitate research in support of response activities." Every 2 years NRT's science and technology committee—which includes, among others, BOEMRE, the Coast Guard, EPA, and NOAA—provides the interagency committee with the information for its biennial reports to Congress. The science and technology committee also meets monthly and member agencies coordinate regularly on oil pollution research projects. These meetings allow agencies to leverage each other's resources to achieve mutually beneficial oil pollution research, according to agency officials.

Federal Agencies Have Conducted Oil Pollution Research, but with a Limited Coordination Role by the Interagency Committee

According to our analysis of interagency committee reports, federal agencies have conducted at least 144 research projects on oil pollution prevention and response since 2003, but the interagency committee had a limited role in facilitating the coordination of agency efforts.[6] The interagency committee established a joint research plan in 1997 that identified oil pollution risks and research priorities, but it has not updated that plan in light of changes in the oil production and transportation sector. The interagency committee also submitted biennial reports to Congress, as directed, but it has not evaluated member agencies' progress in addressing research gaps identified in the 1997 research plan; until

[5]NRT is the interagency organization responsible for planning and coordinating responses to major discharges of oil or hazardous waste in accordance with the National Oil and Hazardous Substances Pollution Contingency Plan, which is the federal government's blueprint for responding to both oil spills and hazardous substance releases with the purpose of developing a national response capability and promoting overall coordination among the hierarchy of responders and contingency plans. According to EPA officials, the first contingency plan was developed and published in 1968 in response to a massive oil spill from the oil tanker, *Torrey Canyon*, off the coast of England the year before. More than 37 million gallons of crude oil spilled into the water, causing massive environmental damage. To avoid the problems faced by response officials involved in this incident, U.S. officials developed a coordinated approach to cope with potential spills in U.S. waters.

[6]We could not identify the number of projects completed in 2000 because the interagency committee was not required to report on its progress for those 2 years per the Federal Reports Elimination and Sunset Act of 1995, and did not do so. Additionally, we could not identify the number of projects completed in fiscal years 2001 and 2002 because the interagency committee's biennial reports did not include projects; instead, the reports included publications authored by member agencies, and we could not confirm whether individual publications corresponded to a single project.

recently, it also had not revisited the plan, as the National Research Council recommended. Furthermore, since completing the 1997 research plan, the interagency committee has taken limited action, until recently, to foster communication and coordinate research among member agencies and to reach out to stakeholders, such as industry and state organizations.

Federal Agencies Have Conducted at Least 144 Research Projects on Oil Pollution Prevention and Response since Completion of the Research Plan

According to the interagency committee's biennial reports, since 2003 member agencies have conducted at least 144 research projects related to preventing or responding to oil pollution. These projects have addressed a range of topics, such as responding to an oil spill by burning oil off the water's surface (*in situ* burning), detecting oil in icy waters, predicting oil behavior in deepwater blowouts, and using micro-organisms to remove spilled oil in saltwater marshes. As table 2 shows, BOEMRE, the Coast Guard, EPA, and NOAA—4 of the 13 member agencies—accounted for all of the projects reported to Congress. Of the remaining nine member agencies, three agencies conducted research, but their research was not reported in the interagency committee's biennial reports, and six agencies did not conduct any research.

Table 2: Number of Oil Pollution Research Projects Conducted by Member Agencies as Reported in the Interagency Committee's Biennial Reports to Congress, Fiscal Years 2003 through 2010

Fiscal year	Member agency					Total
	BOEMRE	Coast Guard	EPA	NOAA	Joint	
2003	12	1	12	0	0	**25**
2004	8	1	9	0	0	**18**
2005	8	0	8	2	0	**18**
2006	7	1	5	0	1[a]	**14**
2007	7	1	3	10	1[b]	**22**
2008	3	0	2	8	1[c]	**14**
2009	9	2	2	9	0	**22**
2010	2	0	5	4	0	**11**
Total	**56**	**6**	**46**	**33**	**3**	**144**

Source: GAO analysis of interagency committee biennial reports to Congress.

Notes: We could not identify the number of projects completed in 2000 because the interagency committee was not required to report on its progress that year per the Federal Reports Elimination and Sunset Act of 1995, and did not do so. Additionally, we could not identify the number of projects completed in fiscal years 2001 and 2002 because the interagency committee's biennial reports did not include projects; instead, the reports included publications authored by member agencies, and we could not confirm whether individual publications corresponded to a single project. The interagency committee plans to release the next biennial report in 2012, which will cover 2010 and 2011.

