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LOOKING TO THE FUTURE: LESSONS IN PREVENTION, RESPONSE, AND RESTORATION FROM THE GULF OIL SPILL

HEARING

BEFORE THE

SUBCOMMITTEE ON OCEANS, ATMOSPHERE, FISHERIES, AND COAST GUARD

OF THE

COMMITTEE ON COMMERCE, SCIENCE, AND TRANSPORTATION
UNITED STATES SENATE

ONE HUNDRED TWELFTH CONGRESS

FIRST SESSION

JULY 20, 2011

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LOOKING TO THE FUTURE: LESSONS IN PREVENTION, RESPONSE, AND RESTORATION FROM THE GULF OIL SPILL

WEDNESDAY, JULY 20, 2011

U.S. SENATE,
SUBCOMMITTEE ON OCEANS, ATMOSPHERE, FISHERIES, AND COAST GUARD,
COMMITTEE ON COMMERCE, SCIENCE, AND TRANSPORTATION,
Washington, DC.

The Subcommittee met, pursuant to notice, at 2:34 p.m. in room SR–253, Russell Senate Office Building, Hon. Mark Begich, Chairman of the Subcommittee, presiding.

OPENING STATEMENT OF HON. MARK BEGICH, U.S. SENATOR FROM ALASKA

Senator BEGICH. I'm just reviewing—my family is in Alaska right now fishing, and my brother-in-law just caught a 40-pound king salmon. The uniqueness of technology is he could send me that photo right now and say, "I'm sorry you're in Washington, but, oh, by the way, please look at this king salmon I just caught."

[Laughter.]

Senator BEGICH. So, thank you all very much. Give me one second here.

I'd like to welcome the witnesses and thank them for taking the time to testify before the Committee today.

On July 15, 2010, just over a year ago, BP finally succeeded in stemming the seemingly never-ending flow of oil of the *Deepwater Horizon* spill. When the well was capped, the people of the Gulf Coast and people across the country, who were mesmerized by the video of the subsea gusher; we were finally able to breathe a collective sigh of relief.

Yet, capping the Macondo well was not the end of this tragedy. We're still understanding and accounting for its costs—the cost to the environment, the cost to the individual people in the Gulf communities, and the cost to their economies.

Over 200 million gallons of oil spewed out into the Gulf for nearly 3 months, becoming the largest accidental marine oil spill in history. The long term impacts to the wildlife and ecosystems of the Gulf, while still ill-defined, are sure to be long-lasting.

Eleven men lost their lives in the explosion that preceded the blowout. Many other lives and livelihoods were, and continue to be, upended by the spill.

Alaskans sympathize with the Gulf and its plight. We've lived through this before. In 1989, Alaska suffered the *Exxon Valdez* disaster, then the largest marine oil spill this country had faced. More than 20 years later, Alaskans are still dealing with the aftermath. The environmental impacts are still being monitored and assessed in the waters of the Prince William Sound. Affected Alaskans, many who waited decades before seeing justice in the courts, still feel the impacts of the trauma which the spill caused within their communities.

While the effects of both spills are tragic, the greatest tragedy of both could and should have been avoided. In each case the responsible parties cut corners and took unnecessary risks for the promise of greater profits.

While the risk-taking and mistakes made leading up to the *Deepwater Horizon* disaster were reckless and flagrant, our response to it must be thoughtful and measured. The United States needs to put itself firmly on the path to energy security, and we cannot do that without increasing our domestic supply of oil. Oil production must be an integral part of any balanced energy plan, including development of the OCS, whether in the Gulf or the Arctic waters of my state. We need to rededicate ourselves to taking the prudent steps to ensure that these kinds of spills never happen again.

Industry needs to rigorously develop and implement better standards and best practices, and regulators must keep them accountable. While they may trust, they must also verify.

In the event of a future spill, industry needs to have the capabilities to act swiftly and decisively. We must also make sure our front line responders, like the Coast Guard and NOAA, have the resources and flexibility and expertise they need to mitigate impacts and get the job done.

We must provide local and State stakeholders and responders a strong voice in the process. It's their way of life and prosperity on the line. And we must make sure we have the best science available to guide the response efforts, to understand the impacts, and to restore the damage that was wrought by a spill.

These are the reasons we're here today. I'm looking forward to hearing from our witnesses. They come from varied perspectives. And I hope that collectively their insight can put us on the path toward improved spill prevention, response and restoration.

We'll have two panels. Before I introduce the first panel, let me ask Senator Wicker, here representing the Ranking Member, to make his opening.

STATEMENT OF HON. ROGER F. WICKER,
U.S. SENATOR FROM MISSISSIPPI

Senator WICKER. Thank you, Chairman Begich.

I'm standing in for Ranking Member Snowe at the moment. She will possibly join us for a few moments, but will not be able to be here for the entirety of the hearing because of scheduling conflicts.

I appreciate you holding this hearing to investigate lessons learned from the Gulf oil spill—the tragic explosion of the *Deepwater Horizon* claiming the lives of four Mississippians and seven others.

It took 87 days to contain the flow of oil, and even longer to seal the blown-out well permanently. This caused extensive damage to the Gulf ecosystem, and significant harm to the Gulf Coast economy, which has still not fully recovered.

I hope to hear from the witnesses on both panels today—how we can prevent spills of this magnitude in the future in a responsible and sensible manner. Just as importantly, I would like to hear how we can mitigate the economic damages that resulted from the *Deepwater Horizon* spill.

The administration's moratorium on offshore drilling added significantly to the spill's negative economic effects. Thirty-three deepwater rigs were forced to suspend operations in the Gulf, impacting thousands of American jobs. At least eight of these rigs have left, or plan to leave the Gulf in order to pursue operations elsewhere. It is highly unlikely they will ever return.

At a time of record unemployment and soaring debt we should be implementing policies that increase American jobs and income, instead of ones that restrict them.

It was clear at the onset that the administration and BP were not prepared to handle a spill of this magnitude. Although I praise the efforts of the Coast Guard and NOAA, the initial shortcomings and response efforts in coordination were disheartening. BP showed it lacked the proper planning and response capabilities for such an event.

I'm pleased that the oil and gas industry have since responded by establishing the Marine Well Containment Company, a not-for-profit organization that can provide containment response should another significant blowout occur in the Gulf.

As the coast continues to recover, it is my hope that responsible parties will work with State and Federal officials to restore the ecosystem and economy.

For Mississippi, the long-term environmental impacts are not yet fully known, but it is clear the immediate economic damages have been significant. Many regular visitors to our beaches and coastal towns have stopped coming, and our fishing industry—steeped in tradition and a way of life on the Coast—has not recovered from the misperception that Gulf seafood is tainted with oil. The truth is, Gulf seafood is safe to eat, and it continues to be tested for oil and other toxins more than any other seafood in the world.

A significant piece of the recovery will be directing fines collected under the Clean Water Act to impacted states. I have supported this effort from the beginning, and I would like to thank my colleagues from other Gulf states for their hard work. I'm confident we will soon have a proposal supported by every Gulf delegation to dedicate Clean Water Act fines to the environmental and economic recovery of the Gulf Coast.

Thank you, again, Mr. Chairman. And I look forward hearing from our distinguished witnesses.

Senator BEGICH. Thank you, Senator. Thank you, Senator Wicker.

Senator Nelson?

STATEMENT OF HON. BILL NELSON,
U.S. SENATOR FROM FLORIDA

Senator NELSON. Mr. Chairman, when you see oil floating on the surface, and you see it approaching a pass like Pensacola Pass; and then, because of the on-rushing tide, you see that oil come on in to Pensacola Bay, or whatever bay, Perdido Bay—some of it, we wanted to keep it out of Choctawhatchee Bay—I can't tell you what an awful sight it is. Like some of the sights that you don't like to look at. That's what it looks like. And then, once it reaches a destination, either on ocean floor or on the beach, or all gathered up around the marsh grasses, then it just makes it even look all the worse. And it wreaks havoc. It wreaks havoc on the environment and on the economy.

I'll never forget, with all the problem we've had in the Gulf Claims Facility, of getting them to try to help out people—what about the little lady that had the advertising business in Destin? Now, her business was a little advertisement, single owner, small business. But, she was advertising to go to this restaurant, that restaurant, this tourist destination. Well, when the tourists stopped coming, she didn't have any business. And so she had no income. And so she couldn't pay her mortgage. And it went on and on and on. And sometimes the banks cooperated, and sometimes the banks didn't cooperate.

I looked at local government, and they're doing everything they can. It's like being the little boy sticking his finger in the dike, and it, the water breaks out over here, and they stick their finger there, and so it happens over and over.

Now, I don't want this to happen again. And there are lot of lessons learned—that we learned from your state—that we didn't pay any attention, and it happened again. And if we don't pay attention to the lessons learned from the Gulf oil spill, it's going to happen again. And when it does, let me just give you a little preview.

Repsol—the big Spanish drilling company that drills in the Gulf of Mexico and drills according to U.S. standards—they're getting ready to drill 40 miles off the North Coast of Cuba in over 5,000 feet of water. If there's a spill there, do you know what runs right by there? It's the Gulf Stream. And where does the Gulf Stream go? It parallels the delicate environmentally highly sensitive Florida Keys and all those coral reefs. And then the Gulf Stream comes to within one mile of the beaches of Miami Beach, all the way up to Palm Beach. And that is a part of the state that has an extraordinary amount of tourism.

A lot of our Florida beaches oil did not get to. But the scare of oil there, when they saw the pictures of the oil on Pensacola Beach—and do you remember that newspaper photograph that had the entire beach? That white sugary sand beach was covered in black oil. And the tourists stop coming. And they stopped coming to the entire Gulf Coast of Florida. So, this is what we are facing.

I am pleased, at my request, and, you and the Ranking Member were kind enough to invite the chairman of our county commission from Pensacola, Escambia County, who was at the front line of this. They were having to do a lot of it themselves, making it up as they went, because in many cases the U.S. Government did not have its act together.

I'll just close with this. Mr. Chairman, I'll never forget—when I went to one of the centers, the command centers, and it was explained to me that the Coast Guard was in control 51 percent, and BP was in control 49 percent. Well, that doesn't work. And we saw that didn't work. You've got to have a military chain of command. And who is at the top of that chain has got to have their orders carried out. So that's one of the significant lessons that we learned from this spill.

Thank you, Mr. Chairman.

Senator BEGICH. Thank you, Senator Nelson.

Senator Lautenberg, do you have any quick openings?

STATEMENT OF HON. FRANK R. LAUTENBERG, U.S. SENATOR FROM NEW JERSEY

Senator LAUTENBERG. Well, if I could trade it for an earlier position in the questioning, I'd like to do that. But just to say——

Senator BEGICH. The negotiations.

Senator LAUTENBERG.—Mr. Chairman, thanks very much. We were not—we know how expedient you'd like to try to make the hearing. It's too important to just bypass it. But I will relinquish my present position here, and plead for mercy on the, in the questioning. And with that, I surrender the chair. Thank you, Mr. Chairman.

Senator BEGICH. Thank you.

Senator Cantwell?

STATEMENT OF HON. MARIA CANTWELL, U.S. SENATOR FROM WASHINGTON

Senator CANTWELL. Thank you, Mr. Chairman. And I commend you for holding this important hearing today, and I thank the witnesses for being here.

Oil spill prevention and response capability was a major focus of mine when I was the chair of this subcommittee, and so I'm pleased that you're continuing to focus on such a vital issue.

We did manage to significantly strengthen our Nation's oil spill safety net in last year's Coast Guard bill—the biggest improvements since OPA 1990. But there is much more to be done—particularly in light of what we have learned from the devastating *Deepwater Horizon* spill.

So, I have many questions for the witnesses today, on issues like steering restoration funds, to the Gulf cleanup—which I support—and possibly earmarking offshore drilling revenues to states for coastal restoration. But, I'm going to submit those for the record.

Today I was hoping to get some answers from our hearing today, Mr. Chairman, from the administration witnesses on the emerging threat in the Northwestern United States.

As many of my colleagues probably know, Canada planned to double production for the Alberta massive tar sand fields over the next decade, and much of that oil will come to the U.S. But some would also likely go to places like China.

The nexus with this hearing is that much of that oil would be shipped by supertankers from Vancouver through the fragile waters of the San Juan Islands and the Strait of Juan de Fuca. This is a major threat to our region, and we have already accom-

modated oil tankers and barges carrying 15 billion gallons of oil—much coming from Alaska to Washington State's five refineries. In fact, we refine twice as much gasoline as we need in our state for consumption. So, there is always a risk there. But, we have tried to do our utmost to minimize that.

The tankers traversing Puget Sound need tug escorts, steered—pilots, and people that know our waters. Just like what happened with Prince William Sound, we need to have people on the ground who knows what's happening. So, we have a very robust oil spill response network in place, including vessel traffic control systems.

Unfortunately, these systems seem to have led to a free ride for Canada. It seems that the Canadian oil spill response plan in the Pacific Northwest is, "call the Americans."

An internal audit last year revealed that, "the Canadian guard—Coast Guard lacks the training, equipment, and management systems to fulfill its duties and response to the offshore pollution incident, such as an oil spill."

That is a scary situation for us in Washington State, particularly when plans by one oil company alone would increase oil tanker traffic by 45 percent. And, these super tankers we are talking about can hold up to a million barrels of oil. That's about four times what was spilled in the *Exxon Valdez,* and covered 1,300 miles of very pristine coastline. Obviously, such a spill in the narrow and heavily polluted waters of the Strait of Juan de Fuca would cause tens of billions of dollars in damage and have a significant impact.

So, with that I will, Mr. Chairman, if I could, just show a chart for, that shows you where this vessel traffic goes. And, while it can go along the coast of Vancouver Island and out the Strait of Juan de Fuca, we're talking about a very busy traffic area, very pristine parts of both Canada and the United States. And I think it deserves a very robust oil spill response plan.

So, thank you for allowing me to make this opening statement. I'll look forward having a chance to, asking of our panels today questions.

Thank you.

Senator BEGICH. Thank you very much.

And, again, thank you to our two witnesses.

The first witness on our panel is Rear Admiral Zukunft.

And, honestly, I'm very impressed with your Federal onsite coordination you did on *Deepwater Horizon.* A lot of kudos to the work you did there.

We also have Mr. Kennedy, David Kennedy, Assistant Administrator for NOAA's National Ocean Service. And thank you, again, for NOAA, doing what you do—not only in the Gulf, but around the country in the sense of protecting our natural resources and beauty.

So let me first open—Admiral, if you'd like to make your opening statement, and Mr. Kennedy. And then we'll open for questions.

Does it work? OK.

STATEMENT OF REAR ADMIRAL PAUL F. ZUKUNFT, ASSISTANT COMMANDANT FOR MARINE SAFETY, SECURITY, AND STEWARDSHIP, UNITED STATES COAST GUARD

Admiral ZUKUNFT. Good afternoon, Chairman Begich and Ranking Member Wicker, and distinguished members of the Subcommittee.

I'm honored to appear before you today to speak about the status of lessons learned from the *Deepwater Horizon* response and efforts the Coast Guard is undertaking.

As you know, on April 20, 2010, an explosion aboard the Mobile Offshore Drilling Unit or MODU, *Deepwater Horizon* resulted in the sinking of this MODU and the tragic loss of 11 lives, and the worst spill in U.S. history.

The spill was designated as the first ever Spill of National Significance, and the first time we have designated a national incident commander. Under the framework of the Oil Pollution Act of 1990 and the National Contingency Plan, a monumental response was undertaken through the unified efforts of over 47,000 Federal, State, and local responders, including 7,000 active and reserve Coast Guard members.

I served as the Federal on-scene coordinator for over 6 months. Today, 15 months later after the explosion occurred, we continue our response efforts, while concurrently—yet distinct from the response—the natural response damage assessment is occurring as well.

Following the *Deepwater Horizon* incident, there had been numerous reports generated and investigations conducted, not only to determine the causes of the casualty, but also to evaluate the effectiveness of the spill response. These reports include the President's national commission on the BP *Deepwater Horizon* oil spill and offshore drilling, the National Incident Commander's Report, and the incident specific preparedness review. The Coast Guard has reviewed these reports, in addition to conducting our own internal review to determine areas where the Coast Guard needs to take corrective action.

Two more reports are forthcoming—the Coast Guard, in B–O–E–M–R–E *et. seq.,* or BOEMREs Joint Investigation Report, into the cause of the casualty, and the Federal On-Scene Coordinators Report, that will contain observations and perspectives of the Federal on-scene coordinator regarding the response effort. Both reports are concurrently undergoing final agency review and should be released within the next month.

As we continue to inventory and analyze the lessons from these reports in our own inner, internal review, I'd like to highlight several actions we've already taken to address areas where response planning and preparedness should be improved, including directing Captains of the Port to review oil spill response plans for offshore facilities—and this is already an ongoing effort; requiring area committees to include worst case discharge scenarios for offshore facilities in their respective area contingency plans; developing subsea dispersant application guidelines; increasing state and local outreach, and participating in area committee meetings and activities; and participating in a Coast Guard Federal Emergency Management Agency and Environmental Protection Agency workgroup to

develop recommendations to harmonize the National Contingency Plan and National Response Framework governance constructs.

While there are several areas for improvement that we are pursuing overall, we have concluded that the framework provided for OPA 1990 in the national contingency plan for oil spill response served us extremely well, and that the National Contingency Plan provided the necessary discretion and freedom of action to address the very unique circumstances of the *Deepwater Horizon* response. The Coast Guard is also committed to ensuring the safety of activities on the outer continental shelf.

The Coast Guard is primarily responsible for vessel safety, and BOEMRE is responsible for drilling systems and wealth safety. This division of responsibilities is captured in a Memorandum of Understanding between our two agencies. The Coast Guard and BOEMRE are working together to ensure there are no safety seams whatsoever in our oversight responsibility in the offshore drilling domain. To that end, we've established a Coast Guard/BOEMRE prevention workgroup, chartered to improve coordination and communication between the two agencies.

In light of the *Deepwater Horizon* incident, we give renewed focus to the expansion of natural resource exploration in the Arctic. The remote and harsh environment presents unique prevention and response challenges for the industries operating in the region and the government agencies providing oversight of the increasing activities in the Arctic domain. We ask for Congress' continued support as we work to address the unique challenges posed by the Arctic region.

In a similar vein, as Cuba prepares to begin offshore oil exploration, we have been updating our contingency plans, and engaging Federal, State and private entities including, Repsol, to ensure we are ready to address a potential discharge impacting U.S. waters.

Finally, I want to thank Congress for their timely action in passing Public Law 111–191, which allowed significant advancements from the principal fund within the Oil Spill Liability Trust Fund in the midst of this unprecedented response. This was critical to me, to ensure that sufficient funds were available to support this Federal response.

Thank you for the opportunity to testify today, and I am pleased to take any questions that you may have. Thank you.

[The prepared statement of Admiral Zukunft follows:]

PREPARED STATEMENT OF REAR ADMIRAL PAUL F. ZUKUNFT, ASSISTANT COMMANDANT FOR MARINE SAFETY, SECURITY, AND STEWARDSHIP, UNITED STATES COAST GUARD

Good Afternoon, Chairman Begich, Ranking Member Snowe, and distinguished members of the Subcommittee. I am honored to appear before you today to discuss the lessons learned from the BP *Deepwater Horizon* oil spill.

Comprehensive Overview of Coast Guard Lessons Learned Review and Implementation Strategy For the BP Deepwater Horizon Incident

Background

On the evening of April 20, 2010, an explosion aboard the Mobile Offshore Drilling Unit (MODU) *Deepwater Horizon* led to the sinking of the MODU, the tragic loss of 11 lives, and the worst oil spill in U.S. history. Given the size and scope of the spill, Secretary Napolitano designated the incident a Spill of National Significance (SONS) and designated then-Commandant of the Coast Guard Admiral Thad

Allen as the National Incident Commander (NIC). Due to the severity of the spill, the complexity of the response effort, and the large-scale potential for adverse impacts on the environment and public health, this response required extraordinary coordination of Federal, state, local, tribal and commercial resources to contain and mitigate the effects of the spill. Using the framework provided for in the National Contingency Plan (NCP), a monumental response was undertaken through the unified efforts of more than 47,000 Federal, state, and local responders, including more than 7,000 active and reserve Coast Guard members. We established five Incident Command Posts (ICPs) across the Gulf Coast states and 15 staging areas to help flow critical resources to impacted locations. I served as the Federal On-Scene Coordinator (FOSC) for more than 6 months during the response and recovery period.

The size and scope of this incident required significant coordination of public and private resources at both the strategic and operational level. The command and control structure facilitated the NIC and FOSC's ability to direct and coordinate with other Federal, state and local stakeholders to address the most critical needs. The FOSC worked with other parties to address operational resource requests and state-by-state concerns throughout the operation. The NIC provided national-level support to the operational response—from resources to policy decisions—to secure the source and mitigate the impact of the spill. The NIC and the FOSC met regularly with key stakeholders, including the Governors of each state on the Gulf Coast and established a critical line of communication to resolve conflicts. At the operational level, a Unified Area Command was established to oversee operational activities across the entire Gulf Region. The FOSC served as the Unified Area Commander in accordance with established incident command doctrine, and under the Unified Area Command (UAC) there were the five ICPs: Houston, TX; Galveston, TX; Houma, LA; Mobile, AL; and Miami, FL.

Although the role and functions of the NIC evolved considerably during the response, the NIC concept proved to be an extremely effective command organization that promoted unity of effort across all levels of government, ensured that timely information was provided to the public and first responders, and efficiently marshaled the resources of the Federal Government, private sector, and international sources to combat this unprecedented oil spill. As the first SONS and NIC designation in U.S. history, the BP *Deepwater Horizon* (DWH) oil spill response enabled us to learn a great deal about NIC roles and responsibilities. Going forward, the Coast Guard will work with our interagency partners to memorialize in doctrine and policy the responsibilities that accrued to the NIC during this response.

The effort to contain and secure the well and the resulting spill response effort became extraordinarily large and complex. This effort required two drilling ships, numerous oil containment vessels used to control the source, and the highly coordinated use of mechanical recovery, surface burning, and dispersant applications. The weather significantly impacted our ability to carry out skimming and surface burn operations. Despite these constraints, we employed more than 835 oil skimmers, more than 6,100 response boats and 3,190 vessels of opportunity, and over 120 aircraft. More than 34.7 million gallons of oil-water mix were recovered through skimming, 411 controlled in-situ burns removing over 11 million gallons of oil from the open water, and the dispersion of oil both at the surface and at the wellhead.

Response operations took place in four zones: at the source of the spill, off-shore, near-shore, and in-shore. At the source, the drilling rigs and remotely operated vehicles necessary for deep water drilling were the only means of accessing the well at a depth of 5,000 feet. Off-shore, as close to the source as possible, the response focused on removal of the oil. Key to these operations were large skimmers and in situ burn task forces. Near-shore operations focused on skimming and the use of booms to protect sensitive areas and as much of the shoreline as possible. In Barataria Bay, for example, shoreline operations involved extensive assessment, environmental protection, and treatment strategies. After the well was capped, shoreline cleanup became the focus of continued response operations.

Health and Safety was a primary strategic goal throughout this response, as reflected by our efforts to address the potential public health impacts of the spill and the remarkably low injury rate for responders across the operation. At its peak, there were 47,000 people working on the response, ranging from those drilling relief wells on ships fifty miles off-shore to those working on skimming and booming vessels and the work crews cleaning the shoreline. Thousands of personnel worked to decontaminate oiled booms, vessels and equipment. A significant safety organization was staffed by numerous Federal and state agencies and private safety experts who oversaw and examined broad aspects of worker safety.

Overall, Section 311 of the Clean Water Act, as amended by the Oil Pollution Act of 1990 (OPA '90), as well as the NCP and the supporting National Incident Management System (NIMS), proved effective during the DWH oil spill response. The

NCP provided a sound framework that allowed for the needed discretion and freedom of action to address contingencies that arose.

Major Report Summaries

As with any incident, there are ongoing assessments and reviews to gain a better understanding of lessons learned from the response to inform equipment standards, technology, and preparedness to respond in the future. These assessments come from both Coast Guard and third party reviews.

The National Incident Commander's Report, released on October 1, 2010, discussed the effectiveness of the NCP as the United States' blueprint for responding to both oil spills and hazardous substance releases. The report reviewed the roles and responsibilities of the NIC and examined whether existing legal authorities and doctrine were adequate. Coast Guard Admiral Thad Allen provided his observations and recommendations regarding the authorities, doctrine, and policy that collectively provide the governance constructs used for oil spill response. Admiral Allen offered key recommendations to improve our collective ability to respond to the next major oil or hazardous substance release. These key recommendations include:

- Incentivizing the private sector to develop 21st century oil spill response capabilities to keep pace with advancing technologies in oil exploration, deepwater offshore drilling, oil production, and maritime transportation;
- Ensuring that all appropriate Federal, state, local, and tribal government authorities and response structures are included in response plans and their elected or appointed officials are invited to participate in oil spill response exercises; and
- Ensuring a NIC has appropriate authorities necessary for the execution of the position.