[a]In 2006, BOEMRE and EPA jointly conducted a research project to evaluate the reliability of a laboratory method used to test dispersant effectiveness.

[b]In 2007, the Coast Guard and NOAA jointly developed a tool to help responders and planners assess the risk from chemical spills in rivers.

[c]In 2008, BOEMRE and the Coast Guard completed a joint research project on verifying the reliability of a cooperatively designed monitoring program to use when *in situ* burning occurs and dispersants are used.

Projects conducted by these agencies and included in the interagency committee's biennial reports addressed a wide range of topics. For example:

- *BOEMRE: research to develop an aerial oil thickness and mapping system*. Based on this research, initiated in 2005, BOEMRE developed a portable aerial sensor to detect and accurately map the thickness and distribution of oil slicks in coastal and offshore waters. The aerial thickness mapping system was deployed for the *Deepwater Horizon* oil spill and flown over the spill, providing maps of oil thickness. The Coast Guard used these maps to guide mechanical response efforts and dispersant operations and to plan *in situ* burns, according to Coast Guard officials. In addition, NOAA used this information to validate its model predictions for how the oil would behave in water, to document the potential for the oil to arrive on beaches, and to assess oil infiltration to the shoreline and marshes, according to NOAA officials.

- *Coast Guard: recovery of oil on the sea floor*. This project, which is ongoing is intended to develop methods to recover oil located on the bottom of the sea, according to Coast Guard officials. Its first objective is to develop a number of potential methods for detecting the oil and then selecting the most cost effective methods for further development.

- *EPA: research into the biodegradability and toxicity of nonpetroleum oils*.[7] Through its ongoing research, EPA has found that the degree to which vegetable oils will biodegrade in the environment depends on a number of factors, including the oil's chemical structure, according to EPA

[7]Nonpetroleum oils include synthetic oils, such as silicone fluids, and seed oils from plants, among other things.

officials. Also, EPA found that vegetable oils can readily biodegrade anaerobically—or without oxygen—suggesting that a new treatment technology could be used for cleaning up a vegetable oil spill. This technology involves sinking the oil into the sediment by adding clay so that the oil rapidly biodegrades under anaerobic conditions with little adverse effects on the ecosystem. Currently, the National Contingency Plan provides that sinking agents may not be used as an oil recovery or mitigation measure, but as a result of this research, EPA is considering proposing an exception for treating vegetable oil spills.

- *NOAA: research into monitoring the effectiveness of chemicals used to disperse oil*. This research, completed in 2008, compared the behavior of oils with and without dispersants in different types of sediment from U.S. coastal waters, according to the interagency committee's 2008–2009 biennial report.

While these four agencies' research projects were discussed in the interagency committee's biennial reports, three other member agencies also conducted research that was not reported, according to our analysis of information that some agencies provided. In speaking with agency officials, however, we could not determine why the following agencies were omitted from the interagency committee's biennial reports.

- PHMSA has administered an oil pollution research program since fiscal year 2002, but none of its projects have been included in the biennial reports. For example, PHMSA has an ongoing project to develop a model for commercial companies to predict the rate at which operating pipelines become weakened and suddenly fracture because of stress and corrosion, and in 2009, PHMSA completed a project examining the risk of plastic pipe failures, according to PHMSA documentation.

- The Navy and NASA have conducted some oil pollution research, but none of their research efforts were included in the biennial reports. For example, the Navy has an ongoing, multiphase project to evaluate the efficacy of equipment used to separate oil from wastewater before the wastewater is discharged from Navy ships. The Navy decided to research this issue because the chemical and physical properties of synthetic lubricants, some of which are denser than water, have posed problems for its oil-water separators, which operate based on the differences in specific gravity between oil and water, according to Navy documentation. Similarly, NASA recently provided funding to an oil pollution detection

project through its Gulf of Mexico Initiative.[8] The goal of the project, which is being conducted in partnership with the Naval Research Laboratory and NOAA, is to demonstrate practical applications for oil spill detection from observations of two NASA sensors in low-earth orbit. From these observations, NASA officials said that new methods will be developed for NOAA to use to detect oil spills. NASA officials said they selected this project because it would employ an innovative use of remote sensing technology, not because of its focus on detecting oil spills.[9]

Without knowing about these projects, Congress may be less informed when making funding decisions about oil pollution research.