The National Commission on the *Deepwater Horizon* Oil Spill and Offshore Drilling was created by Executive Order 13543 on May 21, 2010 as an independent, nonpartisan entity directed to provide a thorough analysis and impartial judgment of the DHW oil spill. The Commission was charged with examining the facts and circumstances concerning the root causes of the DWH explosion, improving the country's ability to respond to oil spills associated with offshore drilling, and recommending reforms to make offshore energy production safer. The report develops options to overhaul the U.S. approach to drilling safety and greatly reduce the chances of a similar, large scale disaster in the future.

The Coast Guard's Marine Safety Manual prescribes a process to conduct a comprehensive review to capture lessons learned from a major spill response. The Incident Specific Preparedness Review (ISPR) is the process by which the Coast Guard examines the implementation and effectiveness of the preparedness for and response to a major response, as it relates to the National Oil and Hazardous Substances Pollution Contingency Plan, Area Contingency Plans and other oil spill response plans. On June 14, 2010, the Commandant of Coast Guard Admiral Robert Papp, Jr., chartered an ISPR team to conduct an independent, third-party review of the *Deepwater Horizon* response. The ISPR team was comprised of Federal and state government representatives along with representatives from the oil exploration and production industry, non-governmental organizations, community groups and the professional oil spill response industry who served as technical advisors. The report represents the views of the ISPR team and provides an assessment of the Coast Guard's preparedness process as well as recommended corrective actions.

On April 27, 2010, the Department of Homeland Security and Department of Interior jointly convened an investigation into the marine casualty, explosion, fire, pollution, and sinking of the DWH. Volume I of the report of this joint investigation concerns matters under the jurisdiction of the Coast Guard. The Coast Guard members of the joint investigation released Volume I on April 22, 2011. Volume II of the report will address matters under the jurisdiction of the Bureau of Ocean Energy Management, Regulation and Enforcement (BOEMRE).

Lastly, the FOSC report is under development. The FOSC report will contain observations and perspectives of the FOSC regarding the oil removal operation and actions taken. As required by 33 C.F.R. § 300.165, the report will document the situation as it developed, the actions taken, the resources committed, and challenges.

Coast Guard Initiatives Resulting From Deepwater Horizon Lessons Learned

The BP *Deepwater Horizon* oil spill and other incidents have prompted the Coast Guard to review all operations and systems under its responsibility for potential improvements to both regulations and the inspection regime for foreign-flagged MODUs on the U.S. Outer Continental Shelf (OCS). Prior to the incident, we were

already pursuing improvements to our offshore inspection capability through our marine safety improvement program. We recently increased our inspection resources and established an Offshore National Center of Expertise that greatly enhances inspector competency.

All MODUs operating in the United States are subject to annual examinations to verify compliance with area laws and international conventions. If that exam finds "questionable equipment, systems, or crew competency issues" the Coast Guard can expand its investigation to determine whether a deficiency exists, and may require additional tests, inspections, or crew drills. On July 7, 2011 we announced in the *Federal Register* a risk-based oversight program for MODUs that will result in more frequent examinations of the highest risk MODUs based on accident history, past discrepancies, flag state performance, and classification society performance. Marine inspectors will focus on critical areas representing the greatest risks, such as dynamic positioning systems and operator competency. The President's Fiscal Year (FY) 2012 budget request seeks additional Marine Safety personnel, including Inspectors and Investigators, to staff vessel inspections and post-incident investigations.

Additionally, we are actively engaged in oversight of rapidly developing well spill containment capabilities (Marine Well Containment System and Helix Well Control Group) to promote rigorous testing to ensure these response vessels are capable of responding to a deepwater well spill and meet applicable safety and environmental requirements. We recently established an OCS Activities Matrix Team to leverage expertise throughout the Coast Guard including various headquarters offices, the Marine Safety Center, the Eighth Coast Guard District in New Orleans, LA, and the OCS Center of Expertise. This team will focus on emerging OCS issues and enhance the Coast Guard's ability to address them, increase our plan review and inspection oversight, support investigations and casualty analysis, and provide a holistic approach to management of OCS safety programs.

The Coast Guard shares MODU regulatory responsibilities with the BOEMRE and each agency's areas of responsibility are delineated in regulations as well as in Memorandums of Understanding. In general, the Coast Guard's primary responsibilities are related to vessel operations and safety systems including firefighting, lifesaving, electrical systems, and hull structures on the MODU and BOEMRE's primary responsibility is subsea operations and drilling systems. The Coast Guard does not oversee drilling systems, but the interface between subsurface and surface operations warrants close coordination and collaboration between both agencies. We continue to engage and improve coordination with BOEMRE through a Prevention Working Group that focuses on enhancing alignment and consistency between the two agencies on how inspections are conducted. The team will coordinate closely with Coast Guard-sponsored OCS stakeholder organizations such as the National Offshore Safety Advisory Committee (NOSAC) and other BOEMRE-Coast Guard meetings and Working Groups as vehicles for improving OCS safety.

The lessons learned from the BP *Deepwater Horizon* oil spill emphasize the importance of updated and comprehensive Regional and Area Contingency Plans around the Nation. The Coast Guard, as the FOSC for oil spills in the coastal zone, is ensuring the Worst Case Discharge (WCD) planning scenarios are accurate and reflect all potential sources for oil spills, including offshore facilities.

The Coast Guard and BOEMRE have formed a joint Response Workgroup to improve interagency partnerships and collaboratively work on improving preparedness efforts in several areas post-*Deepwater Horizon.* Significant Workgroup initiatives include joint Oil Spill Response Plan (OSRP) Review, Regional Contingency Plan and Area Contingency Plan WCD Gap Analysis, joint BOEMRE/Coast Guard pollution equipment compliance inspections, and a review of the effective daily recovery capacity standard for mechanical recovery equipment. The Coast Guard and BOEMRE have conducted a joint review of OSRP in BOEMRE's OCS Gulf of Mexico, Pacific, and Alaska Regions. This review, which included Coast Guard participants from each region, identified the most accurate, up-to-date WCD information for offshore facilities. In addition to the OSRP review, a comprehensive analysis of Regional Contingency Plans (RCP) and Area Contingency Plans (ACP) was conducted to identify significant WCD preparedness gaps.

The Coast Guard directed Area Committees to address these gaps and ensure WCD planning scenarios in all oil spill contingency plans reflect WCD information identified during the joint OSRP review. As mentioned in several key *Deepwater Horizon* lessons learned reports, the Coast Guard identified the need for Area Committees to encourage more participation from state, local and tribal officials in oil spill planning and preparedness efforts. The Coast Guard also re-emphasized existing guidance for District and Sector Commanders to develop aggressive outreach programs with state, parish, county, and other local officials.

The Federal Emergency Management Agency (FEMA), Environmental Protection Agency (EPA), and Coast Guard, via the chairs of the National Response Team (NRT) and the Emergency Support Function Leadership Group (ESFLG), have formed a working group to develop recommendations that support improvements for responses involving the whole of government under both the National Response Framework (NRF) and the NCP. This working group is conducting a comprehensive review of the similarities, differences and synergies between the NRF and the NCP.

The BP *Deepwater Horizon* oil spill response also highlighted the need for Oil Spill Research and Development. The FY 2011 appropriations included $4 million for research, development, test, and evaluation of technologies to prevent and respond to oil and hazardous substance spills. In addition, the President's FY 2012 budget request includes a full-time position for the Interagency Coordination Committee on Oil Pollution Research (ICCOPR) and Research Development Test & Evaluation funding for Oil Spill Detection/Response.

The DWH response highlighted the need for highly qualified surge personnel in the event of pollution incidents. Swift identification of trained and experienced personnel is critical in supporting FOSCs as they carry out their statutory responsibilities. To improve personnel competency in areas that support the Coast Guard FOSCs, we are strengthening our Marine Environmental Response training program for all responders. The President's FY 2012 budget request seeks 87 new environmental response personnel.

We are also developing a FOSC Representative course that will provide greater competency among junior officers and enlisted personnel who may be called upon to provide command and control functions during a range of oil spill and hazardous material incidents. The President's FY 2012 budget request also includes funding to establish a Coast Guard National Incident Management Assistance Team (IMAT) to an immediate, highly proficient, and deployable surge capacity to Coast Guard Incident Commanders nationwide to responds to threats and other disasters.

We continue to provide leadership and direction toward the establishment of a permanent civilian Regional Response Team (RRT) Co-Chair position at each Coast Guard District. These permanent Co-Chairs will provide leadership, continuity and subject matter expertise to regional elements of the National Response Systems and NRF.

Finally, we are considering personnel enhancements in the pollution response field that will allow our high-performing Marine Science Technician enlisted members to advance into greater leadership roles. Once in place, these experts will be able to lead the Coast Guard through future pollution incidents.

Conclusion

The BP *Deepwater Horizon* oil spill response required the collaborative and sustained response of more than 1,000 organizations and the lessons learned will help inform future Coast Guard operations. The OPA '90 as well as the NCP were used effectively, and the Incident Command System's scalable organizational structure proved effective in bringing together Federal, state, local, tribal, and private sector entities. The division of responsibilities between the NIC and staff working at the National level, and the FOSC serving as Unified Area Commander at the regional level, was effective in managing national, regional and local demands of this first "Spill of National Significance."

Thank you for the opportunity to testify before you today and I will be pleased to answer your questions.

Senator BEGICH. Thank you very much, Admiral.

Mr. Kennedy?

STATEMENT OF DAVID M. KENNEDY, ASSISTANT ADMINISTRATOR, NATIONAL OCEAN SERVICE, NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION, DEPARTMENT OF COMMERCE

Mr. KENNEDY. Thank you, Chairman Begich, members of the Committee, for the opportunity to testify on the ongoing response to, and lessons learned from, the *Deepwater Horizon* oil spill.

I appreciate the opportunity to discuss NOAA's response to, and lessons learned from, the *Deepwater Horizon* oil spill. NOAA has been working tirelessly from the first day of the BP *Deepwater Horizon* spill, and we will continue in our efforts until cleanup of re-

sidual oil, assessment of the spill's ecological and human use impacts, and restoration of the injuries, are complete.

My testimony today will discuss the continuing challenges NOAA faces in the wake of the spill, the progress of ongoing and long-term removal and restoration activities, and the emerging needs for improved oil spill prevention response and restoration.

The *Deepwater Horizon* oil spill was a grave reminder that Spills of National Significance can occur despite the many safeguards and improvements in place since the passage of the Oil Pollution Act of 1990. Although our best option is still to prevent spills from, to, from occurring, the risk of spills remains a concern, given the limitation and age of offshore and onshore oil infrastructure, and frequency and volume of oil transported through our waterways.

If a spill does occur, responders must be equipped with the appropriate tools and information. An effective response based on solid science and smart decisionmaking does not just produce cleanup costs—it ultimately decreases environmental and socio-economic impacts which can be more costly in the long term.

To ensure that appropriate tools and information are available to responders and decisionmakers facing the next Spill of National Significance, the public and private sectors must continue to invest time and resources in spill-response research and development in the aftermath of this disaster. While existing research has resulted in advancement of some response technologies, more must be done to strengthen our Nation's response and restoration capabilities.

Critical needs for further research and development are amplified when we examine challenges realized during *Deepwater Horizon* spill, and when we consider the emerging prospects of expanded offshore exploration and production in remote and ecologically sensitive areas. Examples of these well-documented needs include better understanding of the oil fate and behavior from deepwater releases; technological innovation for oil detection and modeling at the surface and in deep water; increased information on the long-term effects to injured species and habitats; and greater perspective, in particular, on social dimensions of spills, including community effects, risk communication methods—I think, very important, and valuation of natural resources.

In addition, many of today's standard approaches to oil spill response, cleanup, and restoration have not been extensively evaluated in remote areas like the Arctic, and their utility in such environments is known to be significantly less effective. For example, the need to better understand oil in ice, weathering and transport, effectiveness of countermeasures in Arctic conditions and ecosystem impacts to that unique area in order to make responsible decisions.

This issue also exemplifies the need for focused peer review research on oil spill response technologies, and development of new strategies and recommendations for key decisionmakers in the event of emergency.

NOAA, along with our co-trustees, is also charged with assessing and restoring natural resources injured by an oil spill. The goal of the assessment process is to determine the type and amount of restoration needed to compensate the public for injury to said resources. Trustees also assess the public's lost was of the resource, which includes losses in recreational fishing, boating, hunting and

swimming. The ultimate goal of NRDA is to implement a package of restoration projects that compensate the public for all ecological injuries and human recreational loss use combined.

Concurrent with the *Deepwater Horizon* injury assessment, NOAA and the co-trustees are planning for and beginning to implement restoration. To date, the Trustees and BP had agreed to implement several emergency restoration projects designed to curtail further injury to resources. In particular, the trustees will implement a project to mend scars created in sea grass beds caused by response equipment—mainly boat propellers in Florida. Designated areas in Mississippi wildlife management areas that have also been flooded to attract migratory birds that otherwise might gather in oil-impacted area, areas.

The Trustees are also preparing an environmental impact statement, which will identify a range of restoration alternatives that Trustees will consider to compensate the public for lost natural resources and services in the future. On April 21 of this year the Trustees announced an agreement under which BP committed to make $1 billion available to fund appropriate early restoration projects. Public input on early restoration projects has already begun, and will continue through the summer.

The *Deepwater Horizon* oil spill presented a unique challenge to NOAA and all who have worked, and are still working, to address its impacts. NOAA has the underlying capacity and expertise to coordinate and deliver essential science-based services under oil and—during oil and hazardous material spills efficiently and effectively. As a result of *Deepwater Horizon,* NOAA examined and critically evaluated our capacity and ability to respond to such large scale events.

For NOAA to continue to be the scientific leader for response to coastal marine spill, as well as other coastal hazards, it is critical to have adequate capacity and necessary resources to conduct, lead, and coordinate scientific research, and develop decision-support tools for informed and effective response and damage assessment.

Thank you for allowing me to provide the update on the *Deepwater Horizon* oil spill. I'd like to close today by assuring you that we will not relent in our efforts to protect the livelihoods of Gulf Coast residents, and mitigate the environmental impacts of the spill.

I'm happy, of course, to answer any questions you might have.

[The prepared statement of Mr. Kennedy follows:]

PREPARED STATEMENT OF DAVID M. KENNEDY, ASSISTANT ADMINISTRATOR, NATIONAL OCEAN SERVICE, NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION, DEPARTMENT OF COMMERCE

Thank you, Chairman Begich and members of the Subcommittee, for the opportunity to testify on the Department of Commerce's National Oceanic and Atmospheric Administration's (NOAA) ongoing involvement in the *Deepwater Horizon* BP oil spill response effort.

My name is David Kennedy, I am the Assistant Administrator for NOAA's National Ocean Service, and I am honored to be here to discuss the critical role NOAA serves in the Natural Resource Damage Assessment (NRDA) process following oil spills and the importance of our contributions to protect and restore the natural resources affected by this tragic event.

NOAA's mission is to understand and predict changes in the Earth's environment and conserve and manage coastal and marine resources to meet our Nation's eco-

nomic, social, and environmental needs. NOAA, acting on behalf of the Secretary of Commerce, is also a natural resource trustee and is one of the Federal agencies responsible for protecting, assessing, and restoring the public's coastal and marine natural resources when they are impacted by oil spills, hazardous substance releases, and, in some cases impacts from vessel groundings on corals and in seagrass beds. For over 20 years, NOAA has assessed and restored coastal, marine, and riverine habitats impacted by oil spills. During this period, NOAA was instrumental in evolving the field of restoration ecology and is one of the Nation's leaders in environmental restoration following an oil spill.

The *Deepwater Horizon* BP oil spill, the largest accidental oil spill in history, is only the most recent example of the environmental and socioeconomic damage caused by oil spills, and underscores the importance of and the linkage between healthy environments and our socioeconomic wellbeing. As such, the entire Department of Commerce is deeply concerned about the immediate and long-term environmental, economic, and social impacts to the Gulf Coast and the Nation as a whole from the BP oil spill. NOAA and our co-trustees have been working tirelessly to assess the ecological impacts and identify restoration opportunities along the coastal and offshore areas of the Gulf of Mexico, and will continue to do so until restoration from those impacts is complete.

My testimony today will discuss NOAA's involvement in the NRDA process, the status of the NRDA for the *Deepwater Horizon* BP oil spill, successes and challenges of the *Deepwater Horizon* NRDA, and the current status of restoration efforts.

NOAA's Natural Resource Damage Assessment Role

NOAA has several critical roles mandated by the Oil Pollution Act (OPA) of 1990 (33 U.S.C. 2701 *et seq.*), one of which is as a natural resource trustee. As a trustee, NOAA, along with our co-trustees, is charged with conducting a NRDA to assess and restore natural resources injured by an oil spill. The NRDA process is a legal process that is resolved through a claim for restoration submitted to the courts. The essence of the process is to determine the type and amount of restoration needed to compensate the public for harm or injury to our collective natural resources that occur as a result of an oil spill. Inherent in this process is the need to assess the injuries to natural resources that are caused by the oil spill itself, as well as those caused by actions carried out as part of the oil spill response. According to NOAA's regulations implementing the OPA, injury is determined relative to baseline, which is "the condition of the natural resources and services that would have existed had the incident not occurred" (15 C.F.R. § 990.30). For restoration, OPA requires the trustees to restore, rehabilitate, replace, or acquire the equivalent of the injured natural resources and services (33 U.S.C. 2705, *see also* 15 C.F.R. § 990.30) and in doing so seeks a nexus between the types and magnitude of the injury and the restoration.

In assessing the injuries to the suite of ecological services provided by the natural resources, NRDA also assesses the public's lost uses of those resources, such as recreational fishing, recreational boating, hunting, and swimming. The goal is to implement a comprehensive package of restoration projects that compensate the public for all of the ecological and human use loss injuries.

Stewardship of the Nation's natural resources is shared among several Federal agencies, states, and tribal trustees that conduct NRDAs. NOAA, acting on behalf of the Secretary of Commerce, is the lead Federal trustee for many of the Nation's coastal and marine resources. NDRA regulations explicitly seek participation by both responsible parties and government (15 C.F.R. § 990.14(c)(1)) to facilitate the restoration of natural resources and their services injured or lost by hazardous substance releases and oil spills. OPA also encourages compensation of injured natural resources in the form of restoration, with public involvement in determining the types and magnitudes of the restoration (33 U.S.C. 2706(c)(5)). NOAA and our fellow trustees conduct a NRDA in three main phases:

- *Preassessment*—The trustees evaluate injury and determine whether they have jurisdiction to pursue restoration and if it is appropriate to do so.
- *Restoration planning*—The trustees evaluate and quantify potential injuries and use that information to determine the appropriate type and scale of restoration actions.
- *Restoration implementation*—The trustees and/or the responsible parties implement restoration and monitoring. This may include corrective actions if necessary.

Within NOAA, the Damage Assessment, Remediation, and Restoration Program (DARRP) conducts NRDA. Established in 1990 after the *Exxon Valdez* oil spill, DARRP is composed of a team of scientists, economists, restoration experts, and at-

torneys to assess and restore injured resources. Since 1990, NOAA, together with other Federal, state, and tribal co-trustees recovered over $800 million for restoration of natural resources injured by oil, hazardous substances, and vessel groundings, including the recent early restoration agreement with BP. NOAA works cooperatively with co-trustee agencies and (in the case of a cooperative assessment of injuries) the responsible party (or parties) to share data and information collected during the spill and during the injury assessment. Working cooperatively with the responsible party and co-trustees can save time and money and can result in restoration being implemented faster and more efficiently.

Although the concept of assessing injuries may sound relatively straightforward, understanding complex ecosystems, the services these ecosystems provide, and the injuries caused by oil and hazardous substances takes time—often years. The time of year the resource was injured, the type of oil or hazardous substance, the amount and duration of the release, and the nature and extent of clean-up are among the many diverse factors that affect how quickly resources are assessed and restoration and recovery occurs. OPA requires that the trustees be able to demonstrate connections between the release of the oil, the pathways the oil moves along from the release point to the resources, exposure of the resources to the oil, and finally a causal connection between exposure and resource injury. The litigation context in which NRDA is conducted requires an elevated level of scientific rigor for the studies that are required to demonstrate these connections in order to ensure that our studies are accepted into court as evidence in the case. This level of scientific rigor coupled with the complexity of the ecosystems that are impacted by the spill means that the studies necessary to prove injury to resources and services may also take years to implement and complete. The NRDA process seeks to ensure an objective, scientifically rigorous, and cost-effective assessment of injuries—and that harm to the public's resources is fully addressed.

Current Status of NOAA's Natural Resource Damage Assessment Efforts

At the outset of the *Deepwater Horizon* BP oil spill, NOAA quickly mobilized staff from DARRP to begin coordinating with Federal and state co-trustees and the responsible parties to collect a variety of ephemeral data that are critical to help inform the NRDA. The trustees are currently assessing the injuries to the Gulf of Mexico and soliciting public involvement in various restoration initiatives. On September 29, 2010, the trustees sent BP a Notice of Intent to Conduct Restoration Planning. This indicates that the trustees determined they have the jurisdiction to pursue restoration under OPA and moves the case from Pre-assessment Phase into the Restoration Planning Phase. In this phase, the trustees formally identify and document impacts to the Gulf's natural resources, and the public's loss of use and enjoyment of these resources in order to determine the appropriate restoration projects to compensate for those losses.

The *Deepwater Horizon* NRDA focuses on assessing the injuries to all ecosystem resources from the deep ocean to the coastlines of the Gulf of Mexico. Information continues to be collected to assess potential impacts to fish, shellfish, terrestrial and marine mammals, turtles, birds, and other sensitive resources, as well as their habitats, including wetlands, beaches, mudflats, bottom sediments, corals, and the water column. Lost human uses of these resources, such as recreational fishing, hunting, and beach use, are also being assessed. Technical teams consisting of scientists from state and Federal agencies, from academic institutions, and from BP have been in the field conducting daily surveys and collecting samples for multiple resources, habitats, and services. To date, several hundred scientists, economists, and restoration specialists have been and continue to be involved in our NRDA activities.

These assessment teams, called technical working groups (TWG) have been established to determine the oil spill's impact on multiple trust resources. The TWGs are responsible for identifying endpoints and developing procedures and methods to measure potential injury to their respective resources in study plans. Currently, there are thirteen TWGs divided into the 1following categories: water column and sediments, turtles and marine mammals, shorelines, terrestrial species, human use, shallow water corals, oysters, birds, submerged aquatic vegetation, and deep sea benthos. Several support TWGs have also been established to help ensure TWGs have the resources and data that they need. The study plans are selected and designed based upon our experiences from past oil spills and sound science with the main purpose of documenting and quantifying injury to a particular trust resource or service.

There are several steps in the development of a NRDA study plan. First, the TWG members identify an injury assessment approach or methodology for a particular resource. They then design and draft the study plan to address one or more questions related to the release, pathway, exposure, and injury resulting from the release of

oil. The study plan is reviewed within the TWG, for scientific and statistical rigor, before the plan is reviewed by *Deepwater Horizon* case managers. As prescribed under the Oil Pollution Act NRDA regulations, the trustees afford BP the opportunity to review and provide input to the trustees in the development of study plans and many of the plans have been agreed to by representatives of the trustees and BP. Cooperation facilitates the cost effective collection and sharing of data, while allowing all parties to conduct their own analysis and interpretation of that data. It is important to note that at any time the trustees have the authority to withdraw from any cooperative assessment. Current study plans are focused on the causal connections between documented exposure to oil and injury to resources and services.

Once BP or their contractor weigh in, the trustees then decide which, if any, of BP's comments to accept. The plans are then submitted to BP, as one of the responsible parties, to either approve and fund or decide not to fund. When trustees cannot reach agreement with BP, or BP decides not to fund the study, the trustees use their own funding sources (*e.g.,* from the Oil Spill Liability Trust Fund) to conduct the study. Once the source of funds has been identified, the study plan is sent to contracting for processing if necessary. Studies have been developed over the course of days to weeks, and have not been delayed by the source of funds. It should be noted that even if the agencies fund the study, they still expect to recover those costs as "reasonable costs" of the assessment (33 U.S.C. 2702(b)(2)(A)).

Due to the size of the *Deepwater Horizon* release and the large potential for injury, NRDA field efforts have far surpassed any other for a single oil release. As of June 9, 2011, the trustees had approved over 115 study plans and collected more than 36,000 water, tissue, sediment, soil, tarball, and oil samples. More than 90 oceanic cruises have been conducted since early May 2010 and many more are scheduled for the summer and fall of 2011. From these sample collection efforts, more than 21,300 laboratory analyses have been completed. Of those, more than 20,400 have been validated through a rigorous quality assurance process. Once these data clear the validation process, they are then made publicly available; a new milestone in NRDA public transparency.

Current Status of Restoration Efforts

The NRDA regulations define three types of restoration: emergency (15 C.F.R. § 990.26), primary (15 C.F.R. § 990.30), and compensatory (15 C.F.R. § 990.30). Emergency restoration is undertaken during the response phase to minimize or prevent (further) injury to natural resources. Primary restoration is any action, including natural recovery that returns injured natural resources and services to baseline. Compensatory restoration is any action taken to compensate for interim losses of natural resources and services that occur from the date of the incident until recovery.

To date, the trustees and BP have agreed to implement several emergency restoration projects designed to curtail further injury to different resources. In particular, the trustees will implement a project to mend scars created in submerged aquatic vegetation (seagrass) beds caused by response equipment, namely boat props, in Florida. Designated areas in Mississippi Wildlife Management Areas have been flooded to attract migratory birds that otherwise may gather in oil impacted areas. One initiative will collect, store, and propagate plants, and replant damaged shorelines along the Gulf Coast to prevent further injury and erosion. Another project will improve the nesting and rearing success of endangered sea turtles on the Padre Island National Seashore.

Early restoration is the implementation of projects prior to the final quantification of injury. It is an emerging tool in NRDA that is not defined in the regulations and thus requires a great deal of discussion and agreement on how it will be implemented. It can fall under the purview of either primary or compensatory restoration.

On April 21, 2011, the trustees announced an agreement, called the Framework Agreement, whereby BP agreed to fund $1 billion in early restoration projects. Under a separate allocation agreement the Department of the Interior (DOI), NOAA, and each of the five Gulf States (Florida, Alabama, Mississippi, Louisiana, and Texas) will receive $100 million to implement projects. The remaining $300 million will be used for projects selected by NOAA and DOI in coordination with the State trustees. All projects must meet the other requirements of the Framework Agreement, which insure a consistency with OPA, and be approved by the Trustee Council (comprised of all the natural resource co-trustees) and BP. Public input on proposed early restoration projects has already begun and will continue through this summer, and will culminate in a formal opportunity for comment once Phase 1 of the Draft Early Restoration Plan has been completed (some time in the fall).

The benefits provided by these early restoration projects will eventually offset a portion of the Responsible Parties' total liability. Under the Framework Agreement, BP and the trustees must agree to the "offsets" that each project will generate. Each project will have its own stipulation, which will be filed with the court hearing the multi-district litigation on the accident. BP, all trustees, and the Department of Justice will sign each stipulation. This restoration should not compromise or negatively impact the NRDA process. Rather, it provides a rare opportunity for active restoration to begin prior to the full quantification of injury, a process that can often take years.

Next Steps

The immediate next steps for the *Deepwater Horizon* NRDA are to: (1) continue with the injury assessment; (2) implement early restoration with public input; and (3) continue broader restoration planning also with public input.

The trustees have assessment activities planned throughout 2011 and into 2012. These activities will continue to assess impacts to habitats and resources as warranted. This year of field activity is crucial for discerning sub-lethal and temporal changes in populations or habitats; a key component to any damage assessment.

A draft Programmatic Environmental Impact Statement will be available for public review and comment in early 2012. This document will identify the range of restoration alternatives that the trustees will consider to compensate the public for lost natural resources and services and lost human use. Concurrently, the trustees are focused on engaging the public to identify early restoration projects and begin the implementation process.

Highlights of Success in the NRDA

To meet the requests from academia, non-governmental organizations, and the general public regarding data and ongoing NRDA actions, NOAA and co-trustees have developed data sharing and other outreach practices that have resulted in one of the most transparent damage assessments in history. As noted previously, NRDA is a legal process, designed to resolve liability through restoration for the American public. The legal nature of damage assessment requires a degree of confidentiality to preserve the government's ability to make the strongest damage claim possible on behalf of the public in settlement negotiations and litigation. Nonetheless, the trustees have developed new public information sharing protocols to address the American public's unprecedented request for NRDA information, while at the same time, preserving the trustees' responsibility to ensure a strong legal case. The Administrative Record can be found online at *http://www.doi.gov/deepwaterhorizon/adminrecord/index.cfm*.

One of the key actions the trustees have taken to ensure enhanced transparency is the public distribution of cooperative assessment work plans and data during the NRDA process. Early in the *Deepwater Horizon* NRDA process, NOAA developed a NRDA *Deepwater Horizon* website (*http://www.gulfspillrestoration.noaa.gov*) which has become an effective tool in providing the public with important information. This website currently provides access to over 80 pre-assessment work plans and resulting validated data that are normally kept internal to the trustees until the NRDA has reached a legal settlement. These efforts to make data publicly accessible as soon as possible while ensuring that rigorous scientific protocols are upheld has required substantial coordination efforts.

In addition, NOAA has continued to update its publicly accessible Gulf Environmental Response Management Application (ERMA) website (*http://www.geoplatform.gov/gulfresponse*), a NOAA tool that served critical operational and situational awareness roles during the response and will continue to be a vital tool during the assessment and restoration planning phases of the NRDA. The team that developed and evolved ERMA was recently named a finalist for the Homeland Security Medal for helping crisis managers respond to the Gulf oil spill by providing critical information on the flow of oil, weather conditions, location of response vessels, and the impact on fisheries and wildlife.

Along with providing an unprecedented amount of data during the NRDA, NOAA and the other trustee agencies have sustained efforts to educate and communicate with the public. Since the beginning of the spill, NOAA has conducted numerous roundtable discussions with stakeholder groups and has facilitated stakeholder field trips where NRDA actions were observed and discussed. NOAA has also used multiple social media tools and videos to help disseminate information regarding the NRDA's status and the opportunities for public involvement. As part of the Programmatic Environmental Impact Statement process to solicit restoration project ideas, eleven public meetings were held across the Gulf States and in Washington, D.C. More than 500 citizens attended these meetings. The trustees received several

hundred comments on restoration alternatives at the meetings, through a website, and via mail. Throughout the rest of the NRDA process, NOAA and our co-trustees envision holding public meetings where input will be formally sought on the damage assessment and restoration planning process.

Conclusion

The task of quantifying the environmental damage from this spill is no small feat. NOAA knows that our efforts are just one of the many pieces required to restore the larger ecosystem within the Gulf. I would like to assure you that we will not relent in our efforts to protect the livelihoods of Gulf Coast residents and mitigate the environmental impacts of this spill. In the wake of such an event, we are reminded of the fragility of our coastal ecosystems and the dependence of coastal economies on the health and prosperity of our seas. Thank you for allowing me to testify on NOAA's damage assessment efforts. I am happy to answer any questions you may have.

Senator BEGICH. Thank you very much, Mr. Kennedy.

I will ask Senator Wicker to go first, and then I will hold to the end. That will give Mr. Lautenberg, Senator Lautenberg 5 minutes. We'll move quicker to you. So, boom, boom. So, Senator Wicker first, and then I'll jump to you.

Senator WICKER. Thank you, Mr. Chairman. It's kind of you to do that.

First of all, Admiral and Mr. Kennedy, thank you for your service, and thank you for your testimony.

Let me ask you first Admiral, during the height of the oil spill there was a lot of discussion about how international assistance might have been hampered by the Jones Act. Tell us what your investigation has found. Did, in fact, the Jones Act impacts skimmer and other response equipment availability during a spill?

Admiral ZUKUNFT. Yes, Senator, I'd be pleased to answer that.

As the Federal On-Scene Coordinator, I approved every pollution response funding authorization thousands of these authorizations. This is everything from domestic to international. And when I approve those, I hand them to BP and then BP writes the check. The responsible party pays. And that's where, when we talk about the division of labor, it is driven from the Federal down in holding the responsible party accountable. And if the responsible party fails to fund that, then we would fund that out of the Oil Spill Liability Trust Fund. So, that was the mechanism in process—in place.

And so, when I looked at what my most critical gaps were. It was offshore skimming capability. And so, we reached out to Norway and their skimming systems that they use in the North Sea to get that skimming equipment to the Gulf Coast, but not to transit by vessel, but to get it on a heavy lift, and get it onto an OSV and to the Gulf of Mexico. But, we invoked over 60 foreign offers of assistance where there are critical gaps that need to be closed.

There is a waiver procedure under the Jones Act, and at no time did the Jones Act impede the resourcing that we needed to respond to this unprecedented spill.

Senator WICKER. So it's your testimony the Jones Act was not a problem in getting international skimmers in?

Admiral ZUKUNFT. That is exactly correct. That it was in no way an impediment.

Senator WICKER. OK. Now, let me ask you, then, about whether or not, in testing for cleanups we need to try technologies right there in the marine environment. Do Federal regulations restrict

the Coast Guard's ability to test cleanup technologies and conduct response drills on controlled oil spills?

For example, are there Environmental Protection Agency rules that prohibit you or others from testing the effectiveness of new technologies in answering this type of a spill?

Admiral ZUKUNFT. We work very closely with our National Response Team that is co-chaired, and with the Environmental Protection Agency, to consider controlled spilled in the environment. What we, and as a rule, we do not. And it's primarily due to environmental concerns.

However, we do use a facility in New Jersey called OHMSETT where we do, on a daily basis—I was just there 6 weeks ago. It's a very large area. We can introduce ice into that as well and——

Senator WICKER. And so, you spill the oil in New Jersey, and that's just fine with me.

Admiral ZUKUNFT. This is a——

[Laughter.]

Admiral ZUKUNFT. Yes. This is a closed facility. But, a very, very large body of water, and none of that does get into the environment.

Senator WICKER. OK. Thank you very much for that.

I have to ask you, Mr. Kennedy, recently there has been a high number of sea turtle deaths in the Gulf of Mexico . Some people are blaming the shrimpers. I don't know what the shrimpers have done differently this year than they had done in previous years. Have you ruled out scientifically the oil spill as a cause of the sea turtle deaths?

Mr. KENNEDY. No, we have not. We, though, are looking very, very carefully at the mortalities, try and collect as many of those turtles as we can, conduct necropsies, and look very carefully at what we think the cause of death might be. The studies are ongoing. And——

Senator WICKER. What do your initial findings show?

Mr. KENNEDY.—the initial findings are that the majority of the necropsies that we have conducted, and these are on the near shore—shallow areas where the turtles have been found—that the turtles are quite healthy, that they're feeding normally, and that their mortality is acute. All of those things are not normally associated with some sort of exposure and longer term mortality.

So, what we're finding, at least in a number of the necropsies, is that this appears to be somehow associated with bycatch.

Senator WICKER. I see. With some sort of trauma.

Mr. KENNEDY. Yes.

Senator WICKER. And not toxicity——

Mr. KENNEDY. Yes.

Senator WICKER.—in the water.

Mr. KENNEDY. Having said that, we absolutely have not ruled out—and continue to investigate what is going on there. And there are some examples that do not fit into that category I just described. So, I think the answer to your question is, we have not ruled that out, and we're aggressively continuing to look.

Senator WICKER. Thank you both.

Senator BEGICH. Thank you very much.

Senator Nelson?

Senator NELSON. Thank you, Mr. Chairman.

Gentlemen, thank you for your public service.

We had a failed decision-making apparatus. The Unified Command, to begin with, did not react as hard as people were working, and as individually as they were just giving it their all. The decision-making apparatus was not quick enough, and there was too much leeway for BP.

I don't want to take the time, but I may as well, just to remind everybody that it started out, oh, it was only going to be 1,000 barrels a day, and then that was revised upwards, and it was revised upwards and upwards, and it ended up being something in excess of 26,000 barrels a day.

What would you two recommend as an improved decision-making apparatus in a command structure that, the next oil spill, that we have in place?

Why don't I ask the civilian first?

And then to you, Admiral.

Admiral ZUKUNFT. Yes, sir.

Mr. KENNEDY. I will just start, I think, by saying that I've been doing oil spill response, one kind or another, for 25 years. I know I look like I'm 35, but I'm actually a little older. And I have never—and I was involved in the *Exxon Valdez* spill deeply, as well. I've never seen anything that even approached the complexity of the issues that we had to deal with. And I think it's not, I think you have to start there. I think you have to start with the fact that none of us could have anticipated, even with a Spill of National Significance, how complex the issues were, and how they continued to kind of expand in their complexity, and all of this under a very, very strong, strong public spotlight and scrutiny.

Having said that, I think there are a number of things that we potentially could do better. But, to stand up an organization of this magnitude, where you had, from every agency, parts of it brought in that had never been in a response mode before, you probably would start with more training for more of the entities within—just speaking for NOAA—for more of the entities within your organization, to get them better equipped, to know what to do on a response. Response mode is kind of a special mode, and it takes a lot of training and kind of a mindset.

As we brought more and more and more of NOAA, for instance, all of our ships which, you know, are not normally involved in oil spills, the satellites, the aircraft, and all of our experts from every discipline, into this event, it took a little time to spin them up. And I think, so communication, training, and I——

Senator NELSON. All right. Let me just stipulate——

Mr. KENNEDY. Yes.

Senator NELSON.—with you there that it was complex, and it was extraordinary. But, you all let BP, basically, direct a lot of the response. It wasn't until some of us up here, including Senator Boxer, forced the availability of that live streaming video, that scientists could then see how much oil was coming out 5,000 feet below the surface, and do their calculations. This wasn't anywhere close to 1,000 barrels.

So, what would you do in the command structure so that BP is not running the show?

And I take nothing away from all the people that gave their heart and soul in doing this. What we're trying to do here is lessons learned, so that we don't repeat the mistakes of the past.

Mr. KENNEDY. Oil Pollution Act and National Contingency Plan, as the Admiral mentioned, I think, do lay out what we're supposed to do. I think when you have something this complex, you maybe have some learning curves on how that structure works. But there is a very specific structure in place. And I'm going to turn to the Admiral and let him handle this. This is his business.

Senator NELSON. OK, so, what you're saying is, a specific structure in place. So——

Mr. KENNEDY. Yes.

Senator NELSON.—does that mean we need to amend the law so that we don't fall back? Because if you're saying the statute required the way it was operated in the past, then that's one of the lessons learned.

Mr. KENNEDY. I think we're all saying that we should look at the Oil Pollution Act and see if there are amendments that are needed. But I think a better understanding across the board of what the current act is and how it is executed would help us as well.

Admiral ZUKUNFT. OK.

Leading up to this, you know, we have a very mature area contingency plan process, where we work with all the stakeholders, we work with the Regional Response Teams, identify environmentally sensitive areas. And that's leading up to—and we exercise this in our Spills of National Significance.

Those Spills of National Significance exercises do not get fully exercised at the local level. We're working in the Gulf of Mexico. For example, the state of Louisiana had five ongoing federally declared disasters under the Stafford Act. And this was the first time that the SONS—the NIC construct—under the Oil Pollution Act had seen the light of day since *Exxon Valdez*.

Working communities that were very used to State-driven Stafford Act responses, which is a co-shared expense process to, now under National Contingency Plan, which is federally driven, where the Federal Government holds the responsible party accountable for paying every bill associated with that response and taking every measure necessary.

The challenge we had was in critical resources. Because of the challenges with the planning process, and full ownership, from local up to State, when that first drop of oil came ashore, it may not have been on an environmentally sensitive area, but there was a mandate to boom the entire Gulf of Mexico, to the point where we had nearly 4 million feet of hard boom, another 10 million feet of sorbent boom, strung across the Gulf of Mexico. That boom did not exist in our Nation's inventory.

Senator NELSON. Yes, But boom doesn't work off of a beach. So right there you have to adjust.

Admiral ZUKUNFT. Yes, sir.

Senator NELSON. Well. I don't want to take any more time. I want others to have a chance.

But, in all of this conversation I've been seeking a recommendation from you all on how we can make that command structure better. And I have not heard a recommendation. So, my recommenda-

tion, Mr. Chairman, would be, if they would like to respond in writing with a specific recommendation. If we need to change the statute, then that's what we're here for.

But the next time around we sure want a crisp, chain of command. The order is given, and you don't have somebody trying to bungle it up, regardless of how complicated it is.

Senator BEGICH. Let me——

Admiral ZUKUNFT. Thank you.

Senator BEGICH. Thank you very much, Senator Nelson.

And I'd make that as a formal request of the Committee, that you could respond to that. Actually, that was one of my questions for both of you also, to, if you could give recommendations that you might think in the law could be changed in order to make it—and I'll use the words of Senator Nelson—a more crisp and efficient response. We'll make that as one of the questions for the record from the Committee in total.

[The information referred to follows:]

NOAA recommendations on (1) how to improve the Unified Command structure and on (2) what changes are necessary in the Oil Pollution Act to improve it.

1. Under the National Oil and Hazardous Substances Pollution Contingency Plan, the U.S. Coast Guard acts as the Federal On-Scene Command for oil spills in U.S. navigable waters. NOAA provides scientific support to the Coast Guard for such spills and may also assist EPA and state authorities if requested. NOAA is also a member of the National Response Team and Regional Response Teams. Through training, exercises, and workshops, we work with Federal, state and local agencies and coastal communities to improve preparedness for oil spill response.

Given the unfortunate scale, complexity, and unprecedented nature of the *Deepwater Horizon* oil spill, some aspects of the Unified Command Structure may not have been executed by design; however, this was mainly a result of the tremendous challenge presented by the equivalent of a new major spill every day for more than 3 months. From NOAA's perspective, greater and more consistent support for oil spill research and development as well as more emphasis on planning activities, training, exercises, and workshops are needed for Federal, state, and local agencies and coastal communities to improve preparedness for coastal environmental disasters.

Furthermore, while needed improvements based on lessons from *Deepwater Horizon* have been well documented and will need to be addressed, the Unified Command I Incident Command System, as designed, is an effective and efficient structure for managing oil spill response.

2. NOAA supports recommendations of the National Commission on the *Deepwater Horizon* Oil Spill that call for mandatory funding for oil spill response research and development (R&D) and provide incentives for private-sector research and development.

One recommendation of the Commission is to ensure R&D funding is not subject to the annual appropriations process and is provided at a level equal to or greater than the amount authorized by the Oil Pollution Act of 1990. These funds should be focused on increasing sustainable Federal funding for oil spill response research by agencies such as NOAA.

By removing oil spill research and development funding from the ordinary appropriations process, Congress can avoid the experience that followed the *Exxon Valdez* spill, when support for response research and development decreased over time.

Senator BEGICH. Senator Lautenberg?

Senator LAUTENBERG. Thanks, Mr. Chairman.

We are at this hearing to learn what to do as a result of the several serious oil spills in the past, and most recently in the Gulf of Mexico.

Chemical dispersants to break down large amounts of surface and subsurface oil were used. And despite concerns about dispersant safety, that actually predates the *Exxon Valdez* oil spill, we're still not sure about what the effects are for the concentrations of these dispersants. They were never made available to the public.

Now, when we look and see that we are still reeling from the oil spills that took place years ago like *Exxon Valdez,* we're still, have many species that haven't yet returned to their quantity, or their, the quality of their existence.

Now, I have introduced legislation that required testing of dispersants, including their long-term effects, before they're used, and the required disclosure of the ingredients in these dispersants.

Now, would more information about dispersants, do you think, affect your oil spill response efforts? Might there be an influence there? Admiral?

Admiral ZUKUNFT. Thank you, Senator.

When we use, made the decision to use Corexit 9500, we worked off an EPA-approved product list. The Regional Response Team had preapproval to apply dispersants. Obviously, we were in uncharted territory when we reached a magnitude of 1.8 million gallons of dispersants applied both on the surface and subsurface.

I will say, as the Federal On-Scene Coordinator, there were periods of up to 16 consecutive days where, because of the wind state, the sea states, we had to draw down the response on two occasions because of potential approaching hurricanes, and we're streaming live video of oil spilling. And then watching that oil come in to Barataria Bay and to Perdido Pass, and other locations, where we're trying to knock this down as far offshore as possible. And so you really, at that time, it would be great to have that information, you know, at my disposal, rather than waiting 3 months for a study. But I have to make a decision within 24 hours. After the 24-hour window expires, that dispersant is no longer effective.

So, those are the tradeoff decisions I had to make—you know, how do I mitigate the effect of the spill, apply dispersants as far offshore as possible? And then, after the well was permanently plugged and abandoned, we did, working with NOAA, undertook the most aggressive undersea monitoring effort ever conducted in the Gulf of Mexico, looking for oxygen depletion, concentrations of oil and oil debris on the sea floor in depths of 5,000 feet.

In the preliminary findings—and this was to determine if any further response, oil removal, was necessary—and as a result of that study, no further findings were necessary. That report was made public in the late December time-frame.

Senator LAUTENBERG. So, do you think we've appropriately, now, analyzed the material that's in the dispersants and the dangers that it, they could represent? Are you satisfied that because you didn't find further damage at that time, that we are fully familiar with what the dispersants might bring, and, to the continuing following up of the accidents?

Admiral ZUKUNFT. I'm not, because we don't have a whole of science peer review. And so, the challenge I would deal with on a daily basis is, getting whole of science concurrence, and so, that's a challenge as well. So, it really needs to be fully peer reviewed and concurred with. So, further work is needed.

Senator LAUTENBERG. And let it not be thought for a moment that we didn't appreciate the work and the bravery of the Coast Guard, their people. There was no task that was asked, that they didn't fulfill, and we're very proud of——

Admiral ZUKUNFT. Thank you, sir.

Senator LAUTENBERG.—you and your people, and I want you to keep up the courage and the response that you give to things in your bailiwick.

Now, the Coast Guard and NOAA play leading roles in responding to oil spills. But even in the best of times these agencies are called on to do more with less.

Now, if the budgets for NOAA and Coast Guard are cut even further, as some are proposing, would your agency be able to help—both agencies—to respond to two major spills at the same time?

Admiral ZUKUNFT. First of all we're very thankful for the proposed budget in Fiscal Year 2012. That does address some of our resource shortcomings for incident management response.

But, in reflecting on the *Deepwater Horizon,* this was 87 major spills. And I say that because we had one day we recovered 30,000 barrels of oil, most of this well offshore. And this is not oily water, this is oil, it's in situation burning oil recovery, 1.2 million gallons, about 20 percent of *Exxon Valdez.* The next day we had the same amount of oil, and the next day we had the same amount of oil. So, every day the spill duplicated itself, and it almost became exponential.

So, the fact that we are able to respond to 87 spills, with the augmentation of personnel that is in the 2012 budget, with the cooperation of inter-agencies, this was a tremendous learning experience at the local, Federal, tribal, international level. And shame on us if we don't take these lessons and apply those to future challenges, especially in the Arctic, in the Northwest, and to Cuba as well.

Senator LAUTENBERG. Admiral, are you saying—and I'll be, this will be it—that you, 87 spills, and your response suggests that, maybe you could be doing with less funding in response to my question?

Admiral ZUKUNFT. We were sorely stressed in,—this was a campaign. We had exhausted our reserve call-up capability, and so we were thankful that this well was capped when it was. If we were still responding today—again, this was, most spills are an instantaneous release like *Exxon Valdez.* But, when you have a spill in deepwater dealing with hydrates, the complexities, great depths, and access, that is a, you know, that is the new frontier we're living in. And where is that exploitable oil and gas? You know, it's in that new frontier. It's either in deep water, or maybe in the Arctic, or it may be in a country where we don't have diplomatic relations.

Senator LAUTENBERG. Thanks very much, Mr. Chairman.

We, I have other questions which I'll submit for the record.

Senator BEGICH. Thank you very much, Senator Lautenberg.

Senator Cantwell.

Senator CANTWELL. Thank you, Mr. Chairman. And, again, thank you for this hearing.

Obviously, looking to the future, lessons in prevention, response and restoration are very important issues. As I outlined in my opening statement, I'm very concerned about the future as it relates to the Pacific Northwest. And so, Rear Admiral, I appreciate your testimony today, and wanted to ask you—we put into the Coast Guard reauthorization bill language pushing Coast Guard to do analysis of the U.S.-Canadian oil response agreements.

Can you tell me whether some analysis has been done, and what you think the agreements are in oil response between the United States and Canada?

Admiral ZUKUNFT. I can't on the record produce that. But, certainly, I'd be pleased to do so. I will say that we have regular, at least on a quarterly basis, interactions with our Canadian partners on everything from oil spill to, you know, to security among our common border. But, I would be glad to provide you an update.

Senator CANTWELL. Thank you. So, you will give me an analysis of those, what you think the existing agreements are, and how they work and——

Admiral ZUKUNFT. Yes, Senator.

Senator CANTWELL. Thank you.

Do you think—I mean, God forbid that such oil spill would happen in Canadian waters. Do you think, according to this, whatever it is, verbal agreements, or things that you have now, do you think the United States can enter those waters without the oil spill entering the United States?

Admiral ZUKUNFT. We have shiprider agreements where we do law enforcement in Canadian waters, just as we invite RCMP officers on our vessels, so we eliminate that seam between the United States and Canada. And I'm quite satisfied that we can do that in a, in an environmental capacity.

And I'll just follow it with—I'm also, as part of our Arctic Council for search and rescue—and the next part of that is looking at carbon emissions in maritime environment in the Arctic domain. Canada is signatory to that, and they are very committed to living up to that commitment as well.