The Interagency Committee Coordinated Efforts to Develop the 1997 Research Plan, but until 2009, Took Limited Action to Foster Communication and Coordinate Research

The interagency committee completed the research plan mandated by OPA to help guide member agencies' research on oil pollution prevention and response in 1997. However, once the plan was completed, the interagency committee played a limited role in coordinating member agencies' efforts.

The Interagency Committee Developed the 1997 Research Plan through Joint Efforts but Has Not Addressed Some National Research Council Recommendations

The interagency committee prepared a research plan required by OPA and submitted it for review to the National Research Council and Congress in 1992. The National Research Council provided its review of the first plan in 1994, and the interagency committee submitted the second edition of the plan to Congress on April 1, 1997. According to the interagency committee's documentation, the committee conducted a 2-year voluntary interagency effort to address the National Research Council's recommendations. The interagency committee's 1997 research plan includes (1) an analysis of the oil production and transportation systems and associated oil pollution risks; (2) an identification of 21 research

[8]Through the Gulf of Mexico Initiative, NASA conducts applied research and development on weather and climate change to enhance the ecological and economic health of the Gulf of Mexico by using remote sensing, oceanography, coastal processes, signal processing, and mathematical modeling. The initiative was created in 2007 in response to a series of hurricanes in 2005, including hurricanes Dennis, Katrina, Rita, and Wilma, according to NASA officials.

[9]Remote sensing involves gathering data and information about the physical world by detecting and measuring signals composed of radiation, particles and fields emanating from objects located beyond the immediate vicinity of the sensor devices.

priorities intended to address oil pollution risks, categorized into three priority levels; (3) an identification of research areas of focus for some member agencies; and (4) an identification of some nonfederal stakeholders.

While the interagency committee revised its research plan in order to address the National Research Council's review, the committee did not fully address all of the council's recommendations. For example, after reviewing the interagency committee's first draft research plan, the National Research Council noted the interagency committee should, as part of its activities, comprehensively review and evaluate past and present oil pollution research to help guide federal research efforts and avoid duplication. The interagency committee followed this recommendation, in part, by capturing the results of some member agencies' oil pollution research in its biennial reports to Congress, but it did not assess whether completed research contributed to advancing the 1997 research priorities; rather, the reports provided only summaries of research projects. Without such an assessment, Congress may be less able to provide oversight on the contributions of federal research to prevent and respond to oil spills. Furthermore, while some member agencies maintain Web sites that are accessible to the public and that contain data and reports on oil pollution research that has been conducted, the interagency committee has not assembled or published a comprehensive inventory of all research projects conducted by member agencies, which limits the interagency committee's ability to evaluate past research.

The interagency committee has recently taken steps to inventory member agencies' research. Specifically, according to Coast Guard documents, in September 2010, the interagency committee chair began to inventory research projects and categorize them according to the 1997 plan's research priorities. The interagency committee chair told us that this inventory is likely to help the interagency committee determine where to focus future research efforts in response to current and emerging risks.

In addition, while OPA did not require the interagency committee to revise its research and technology plan, the National Research Council noted in its review that a comprehensive research plan should be continually reassessed. However, the interagency committee has not revised its 1997 research plan. As a result, the plan does not reflect significant changes in the oil production and transportation sectors or assess current and emerging risks or research priorities. Consequently, knowledge gaps in critical research areas may have been overlooked. For example:

- The 1997 plan contained 21 research priorities, such as oil spill surveillance and environmental restoration methods, and identified knowledge gaps in these areas, but it did not identify deepwater drilling as a specific research priority. However, by 2000, deepwater oil production had surpassed shallow water oil production, and within 5 years of the plan's completion, oil production in deepwater had tripled, according to data from BOEMRE.[10]

- The plan did not identify oil spills in icy waters as a risk, although oil production and shipping are expected to increase substantially in the Arctic, according to member agency officials.

Coast Guard officials said that although the 1997 plan did not focus on oil spills in deepwater or the Arctic, many of the plan's research priorities are still relevant for guiding current research. However, most officials from the 13 member agencies we spoke with told us that they either did not know that the interagency committee's 1997 plan existed or did not use it to guide research; rather, each agency determined its own research priorities based on its mission. For example, EPA used a multiyear plan to guide all of its research, including oil pollution, but its plan did not reference the interagency committee's 1997 research plan.

Recognizing the need for a more active approach, the interagency committee chair told us that the committee began to consider updating the 1997 plan in late 2009 and planned to ask member agency officials to draft components of the revised plan during the summer of 2010. However, a number of member agencies were occupied with responding to the *Deepwater Horizon* incident, according to agency officials, and were thus unable to begin revising the plan. Coast Guard officials expect drafting of a revised research plan to begin during the summer 2011 and stated that it will take approximately 2 years to update the plan because the interagency committee intends to submit the plan to the National Research Council for its review. Coast Guard officials said that this effort to review and revise

[10]According to a BOEMRE report on trends in oil production in the Gulf of Mexico, in 1997 the Gulf of Mexico average annual oil production rates (in thousands of barrels a day (Mbpd)) were 830 for shallow water and 296 for deepwater. In its report, BOEMRE defined shallow water production as production from oil wells in less than 1,000 feet of water and deepwater production as production from oil wells in greater than 1,000 feet of water. By 2000, the rate was 690 Mbpd for shallow water and 743 Mbpd for deepwater. In 2007, the difference between shallow water and deepwater production had increased, with shallow water production at 381 Mbpd and deepwater production at 895 Mbpd.

could take several years, as it did in the 1990s. Furthermore, according to Coast Guard officials, they have not yet decided whether the new research plan will include an evaluation of past research or address research priorities outlined in the 1997 plan.

Interagency Committee Has Taken Limited Actions to Foster Communication and Coordination among Member Agencies and Nonfederal Stakeholders

As directed by OPA, the interagency committee was to coordinate a comprehensive program of oil pollution research among the member agencies, in cooperation and coordination with industry, universities, research institutions, state governments, and other nations, as appropriate. The interagency committee has helped member agencies collaborate on some occasions. For example, according to an agency official who participates in the interagency committee, the committee played a role in facilitating interagency cooperation between BOEMRE and EPA. These agencies jointly conducted research, completed in 2006, in comparing how laboratory tests of the effectiveness of certain chemicals in dispersing oil in sea water compared with certain larger scale tests at a research facility.

According to some member agency officials, however, the interagency committee had taken limited action to foster communication among member agencies between 1997 and 2009, when the interagency committee chair proposed updating the 1997 plan. Although the interagency committee's meetings have occurred once or twice annually for the past 2 years, they occurred irregularly before then, according to some agency officials.

Additionally, member agencies were not consistently represented in the interagency committee. Specifically, five agencies did not have a representative designated to the interagency committee until 2010. An official at one of these agencies told us that he was assigned as the representative to the interagency committee only after the agency had received our request to discuss the interagency committee's work. Furthermore, officials at one agency said that they have never heard of the interagency committee and reported that the agency did not have a representative designated to the interagency committee.

In October 2010, to better communicate with interagency committee member agencies, among others, the Coast Guard launched the interagency committee's Web site, which includes transcripts from past public meetings and biennial reports to Congress. In addition, as directed by OPA, the interagency committee was to cooperate and coordinate with industry, universities, research institutions, state governments, and other nations, as appropriate. With specific regard to states, the interagency committee was to consult with them on regional oil pollution research

needs and priorities. The National Research Council echoed these requirements in its recommendations, noting that such work was necessary in order to avoid duplication of research efforts and to enhance coordination and cooperation with those entities. In its 1997 research plan, the interagency committee identified the activities of some stakeholders, including the oil pollution research programs of four states and three industry groups, but interested stakeholders have reported limited contact with the interagency committee. For example:

- Officials from two of the four state oil pollution research programs we spoke with were unaware of the interagency committee's existence until we contacted them.
- Officials from the other two state oil pollution research programs reported having past, albeit inconsistent, interaction with the interagency committee.
- The committee hosted three public meetings in 2010 to solicit input from nonfederal stakeholders on the direction of a new research plan; however, it announced the meetings only 4 weeks in advance, which may have been insufficient time to obtain participation from a range of stakeholders.
- An official we spoke with from a nonprofit oil pollution research organization had never interacted with the interagency committee until two of the conferences in 2010.