Senator CANTWELL. Well, so you think the answer is, yes, you can respond to an oil spill in Canadian waters?

Admiral ZUKUNFT. I am confident that we will be able to do so.

Senator CANTWELL. OK. And do you think that you can require supertankers to have a tug escort when they are a few miles within American waters?

Admiral ZUKUNFT. We traditionally will work with the International Maritime Organization to ensure that, you know, these are global, oftentimes global issues that may affect the ship routing, that could have unintended consequences. So, so we look for those best practices. They certainly exist. When I was the Commander of the Eleventh District in California, where we had the Exxon—I mean the CoscoBusan, there are areas for tankers as they come in to Richmond, where we do require tug escorts. So, certainly, that governance structure is in place in select ports based on the given risk.

Senator CANTWELL. Do you think that we should look at that policy as it relates to this increase in traffic, given the fragile nature of, you know, Puget Sound? I mean, the, it's a tricky waterway as

our—I think our chart's still here—shows and designates, and some very pristine area in the country. So, do you think we should be reviewing this increase in tanker traffic? I mean, it's almost a 45 percent increase.

Admiral ZUKUNFT. With any of these decisions, we do an extensive amount of outreach, whether it's with advisory committees, with the pilot associations, you know, with our port authorities, because there are, you know, if there's a rulemaking, you know, it does have cost implications as well. But, certainly, if those risk factors are made known to us, you know, it would be the impetus for a rulemaking to advance that. This would create challenges since it would apply, you know, in an, in Canadian waters where this, this traffic originates, that would be a challenge for us.

Senator CANTWELL. What is your assessment of the Canadians' ability to respond to a major oil spill in this area?

Admiral ZUKUNFT. I'll just go back to the Spill of National Significance exercise that we conducted last year. And it was a scenario where—it was up in New England, and that oil would have then impacted Canadian waters as well. We invited Canada to participate, and they participated at the executive level, not in an observer status. But certainly, recognize that we cannot allow seams to exist, because oil is agnostic to borders, and that we need to be able to bridge that gap with appropriate response measures on both sides of that border.

Senator CANTWELL. I feel you're being very diplomatic, and so if I asked you to grade them you would probably hesitate. But, my point is, do you think they have the same preparedness that we do in responding to oil spills in the Northwest?

Admiral ZUKUNFT. You know, any comment I would make, Senator, would be speculative. But, certainly their earnestness in being a partner with the U.S. Coast Guard, and with our Regional Response Team process for, under National Contingency Plan, I see them as committed partners.

Senator CANTWELL. Do you think they have the same capacity that we do?

Admiral ZUKUNFT. I could not answer that question.

Senator CANTWELL. OK. Well, will you in your analysis of the U.S. agreements give us a sense of what you think their capacity is?

This is a very big issue. The amount of traffic increase going through this very delicate waterway's tricky systems, where, again, most of the traffic we're talking about from Puget Sound does require local pilots and a variety things—these are very important issues. So we'll look to get your views on the record on that.

Admiral ZUKUNFT. I will be pleased to provide that. Thank you.

Senator CANTWELL. Thank you.

Thank you, Mr. Chairman.

Senator BEGICH. Thank you very much, Senator Cantwell.

Let me also emphasize that last point, obviously, with Alaska on the border along with Washington, to Canada. I think it is—if there are issues that you identify that may be gaps, or you're unaware, because the information isn't there—I think we need to know that because of the work. I know my state does—I know your state does with Canada on regular basis. They visit our offices fair-

ly regular because of issues of trade and fish, and many other things—that, I think it would be very important for us to know.

And I think a part of our role should be to assist to make sure their standards equal—obviously we'd love them to exceed—but, at least, equal what we are requiring at this point.

So, as you do that analysis, can you step to that next level and say, "Here are some areas that we were unable to analyze. But it's clear we need some current review of?" Because we're, I think that's what Senator Cantwell was trying to get to, is that we want to help make sure Canada, if—we need to know. You should be able to sit in a room like this and say, "They are—" fill in the blank. Because that's the kind of relationship we need to have with their oil spill capacity.

I think that's what you were going. Is that——

Senator CANTWELL. Yes. Thank you, Mr. Chairman.

Senator BEGICH. Very good.

Senator CANTWELL. Absolutely.

Admiral ZUKUNFT. Mr. Chairman——

Senator CANTWELL. Thank you.

Admiral ZUKUNFT.—I look forward to providing that information.

[The information referred to follows:]

The Coast Guard is actively working to update the comparability analysis related to the Cooperative Vessel Traffic Service agreement between the United States and Canada for the management of maritime traffic in Puget Sound, the Strait of Georgia, Haro Strait, Rosario Strait, and the Strait of Juan de Fuca.

The United States Coast Guard and the Canadian Coast Guard have a long history of cooperation in executing our responsibilities to prepare for and respond to oil and hazardous substance events under the auspices of the Canada-United States Joint Marine Pollution Contingency Plan (JCP).

The Coast Guard is in the process of updating both the JCP and the suite of geographical annexes under the JCP in regards to oil spill response. In February 2011, at the Canadian Coast Guard-United States Coast Guard Summit, the leaders of both organizations agreed and committed to revise and update the JCP with a focus on improving the ability of both nations to support regional planning and response. Specifically, the updates aim to create broader agreements under the JCP for managing mutual aid between the nations for incidents which are not trans-boundary, such as *Deepwater Horizon* and also encouraging coordination of exercises and training among the regions which hold geographic annexes to the JCP.

The JCP Annual Meeting will be held in Halifax, Nova Scotia, on August 30–31, 2011. This meeting will be attended by both national and regional representatives of both nations, including: RDML Cari Thomas, U.S. Coast Guard Director of Response Policy; and Jacqueline Gonclaves, Canadian Coast Guard Director General, Maritime Services. The objective of the meeting is to conduct a strategic review of the JCP in regards to cooperation for oil spill preparedness and response as informed by lessons learned from *Deepwater Horizon.* Specifically, the meeting attendees will examine the JCP and its regional annexes in terms of the strength of communications, incident management coordination, worst case discharge threats and assumptions, strategic priorities for response and recovery, equipment lists, and equipment sharing. The revised JCP is expected to be ready for final review by the end of 2011.

Senator BEGICH. OK.

Admiral, I have a couple of questions for you. But, let me hold for a second.

Mr. Kennedy, I want to ask, I know there's the Environmental Response Management Application, which is a tool that was used quite a bit in the Gulf. I know there's one in the Arctic being developed.

Mr. KENNEDY. Yes.

Senator BEGICH. Can you give me, kind of, what's happening with that at this point, and, kind of, the status of that development?

Mr. KENNEDY. So, this is a product that we have developed just as a tool to help with data management of spill response. It more or less had been launched in the months prior to *Deepwater Horizon,* and turned out to be an extremely accessible tool. Basically, a product with data layers, and the ability to process and receive data in the event of a spill, so that you have kind of a central location where all of the information that's required by all the responders is available, and in a variety of different forms.

And so, we have started that process. It's somewhat geography specific, and so you need to have it set up so that it can specifically respond to the uniqueness of the region that you're trying to develop it for. So, we have begun the Arctic. I'm, I will have to get back to you to give you a specific date. But, it's underway, and we expect to have a product, I think, by the end of the year. But, let me get back to you——

Senator BEGICH. Can you provide that?

Mr. KENNEDY.—for specifics on that.

[The information referred to follows:]

Update on the status of the development of the Arctic ERMA

Development of NOAA's Arctic Environmental Response Management Application (ERMA) is ongoing with plans to finish in Spring 2012, pending additional funding to support final stages of tool development, stakeholder meetings to refine functionality, and additional infrastructure to support a public facing website similar to *Geoplatform.gov,* which was deployed during the *Deepwater Horizon* oil spill last summer.

Currently, NOAA has a working demo product (*i.e.,* development site) for Arctic ERMA and we continue to add data and information applicable to planning for and responding to oil spills in the arctic. NOAA also continues to work with Alaska native communities to better access local traditional knowledge; however, a lack of resources is currently limiting our ability to fully engage these communities in a productive way.

NOAA's goals for Arctic ERMA in 2012 include the following attributes: a platform that easily crosses boundaries; improves data sharing and communication; is easy to use even for non-GIS savvy users; conveys real-time data sets overlaid with baseline ecological and operational data; is accessible from anywhere as both a planning and preparedness tool, and serves as a common operating picture for an actual response.

Senator BEGICH. You bet. Thank you.

Another question—I know you have developed an MOU, memorandum of understanding between yourself and BOEMRE. Can you tell me—and it's related to information that's provided on, that you would provide in their process. Can you tell me how that coordination is going? This is in regards to offshore energy decisionmaking. And can you just give me a sense—I will tell you from, industry folks are all nervous about what that means in time, if it'll create delay. So I want to get a sense from you on that.

And then, do you have the resources and expertise to really do that work?

Mr. KENNEDY. Sir, yes, we do have an MOU. We work with the old BOEMRE. MMS over the years had a partnership with them. We always felt like there was more that we could do to partner. So, this MOU, I, we think is the next best good step to have us at the table.

As we have these kinds of discussions, I think it will do two things. I think it will bring a level of expertise and, I'm hoping, efficiency to the process that we haven't had, because we haven't been at the table as appropriately as we'd like to have been.

So, to date, I think that relationship is blossoming, and that we are now engaging much more quickly and often with them as we discuss leasing and drilling issues. And we look forward—I think it's a new enough relationship, and a new enough organization, that we want to watch and see how it goes. But, we look forward to having the ability, and we think it will prove to be more efficient and effective.

Senator BEGICH. And do you have the resources to do that expertise?

Mr. KENNEDY. I was hoping I would have the opportunity to answer Senator Lautenberg's question as well, because I thought it was a very good question for us. And, we for a long time have tried to look at our ability to respond to two spills. It's kind of the basis for, are we at a point where we think that nationally we can do our job? And the answer for NOAA is, no. We don't have the resources to respond to two spills. And over the last several years, the resources for the specific group that does most of our core response has had to be right-sized because of a lack of resources. And during the course of this event, everybody that still wasn't in a walker that had retired and was still somewhere around, we brought back to try and just have enough resources to respond to this one spill.

So, given the budgets that we're looking at, we're very concerned about our ability to continue.

Senator BEGICH. Can you for the record do two responses on that? One is on the decision-making process, which is the new MOU that you have with BOEMRE——

Mr. KENNEDY. Mm-hm.

Senator BEGICH.—what kind of resources you think you need in order to accomplish that. And then, the second part is more global, which is on the oil spill capacity itself, what you think the response or resources need is for that. Can you do that, if possible, for the record?

Mr. KENNEDY. For, yes.

[The information referred to follows:]

What resources does NOAA need to implement the new relationship between NOAA and BOEMRE and what resources does NOAA need to be able to respond to two spills at the same time?

(1) The following list of activities would enhance NOAA's ability to meet the terms of the new Memorandum of Agreement with the Bureau of Ocean Energy Management and Enforcement.

- *Improve NOAA capacity to review the adequacy of oil spill and hazardous material response plans associated with oil and gas development in 26 lease areas on the outer continental shelf.*
- *Develop new I enhance existing oil spill response and damage assessment tools.*
  - New and enhanced scientific tools (*e.g.,* ERMA) and protocols are needed to increase the effectiveness of oil spill response and improve efficiency and effectiveness of natural resource damage assessment in coastal and offshore areas identified for oil/gas exploration and production throughout the Nation.
  - Addressing the backlog of outdated Environmental Sensitivity Index (ESI) maps and developing new maps for offshore oil and gas lease areas. Accurate,

up-to-date ESI maps are essential to development of spill response plans as they identify and catalog resources at risk and also guide critical response decisions during an event. Currently, over 60 percent of NOAA Office of Response and Restoration's ESI maps are out of date (*i.e.,* greater than 7 years old) and do not provide the most recent information on shoreline characteristics, endangered species, nursery areas for commercially valuable fisheries, and other types of critical response data.

(2) The following list of activities will enhance response and restoration capacity to ensure that NOAA can effectively respond to of two simultaneous spills of national significance.

- *Rebuild the Office of Response and Restoration's (OR&R) response and damage assessment capacity*.
  - Ensure NOAA has the capacity to effectively respond to two simultaneous major spill events. The *Deepwater Horizon* spill underscored a large capacity gap for both oil spill response and natural resource damage assessment (NRDA). For example, the majority of OR&R's natural resource damage assessment staff were reassigned to the Gulf of Mexico region in order to meet the immediate needs of the spill, severely restricting OR&R's ability to conduct 140 other ongoing damage assessments from previous events across the Nation.
  - Support additional trained response staff and augment external contract support, including enhancing expertise in analytical chemistry, environmental chemistry, biology, oceanography, NRDA, GIS and data management, logistics, and required NRDA financial/cost documentation functions. These funds will allow NOAA to conduct the necessary training and preparedness activities between incidents.

Senator BEGICH. So, then there are some real numbers and expertise—

Mr. KENNEDY. Mm-hm. We'd be happy to do that.

Senator BEGICH. Great.

Let me ask the Admiral just a couple of quick questions, and then I'll have a series of questions for both of you that I'll submit for the record, for more detail.

I know the Oil Spill Commission recommended that the Coast Guard work, and you mentioned it, too, they work more with State and local entities. And, in Alaska we have successful Regional Citizen Advisory Councils. One in Prince William Sound, and one in Cook Inlet. We're advocating one for the Arctic also.

Can you tell me, is that the kind of increased local participation that makes sense for the Coast Guard, those kind of regional advisory councils to help do your work better, and also respond to the commission's recommendation?

Admiral ZUKUNFT. Certainly, Chairman. And, we have a lead role in that process as well.

And that was, one of the key lessons learned is that, at the local level, that there was not full awareness of the oil spill contingency plans, the environmentally sensitive areas, and just the governance structure that's in place. And certainly, that's going to be especially critical as we look at the Arctic. And it's understanding the culture of the Arctic, and the tribal entities that reside there, as well.

And so we've been doing a lot of outreach, you know, in those communities as we look at increased human activity, and then the impact of that activity in that precious environment.

Senator BEGICH. And if I can just emphasize a point earlier that, again, regarding OPA 1990 and other processes that we have put into place over the years—your recommendations and thoughts on that will be critical. I know we mentioned that earlier. And, again,

to follow up to Senator Nelson's comment, please do what you can there.

And then the last question for both of you, because I cannot remember if you, either one of your agencies are doing this, or who is doing it. But, I don't know why I have this in my mind. But, is there a competition right now for oil spill technology that's undergoing literally as we speak? Because, I think there's an Alaskan company involved. But, there's, like 10 companies. I don't know if it's NOAA, or it's Coast Guard, or someone else. Does this ring a bell to either one of you?

OK. Mr. Kennedy, you shook your head yes, so you're the target here. Can you——

Mr. KENNEDY. Well——

Senator BEGICH.—tell me, this is—am I right on this? There are 10 companies kind of competing for the best oil spill skimming technology?

Mr. KENNEDY. I can only highlight the issue because I haven't been in, directly involved. I have one of, an individual that works for me, who is more specifically involved. But, in the course of this event and the idea of what else should we, could we be thinking about that might be the silver bullet or help somehow, there was an idea hatched to come up with a prize and a, through a competition. There was a team put together.

And Admiral Z, I don't know whether you recall the specifics of it.

But, yes, there is an effort under-way, there was a call for proposals. There are some finalists, and there is a competition that's being—I don't know that it's been completely evaluated yet. But, it's in the process of being evaluated, with a winner, or winners, that would be awarded some funds to move forward.

Senator BEGICH. Yes. I would be very interested, and I'm sure the Committee, too. I know there is an Alaskan company—that's why it's just kind of in my mind. And I think they're starting this month. But, I would be very interested to see what that is, because that's a great—I have to commend you. It's a great idea to challenge the private sector for innovation around this, because the spill technology or spill cleanup has not changed much in the last 20 plus years. And so, challenging the industry, I think, is a great—and also, innovating. So, I think it would be very interesting as you develop the response to that, or how it comes about, if you could share that with the Committee, that'd be great.

Mr. KENNEDY. OK.

Senator BEGICH. Let me end there, and say thank you, both, for being our first panel. And, again, thank you for being here to help us understand what more we can do, and have a future sense for oil spill technology.

Again, I'll present some additional questions to you for the record, and we thank you both for being here.

Admiral ZUKUNFT. Thank you.

Mr. KENNEDY. Thank you.

Senator BEGICH. The next panel, if they can get, we'll give a couple seconds here to get some adjustment.

As the next panel gets situated, we thank you.

To the second panel, we appreciate you being here.

Again, we have four additional witnesses. And, again, some members here have already submitted questions for you for the record that you'll see soon after this meeting. So, be prepared for that. Several have already indicated that.

Let me introduce the next panel.

It's—the first one will be the honorable Grover Robinson, Commissioner of Escambia County in Florida; Dr. Eugene Turner, Chaired Professor, Distinguished Research Master, and Distinguished Faculty at Louisiana State University, Baton Rouge; Erik Milito, Group Director for Upstream Operation for American Petroleum Institute; and Jim Ayers, Senior Adviser, Ocean Conservancy.

Thank you all very much for being here today. What I'd like to do is, I'm just going to go right down the row here. If you can keep your comments to 5 minutes, I'll have some questions afterwards. Again, same thing—I'll have some for the record that I will not be able to get to, based on our time.

So, let me start with Mr. Robinson.

STATEMENT OF HON. GROVER C. ROBINSON, COMMISSIONER, ESCAMBIA COUNTY, FLORIDA

Mr. ROBINSON. On behalf of Florida's 67 counties and, more specifically, the eight Gulf Coast counties in northwest Florida, I would like to thank Chairman Begich and the Committee members for the opportunity to address the Senate's Oceans, Atmosphere, Fisheries, and Coast Guard Subcommittee this afternoon.

I stand before you today as a seventh generation Floridian and Escambia County resident. Over 200 years, my family has survived and thrived in Escambia County through a civil war, countless hurricanes, and various cycles of economic booms and deep recessions. However, the *Deepwater Horizon* spill of 2010 has rocked our community like no other event.

As Chairman of the Escambia County Commission, I found myself at the epicenter of Florida's oil spill response for the last 14 months. It is my experiences during that time that I would wish to share with your committee today for suggestions related to OPA reform, as well as suggestions for monies for Clean Water Act penalties.

In April 2010, the United States and the Gulf Coast faced a crisis unlike anything we have ever seen. The tragedy that struck that day took 11 lives, countless jobs, and caused extensive damage to our coastal resources.

Florida is experienced with disasters, and Escambia County is no exception. Each year we prepare and respond to hurricanes that threaten our homes and beaches. Florida's emergency response teams are the best in the country and, arguably, the world. City, county and State first responders practice and prepare year round to respond and recover from potential disasters.

Shortly after the oil spill, Escambia County was given 48 hours to prepare for oil on our beaches. Our county did what we were trained to do—we declared a state of emergency which predated the State of Florida and prepared a plan to block oil from entering our more fragile inland water estuaries. Within 24 hours of Escambia County declaring our state of emergency, the State of

Florida declared a state of emergency, and we were introduced to the Unified Command Structure.

With the threat of oil imminent and a plan in place, we were ready to do what was needed to protect our environment and, ultimately, our economy. Yet, we were stopped instead, and told that we must accept the protection plans of experts that had never stepped foot in Escambia County and knew nothing about the tidal flows and intricacies of our bays. Now, instead of putting up boom and protecting Pensacola Bay and the Perdido Bay Passes, we were arguing with strangers about what was best for the local waterways.

This system of a Federal-down approach, set up through the Oil Pollution Act of 1990, OPA, simply did not work in disaster situation. While there are many aspects of OPA that are effective, such as Command Structure for Federal Waters, and the National Resource Damage Assessment, otherwise known as NRDA, process, the response process in local jurisdictions must be changed.

While I recognize the Stafford Act, which is implemented during natural disasters, could not be applied uniformly to a man-made disaster, there is a fundamental element that should be applied regardless, of the cause. It is that local experts need to be included in determining the response and recovery plans for local jurisdictions. The very people that have lived and made their livelihoods in their community are best suited to know where priorities must be placed, and what is needed to provide adequate protection to the environmental resources of that community.

I would no more pretend to know how to adequately respond to an oil spill in the Gulf of Alaska, or even how to defend Cape San Blas in Gulf County Florida, than an outsider would know how to protect the gulf shores and estuaries in Escambia County.

Ultimately, the oil that was 48 hours off shore actually ended up taking 30 days to make it to our beaches. This should have allowed us ample time to implement plans to protect our passes and waterways. Unfortunately, OPA prevented us from effectively implementing our plans until July, by which time the well was already capped. We spent the first 75 days using inadequate plans provided to us by Unified Command that were not effective and wasted money.

My essential point today is, local government provided better protection to the estuaries of Perdido and Pensacola Bays and the citizens of Escambia County, as well as provided cost savings to Unified Command and even British Petroleum. The only thing that prevented us from this protection was OPA.

I've said many times, including to Admiral Landry, that it is my belief that the Coast Guard and other Federal agencies were staffed with good people who wanted to do the right things for our community and nation. However, they were prevented by the rules presented in the Oil Pollution Act of 1990. Therefore, OPA reform must be enacted to allow for more effective and coordinated defense of our environmental assets by local, State and Federal jurisdictions working together. Local government has a place in the planning, coordination, communication, and implementation of disaster strategies and decisions, and its omission will lead to failure, as seen in May and June of 2010.

I would like to close by saying that there's still time to make some of this right through the NRDA process and the Clean Water Act.

Through the NRDA process, NOAA, DOI, and other State trustees are conducting studies to identify the extent of resource injuries, the best methods for restoring those resources, and the type and amount of restoration required. This process so far has been inclusive and collaborative, and for that we are grateful.

I'm also pleased to say that Escambia County is recovering and our beaches are as beautiful as they ever were. But, as with most tragedies, while we may recover on the outside, the scars never leave us.

Prior to the *Deepwater Horizon* Oil Spill, I operated a successful real estate business started by my late father in 1977. Like so many other businesses, I filed and received a claim due to the oil spill. Yet, my business has not fully recovered—so much so that, ultimately, my wife and I had to make the hard decision to merge our, merge with another firm after 34 years of existence.

I am not alone. There are countless small businesses there that have suffered a similar fate. Any funds received due to fines from the Clean Water Act should be directed to the coastal counties that were impacted from the spill so that investments can be made for the long-term recovery of this region and our communities, both environmentally and economically.

We must take, we must now turn this disaster around and seize the opportunities before us. We must take the opportunity to learn from our mistakes and reform OPA. We must take the opportunity through the NRDA process to help our environment fully recover from the tar on our white sand. And we must take the opportunity to use the Clean Water Act fines to invest in the Gulf Coast and our economies—not just to survive this disaster, but to thrive in spite of it.

Thank you for the work that each of you do for our country and its citizens, and thank you for the time today to hear my testimony.

[The prepared statement of Mr. Robinson follows:]

PREPARED STATEMENT OF HON. GROVER C. ROBINSON, COMMISSIONER, ESCAMBIA COUNTY, FLORIDA

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It is that local experts that should determine the response and recovery plans for local jurisdictions. The very people that have lived and made their livelihoods in their community are best suited to know where the priorities must be placed and what is needed to provide adequate protection to the environmental resources of that community. I would no more pretend to know how to adequately respond to a spill in the Gulf of Alaska or even how to defend Cape San Blas in Gulf County Florida than an outsider could know how to protect the gulf shores and estuaries in Escambia County.

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Thank you for all the work you do for our country and its citizens and thank you for taking the time today to hear my testimony.

Senator BEGICH. Thank you, Mr. Robinson.

Mr. Turner?

STATEMENT OF DR. R. EUGENE TURNER,
CHAIRED PROFESSOR, DISTINGUISHED RESEARCH MASTER,
LOUISIANA STATE UNIVERSITY

Dr. TURNER. Thank you, Senator, and thank you for holding these hearing.

I'm a, I do field work. I've been working this 35 years. I was in the marshes last week. I'll be offshore for 2 weeks as of Sunday. And I'm going to speak to you about what some of the things are in the field, as asked.

The oil has not gone away. It's still there. You can walk in the marsh, and you can smell it. And the crust on the marsh is still there, and you can probe the marsh and come up with fresh oil on the end of whatever you're probing.

It hasn't gone away. It's had its impacts in the marsh and offshore. We have the, kind of, the Grand Canyon, Grand Tetons offshore that we do not see, very few people see. But, we know that's been impacted, and we know there's oil on there. We know things have been killed. And a disproportional amount of the oil that went onshore was in the Central Gulf from Mexico. Sixty percent of the oiled shoreline is in Louisiana. I think 70 percent of the birds that were oiled and 40 percent of the turtles that were oiled came off of Louisiana, so it was in the Central Gulf that it had these impacts. I'll come back to make some recommendations about what might be done the next. But, I'd make some comments about the context of what's happening.