By not communicating with key nonfederal stakeholders, the interagency committee may have missed opportunities to coordinate research efforts across sectors. For example, a state official we spoke with said that he is concerned that the interagency committee is not doing a sufficient job to minimize the duplication of research efforts across sectors; he noted that some of the federal and state research recently completed or currently underway is similar to federal and state research completed in the 1990s. Several state officials we spoke with also said that the interagency committee has generally not done a sufficient job of disseminating the results of completed federal research to nonfederal stakeholders, which could help nonfederal research organizations in planning their own research efforts. Furthermore, while the interagency committee's last biennial report listed workshops or conferences interagency members attended, it did not report on any efforts to consult with key nonfederal stakeholders.

In December 2010, Coast Guard officials told us that the interagency committee was considering establishing a subcommittee to coordinate with industry on planning and research, but they had not yet firmed up any plans to do so.

Conclusions

Like the *Exxon Valdez* spill in 1989, the *Deepwater Horizon* incident once again highlighted the need for new knowledge about oil spill prevention and response. The interagency committee completed a research plan required by OPA in 1997 to help guide member agencies' research on oil pollution prevention and response. Federal agencies have conducted at least 144 research projects related to this issue, but the interagency committee, established to develop a comprehensive research and development program on oil spill prevention and response, has been incomplete in its accounting for research projects and has done little until recently to coordinate the federal research effort.

The chair of the interagency committee has recognized the need for a proactive approach to coordination, and the committee's recent effort to inventory member agencies' research projects is a necessary step to understanding past research. However, this effort will be incomplete without an evaluation of whether this research addressed knowledge gaps identified in the 1997 plan. Without such an evaluation, Congress may be unable to provide effective oversight on the progress made in federal efforts to conduct research on oil pollution prevention and response. Furthermore, Coast Guard officials expect the drafting of a revised research plan to begin during summer 2011, but the revision of the plan has already been delayed because of the *Deepwater Horizon* incident, and the interagency committee could take several years to complete the planned revision, as it did in the 1990s with the 1997 research plan. Moreover, in the past, the interagency committee has not reached out effectively to identify and consult with key nonfederal stakeholders who could provide insight into the research that may need to be conducted, as it was directed to do by OPA. Without such outreach, the committee may be missing opportunities to advance knowledge across sectors and to avoid duplication of research efforts.

Recommendations for Executive Action

In order to better identify oil pollution risks, determine research priorities, and coordinate research efforts, we recommend that the Commandant of the U.S. Coast Guard direct the chair of the interagency committee to take the following three actions, in coordination with member agencies:

- Evaluate the contributions of past research to current knowledge on oil pollution prevention and response and report the results of these evaluations, including remaining gaps in knowledge, in its biennial reports to Congress.
- Provide a status update regarding the revision of the research plan, as well as a schedule for completing the revision, in the next biennial report due in 2012, which will cover 2010 and 2011.
- Establish a more systematic process to identify and consult with key nonfederal stakeholders on oil pollution risks and research needs on an ongoing basis.

Agency Comments and Our Evaluation

We provided the departments of Commerce, Defense, Energy, Homeland Security, the Interior, and Transportation; EPA; and NASA with a draft of this report for review and comment. In commenting on this report, the departments of the Interior and Transportation, and EPA provided technical comments, which we incorporated as appropriate. In addition, the Department of Homeland Security concurred with our recommendations and provided a formal response, which we reprinted in appendix II.

As agreed with your office, unless you publicly announce the contents of this report earlier, we plan no further distribution until 30 days from the report date. At that time, we will send copies to the appropriate congressional committees; the Secretaries of Commerce, Defense, Energy, Homeland Security, the Interior, and Transportation; the Administrators of EPA and NASA; the Commandant of the U.S. Coast Guard; and other interested parties. In addition, the report will be available at no charge on the GAO Web site at http://www.gao.gov.

If you or your staff have any questions concerning this report, please contact me at (202) 512-3841 or ruscof@gao.gov. Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this report. Key contributors to this report are listed in appendix III.