We can't say that we know very much right now because the, we're trying it figure out. For example, is the shoreline eroded more because of the oil, or just as, just a little bit more? Is it synergistically larger? Erosion to an area that already has a huge, it's already lost 22 percent of the wet lands? So, this is going to make it a lot larger? Or, in fact, maybe, it strengthened the shorelines in some cases.

But, if you figure out that the context, you know, I am talking about, that a certain amount of the oil went into the marsh and how much is lost, and how much of the area was, shoreline was, it might be in the order of a few square miles a year that could be lost if everything went the worst possible way. And we're losing that much every year already—and primarily through the permitting programs. So, we have a very dramatic loss that might happen, and we have this chronic background loss. And I think if the restoration is taken in the context of what's going on as a whole,

restoration could be done as a whole, with this background factors in mind.

The human dimension that's going on for restoration, as we have understandable desires to protect the shoreline from hurricanes and flood protection, and that's, going, may require, or, being asked to require for levees, but those very levees will destroy some wetlands behind them. So, we're trying to restore wetlands, and yet we're losing wetlands in these conflicting desires. And I think the agreements we reach about that have, to have more people at the table, not fewer, and that includes the national agencies, the local, as the whole suite of things that were involved in the oil spill, of course. And the oil spill funds are being asked to carry some of this. And I guess it'd be fairly complex. And that doesn't mean we have to be timid about engaging in these.

As an example of the complexity, a Pew panel who works out, that's making recommendations on what to do with the oil spill money. It'll be out in a few weeks probably. But, one of the things that's in there is going to be to address this issue of hypoxia offshore, which is a dead zone the size of Massachusetts and is driven mainly by eutrophication nutrient release from the Midwest.

The same nutrients are driving wetland loss in Louisiana through the restoration technique of diverting river water into them, which is actually because of the—more detail than you want to probably hear right now—but it's causing wetland loss because of the nutrients in the rivers going into these wetlands.

The win-win solution is for, restoring the water probably offshore, and for the wetland restoration technique to be used in a productive way, is to reduce nutrients in the river. And the way to use the oil spill money in that is perhaps to have a watershed, demonstration watersheds on the scale of the TVA projects. So, it could facilitate a more effective use of the farm bill funds, whatever allowed, and have the communities be allowed to use them, so the farmers actually—according to all the models we've done and all the work in the communities, they actually use fewer subsidies, have greater profits, and better water quality, and all the rest. And, it's totally a win-win solution, including local governance, and it'll be outlined in the Pew workshop.

In terms of some quick observations about what's went wrong, or what might go better next time, one of the salient issues is that we have to have greater involvement, and it would help to have greater local involvement, understanding, and participation, expertise available. And there are several Federal programs that are underutilized in the Gulf—the National Estuarine Program, the National Estuarine Reserves—there's a series in the table in my comments. They ought to be used better. And, Florida and Texas have made use of these, but the middle three states have not, including—I think, Louisiana is the only state that doesn't have a National Estuarine Reserve Program. They probably by proportion ought to have four or five, and that's, if anything could be done, to help that. It would build local support, participation, shared governance, greater monitoring.

And that's one thing that's missing out of this. We didn't have a good baseline monitoring going on, long-term monitoring. We didn't have funding when the oil spill happened. We had, we, it

was, you can't measure impacts if you don't have pre-impact data. And we could not get that. The only agency that helped us in that is the National Science Foundation. It was unusual, but they did come through with some.

And the last little detail on this is that most of the assessments for damages for toxicity and things like that are based on individual species, and they're not based on the interactions they all have. It may be good for the lawyers, but it's not—because it's very precise. You can defend the, what the results are. But, they don't represent reality out in the field. They need to have a greater sense of, a more holistic view of damages when they do these assessments.

And I'm out of time, so I'll stop.

Thank you.

[The prepared statement of Dr. Turner follows:]

PREPARED STATEMENT OF DR. R. EUGENE TURNER, CHAIRED PROFESSOR, DISTINGUISHED RESEARCH MASTER, LOUISIANA STATE UNIVERSITY

Good afternoon, Presiding Senator Begich, Chairman Rockefeller, Committee Ranking Member Senator Snowe, and members of the Subcommittee. Thank you for this opportunity to participate in this timely hearing concerning the lessons from the Gulf Oil Spill and how we might do things better. I will briefly address the following topics and remain for any questions/comments you might have time for.

- The current understanding of the short-term environmental effects from the *Deepwater Horizon* oil spill,
- The long-term degradation of the Gulf of Mexico,
- The appropriate restoration activities that should be undertaken, particularly by the National Oceanic and Atmospheric Administration (NOAA), but other entities as well, including in the watershed
- What is needed to improve oil spill response and restoration in the future.

Background

Oil sheens and the smell of volatile organics remain in coastal Louisiana 15 months after the 20 April, 2010 BP Macondo (aka, DWH; *Deepwater Horizon*) oil spill disaster began at Mississippi Canyon Block 252, located about 66 km offshore of the Mississippi River delta. This disaster resulted in 13 deaths and 17 people injured, and released an estimated 4.4 x 10^6 barrels of oil into the Gulf of Mexico (804,877 barrels were also collected at the seafloor (Crone and Tolstoy 2010). It was the largest spill event in U.S. history, equal to 7 times the size of the *Exxon Valdez* oil spill, and was the fifth largest in the world.

Oil from this industrial accident was first found on the Louisiana beaches on 11 May; fresh sightings of the oily mousse and tar balls in the estuaries continued after the leak was stopped using relief wells on 15 July and officially declared closed on 19 September 2010.

The Louisiana coastal ecosystems were disproportionately exposed to the released oil (Table 1). It had the highest percentage of its lengthy shoreline oiled (45 percent) resulting in 60 percent of the oiled shoreline in the GOM. The majority of the recovered oiled birds, turtles and mammals were in the three central states, and 70 percent of the recovered oiled birds were from Louisiana.

Table 1. Indicators of oil spill exposure and impact in the GOM States. These metrics indicate that Louisiana had the greatest onshore exposure and impact by oil.

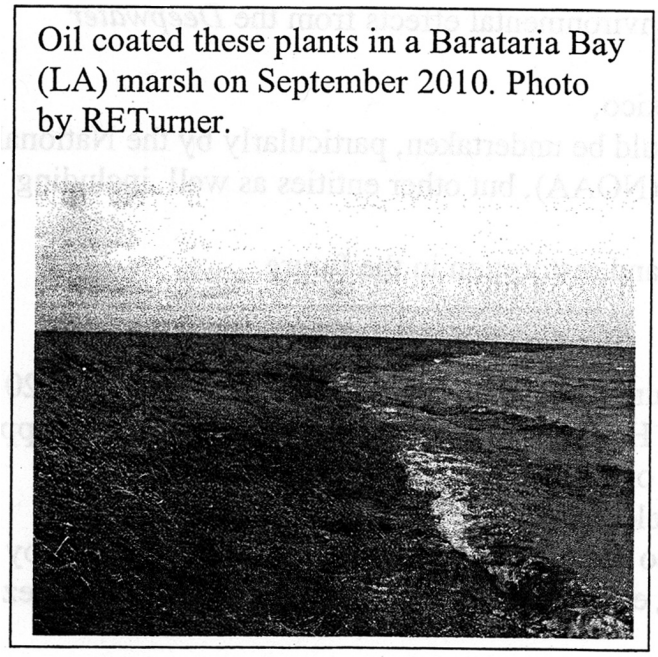
Indicators	West Coast				
	FL	AL	MS	LA	TX
Percent of the GOM Tidal shoreline in State	30%	4%	2%	45%	20%
Oiled Shoreline of State shoreline	3%	15%	44%	8%	0%
Turtles oiled (live and dead)	16%	40%	4%	40%	0%
Mammals oiled (live and dead)	17%	0%	67%	17%	0%
Birds oiled (live and dead)	11%	8%	11%	70%	0%
Percent of the oiled GOM shoreline found in this State	16%	9%	15%	60%	0%

Sources: *http://www.nmfs.noaa.gov/pr/pdfs/oilspill/turtle_data.pdf; http://www.nmfs.noaa.gov/pr/pdfs/oilspill/cetacean data.pdf;http://www.restorethegulf.gov/sites/default/files/documents/pdf/Consolidated%20 Wildlife%20Table%20110210.pdf.*

Current Understanding

Natural Systems

The ongoing research results that I am aware of document damages to fish, birds, marsh, coral, and bottom-dwelling organisms, and changes in food webs. Oil on the sea surface injured or killed seabirds, sea turtles and dolphins, put at risk many commercially valuable marine organisms, such as blue-fin tuna, blue crabs, penaeid shrimps, and many fish. Shorebirds, tourists, and fisher(wo)men were harmed. Seafood was contaminated, and oyster reefs destroyed. Deep-sea organisms on hard- and soft-sediment habitats died from apparent oil deposition within some as yet undetermined distance from the wellhead.



Oil coated these plants in a Barataria Bay (LA) marsh on September 2010. Photo by RETurner.

The results from studies examining other oil spills suggests that the oil making its way into coastal ecosystems will persist for decades (Reddy *et al.,* 2002). Its ecological effects may be immediately toxic to a variety of organisms, and the long-term effects last several decades (Teal *et al.,* 1992; Culbertson *et al.,* 2007a, b). Any damage incurred is expected to be dependent on exposure length and frequency. Recovery is possible, but not guaranteed. This is because, in part, oil quality changes with temperature, volatilization, and decomposition, and moved between ocean, estuary and marsh as droplets, tar balls, a brownish mouse with colorful descriptive names, or "mousse". This oil might coat the emergent wetland plants up to the high water

mark or weigh them down as far as 10 m into the marsh. Its effects might combine with other influences to have a synergistic and maladaptive outcome. A series of cascading effects on the plant-dependent food web are expected to follow from these impacts.

The ecosystem consequences of exposures to and incorporation of toxicants at the base of the pelagic food chains and the massive organic carbon subsidy to the shallow and deep ocean remain uncertain, requiring new advances in oil spill oceanography to assess. The illumination of the indirect impacts and the dismissal of many presumed impacts will play out for decades in the scientific literature, in government reports, and in the courts.

A major coastal problem in Louisiana is to reduce wetland loss rates and to restore wetlands. Twenty-two percent of the wetlands existing in 1930 are now open water. These losses are primarily a consequence of dredge and fill operations, which were permitted by State and Federal agencies. It took 8,000 years to build these marshes, and so 22 percent of the wetland represents 1720 years of net land building. It is hard to see how to restore these wetlands faster than the natural system builds them, and so preventing more losses is extremely cost-effective. It is reasonable to ask if this oil spill accelerated these losses. I estimated how much this might be based on the penetration of oil into the oiled shoreline to address this question and estimate that there will be far more wetland loss (direct and indirect) from the annual dredge and fill permitting every year than from this one oil spill over the next 10 years. The chronic demise of the marsh may be more significant than the losses due to a one-time dramatic oil spill.

The Human Dimensions

These impacts took place in an ecosystem and socio-political system that already had many significant "stressors," including: (1) intense hurricanes arising from global climate change exposes the Gulf coast to greater risks of catastrophic flooding, shoreline erosion, sea-level rise, (2) marsh channelization from petroleum-industry activities, (3) excessive nutrient (largely N) loading from agriculture and other anthropogenic sources extending into the Mississippi River watershed, (4) the exploitation of apex predators like sharks and blue-fin tuna, (5) bottom trawling and dredging, (6) industrial development, including petroleum production and refining, (7) failure to treat and control storm water and atmospheric emissions that have led to the introduction of mercury and other heavy metals and organic pollutants like dioxin, DDT, and PCBs into the Gulf. In addition, development of low-lying lands and coastal barriers has degraded and destroyed shoreline habitats and led to engineering of structural responses and dredge-and-fill projects to protect housing and infrastructure at risk, but such responses interfere with natural roll-over and transgression of barrier islands and resilience of natural shoreline habitats.

This set of conditions poses extreme socio-economic challenges: how can resilience of human communities, culture, and ecosystems be sustained or created when maintaining coastal residency increasingly risks property and life, yet retreating inland by entire communities challenges the fabric and glue of social cohesion and place-based history?

Synergisms

There were synergisms between the existing stressors and the oil spill. The State, for example, opened river diversions and this killed oyster beds; businesses closed that had been around for 100 years. It was the cumulative effect of the ill-informed State government, the threat of oil impacts, that finally forced them out of business for the first time in 100 years. The diversion volume would not have been as high and for the length of time, in my opinion, if the oil spill was not occurring. The State neglected the oyster fishermen, ignored scientists, and over-reacted because of some perceived need to open the diversions as much as possible.

There was (is) shoreline erosion before the oil spill, but I don't know that the combination of shoreline erosion and overzealous oil clean up caused more wetland loss than each operating separately. I suspect that is the case, but don't know it to be true. They would not have done some of the inappropriate things they did if it were not an oil spill.

Restoration in Context

Principles

Addressing the impacts of the DWH oil spill should be integrated into a holistic understanding of how all stressors may potentially combine to destabilize the ecosystem by passing through a critical threshold and into an undesirable state of the system. Restoration should be holistic, not piecemeal, and should be durable and sustainable under the conditions of dynamic change expected in the Gulf for over

a century and longer. Traditional tests of restoration appropriateness of "in-place" and "in-kind" are likely to fail the criteria for sustainability under a changing climate, rising sea level, and more intensely stormy regime.

Below are a few simple operating principles that may help avoid potentially fatal flaws of logic, administration lapses, and financial waste (adapted from Turner 2009).

(1) Assume that key pieces of information are missing and may not be revealed (ever);

(2) Because of the collective and respected ignorance, be flexible in how to develop, evaluate and apply new information and perspectives; learn how to create the context for that new situation;

(3) Include many small steps that are addressed in multiple ways;

(4) Let data trump concepts, not the reverse. If "the bigger, the better" is the operating model, then the model is likely to be superficially abstract (this is not to dispute the need for hierarchy or a division of labor);

(5) Assume that surprises will occur;

(6) Develop exit strategies, including how to reverse interventions;

(7) Do no harm; do not implement plans that will be irreversible if they go awry; If irreversible outcomes are anticipated, then start with the smallest plans, not the largest ones.

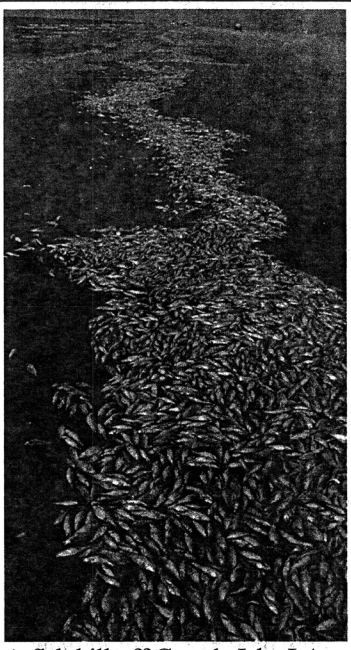
Pew Panel Recommendations

A workshop panel was recently completed under sponsorship of the Pew Foundation to make recommendations about the long-term sustainability of the Gulf of Mexico within the context of the DWH oil spill. I am one of 15 authors of this report. The report (Peterson *et al.,* 2011) offers guidance on how funds from the *Deepwater Horizon* Blowout might be used for restoration. This report is due to be completed within 2 months and contains the following relevant recommendations about priority areas for restoration of the Gulf of Mexico following the DWH oil spill.

Restore water quality and damaged habitats
Restore habitats directly and indirectly damaged by the oil release;
Demonstrate transformative farming in Mississippi Basin to reduce nutrient loading;
Remove marine, estuarine, and riverine debris and inhibit future discards;
Restore water flows, water quality, riparian habitats, and ecosystem services of smaller rivers.

Rebuild fish stocks and wildlife populations by protecting habitat functions
Purchase and preserve functionally valuable habitat for fish and wildlife sanctuaries;
Protect habitat and implement recovery plan actions for injured species;
Sustain and enforce existing Federal legislative habitat, fish, and wildlife protections;
Create networks of protected habitats to enhance fish stocks and valuable species;
Manage Gulf fisheries sustainably by recognizing ecosystem processes.

Make the Gulf coast resilient—A single integrated human and natural system
Investigate deep-sea oil fate and injury to allow restoration of ecosystem services;
Determine full impact of oil on, and restore, *Sargassum* and associated fish and wildlife;
Engage Gulf communities to adapt to increasing coastal inundation—while sustaining fish and wildlife;
Assess with rigor the potential fishery benefits of trawling protections of shelf bottom;
Endow capacity building of GoM in social-environmental monitoring and problem solving;
Communicate within communities to inspire informed environmental decisions.



A fish kill off Grande Isle, LA, 17 July 2011. Catfish, croakers and berried crab were trapped between the beach and the low oxygen zone in shallow water (hypoxic zone, aka 'Dead Zone'). Photo by Zach Rowalt.

Example—Hypoxia (aka "Dead Zone")

Hypoxia (dissolved oxygen < 2 mg l^{-1}) is a symptom of too many nutrients in the water. Hypoxia is a growing problem worldwide (Rabalais *et al.,* 2010), and the extent and persistence of hypoxia on the continental shelf of the northern Gulf of Mexico makes the Gulf of Mexico 'Dead Zone' one of the most extensive manifestations of anthropogenic coastal nutrient over-enrichment (Figure 1). Systematic mapping and monitoring of the area of hypoxia in bottom waters began in 1985 (Rabalais 2002. An Integrated Assessment (CENR 2000) of the causes, consequences and actions needed to reduce hypoxia was completed and a 2008 Action Plan for Reducing, Mitigating, and Controlling Hypoxia in the Northern Gulf of Mexico (Mississippi River/Gulf of Mexico Watershed Nutrient Task Force 2001) was endorsed by Federal agencies, states and tribal governments.

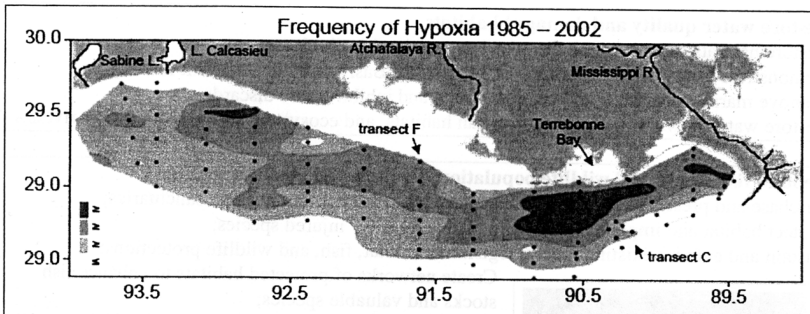


Figure 1. The distribution of the hypoxic zone from 1985-2002 in summer. The area (aka 'Deac Zone') is on the bottom of the water column and has few, if any, shrimp or fish in it. Its size has been increasing to the area of Massachusetts in recent years. Data collected by N. Rabalais and R.E.Turner, based primarily on support from NOAA.

Several models have summarized various relationships between the river loading of nitrogen and the severity of the hypoxic zone (Rabalais *et al.,* 2007). These models link the area of hypoxia and nutrient loading, and support the key component of the management action, which is to reduce nutrient loading to the Gulf of Mexico so that the average hypoxic area in summer is 5,000 km2 or less by 2015.

Reducing nutrient loading to the GOM can happen with 'win-win' outcomes if the agricultural communities are constructively involved in more flexible ways than presently allowed. We propose the creation of a network of research and demonstration projects that will establish and evaluate new bio-economic enterprises based on multi-functional production systems. This program will help develop and refine Federal farm-bill policy by using existing subsidies, but applied in regional-specific ways. The *Deepwater Horizon* Oil Spill Restoration funds would be the catalyst for this change.

Administrative bodies that integrate across political, economic, and social boundaries (Roux *et al.,* 2008) will be required to successfully apply management practices in ecological units stretching from small upland watersheds to coastal waters. To address problems of this magnitude requires working in watersheds at sufficiently large temporal and spatial scales to match the needs of the farming communities. These "demonstration" watersheds would be used to improve outcomes arising from the relationships between farm policies, on-the-ground outcomes, and environmental benefits or consequences that are suggested as benefits by others (*e.g.,* Jordan *et al.,* 2007; Batie, 2009). In particular, the Farm Bill should provide the agricultural R&D infrastructure with incentives to evaluate multi-functional production as a basis for a sustainable agricultural bio-economy. We judge that this can be done with very modest public investments (ca. $10 million annually x 5 sites x 25 years). A variety of strong political constituencies now expects a very different set of outputs from agriculture, and the U.S. farm landscapes. The cooperation of NOAA, EPA, USDA and others is important for this to succeed in the existing mosaic of balkanized jurisdictional mandates.

A key positive outcome of this proposed effort involves how river diversions are used to restore Louisiana's wetlands. The diversions are causing more wetland loss, not less (Kearney *et al.,* 2011) in the organic soils lining the flanks of the lower Mississippi River. We suggest that their vulnerability to storms reflects the introduction of nutrients in the diversions (that add insignificant amounts of additional sediments), which promotes poor rhizome and root growth in marshes and oxidizes the existing soils. Improving water quality through implementation of sustainable farming practices will keep working farms working (and with better profits), decrease the size of the Dead Zone, and improve prospects for wetland restoration.

Example—Conflicting Agendas

A number of daunting restoration issues existed even before the BP oil disaster. Louisiana's legal integration of coastal restoration and hurricane protection in 2005 still left the issue of how to prioritize between these two necessities unresolved. *The Comprehensive Master Plan for a Sustainable Coast* (2007) is primarily a summary

of major options and alternatives for restoration and protection.[1] Neither the *Master Plan* nor the LaCPR Report (2010) provides the final decisions on which specific alternatives to choose.[2]

One problematic decision involves the large new levee systems being planned for the Louisiana coast. These systems would consist of continuous levees, with a number of hydraulic gates to allow or block tidal flow, which would be closed to keep out storm surge. The construction of these levees would, essentially, wall off the coast, and cause more wetland loss. People are being polite about it, but make no mistake, wetland restoration will be compromised if these levees are built. These are not abstract issues, because some coastal parishes, with state approval and funding, have constructed sections of the Morganza to the Gulf levee system.[3] Louisiana cannot afford to complete the entire project itself, it is expected that state and local officials plan to ask the Federal Government to perform this function at some point in the future.[4] Fungible BP oil spill funds could well be sought to pay for these projects.

In addition, both the existing sea-level rise and the acceleration of sea level rise from climate change puts major Gulf cities like New Orleans and Houston at risk of flooding. When hurricanes are added to this mix, then the long-term human occupation of the Mississippi delta and coastal shorelines of all Gulf states becomes problematic. There have also been attempts to decouple the climate and coastal issues that should not escape national scrutiny. While Louisiana is not the only state to oppose the EPA's Endangerment Finding of greenhouse gases, it is the only one asking for an estimated $60–$100 billion in Federal funds to restore and protect its coast.

Resolution of these issues is critically important to create sustainable systems. Federal resources, leadership and participation are (still) essential to optimizing fruitful outcomes.

Improving Future Oil Spill Response and Restoration

The status quo is not enough, and never will be in a changing world. The existing resources for adaptation might be supplemented by the fines and legal settlement from this spill, that are projected to be as large as $20 billion, which is equivalent to $320 per capita for the GOM states. These are significant funds that can be spent to prevent or reduce the unknown consequences of past, present and future actions. They can be invested in the natural system capital supporting sustainable systems, or used inefficiently as fungible funds spent for projects with short-term goals in mind. They can be used to create the knowledge and experience to deal effectively with the unknown. Here are three areas that need attention to improve the status quo.

(1) *Increase rapid funding:* There was an undeniable lack of quick-response funding to determine baseline conditions before the oil spread out from the wellhead, and just after it polluted an area. The National Science Foundation is the only agency that spent quick-reaction funds in a merit- reviewed way to figure out what was happening. It was a hectic process and could have been faster if funded adequately, but these NSF funds allowed people with expertise, local knowledge, and limited appearances of conflicted interests to get into the field quickly. We were left to our own devices to get around the administrative obstacles offered by State and Federal agencies, and from the industry consultants seemingly in charge for too long. But we could not have been nimble without these quick-reaction funds. These options need to be encouraged for the next spill, the next unexpected set of circumstances, and the next unexpected event.

(2) *Expand the long-term observations of natural systems:* Measuring impacts and creating a baseline against which to measure restoration requires long-term measurements, and not just in one location, but many. These science-based observations need to be encouraged through funding and accomplished by independent scientists that can append additional inquiries onto them. I recommend that any funds from

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[1] *Integrated Ecosystem Restoration and Hurricane Protection: Louisiana's Comprehensive Master Plan for a Sustainable Coast,* 2007; *http://www.lacpra.org/*.

[2] LaCPR Final Technical Report, 2009, U.S. Army Corps of Engineers, *http://lacpr.usace.army.mil/default.aspx?p=LACPR_Final_Technical_Report*. The National Research Council Review Team noted that the LaCPR Report "produced no actionable project recommendations." *Final Report from the NRC Committee on the Review of the Louisiana Coastal Protection and Restoration (LACPR) Program,* 2009; p. 11; *http://www.nap.edu/openbook.php?record_id=12708&page=11*.

[3] N. Buskey, "2010 will see unprecedented levee spending," *Houma Courier*, December 26, 2009, *http://www.houmatoday.com/article/20091227/ARTICLES/912269966*.

[4] M. Brossette, "Morganza's J–2 work to begin soon," Tri-Parish Times, September 16, 2009; *http://www.tri-parishtimes.com/articles/2009/09/16/news/106_51_morganzapg1.eml*.

the polluting party that funds science studies by academics, are not to be used by academics (or non-profits) if they are involved in the NRDA or BP assessments. The USGS has this policy and it is a good one that maintains a high standard viz a viz the appearance of conflicting allegiances.

(3) *Improve the NRDA capabilities for field-based assessments:* For the most part, the current NRDA process does not have the necessary tools and experience to evaluate ocean ecosystem impacts and lacks the capacity for rigorous testing of dispersant effectiveness or toxicity in natural systems. The clumsy laboratory tests used in this process may meet the needs of the legal system, but they are fairly useless in telling about the in situ impacts. An NRC panel assessment is recommended.

(4) *Expand infrastructure support:* Several Federal programs, including NOAA programs, support infrastructure for education, policy development, public support and research in coastal affairs. Some of these are listed in Table 2. Some states have taken advantage of these program, while others have not. They are usually incredibly inexpensive programs and demonstrably effective, like pre-emptive educational initiatives almost always are. Most of these offer shared governance with the local, regional and State governing bodies. All have been operational for > 20 years. Expansion of these programs will enhance the quality and quantity of the response to the next oil spill, the sustainability of coastal systems, and raise the quality of life and livelihood of coastal residents.

Thank you for the opportunity to testify and for your time.

ATTACHMENT

Table 2. Indices of educational and research coastal infrastructure in the GOM: marine laboratories, coastal reserves, conservation zones, and State/Federal partnerships. Data are normalized per shoreline length to facilitate comparisons. SAML is the professional organization of non-Federal marine laboratories. The others (NEP, NERR, NPS, NMS) are federally-supported programs, some of which are co-managed with State entities. These metrics indicate that the strongest infrastructure is in Texas and Florida, and the weakest in Louisiana.

Program	West coast FL	AL	MS	LA	TX
1. Southern Association of Marine Laboratories (SAML)					
(a) # Members	20	1	2	1	11
(b) Km shoreline per member410	410	977	289	12,431	492
2. National Estuarine Program (EPA/State)					
(a) # Estuaries	3	1	0	2	5
(b) Km^2 Area	19,969	115,467	0	15,769	129,293
(c) Km2 per Km shoreline	2.4	118	0.0	1.3	24
3. National Estuarine Research Reserves (NOAA)					
(a) # Reserves	2	1	1	0	1
(b)Km^2 area	1,158	19	75	0	752
(c) Km^2 per 1000 Km shoreline	141	20	129	0	139
4. National Parks on coastline (interior)	5	1	1	1	0
5. National Marine Sanctuaries (NOAA)	1	0	0	0	1

Notes: 1. *http://www.naml.org;*
2. *http://www.epa.gov/owow_keep/estuaries/programs/gom.html;*
3. *http://www.nerrs.noaa.gov/;*
4. Park Boundaries overlap the State boundaries;
5. *http://sanctuaries.noaa.gov*.

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Senator BEGICH. Thank you very much, Dr. Turner.

Mr. Milito?

STATEMENT OF ERIK MILITO, GROUP DIRECTOR, UPSTREAM AND INDUSTRY OPERATIONS, AMERICAN PETROLEUM INSTITUTE

Mr. MILITO. Good afternoon, Chairman Begich, and Senator Rubio.

I'm Erik Milito, Upstream Director at the American Petroleum Institute.

API has more than 470 member companies which represent all sectors of America's oil and natural gas industry. Our industry supports 9.2 million American jobs, including 170,000 in the Gulf of Mexico related to the offshore development business. It also provides most of the energy we need to power our economy and way of life, and delivers more than $86 million a day in revenue to the Federal Government.

It's now been more than a year since the tragic Macondo well accident. We cannot forget that the industry and the Nation lost 11 workers that day, and our thoughts and prayers continue to go out to the families of those workers. To be certain, the incident has

provided us with a sobering reminder: We must maintain a laser focus on safety as a priority in operations.

Immediately after the accident, the industry formed task forces to examine every aspect of offshore safety systems, including equipment, operating practices, subsea well control, and spill response. Due to the leadership and work of the industry, we now have enhanced capabilities in each of the key areas—prevention, capping and containment, and spill response.

As an industry, we recognize that the most effective oil spill response is to prevent it from ever happening in the first place. Therefore, a great deal of attention has always been placed on prevention. The recommendations developed by the industry task forces form the basis of some of the regulations we have now on prevention. These include requirements for maintaining multiple barriers during well construction, implementation of various new testing requirements during drilling operations, and adoption of API Recommended Practice 65, Part 2, on so many.

In addition, the industry is currently developing API Recommended Practice 96, which will help improve deepwater well design and installation practices, as well as Bulletin 97, which is a joint effort between API and the International Association of Drilling Contractors, intended to help link—improve the link between the safety system of the drilling contractor with the safety system of the lease operator.

Representatives of the Bureau of Ocean Energy Management, Regulation and Enforcement participate in the standard setting activities, and about 100 of the API documents are referenced in the BOEMRE regulations.

Also, the industry is putting the final pieces in place for its new Center for Offshore Safety, which we will have up and running later this year. The Center will focus on the development and implementations of safety and environmental management systems in deepwater operations, drawing on the collective knowledge and experience of the industry, and promoting use of the best safety practices.

However, should an incident occur, preparedness becomes a key factor in determining the effectiveness of a response. In the post-Macondo world, the industry has invested significant resources in the development of a capping and containment solution to stop the blowout at its source. These efforts, which include the Marine Well Containment Company and the Helix Well Containment Group, will ensure the industry can quickly cap and contain a leaking well.

In terms of spill response, the actions taken following the Macondo incident effectively minimized the impact to the environment and ecosystem. The spill itself was unprecedented. But, with close to 50,000 people, 9,700 vessels, 13.5 million feet of boom, 125 planes, and several rigs, so was the response. A substantial contingent continues to be on scene to remediate any potential affected areas.

While preliminary reports have shown that the impacts to the shoreline, seafood, and vitality of the area are significantly less than what was anticipated, the long-term impacts will continue to be monitored and studied. Moving forward, industry is committed

to review the entire spill response system, identify any potential gaps, and address where necessary. We've initiated this review on issues such as dispersants, in-situ burning, and mechanical recovery. This review effort involves both U.S. and international stakeholders. It is open to the entire industry, covers both Gulf and Alaska activities, and it seeks government input into the program.

Great strides have been made to enhance the industry's capability to prevent an incident from happening, to cap and contain a leaking well, and to respond to a spill, and we're committed to building on this progress. But, we are also prepared to safely and fully resume operations in the Gulf, Alaska, and other areas. If permitting moves forward at a reasonable pace for projects in the Gulf alone, then we can put 190,000 more people to work, safely bring more of the Gulf's vitally needed energy to America's consumers, and deliver many billions of dollars in additional revenue to our Federal treasury.

Thank you. This concludes my statements. I'll be happy to take any questions.

[The prepared statement of Mr. Milito follows:]

PREPARED STATEMENT OF ERIK MILITO, GROUP DIRECTOR, UPSTREAM AND INDUSTRY OPERATIONS, AMERICAN PETROLEUM INSTITUTE

Good afternoon Chairman Begich, Ranking Member Snowe, and members of the Subcommittee.

I am Erik Milito, Upstream Director at the American Petroleum Institute. API has more than 470 member companies, which represent all sectors of America's oil and natural gas industry. Our industry supports 9.2 million American jobs, including 170,000 in the Gulf of Mexico related to the offshore development business. It also provides most of the energy we need to power our economy and way of life, and delivers more than $86 million a day in revenue to the Federal Government.

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As an industry, we recognize that the most effective oil spill response is to prevent it from ever happening in the first place. Therefore, a great deal of attention has always been placed on prevention. The recommendations developed by the industry task forces formed the basis of some of the regulations on prevention that we now see. These include requirements for maintaining multiple barriers during well construction, implementation of various new testing requirements during drilling operations, and adoption of API Recommended Practice 65 Part 2, which focuses on zone isolation in wells and preventing and controlling flows in cementing operations. In addition, the industry is currently developing API Recommended Practice 96, which will help improve deepwater well design and installation practices, and Bulletin 97, a joint effort of API and the International Association of Drilling Contractors, intended to help link the safety system of the drilling contractor with the safety system of the lease operator.

Representatives of the Bureau of Ocean Energy Management, Regulations and Enforcement participate in the development of our standards, and about 100 are referenced in the BOEMRE regulations.

Also, the industry is putting the final pieces in place on its new Center for Offshore Safety, which we will have up and running later in the year. The center will focus on the development and implementation of safety and environmental management systems in deepwater operations, drawing on the collective knowledge and experience of the industry and promoting use of the best safety practices.

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Moving forward, industry has committed to review the entire spill response system, identify any potential gaps and address where necessary. We have initiated this review on issues such as dispersants, in-situ burning, and mechanical recovery. This review effort involves both U.S. and international stakeholders; it is open to the entire industry; it covers both Gulf and Alaska activities, and it seeks government input in the program.

Great strides have been made to enhance the industry's capability to prevent an incident from happening, to cap and contain a leaking well, and to respond to a spill, and we're committed to building on this progress. But we are also prepared to safely and fully resume operations in the Gulf, Alaska and other areas. The government needs to issue leases, and approve and permit projects, without unreasonable delay. If permitting moves forward at a reasonable pace for projects in the Gulf, then we can put 190,000 more people to work, safely bring more of the Gulf's vitally needed energy to America's consumers, and deliver many billions of dollars in additional revenue to our Federal treasury.

Thank you. That concludes my statement.

Senator BEGICH. Thank you very much, Mr. Milito.

Let me move to Mr. Ayers, and then we'll go into questions.

STATEMENT OF JIM AYERS, SENIOR ADVISOR AND CONSULTANT, OCEAN CONSERVANCY

Mr. AYERS. Chairman Begich. Senator Rubio, thank you for the invitation to be here today.

I'm testifying today in my capacity as a Senior Advisor and Consultant to the Ocean Conservancy, although I have other conservation clients as well.

The Ocean Conservancy is a national marine conservation organization of scientists and citizens and volunteers that promote a healthy ocean, and have done so for over 40 years, and headquartered here in D.C.

My testimony will address three things: First, prevention preparedness and response, and recommendations with regard to my experience in *Deepwater Horizon* and *Exxon Valdez;* second, restoration; and third, a brief sentence in reference to the Arctic, and what I believe is an imperative approach.

Among many other things, I served as the Executive Director of the *Exxon Valdez* Oil Spill Trustee Council, and led the effort to develop and implement a comprehensive restoration plan. I later became Chief of Staff, where I supported that plan and moved forward with preparedness, including issues that were mentioned earlier by Senator Cantwell, like shipping, and continued preparedness and prevention.

In short, we are not prepared. We are not yet committed to prevention. And the Oil Pollution Act of 1990, though it is done a lot

of good, has significant holes and, in particular, with regard to response.

Here are my recommendations of how to fix the problem. First, we must integrate spill prevention and preparedness into the oil and gas decision-making process. Congress should mandate the baseline science and an understanding of the marine ecosystem in which we intend to drill is fully understood. That informed decisions about if we should drill, when, where and how, are based on science.

It also means giving a stronger role to the expert agencies like NOAA and the Coast Guard. And, as was aforementioned, they're insufficiently not funded and not given the authority to incorporate true worst case scenarios into the planning process.

We must require the best available technology in engineering to be brought forward into the process. That is currently not a mandate under OPA 1990, and I participated in that and find myself guilty. It is our responsibility to bring the best and brightest of America to bear on this project and on this issue of offshore drilling, and we have not done so.

Second, we need to step up our game with respect to spill response. Government regulators and industry operators must ensure and demonstrate that they have trained personnel and equipment sufficient to contain, control, and clean up a worst case discharge. As you heard earlier, the cascading approach of bring supplies, equipment and personnel from other states and other nations is insufficient in protecting our Nation's ocean resources.

The Coast Guard must be authorized and funded to ensure that responsible parties' oil spill response plans and area contingency plans are, in fact, in place and comply with the National Contingency Plan. Based on your question earlier, although it's suggested in the National Contingency Plan of how it should operate, it is not mandated, nor is it in place today.

Third, Congress must commit the financial resources necessary to ensure that agencies like the Coast Guard and NOAA can do their job. I humbly suggest that a small increase in the per barrel tax that funds the Oil Spill Liability and Trust Fund would provide the funding necessary to ensure that responsibilities are met and, in fact, would be a certain provision that would allow and ensure that America can comply with the requirements of preparedness, prevention, and response.

It's America's oil, America's oceans. Oil companies sell oil. It's the Government's responsibility to ensure that the public trust is protected.

Let's move quickly to restoration. Restoration is becoming a part of our culture and our economy from the tundra to the Gulf and from Yellowstone to Chesapeake, this country is engaged in restoration, and will be for the rest of this generation.

I'm pleased the restoration planning is moving forward in the Gulf, with the Gulf ecosystem task force that was created by the President, and that the Natural Resources Trustees under OPA 1990 are moving forward with the restoration plan. But, I have several critical elements to suggest.

Based on my experience with the *Exxon Valdez* oil spill, we must have a common vision for a healthy biodiverse, productive Gulf,

and we must have clear measurable objectives and rigorous criteria for moving forward with projects.

To make this happen, Congress should demonstrate that America will not sacrifice the long-term health in fisheries and biodiversity of the Gulf of Mexico, or any other large marine ecosystems in this country, for short-term industrial production of any kind. That must begin with dedicating a significant portion of the Clean Water Act penalties, as has been done by Senator Rockefeller in Senate Bill 1140. Some piece of those penalties should be directed in a separate account within the Unites States Treasury, with the earnings of that accounts supporting a long-term Gulf ecosystem monitoring observation research program.

And with that said, Mr. Chairman, let me say that the science-based approach that I'm suggesting would work in the Arctic as well. And, as you can see, it's science that's missing in both applications—both in the preparedness and response, and also in the restoration. Congress should act now to establish a long-term scientific monitoring observation research program, and ensure response capabilities are in place, before offshore environment is exposed to widespread industrial activity in the Arctic and the attendant risks therein.

Finally, at broader level, Mr. Chairman, although Senator Snowe is not here, let me mention it—Congress should ensure that the United States has the financial resources necessary to be an effective steward of its oceans and coastal ecosystems. The National Endowment for Ocean's Act, co-sponsored by Ranking Member Snowe and other members of this committee, would do just that.

The Ocean Conservancy recognizes the United States must continue to develop energy. It's an imperative. But, we must do so the right way, and we can do it right.

Thank you, Mr. Chairman and Senator Rubio.

[The prepared statement of Mr. Ayers follows:]

PREPARED STATEMENT OF JIM AYERS, SENIOR ADVISOR AND CONSULTANT, OCEAN CONSERVANCY

Chairman Begich, Ranking Member Snowe, and members of the Subcommittee, thank you for the invitation to participate in today's hearing. My name is Jim Ayers, and I am the founder and President of Alaska Strategies, a conservation consulting firm. I am testifying today in my capacity as a senior advisor and consultant for Ocean Conservancy, a national marine conservation organization that has promoted healthy and diverse ocean ecosystems since its founding in 1972. Ocean Conservancy is supported by more than 500,000 members and volunteers, with its headquarters in Washington, D.C.

You have invited me here today to discuss two broad topics: first, the efficacy of the laws, regulations, and policies that relate to oil spills and spill response and prevention on the Outer Continental Shelf (OCS); and second, the progress and viability of long-term restoration in the Gulf of Mexico in the wake of the BP *Deepwater Horizon* oil disaster.

My perspective on these topics is informed by substantial experience dealing with offshore oil spills and restoration efforts. Most recently, I was a representative on the U.S. Coast Guard's Incident Specific Preparedness Review for the response to the BP *Deepwater Horizon* oil spill—a review designed "to examine the implementation and effectiveness of the preparedness and response to the BP *Deepwater Horizon* incident." [1] Earlier in my career, I was the first executive director of the *Exxon Valdez* Oil Spill Trustee Council, where I led the effort to develop and implement

[1] U.S. Coast Guard, Final Report: Incident Specific Preparedness Review for the BP *Deepwater Horizon* Oil Spill (Jan. 2011), at 1.

a comprehensive restoration plan for the region affected by the *Exxon Valdez* spill, and helped establish a long-term research and monitoring fund designed to enhance recovery and restoration.

Before proceeding any further with my testimony, I would like to acknowledge that the BP *Deepwater Horizon* oil disaster was a human and environmental tragedy. It killed 11 men, seriously injured 16 others, and discharged roughly 205 million gallons of oil into the Gulf of Mexico. The disaster impacted lives, livelihoods, and the rich and diverse Gulf of Mexico ecosystem that is a national treasure and cornerstone of the regional economy.

Now, more than a year after the BP *Deepwater Horizon* disaster, the United States stands at yet another major crossroads, and we must decide which way we want to go. On one hand, we can turn a blind eye to the shortcomings of the statutes that govern offshore oil and gas operations and spill response, maintaining the status quo and hoping for the best. On the other hand, we can acknowledge the gaps and flaws in the existing system and enact reforms designed to prevent future offshore oil disasters and promote preparedness, safety, and protection of ecosystem services vital to our Nation. I believe it is imperative that we choose the latter. In our pursuit of energy, we must minimize risks to the natural environment to ensure diverse, healthy ecosystems capable of supporting the economy and human health—for this generation and the next. But to do so, Congress must take meaningful action now.

In Part I below, I address the existing framework that governs spill prevention and response, and recommend a series of reforms to the OCS oil and gas process. In general, these reforms strive to integrate spill prevention and response into OCS policies and decision-making processes. Then, in Part II, I discuss restoration efforts in the wake of the BP *Deepwater Horizon* oil spill, and recommend actions that will bolster effective long-term restoration in the Gulf of Mexico and better preparedness in frontier regions which may soon experience increasing levels of oil and gas activity.

I. Oil Spill Prevention And Response Must Be Integrated Into The OCS Oil and Gas Process

The Oil Pollution Act of 1990—enacted in the wake of the *Exxon Valdez* oil spill—is the primary statute governing issues of planning, prevention, response, and liability for oil spills in marine waters.[2] OPA 90 introduced several critical reforms, including technical standards, improved response planning, funding for research and development, and liability and compensation requirements. Under OPA 90's amendments to the Clean Water Act, the Federal Government may respond to a spill event by "federalizing" the spill and engaging directly in the cleanup, monitoring the responsible party's cleanup efforts, or directing the responsible party in implementation of the response.[3] These changes have made it more likely that the relevant contingency plans would be properly carried out during a major spill. OPA 90 also expanded the role and breadth of the National Contingency Plan (NCP) and linked the NCP to area response plans, regional response plans, and facility-level response plans—a multi-layered planning and response system intended to improve spill preparedness and response effectiveness.

Despite the benefits of the spill prevention and response framework established by OPA 90, the present system suffers from a significant flaw: for the most part, the OPA 90 framework exists separate and apart from the rest of the OCS oil and gas development process. As a result, preparedness regarding spill prevention and response is not integrated adequately into OCS policy, and does not play a significant role in many OCS decision-making processes. The following sections include recommendations to address this problem.

A. Prevention of oil spills should start with ensuring that energy development takes place only in appropriate locations, where it can be undertaken without undue risk to environmental, human, and economic health.

A little over a year ago, President Obama issued an Executive Order establishing a National Ocean Policy. That policy includes a set of overarching guiding principles for management decisions and actions toward achieving the vision of "an America whose stewardship ensures that the ocean, our coasts, and the Great Lakes are healthy and resilient, safe and productive, and understood and treasured so as to

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[2] *See, e.g.,* Nat'l Comm'n on the BP *Deepwater Horizon* Oil Spill and Offshore Drilling, Deep Water: The Gulf Oil Disaster and the Future of Offshore Drilling (2011) at 83 [hereinafter National Commission].

[3] 33 U.S.C. § 1321(c)(1)(B).

promote the well-being, prosperity, and security of present and future generations."[4] Prevention of oil spills should begin at the highest level, by ensuring that our National Energy Policy and our National Ocean Policy are aligned. As we pursue currently available energy resources, we must do so in a way that is safe for energy workers and allows us to maintain a healthy environment for this and future generations. Safe and responsible development of current energy sources, combined with sensible conservation measures and investments and a commitment to developing more sustainable energy options going forward, will help ensure that there are economic opportunities, healthy and diverse ecosystems, and a clean and safe environment in the future.

More specifically, we must ensure that energy development occurs only in safe and appropriate locations. Oil and gas lease sales, exploratory drilling, and development and production on the OCS are appropriate only when there is sufficient science to support informed decisions that such actions can proceed with minimal risk to the health of ocean and coastal ecosystems. To help ensure that economic sectors other than oil and gas development are given adequate consideration, Congress should support the implementation of a more comprehensive system of regional planning for the conservation and management of marine resources. In addition, Congress should amend the nation's existing OCS policy statement to make protection, maintenance, and restoration of coastal and ocean ecosystems a primary policy objective.

To help ensure that energy development occurs safely and only in appropriate locations, expert agencies in addition to the Bureau of Ocean Energy Management, Regulation and Enforcement (BOEMRE) should play a greater role in decisions about, and preparation of environmental analyses for, oil and gas operations.[5] These agencies should include the National Oceanic and Atmospheric Administration (NOAA), the U.S. Fish and Wildlife Service (USFWS), the U.S. Coast Guard, and others. For example, Congress should change Section 18 of the Outer Continental Shelf Lands Act to give the Secretary of Commerce a greater role in the initial decisions about if, when, where, and how to allow oil and gas leasing, exploration, and development on the OCS. Congress could amend Section 18 so that the Secretaries of Commerce and of the Interior have joint and equal responsibility for preparing five-year oil and gas leasing programs. Alternatively, Congress could amend Section 18 to require the concurrence of the Secretary of Commerce before any five-year leasing program is finalized and implemented. Similarly, the U.S. Coast Guard should play a role in identifying how oil and gas activities on the OCS proceed.

To facilitate more meaningful environmental analysis before exploration and drilling activities proceed, OCS planning areas—at least in frontier areas—should be smaller and focused more precisely on specific lease tracts.[6] Congress, for example, could amend section 18 of the Outer Continental Shelf Lands Act to specify an upper limit on the percentage of a frontier planning area that may be included in any one five-year oil and gas leasing program. Alternatively, Congress could require DOI to use tract-style leasing in frontier areas, rather than offering enormous portions of planning areas.

Finally, areas of the marine environment that are particularly significant—such as essential fish habitats, areas of high productivity, or areas supporting important concentrations of wildlife, migratory pathways, and subsistence use—should be protected from the impacts of OCS oil and gas activities. Regulators should preserve the resilience of marine ecosystems by placing important ecological areas off-limits to drilling and ensure that such areas are well buffered from oil and gas activities elsewhere in the region. Congress should amend the law to require regulatory agencies, during their planning processes, to identify any important ecological areas and explain the protection measures necessary to preserve the integrity and function of those areas.

B. Making informed decisions about oil spill prevention and response requires adequate baseline scientific information.

To understand fully the potential impacts on the local ecosystem from a large-scale spill—and to determine how best to respond to a spill—decisionmakers require adequate baseline science. Scientific baseline data and risk analyses should inform decisions about whether, when, and where to allow OCS oil and gas activities. As

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[4] Exec. Order No. 13547, 75 Fed. Reg. 43,023, 43,023 (July 22, 2010).

[5] *See, e.g.,* National Commission at 264 (recommending that Congress amend the Outer Continental Shelf Lands Act "to provide NOAA with a formal consultative role during the development of the five-year lease plan and lease sale stages.").

[6] *Cf. id.* at 262 (recommending reducing the size of lease sales "in less well explored areas," so that the "geographic scope [of the lease sale] allows for a meaningful analysis of potential environmental impacts and identification of areas of ecological significance").

a result, before permitting OCS activities to proceed, Congress should require the availability of specific types and quantities of baseline scientific information gathered over time at scales appropriate to the decisions that must be made. This information might include physical characteristics—such as data on the sea floor, ocean currents, wind and weather patterns, and water temperature and salinity—as well as information about the ecosystem, such as the presence, distribution, and abundance of species and the relationships among those species. Collection of baseline science should include and incorporate local and traditional knowledge from affected communities. This approach would ensure that expert concerns are heard from the outset, and would help avoid later complications. "Doing it right" is an expression that many of us use with reference to oil and gas activity, and doing it right means taking the time and spending the money to gather the necessary science to support smart decisions.