Sincerely yours,

Frank Rusco
Director, Natural Resources and Environment

Appendix I: Scope and Methodology

To review the extent to which the Interagency Coordinating Committee on Oil Pollution Research (interagency committee) has facilitated the coordination of federal agencies' oil pollution research efforts, we analyzed biennial reports produced by the interagency committee to assess efforts to identify and set priorities for research needs and reviewed our guidance on interagency collaboration.[1] We interviewed cognizant agency officials on the extent of coordination among committee member agencies and, in September 2010, we attended a public meeting of the interagency committee to observe efforts to coordinate oil pollution research. We also interviewed external stakeholders, including officials from California, Louisiana, and Texas, and the Oil Spill Recovery Institute, a nonprofit research organization. We selected these organizations because all were listed in the interagency committee's research plan as stakeholders. The findings from the officials we interviewed, however, cannot be generalized to other states or organizations. We also reviewed and analyzed interagency committee documentation to assess efforts to evaluate research projects and determine progress made toward completing research goals. We reviewed committee documentation and interviewed cognizant agency officials about any current and emerging oil pollution risks, as well as how they were identified.

To determine the number of research projects conducted by member agencies, we reviewed the interagency committee's biennial reports to Congress. While we intended to count the number of projects conducted since completion of the 1997 research plan, we could not count projects for fiscal years (1) 1997 and 1998 because the biennial report that includes those years did not include any research projects initiated after completion of the research plan; (2) 1999 and 2000 because the interagency committee was not required to report on its progress for those two years in accordance with the Federal Reports Elimination and Sunset Act of 1995, and did not do so; and (3) 2000, 2001, and 2002 because the interagency committee's biennial reports included publications and not projects. Also, we could not confirm whether individual publications corresponded to a single project. Because of concerns about the availability and reliability of data, we were not able to identify all research projects completed during those years; however, we believe we captured the majority of the projects with our methodology because we were able to interview program officials from each member agency that conducted

[1]GAO, *Results-Oriented Government: Practices That Can Help Enhance and Sustain Collaboration among Federal Agencies*, GAO-06-15 (Washington, D.C.: Oct. 21, 2005).

oil pollution research and confirm our approach and our list of projects with them.

We conducted this performance audit from June 2010 to March 2011 in accordance with generally accepted government auditing standards. These standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

Appendix II: Comments from the Department of Homeland Security

U.S. Department of Homeland Security
Washington, DC 20528

Homeland Security

March 4, 2011

Frank Rusco
Director, Natural Resources and Environment
U.S. Government Accountability Office
441 G Street, NW
Washington, DC 20548

Re: GAO-11-319, Federal Oil and Gas: Interagency Committee Needs to Better Coordinate Research on Oil Pollution Prevention and Response

Dear Mr. Rusco:

The U.S. Coast Guard generally concurs with the Government Accountability Office (GAO) recommendations and appreciates the opportunity to comment on the draft report. The Coast Guard is taking corrective actions to address the recommendations. The President's FY12 Budget request includes a position to serve as the full-time Executive Director for the Interagency Coordinating Committee on Oil Pollution Research (ICCOPR). This position is a key step in the Coast Guard's efforts to revitalize the ICCOPR program.

The GAO audit focused on the ICCOPR's activities after 2000. By doing so, numerous ICCOPR initiatives, interactions, and accomplishments are not discussed. Many of these actions addressed specific congressionally mandated requirements of the Interagency Committee. For example, Section 7001, subsection (c), paragraph (8), of the Oil Pollution Act of 1990 (codified in 33 U.S.C. § 2761(c)(8)) required the Interagency Committee to establish a regional research program and authorized those agencies represented on the Interagency Committee to make grants to universities and other such research institutions to perform research related to regional effects of oil pollution. Numerous academic grants were awarded with the funding that was authorized from1992-95. In addition, the Interagency Committee conducted a series of port demonstration projects as well as successful international outreach initiatives prior to 2000.

Specific DHS responses to the three recommendations follow:

"In order to better identify oil pollution risks, determine research priorities, and coordinate research efforts, we recommend that the Commandant of the U.S. Coast Guard direct the chair of the interagency committee to take the following three actions, in coordination with the member agencies:

Recommendation 1: Evaluate the contributions of past research to current knowledge on oil pollution prevention and response and report the results of these evaluations, including remaining gaps in knowledge, in its biennial reports to Congress."