Certain types of scientific information, such as identifying sensitive areas and locations of critical ecological processes, are necessary to help plan for and implement oil spill response operations. In addition, baseline science is necessary in carrying out a natural resource damage assessment following an oil spill, because the impacts from the spill must be measured against the environmental baseline that existed prior to the spill.[7] This is not possible without a robust time series of baseline data gathered over an appropriate geographic area. During my time with the *Exxon Valdez* Oil Spill Trustee Council, not a day went by when we did not rue the lack of baseline data gathered prior to that disastrous event. Baseline data are particularly lacking in frontier areas such as the Arctic.[8]

Congress should require the collection of specific types of baseline science information before areas can be considered for oil and gas leasing. For example, before an area is considered for leasing in a five-year program, Congress should require at least 3 years of baseline weather, water, wind, ocean chemistry, and other environmental data. It should also require similar baseline studies for wildlife—including fish, birds, invertebrates, and marine mammals—and of the sea floor environment. Unless and until such data are compiled for a given area of the OCS, that area should not be eligible for leasing. In addition, Congress should enact requirements designed to ensure a more rigorous and meaningful evaluation of environmental sensitivity and marine productivity. This requirement should be integrated and coordinated with baseline science information.

Congress should support collection of baseline scientific data through integrated programs that undertake research, monitoring, documentation of local and traditional knowledge, and synthesis. Such work would, for example, assess and monitor populations of principal species in the ecosystem and the biological and physical factors that affect their abundance and distribution; construct and maintain an updated quantitative food web model; identify sensitive species and important ecological areas; and enhance understanding of temporal and spatial variability within ecosystems. These programs would require secure and stable sources of funding.

C. Rigorous risk assessment is critical to preventing oil spills and ensuring preparedness.

As development planning and activities are considered, regulators must undertake a rigorous analysis of potential impacts and risks. As noted above, Federal agencies in addition to BOEMRE should have a greater role in planning for and conducting environmental analyses of OCS oil and gas activities. Risk analysis should be science-based, and subject to external, expert peer review. Analysis pursuant to the National Environmental Policy Act (NEPA) should be substantive—not mere window dressing—and OCS drilling operations should not be categorically excluded from environmental review. All OCS drilling activities should be subject to site-specific NEPA analysis, either an Environmental Assessment or an Environmental Impact Statement.

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[7] *See, e.g.,* 15 C.F.R. § 990.52 (noting that natural resource trustees "must quantify the degree, and spatial and temporal extent of such injuries relative to baseline."); *see also id.* § 990.30 (defining "baseline" as "the condition of the natural resources and services that would have existed had the [oil spill] incident not occurred.").

[8] *See generally* Holland-Bartels, Leslie, and Brenda Pierce, eds., An evaluation of the science needs to inform decisions on Outer Continental Shelf energy development in the Chukchi and Beaufort Seas, Alaska: U.S. Geological Survey Circular 1370 (2011); Coastal Response Research Center, Natural Resources Damage Assessment (NRDA) in Arctic Waters: The Dialogue Begins, Univ. of New Hampshire (2010). *See also* National Commission at 303 (recognizing that "scientific research on the ecosystems of the Arctic is difficult and expensive. Good information exists for only a few species, and even for those, just for certain times of the year or in certain areas.").

The BP *Deepwater Horizon* disaster highlighted the risk of failing to engage in worst-case oil spill planning. When making decisions that involve the potential for catastrophic results—such as major oil spills—environmental analyses must take seriously the potential for disaster. This is true even if the probability of an individual occurrence is low, because the harm from such an event may be very great.[9] Federal regulators must analyze low-probability, high-risk events to ensure that they are prepared for a worst-case. In light of the BP *Deepwater Horizon* disaster, the Council on Environmental Quality concluded that Federal regulators must "take steps to incorporate catastrophic risk analysis."[10] The National Commission on the BP *Deepwater Horizon* Oil Spill and Offshore Drilling (National Commission) recommended that regulators "incorporate the 'worst-case scenario' calculations from industry oil spill response plans into NEPA documents and other environmental analyses or reviews" to inform the agency's "estimates for potential oil spill situations in its environmental analyses."[11]

D. Government regulators and industry operators must ensure that they have trained personnel and equipment sufficient to contain, control, and clean up a worst case discharge.

To protect healthy, diverse ocean ecosystems for future generations, regulators and the oil and gas industry must ensure that facility-specific oil spill response plans provide for the immediate availability of equipment and trained personnel sufficient to contain, control, and clean-up a worst-case discharge. Equipment must be based reasonably close to potential accident sites, and trained teams of responders must be available in-region to operate the equipment in accordance with the pre-approved plan.

Worst-case scenario planning will help Federal regulators and OCS operators anticipate their needs in the event of a major oil spill or other emergency event. The BP *Deepwater Horizon* disaster showed that the existing planning standard—responding to a worst-case scenario spill in 30 days—is unrealistic for an offshore well blowout. The law should be changed to require operators to meet a performance standard based on a true worst-case scenario oil spill. For an exploration well the worst case oil spill scenario time frame should be increased to at least 90 days (the time it takes to drill a relief well). The worst-case oil spill volume should be based on that 90-day period multiplied by a maximum flow rate of 60,000 barrels of oil per day, unless the operator can provide reservoir and engineering data to prove that the flow rate will be less.

To be effective in an emergency, response capability must be mobilized immediately. For that to happen, equipment and personnel must be either pre-positioned near potential spill sites or quickly mobilized from nearby locations that actually have those resources onsite. Spill response plans often rely upon contracts with spill response companies or regional consortia, and delays in mobilization of an effective spill response may result from the lack of actual capacity in the area of the spill. If a response plan calls for contractors to provide equipment and trained personnel for the response, actual capacity must be demonstrated ahead of time.

In addition to implementing more stringent planning and response standards, assessment of industry oil spill response plans must be more rigorous. For example, in the Arctic, BOEMRE approved an oil spill response plan in which Shell Offshore, Inc. claimed that it would recover 90 percent of the oil spilled during a worst case discharge from its proposed facility in the Beaufort Sea[12]—even though a 90 percent recovery rate is, without question, wholly unrealistic. The agency approved Shell's plan despite the fact that in earlier planning documents, the agency had acknowledged that "[o]n average, spill-response efforts result in recovery of approximately 10–20 percent of the oil released to the ocean environment."[13] This lax over-

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[9] *See, e.g.,* 40 C.F.R. § 1502.22(b)(4) (noting that in a NEPA analysis when information is missing or unavailable, "reasonably foreseeable" impacts include "impacts which have catastrophic consequences, even if their probability of occurrence is low, provided that the analysis of the impacts is supported by credible scientific evidence, is not based on pure conjecture, and is within the rule of reason").

[10] Council on Envtl. Quality, Report Regarding the Minerals Management Service's National Environmental Policy Act Policies, Practices, and Procedures as They Relate to Outer Continental Shelf Oil and Gas Exploration and Development (Aug. 16, 2010) at 27.

[11] National Commission at 267.

[12] *See* Shell Offshore Inc., *Beaufort Sea Regional Exploration Oil Discharge Prevention and Contingency Plan* (Jan. 2010) at unnumbered page following I–12 (containing BOEMRE approval letter); *id.* at 1–29 (assuming that only 10 percent of the discharge from a hypothetical blowout will "escape [ ] primary offshore recovery efforts").

[13] Minerals Management Service, Final Environmental Impact Statement: Beaufort Sea Planning Area Oil and Gas Lease Sales 186, 195, and 202 p. IV–17 (Feb. 2003).

sight led DOI's Office of Inspector General to conclude that review of oil spill response plans "does not ensure that critical data are correct." [14]

Finally, to facilitate more serious review of oil spill response plans for offshore facilities, broaden the scope of review, and promote better information-sharing, multiple Federal agencies should—in a coordinated and timely fashion—review and approve these plans. In addition to interagency review of oil spill response plans for OCS facilities, there should be public comment on such plans.[15] The National Commission endorsed the idea of interagency spill plan review:

> In addition to the Department of the Interior, other agencies with relevant scientific and operational expertise should play a role in evaluating spill response plans to verify that operators can conduct the response and containment operations detailed in their plans. Specifically, oil spill response plans, including source-control measures, should be subject to interagency review and approval by the Coast Guard, EPA, and NOAA. Other parts of the Federal Government, such as Department of Energy national laboratories that possess relevant scientific expertise, could be consulted.[16]

The National Commission also noted that interagency review of oil spill response plans for OCS facilities would facilitate greater integration of those plans with broader-level area contingency plans and regional contingency plans because it would "involve[e] the agencies with primary responsibility for government spill response planning in oversight of industry planning." [17]

In particular, the Coast Guard should have a formal role in the review of facility oil spill response plans. As it stands now, DOI has the primary responsibility to review facility response plans, even though the Coast Guard is ultimately responsible for response efforts on the water. As a result, the Coast Guard—the on-scene coordinator and lead agency for response to offshore spills—has not taken an active role in reviewing facility response plans. If it did, the Coast Guard might be able to suggest improvements or refinements that could make facility response plans more effective. Congress should ensure that the Coast Guard participates formally in spill prevention and response planning for OCS oil and gas facilities.

E. OCS oil and gas operations must use the best available engineering and technology in their prevention and response toolkits.

A recent DOI Inspector General Report concluded that the "process for developing or updating standards and regulations has not kept pace with new and emerging offshore technologies." [18] Going forward, we must ensure that OCS facilities use the best available engineering, technology, and safety procedures to maximize the protection of workers, ocean and coastal ecosystems, and the coastal businesses and economies that rely on those ecosystems.

Operators of all new offshore leases should be required to demonstrate that they are using the most effective safety technology for exploration or development activity as a precondition to drilling.[19] Standards regarding spill prevention technologies should be implemented, as well. These might require redundant engineering controls, such as multiple or improved blowout prevention systems, on-site blowout containment structures, and double-walled pipes or tanks. All OCS leases should be required to incorporate the most environmentally protective timing and location stipulations and terms to reduce the potential for environmental damage.

Spill response technologies also must be improved. Estimates following the BP *Deepwater Horizon* disaster reveal that despite the massive effort that BP activated

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[14] Office of Inspector General, U.S. Department of the Interior, *A New Horizon: Looking to the Future of the Bureau of Ocean Energy Management, Regulation and Enforcement* (Dec. 2010), at 44.

[15] *See id.* ("Plans should also be made available for a public comment period prior to final approval and response plans should be made available to the public following their approval.")

[16] National Commission at 266–67.

[17] *Id.* at 267.

[18] Office of Inspector General, U.S. Department of the Interior, *A New Horizon: Looking to the Future of the Bureau of Ocean Energy Management, Regulation and Enforcement* (Dec. 2010), at 44.

[19] At present, OCSLA provides for "the use of the best available and safest technologies . . . on all new drilling and production operations and, wherever practicable, on existing operations." 43 U.S.C. § 1347(b). However, this requirement is weakened significantly by other provisions: it applies only to certain types of equipment, and the Secretary of the Interior may waive the requirement if he determines that the additional cost of using the "best" or "safest" technology outweighs the additional benefits of using the technology. *Id*.

to clean up the oil,[20] response efforts were able to remove or chemically disperse—without removal of the dispersed oil—only about one-third of the oil that was discharged from the Macondo well.[21] The National Commission determined that "[t]he technology available for cleaning up oil spills has improved only incrementally since 1990."[22] The Commission further observed that "[f]ederal research and development programs in this area are underfunded," and the major oil companies have committed minimal resources to in-house research and development related to spill response technology."[23]

To spur better on-water cleanup results and more investment in research and development for response technologies, regulators should require operators to demonstrate the ability to meet specific performance standards in real-world conditions in the lease area before allowing operators to conduct drilling operations. The performance standards should require operators to demonstrate in simulated field trials that they have in place adequate equipment, personnel, and resources to respond effectively in the event of a catastrophic spill. Operators should show that they can deploy their resources in real-world conditions and that the chosen equipment is effective in meeting an established oil removal performance target. These spill response standards should be enforced through independent third-party review of facility response plans and regular audits during the period of exploration and production.

F. Congress must provide the funding necessary to ensure adequate preparedness.

It will not be enough to require adequate oil spill preparedness in legislation or agency regulations. Congress also must commit the necessary financial resources to enable relevant Federal agencies, such as the Coast Guard, NOAA, DOI, and others, to do their jobs. Absent stable and adequate funding for oil spill preparedness, Federal agencies may not be able to carry out their responsibilities to plan, prepare, and respond to incidents, and to contain, control, and clean-up a major oil spill. Ensuring adequate preparedness is simply one of the costs of doing business. A small increase in the per-barrel tax that funds the Oil Spill Liability Trust Fund could provide funding for Federal agencies to better meet their responsibilities to prepare and respond to oil spills.

Taking a broader perspective, Congress should also ensure that the United States has the financial resources necessary to be an effective steward of its ocean and coastal ecosystems. Despite the importance of these ecosystems and the risks posed by oil and gas and other activities, there is no dedicated source of funding to support conservation and management activities. Congress should invest revenues derived from offshore development in a fund dedicated to ocean and coastal restoration and conservation. Given the economic and ecological importance of our ocean and coasts, we should invest more in monitoring, researching, protecting, and restoring the health of these systems and promoting their resilience so that they can better recover when disasters happen, whether man-made or natural.

In May, Ranking Member Snowe and Senator Whitehouse, along with Chairman Rockefeller and Senators Inouye, Nelson, Stabenow, and Landrieu, introduced legislation to make crucial investments in cleaner and healthier oceans across the country. The National Endowment for the Oceans Act takes the common-sense step of using money the government already gets from economic activities on our oceans, and directs a portion of those funds toward keeping our oceans clean and healthy. Money from the endowment could then be distributed as grants to states and tribes for bottom-up, on-the-ground conservation and research to protect our oceans. Reinvesting a portion of revenue made from ocean resources is a fair and reasonable way to fund the work to protect ocean health, and ultimately economic health. We commend the bill's sponsors for their leadership on this issue and urge the Committee to move the National Endowment for the Oceans Act forward.

II. Congress Must Commit to Long-Term Restoration in the Gulf of Mexico

The Gulf of Mexico region and ecosystem are vital to the United States in many respects, including oil and gas resources, seafood production, shipping, and recre-

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[20] At its peak, more than 45,000 people were involved in the response effort. *National Commission Report* at 133.

[21] *See* Jane Lubchenco *et al., BP Deepwater Horizon* Oil Budget: What Happened to the Oil? (Aug. 4, 2010) available at *http://www.restorethegulf.gov/sites/default/files/imported_pdfs/posted/2931/Oil_Budget_description_8_3_FINAL.844091.pdf* (estimating that of the 4.9 million barrels of oil that was discharged, responders recovered 17 percent directly from the wellhead, skimmed 3 percent, burned 5 percent, and chemically dispersed 8 percent, for a total of 33 percent).

[22] National Commission at 269.

[23] *Id.* at 270.

ation, to name only a few. While the Gulf of Mexico region has benefited from and is heavily dependent on oil and gas production, it has also paid a high environmental price for it. Going forward, a sound energy development policy must include a commitment to restore the Gulf of Mexico ecosystem and communities following last summer's BP *Deepwater Horizon* disaster and decades of degradation. Congress must do its part to ensure that the people and environment in the Gulf region are made whole following that disaster, and the decades of environmental degradation that preceded it, by dedicating a major portion of Clean Water Act penalties to recovery and restoration in the Gulf.

A. Restoration efforts in the Gulf of Mexico require dedicated, predictable funding.

Dedicated, predictable funding will be critical to successful restoration. Congress should dedicate Clean Water Act penalties associated with the BP *Deepwater Horizon* disaster to fund restoration in the Gulf of Mexico. The National Commission recommended that 80 percent of such penalties be dedicated to that purpose. Several bills have been introduced in the Senate that would accomplish that purpose.[24] For example, Chairman Rockefeller introduced S. 1140, the "Gulf Coast Restoration Act," which calls for 80 percent of Clean Water Act penalties to be deposited into a "Gulf Coast Ecosystem Restoration Fund."

Restoration funding should be structured in a way that results in dedicated, predictable funding streams. For example, an endowment should be established to support long-term research and monitoring needed to assess the health of the Gulf, evaluate the efficacy of restoration measures, and facilitate adaptive management. I will expand on this idea in Subsection D, below. The revenue stream from the endowment could also provide valuable support for the work of Gulf Coast research institutions, which are in a good position to make lasting contributions to the overall recovery of the Gulf ecosystem and economy.

B. Gulf restoration efforts must address a variety of issues.

Successful restoration of the Gulf ecosystem—including preserving the region's unique culture and traditions and promoting its economic restoration—will require sound management, stable and coordinated funding, prudent project selection, stewardship of the full ecosystem, and monitoring and adaptive management over the long-term. Restoration should focus on five key strategies:

1. Protecting, restoring, and enhancing the coast and wetlands: Restore resilience to coastal areas and nourish wetlands through major projects in the Mississippi River delta and elsewhere in the five-state region.

2. Maintaining healthy, sustainable fisheries: Restore and sustain Gulf of Mexico fisheries through investments in science, technology, fishing fleet performance, and strategies to restore depleted fish populations and support sustainable long-term management.

3. Restoring and protecting coastal and marine habitats: Enhance key coastal and marine habitats like oyster reefs, seagrass beds, corals, and nesting sites for birds and turtles to strengthen and restore critical ecosystem services, such as shoreline protection, tourism, and fishing.

4. Shrinking the dead zone in the northern Gulf of Mexico: Implement nutrient reduction strategies in the Mississippi River watershed to reduce the size and duration of the hypoxia zone to improve marine health and increase fisheries productivity in the Gulf of Mexico.

5. Taking the pulse of the Gulf ecosystem: Create a permanently-funded, long-term Gulf of Mexico ecosystem monitoring and research program to provide the basis for adaptive management of coastal and marine natural resources.

C. Restoration efforts are underway in the Gulf, but success will require a common goal, a comprehensive restoration program, public involvement, incorporation of science, and clear, measurable objectives.

Federal and state restoration planning activities in the Gulf of Mexico are currently underway through the *Deepwater Horizon* Oil Spill Trustee Council, which implements the natural resources damage assessment (NRDA) and restoration program under OPA 90, and the Gulf Coast Ecosystem Restoration Task Force (Task Force), which was established by Executive Order.[25] The Executive Order instructs the Task Force to prepare a Gulf Coast Ecosystem Restoration Strategy by October

[24] National Commission at 280.

[25] Executive Order 13554 of October 5, 2010: Establishing the Gulf Coast Ecosystem Restoration Task Force, 75 Fed. Reg. 62,313, 62,313–17 (Oct. 8, 2010).

2011;[26] this document is intended to guide development of a broader ecosystem restoration effort in the event that Congress allocates Clean Water Act fines for that purpose. The Trustee Council is preparing a programmatic environmental impact statement on a NRDA-based Gulf restoration program, and we anticipate release of the draft late this year or early next. In the meantime, BP has provided one billion dollars in early restoration funds and there is a flurry of activity as state and Federal agencies, as well as many stakeholders, consider how those funds can best be allocated.

We are pleased that the Task Force and Trustee Council are developing and evaluating restoration strategies and that a down payment of one billion dollars is now available to jump-start restoration efforts on the ground and in the water. However, based on my experience with the *Exxon Valdez* program, I want to share some perspective and offer several suggestions to help ensure that the restoration program in the Gulf is designed to achieve maximum long-term benefit to the ecosystem and communities in the region.

(1) Restoration of the Gulf ecosystem will require a common vision and a comprehensive program to guide restoration efforts.

Restoration in the Gulf of Mexico must start with an understanding of how the ecosystem works and a shared vision of what comprises a restored and sustained Gulf ecosystem. To achieve that vision requires development and implementation of an integrated, strategic program to guide and coordinate restoration efforts. In the Gulf, that program must address not only injuries caused by the BP *Deepwater Horizon* oil disaster, but also the systemic, decades-long degradation of the Gulf ecosystem. The restoration program must embrace the whole Gulf ecosystem, from coasts and marshes under state jurisdictions to blue-water environments managed by the Federal Government.

To make the most of limited resources, all restoration projects in the Gulf—including those funded with early restoration money—must be part of the overarching restoration program. This will demand discipline. When funding is limited and money is on the table, there is a real temptation to use those funds for support of projects that have been languishing on the shelf, waiting for the availability of money. While I have no doubt that many of those projects are meritorious, if they are not part of an integrated, strategic suite of projects, they will not be effective tools in the pursuit of Gulf restoration. A haphazard assortment of unrelated efforts—however well intentioned—will not yield success. Setting aside differences and focusing on the disciplined implementation of an integrated restoration program will greatly enhance chances for success.

(2) Transparency and public involvement are critical to successful restoration.

Having served in government in many capacities and for many years, I know there is a tendency to think that we—as professional public servants—know best how to get the job done. It is critical, however, that restoration in the Gulf engage the public through a formal and recognized process that includes broad representation from communities and stakeholders in the region. No major decisions should be made—including allocation of funds for early restoration—without full engagement of the public in a process that is open, transparent, and consistent across the Gulf region. In the *Exxon Valdez* program we bent over backward to engage the public. At times it was difficult and even tedious, but in the end, it resulted in a better program, one in which the public was invested. Public engagement is critical to long-term success.

Part of public participation is sharing information with the public about what is being studied and learned in the course of the damage assessment. We learned the hard way in the *Exxon Valdez* program that not disclosing information about the harm caused by spilled oil fed the public's worst fears and left a legacy of bitterness about government secrecy.

Given the potential for NRDA-related litigation, we acknowledge the need for caution in what information is disclosed to the public, but Federal and state governments should do more to provide information in a way that is useful to and understandable by the public. We truly appreciate that the trustees are posting individual study designs approved by the governments and BP on the Internet, but what is lacking is a description of how these pieces fit together in an overall damage assessment plan and a summary-level glimpse of what is being learned. The former is essential if the public is to evaluate whether the right scientific work is underway. The latter is essential if we are to engage intelligently in restoration planning, including offering informed opinions about allocation of early restoration funds.

[26] *Id.* at 62,315.

Following the *Exxon Valdez*, Exxon and the governments had an adversarial relationship. Notwithstanding this fact, within 5 months of the *Exxon Valdez* oil spill, Federal and state trustees released a damage assessment plan with project descriptions and costs and invited public comment on their efforts.[27] A similar document was released annually until a settlement was achieved. This level of information sharing would seem appropriate following the BP *Deepwater Horizon* event, especially given that the relationship between the responsible party and the governments is far more cooperative.

(3) External, independent scientific peer review is vital.

Along with public participation, there is critical need to incorporate external, independent scientific peer review into the program from the very outset. We acknowledge and appreciate that the damage assessment involves consultation with and review by outside experts, but we urge the trustees to extend that approach to every aspect of the restoration program. The restoration program as a whole, and every restoration project—including those funded through early restoration—should be subjected to external review.

In the *Exxon Valdez* program, we contracted with a chief scientist who did not work for any government agency and was not associated with any requests for restoration funds. His job was to manage a peer review panel and provide independent advice to the Trustee Council's executive director and to the Trustee Council itself. The chief scientist and peer review panel examined every project funded by the Trustee Council, as well as the overall restoration plan itself. I am very proud of this effort and believe it vastly improved the quality of the work and the effectiveness of our restoration program.

(4) The restoration program and restoration projects must be guided by objective criteria and clear, measurable goals.

Finally, it is critical that both the restoration program as a whole and every project have clear, measureable goals. A series of objective criteria should be used to make decisions about funding. For NRDA-based restoration, these criteria should be the same across the Gulf region and be consistently applied, including early restoration projects. Having an appropriate set of criteria and measurable goals will not only improve decisions about which projects go forward, it will facilitate monitoring and evaluation during and after implementation. The sums of money potentially available for restoration are too large to have anything but the most rigorous approach to decisionmaking in order to enhance accountability and public trust. As a model, I have attached a set of guiding principles and criteria developed by Ocean Conservancy; these are based in part on policies adopted and implemented by the *Exxon Valdez* Oil Spill Trustee Council.

In short, successful restoration of the Gulf ecosystem will require a common vision of restoration, one that embraces the entire ecosystem, from coasts and marshes to the open water environments that stretch out beyond the shoreline. It will also demand the development and implementation of a comprehensive, integrated, Gulf-wide, science-based strategy and program. This program must be built on strong public participation and must incorporate external scientific peer review at every level. Finally, all restoration projects should have clear, measurable goals and be rigorously screened using objective criteria. Ten and twenty years down the road, when Congress asks the Government Accountability Office or the National Research Council to review the Gulf restoration program, we all hope they will conclude that these efforts resulted in tangible, lasting benefit for the Gulf ecosystem and hence its communities and economy.

D. Congress should support a long-term scientific research and monitoring program in the Gulf of Mexico, and should consider exporting the model to frontier areas such as the Arctic.

While I suspect that most people will agree that planning and design of restoration projects should be science-based, it is just as important that science is used to monitor and evaluate the results. To that end, we urge Congress to support the creation of a long-term scientific research and monitoring program to support restoration of and resource management in the Gulf of Mexico. In addition, we urge Congress to support a scientific research and monitoring program for the Arctic, so that we can make informed management decisions and avoid the type of degradation that has plagued the Gulf of Mexico.