Response: DHS concurs. In the fall of 2009, the Chair requested that ICCOPR members review their respective research portfolios to identify any research projects that had not been previously reported in the ICCOPR Biennial Reports. The Interagency Committee will use this validated catalogue of projects to help communicate what research gaps from the 1997 Research and Technology Plan have been addressed. The validated list of projects will also help to inform the ongoing revision of the research plan.

Recommendation 2: "Provide a status update regarding the revision of the research plan, as well as a schedule for completing the revision, in the next biennial report due in 2012, which will cover 2010 and 2011."

Response: DHS concurs. The ICCOPR initiated plans and meetings to revise its 1997 Research and Technology Plan in 2009. For example, the ICCOPR scheduled three different Public Meetings to solicit input for the plan's revision. These meetings were arranged to obtain regional perspectives from the West Coast, East Coast, and the Gulf Coast. In addition, the ICCOPR met with the U.S. Arctic Research Commission to better understand its concerns and obtain feedback regarding needs for high-latitude research. The ICCOPR continues to review the input from these meetings as well as the perspectives and opinions contained in the President's National Commission on the BP Deepwater Horizon Oil Spill and Offshore Drilling's findings and several other Deepwater Horizon reports. Additionally, as part of the ongoing effort to identify technology gaps for deepwater open ocean oil spills, the Coast Guard Research and Development Center, in support of the Interagency Committee, hosted two symposiums on oil spill response and recovery. All of these information sources will be used to guide the ICCOPR's plan revision efforts over the next year. These efforts and a tentative timeline will be described in the FY10-11 Congressional Biennial Report.

Recommendation 3: "Establish a more systematic process to identify and consult with key nonfederal stakeholders on oil pollution risks and research needs on an ongoing basis."

Response: DHS concurs. The ICCOPR is examining the collaboration needs outlined in two joint industry task forces (Joint Industry Oil Spill Preparedness and Response Task Force and the Joint Industry Subsea Well Control and Containment Task Force) to improve spill response and containment research efforts.

The Interagency Committee continues its participation and outreach at oil pollution research and development conferences and workshops, such as the International Oil Spill Conference, the Clean Gulf and Pacific Conferences, and the Arctic and Marine Oilspill Program (AMOP) Technical Seminar on Environmental Contamination and Response.

The ICCOPR continues to expand and advertise its website for further outreach efforts (www.iccopr.uscg.gov). The website provides a convenient and informative way for stakeholders and the public to have access to ICCOPRs latest activities and to communicate with membership. An important element of the website is a comprehensive listing of ongoing conferences and workshops offered by academia, industry, and the federal government.

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The ICCOPR continues to support numerous academic/industry outreach endeavors. For example, ICCOPR members will be participating in the March 22-24 Workshop on Coordinating Research and Development on Oil Spill Response in the Wake of the Deepwater Horizon hosted by the Coastal Response Research Center (CRRC) at the University of New Hampshire. Also, the Coast Guard Research and Development Center hosted two symposiums on oil spill response and recovery as part of the ongoing effort to identify technology gaps for deepwater open ocean oil spills. These symposiums were organized to provide an audience of federal agency responders, academic representatives, and industry contractors involved in the Deepwater Horizon response with a forum to discuss current oil spill priorities and the needs and challenges in executing the spill clean-up.

Although several state oil pollution research and development programs no longer exist as indicated in the draft report, the ICCOPR will reach out to those that still operate to share information about current research and education efforts.

Thank you for the opportunity to comment on this Draft Report. We look forward to working with you on future Department of Homeland Security issues.

Sincerely,

Jim H. Crumpacker
Director
Departmental GAO/OIG Liaison Office

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Appendix III: GAO Contact and Staff Acknowledgments

GAO Contact

Frank Rusco, (202) 512-3841 or ruscof@gao.gov

Staff Acknowledgments

In addition to the individual named above, Christine Kehr, Assistant Director; David Bennett; Antoinette Capaccio; Nirmal Chaudhary; Scott Doubleday; Cindy Gilbert; Rich Johnson; Michael Kendix; Carol Herrnstadt Shulman; Vasiliki (Kiki) Theodoropoulos; and Jeremy Williams made key contributions to this report.

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