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[27] *Exxon Valdez* Oil Spill Trustee Council, State/Federal Natural Resource Damage Assessment Plan for the *Exxon Valdez* Oil Spill, Juneau, Alaska (Aug. 1989).

(1) Congress should establish a long-term, permanently funded scientific research and monitoring program for the Gulf of Mexico.

Even in the absence of events like the BP oil disaster, the Gulf of Mexico ecosystem is in perpetual flux. Natural changes in oceanographic conditions, combined with chronic impacts from past and present human activities on land or at sea, affect habitat quantity and quality, as well as the abundance and distribution of marine life. Understanding change in the Gulf ecosystem—whether from natural or anthropogenic causes—requires long-term science and is essential to restoration, management, and conservation over the long term.

As discussed above, restoration of the Gulf ecosystem must be informed, supported, and evaluated by science. A robust, long-term science program must be in place from the outset. Such a program should take advantage of the work on BP oil-related impacts being carried out in the NRDA and by independent researchers, and should be designed to detect lingering or sublethal injuries that extend over many years. More broadly, a restoration science program should provide information to support the design and selection of ecosystem restoration projects, evaluate the effectiveness of those projects and the overall program, and facilitate adaptive management going forward.

The *Exxon Valdez* Oil Spill Trustee Council made an early decision to make a major investment of restoration funds in science, both to facilitate restoration of oil-spill injuries and to guide management and conservation efforts in the future. That investment in science continues more than 20 years after the oil spill. In addition, Congress established and endowed the North Pacific Research Board in Alaska as a source of competitive grants to support applied research that contributed to management and conservation of marine resources.[28] Research funded by the North Pacific Research Board has improved scientists' ability to forecast ecosystem changes, answered important questions about fish-habitat relationships, and led to more informed resource management decisions.

Drawing in part on the Alaska experience, members of the scientific and conservation communities have proposed versions of a permanent, endowed Gulf of Mexico Ecosystem Monitoring (GEM) program to supplement and extend beyond the restoration science carried out in connection with NRDA and Restoration Task Force programs in the Gulf. The GEM program should include and support an expanded, ongoing Ocean Observing System in the Gulf of Mexico so that ocean scientists can detect changes in the marine ecosystem and forecast the impacts of those changes on ecosystem productivity and fishery resources. We strongly recommend that Congress create a permanently-funded GEM program.

To fund a GEM program, Congress should segregate a portion of the Clean Water Act penalties associated with the BP *Deepwater Horizon* disaster into a separate account within the U.S. Treasury. It should dedicate the revenue stream from the earnings of that account, after adjusting for inflation, to the support of the GEM program and its ecosystem monitoring and research projects. Grants should be awarded on a competitive basis to academic institutions, marine research consortia, government agencies, and other appropriate entities with an emphasis on developing an integrated series of scientific research and monitoring projects over a long time horizon. To ensure an adequate level of continuing support, Congress should designate on the order of $1 billion of the Clean Water Act penalties for the separate GEM account. GEM grants should be administered by a decision-making board established and operated by a regional entity, such as the Gulf of Mexico Alliance, under the fiscal and administrative authority of the U.S. Department of Commerce. Members of the board should include stakeholders from the Gulf region, as well as representatives of key Federal and state agencies and academic institutions.

(2) Congress should act now to establish a long-term scientific research and monitoring program in the Arctic.

Establishing a long-term scientific research and monitoring program will support restoration efforts in the Gulf of Mexico in the wake of the BP *Deepwater Horizon* disaster and decades of systemic degradation. But there is no reason that development and implementation of a science plan should come about only after a region has been degraded or affected by a catastrophe. On the contrary, the best time to conduct scientific research and monitoring comes before an area is exposed to widespread industrial activity and its attendant risks. This allows scientists to establish an accurate baseline that can help guide management decisions, including decisions about whether, when, where, and how to pursue oil and gas operations.

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[28] P.L. 105–83, § 401(e), 111 Stat. 66–67 (Nov. 14, 1997); *codified* at 43 U.S.C. 1474d(e).

With warming temperatures, decreasing seasonal ice, and advancing technology, the Arctic is becoming more accessible to commercial and industrial users. Ship traffic is already on the rise, and the oil and gas industry is anxious to explore the region. But the Arctic is a challenging area in which to operate, and its environment is particularly fragile. Moreover, the Arctic is not well understood, and there are significant gaps in our knowledge of this rapidly changing ecosystem.[29] In short, we need to act now to ensure that we have the baseline scientific data that will allow us to make informed management decisions and no-regrets choices about industrial activities in the region. To that end, we urge Congress to support the immediate development and implementation of a long-term, comprehensive, integrated science program for the Arctic.

IV. Conclusion

Ocean Conservancy recognizes that the United States must continue to develop energy sources needed to sustain and promote economic growth and support our social needs. But the catastrophe in the Gulf of Mexico shows that we must learn to do so in ways that are safe for energy workers and that allow us to maintain a healthy environment for this and future generations.

ATTACHMENT

Ocean Conservancy

PRINCIPLES FOR EFFECTIVE RESTORATION AND CRITERIA FOR SELECTING AND FUNDING RESTORATION PROJECTS

Principles for Effective Restoration

The principles below are intended to guide development of restoration decision-making structures, processes, and plans, to measure their sufficiency, and to enhance their accountability:

Sound Management

- Efficient, transparent, responsive, and accountable to the public;
- Active, full participation by relevant Federal entities and all Gulf states, individually and collectively, over time;
- A formal and recognized process that engages the public, including broad representation from regional communities and stakeholders;
- Commitment by Federal and state partners to incorporate local and traditional knowledge in management decisions;
- Coordination between the Natural Resources Damage Assessment and Restoration process (NRDA) conducted in response to the BP oil disaster and the broader restoration planning functions of Gulf Coast Ecosystem Restoration Task Force; and
- A comprehensive science-based ecosystem restoration strategy—resting on a clear vision for a healthy Gulf ecosystem—and supplemented by annual work plans, progress reports, and periodic requests for project proposals.

Stable and Coordinated Funding

- Coordination of projects from funds allocated from various revenue sources (to ensure that projects are consistent, complementary and not duplicative);
- Predictable funding streams, consistent from year to year, and sustained over the long-term;
- Funding levels commensurate with the magnitude of the restoration goals; and
- Endowment established to permanently support the research and monitoring needed to assess the health of the Gulf, evaluate the efficacy of restoration measures, and facilitate adaptive management.

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[29] *See generally* Holland-Bartels, Leslie, and Brenda Pierce, eds., An evaluation of the science needs to inform decisions on Outer Continental Shelf energy development in the Chukchi and Beaufort Seas, Alaska: U.S. Geological Survey Circular 1370 (2011); Coastal Response Research Center, Natural Resources Damage Assessment (NRDA) in Arctic Waters: The Dialogue Begins, Univ. of New Hampshire (2010). *See also* National Commission at 303 (recognizing that "scientific research on the ecosystems of the Arctic is difficult and expensive. Good information exists for only a few species, and even for those, just for certain times of the year or in certain areas.").

- Funds provided by the parties responsible for the oil disaster under the Oil Pollution Act of 1990, Clean Water Act, and other sources, such as the Migratory Bird Treaty Act and Endangered Species Act; and
- Additional funds contributed by the private sector for matching or leveraging restoration funds provided by state and federal governments.

Prudent Project Selection

- Established criteria clearly link projects to specific, measurable, feasible objectives;
- Projects subject to independent scientific peer review in selection and evaluation processes; and
- Projects coordinated and integrated projects within the framework of a comprehensive ecosystem restoration strategy.

Stewardship

- Restoration and enhancement of the Gulf of Mexico ecosystem from coastal to open blue-water environments;
- Habitat protection and enhancement that provide long-term resiliency and sustainability for coastal communities;
- Rehabilitation of degraded natural resources and ecosystem services that provide sustainable economic opportunity and human uses.

Sentinel System for the Future

- Monitoring and management systems in place to identify and address lingering injury from BP oil and evaluate effectiveness of restoration projects and make necessary adjustments based on performance in achieving goals; and
- Permanent "take the pulse of the Gulf" science program to track ecosystem health, identify emerging problems, and facilitate solutions.

Criteria for Selecting and Funding Restoration Projects

As restoration moves from planning to implementation, there will be a myriad of proposals for projects on which to spend restoration funds. The ultimate success of these projects—which must be measured by the health and resilience of the ecosystem—rests on selection, implementation, and evaluation of a series of integrated projects, consistent with a Gulf-wide plan, and rigorous application of criteria to ensure that only the best and most appropriate projects are funded. The restoration program that emerges should take a comprehensive, integrated ecosystem approach and should strive for restoration that is greater than the sum of individual projects. This is no easy task, and criteria can be structured to emphasize different goals and values. The criteria described below can be applied at the strategic level, as well as at the level of individual projects.

The following criteria, based in part on those developed and tested by the *Exxon Valdez* Oil Spill Trustee Council, are recommended for guiding project selection for Gulf restoration related to injuries or losses caused by the BP disaster or long-term environmental degradation:

- Restoration will contribute to a healthy, productive and biologically diverse coastal and marine ecosystem that supports the services necessary for the people who live or work in the area.
- Restoration uses an ecosystem approach based on an understanding of factors that control the populations of species or condition of habitats found in coastal and marine areas.
- Priority will be given to restoration projects that facilitate recovery of injured natural resources and lost services by addressing systemic problems facing the ecosystem, including historical degradation.
- Priority will be given to restoration of natural resources and ecosystem services that have economic, cultural and subsistence value to people living or working along the Gulf coast and that bring long-term benefit to multiple species.
- Possible unintended negative effects on non-target resources and services must be assessed in considering restoration projects.
- Competitive, innovative and cost-effective proposals for restoration projects will be encouraged.
- Restoration priorities and activities will be re-evaluated as information on the extent and significance of injury to natural resources is obtained from the Natural Resource Damage Assessment and from other scientific sources.

- Restoration activities should state a clear, measurable and achievable endpoint.
- Priority will be given to activities that involve multi-disciplinary, interagency or collaborative partnerships.
- Restoration activities will be subject to independent scientific review before approval.
- Restoration must include meaningful public participation at all levels—planning, project design, implementation and review.
- Restoration must reflect public ownership of the process by timely release and reasonable access to information and data.
- Long-term monitoring programs and decision support tools shall be established to assess performance of restoration activities, allow for adaptive management and measure the health of the Gulf ecosystem.

Senator BEGICH. Thank you, Mr. Ayers.

What I'll do—Senator Rubio, I'm going to do 7 minutes on, because we're the only two here, so I'll allow you up at 7 minutes. I'll let you go first, and then I'll finish up.

STATEMENT OF HON. MARCO RUBIO,
U.S. SENATOR FROM FLORIDA

Senator RUBIO. Thank you. And I'm not sure I'll need the full 7 minutes.

Senator BEGICH. OK.

Senator RUBIO. But I appreciate that. Thank you for having the hearing.

And, thank you all for being a part of it.

Commissioner Robinson, it's great to see you. I was in northwest Florida last week, and the Small Business Committee allowed us to do a field hearing on the spill.

I have a couple, three separate questions, and I think they can all be promptly answered. The first is one the concerns I kept hearing, which I guess I had heard before, but was really articulated to me in way that maybe I hadn't thought about as deeply before, is, there's this real concern in the Gulf region that, the spill happened, but that the full impact of it may not be known for years, in essence. That people get there, they look around, they,—it's good news, you know. There's no oil on the sand, and so forth. But, in fact, there's a bunch of oil still unaccounted for. It's out there somewhere, and its impact may be delayed. And I heard a lot of concern from folks about that.

In particular, their concern was that we were going to set up a response process, be it, you know, through the Clean Water Act, the fines, that a few years from now, if there is some delayed impact, there won't be any funds or mechanism in place for that. In essence, there'll be a gap between the response this year and the impact that may be felt years down the road.

I don't know if there's any thoughts on that you will share with us. But, it's certainty something that, a line that I'm going to be pursuing up here as we move forward on that process.

Senator BEGICH. Who would like to respond to that?

Mr. MILITO. Absolutely. You can have a chronic undermining of the strength of an ecosystem, and then have a dramatic event like a hurricane that will reveal it. But, the hurricane only comes every 15 years in that area.

So, absolutely, there can be delayed responses, and they're just not obvious to the eye because they're happening—for example, on

the marsh they're happening below ground, which you don't look at.

Mr. AYERS. I think there's two separate issues that we really ought to address, that we learned from the *Exxon Valdez*. And let me say, we were 18 months into it before I realized the situation along with our science advisors.

The first is that it's imperative that as soon as possible there is a monitoring observation and research program that's established. We did that, but only 18 months after we began the program. But, that research monitoring program is still in operation in Alaska today, and it's a separate account like the one I suggested be set up, which is a full monitoring observation research program.

The second is the issue that you're referring to, Senator, and that is, in Alaska there are still places in Prince William Sound, in the community around Cordova and Valdez and Chenega, and other places where oil is still found. There are still storms that churn up those hydrocarbons. And I think that will continue to be the case in the Gulf of Mexico for many years to come.

Senator RUBIO. My second observation is kind of a new issue, and I don't know what perception you'll have about it. It's really related specifically, again, to the Gulf. It's, Cuba has recently announced that it is going to begin to explore off its coast. And from the science that I have been shown, a spill in one of those sites would be even more catastrophic than what happened, based on the currents and the way it would take it. I think they'd only be, like, 40 miles or 50 miles away from the Florida Keys—so, much closer than even what happened with the recent oil spill.

Are there any recommendations you have about how to deal with a foreign drilling operation like that, in terms of what we can do? Because ultimately, if there is a spill, say, in a Cuban operation, its impact would be fully felt by the entire Gulf region—actually, the entire Eastern Seaboard potentially. But, there is not a lot we can do about it. It's their territorial waters.

Has any work ever been done on that? Is there a, good examples of transnational cooperation? And I'll leave that one out there.

Real quickly, I just want to reaffirm what the commissioner said about the Florida based response. We're very proud of our emergency response operations in the state. And I hope, moving forward, that we have response mechanisms, not just for oil spills, but, in general, that recognize that the people on the ground who deal on a daily basis with the geography and topography of a certain area know a lot better than some—with all due respect—you know, well-intentioned scientists far away who think they have a better idea. I just wanted to echo that, because those were very strong comments, and——

Mr. ROBINSON. Senator Rubio, if I could, I would—and thank you. And I apologize that we missed you. We wanted to come testify but we were doing redistricting, so you know how long sometimes that takes.

But, I think it is important, just what you said. And the fact that we need to be at the table, Florida and its individual counties need to be at the table if something happens regarding response. Clearly, we were 110 miles away in Escambia County from the *Deepwater Horizon* well and it did not prevent us from having impacts.

So, clearly, when it comes to response, I think there is something in here that. I've had, I was just in Portland with other counties, and there's a lot of comments that, again, in some places it worked well, and that is when they engaged the locals.

By the comments we heard from some of Senator Begich's constituents in Alaska, there were people from Montana with the Yellowstone, there are other places on the Gulf that did not have that same experience. If we go ahead and say now that you have to include those local governmental authorities so that they can engage the process and begin response immediately, I think that is going to be important to continuing to help at least coordinate that response. Because we are all very concerned about what happens if we don't have a responsible party.

Senator RUBIO. And as far as the other countries, like, the particular issue of Cuba is very concerning. I think Repsol's one of the companies. There are some other companies we don't know a lot about that are talking about being a part of it. We don't know what safety standards they would have.

My point being, a spill there would have just as disastrous an impact, as disastrous, if not more, as the one that already occurred, but our ability to influence it is a lot less. Is there any thought, is there any model we would follow, is there any precedent——

Mr. AYERS. Mr. Chairman, Senator Rubio, this committee has led the way with regard to fisheries and taking major standards, or, important standards of this country into the international arena, both in terms of action policy, and even legislation, and a recent senate joint resolution. And certainly, it's my view that that ultimately is what's going to have to happen, including with Senator Cantwell's concern over shipping, although it is governed by the IMO, the International Maritime Organization.

But, it, the standards for off-shore drilling, it's first matter of this country, and I won't repeat my suggestions, but those standards are really the beginning of a discussion that ought to go into the international arena, and we have done that with Fisheries in many ways, from drift nets to bottom trawling. And certainly, the State Department and NOAA and the Coast Guard have been very involved, and I have worked with them.

Senator RUBIO. And I have exhausted my time.

My only point I would like to raise for further discussion at some point—I don't think we have the time to do it today, and quite frankly, it wasn't the sole focus of this hearing. But, at some point, especially if it's companies that are doing business here, in this country, and you are dealing with nations that perhaps aren't following the same safety standards, I'd like to figure out a way where we can create some leverage there, because a spill in one of these places would be deeply disastrous as much as anywhere else. And so, I hope we'll be able to have those conversations in the future.

Senator BEGICH. Thank you very much, Senator Rubio.

And actually, that is a really good point. As you were talking, I was just thinking that many of those same companies do business in Federal waters and State waters and Federal lands, and you never know if, maybe there's opportunity through our lease agree-

ments that we have, what opportunity we have. So, it's a good question.

And Mr. Ayers brought up a good point on fisheries—especially out of this committee, they have done international activities that have created international standards. So, it's a good question, it's a good point for later down the road, too. Thank you.

Let me, Mr. Robinson, if I could follow up. Because I think your response to Senator Rubio intrigued me because some of the work we are doing in Alaska, and let me just ask you—last year we had a piece of legislation called the Shore Act that we were moving through. It created a Gulf Citizen's Advisory Council similar to what we would have, what we have in Prince William Sound, what we have in Cooks Inlet, where citizens are engaged. They're not regulatory, but they are advisory in early stages of prevention and other things, as well as monitoring a lot of activities.

Is that an avenue or something that would be a positive step? I know in the legislation we had last year, we had that in there, and it seemed like you know, it's always, we do these after spills, that is the problem. You know, we always, that is why we are advocating one for the Arctic before we develop the Arctic——

Mr. ROBINSON. And thank you, Mr. Chairman.

I think it is—I think the National Association of Counties, we took a strong advocacy asking all of you and Congress to look at, including local governments, and it was, while several of us around the Gulf back here were in Washington in March, and it was actually a commissioner from Alaska who stepped up and said, "Everything you said was our exact experience." And clearly, we didn't learn how to engage the locals there. So, I think the more you can do that, the better.

I think it's—certainly that is a starting point, but I think when the response actually happens, when the problem occurs, at some point or another, the local government has to be brought in in a better way than we were, just sitting on the sidelines. And that was a very difficult process for us to go through, seeing things that we knew and we tried to advocate. And there are certainly things as I said, I wouldn't know where to begin and either the Pacific or the Arctic in Alaska. But, surely, I know there are people who are your constituents that do know how to do that.

And I think somewhere or another they need to be engaged in the process, certainly, as I said, in planning, as well as coordination, communication and implementation.

Senator BEGICH. Very good. Thank you.

Jim, let me ask you a question or two in regards to Clean Water penalties and how to utilize them. I know that is going to be one of the big issues that we deal with, how do we put that money into work?

I think you heard Senator Rubio talk a little bit about how to monitor, and you have indicated and others have indicated that. Can you talk, just give me your thoughts? I know the legislation, you know, one of the thoughts is try to do an 80–20 split, 80 percent for the Gulf and some of the things they need, and then 20 percent set aside for other activities which could include Arctic scientific work and others. But, how would you see if there was an

80–20 split, where that 20 percent could end up in regards to the rest of the oceans or waterways within the United States?

Mr. AYERS. Certainly. Thank you, Mr. Chairman.

As we all know, any time we are discussing the distribution of funds these days, it's fraught with peril.

Senator BEGICH. That is why I'm giving you the question.

[Laughter.]

Mr. AYERS. Thank you very much, Mr. Chairman, and I appreciate it.

Senator BEGICH. I'm here to help.

Mr. AYERS. As am I. Senator, it's certainly my view that—and the Ocean Conservancy strongly supports Senator Rockefeller's bill and the use of the Clean Water Act penalties toward the 80 percent dedicated toward the Gulf, and certainly the idea of having a portion of that be used for the long-term monitoring and observation and research is in my mind a tremendous step forward with regard to a true commitment to ensuring the Gulf of Mexico.

With regard to the balance of funds, I certainly wouldn't speak for, or haven't in a long time, except with regard to escort tugs, speak for the oil industry. We see eye to eye, I think, on escort tug issues in Alaska.

But, with regard to the use of other funds that are going into the Oil Spill Liability and Trust Fund, those funds are, originate as a fee, or a tax if you will. Originally, each barrel of oil is taxed, and that discussion came up in OPA 1990, and actually, the State of Alaska has a per barrel fee. Those are public resources and they are owned by the public. And that discussion went on 20-something years ago. And those funds, that fee per barrel, is there for oil spill, various liabilities, and is to be used as investments to deal with oil spill issues.

Clean Water Act penalties are, of course a penalty, unlike, in my view, the oil spill per barrel tax, which I suggested an increase on earlier, to be clear. But, those dollars, in my view, ought to, not to go into the Oil Spill and Liability Trust Fund, but be used, in fact, for those areas in large marine ecosystems where the industry intends to go conduct offshore business.

So, with regard to your question, specifically, my view is that 20 percent ought to be used in those areas where the industry is excited and proposing to do offshore business, and that money ought to be used to, in fact, put in place the kind of infrastructures of monitoring and observation and research that I'm talking about. And if they are headed to the arctic, my view is, some funds, it makes no sense to me at all to relieve the Oil Spill Liability and Trust Fund tax because you are paying a penalty. And remember, there is a cap on the Oil Spill and Liability Trust Fund, so if you put them in there, the caps raise, so you actually are giving some money back, so you ought to just write the oil companies a check.

So, my view is you ought to invest those funds, sir, not, and deposit in the oil spill trust—and if they are headed to the Arctic, we all know that we have a tremendous gap in monitoring observation and research, and a tremendous gap in response, according to NOAA, and the Coast Guard, who was just here.

Senator BEGICH. Very good, let me——

Mr. AYERS. Thanks. Sorry to eat up your——

Senator BEGICH. Not a problem.

Let me ask another quick question, and then Mr. Milito, I will have two quick questions for you.

But, Jim, last question—Citizen's Advisory Council for Arctic. Your, has your organization taken a position on that?

Mr. AYERS. Citizen's Advisory Council for the Arctic, in my view—and I'm sure, and my work with the Ocean Conservancy, Center and other people that have worked with the Citizen's Advisory Committee have found them very helpful.

They are awkward. It's not easy to involve the public. It's not easy to be transparent. But certainly, we support a Citizen's Advisory Committee, we think it's very important, certainly, we have worked very closely with the North Slope Borough, and tribes, and they ought to be at the table in the discussion of what is happening in that ecosystem.

Senator BEGICH. Very good.

Mr. Milito, you heard me ask a question earlier to NOAA in regards to this kind of new or enhanced relationship between NOAA and BOEMRE in regards to decisions or that, you know, the process that will go forward in regards to oil and gas leasing, and OCS.

Can you give me, from the industry standpoint, even though it's in a new process, how has that been working? Or is it too new? What's your thoughts?

Mr. MILITO. I think at this point, it's too new to form an opinion on it. I will say that under the Outer Continental Shelf Lands Act, there have been opportunities, and it is an option for all Federal agencies to be engaged in the process, whether it's the 5-year leasing plan, the actual lease, or the permitting process. So, this formalizes it to some degree, and I think it actually lays out the steps in which NOAA will be able to insert itself. But, in talking to the BOEMRE staff, even they believe it's too early to comment and provide an opinion on that.

Senator BEGICH. OK. Can you tell me, you know—and I will be very Alaska-centric here for a second in regards to the Arctic and the Arctic development—can you give me, from the industry standpoint, how, you have heard a lot of the issues that are out there, both from industry, or, from independent individuals, as well as organizations and senators, of the concern they have is we move forward and what kind of development may occur there.

Give me your two bits on, kind of, how you see the industry respond to that, which is different than, in a lot of ways, the Gulf. They are different environments, different depths, different pressure, a variety of other differences, let alone the climate. Can you give me some thoughts on that?

Mr. MILITO. Well, we are obviously seeing a very tailored planning process for activities in the Arctic. At this point, we are really just looking at the Shell model, and Shell is going out of its way to not only meet the regulations, but to go beyond the regulations in terms of having the vessels and the personnel onsite in the event that there would be any type of blowout-type incident, and, as well as having the actual prevention measures in place for that Arctic environment. So, the exploration plan and the permits associated with it, the spill response plans, are very tailored and very robust for those purposes.

I think you know, we have seen a lot of hold ups in the process, whether it's through the permitting at the BOEMRE level or through the EPA, but it looks like we are getting past all that and all those questions are being resolved. So, it's going to be a matter of looking forward to very select drilling that will occur—and we are not talking about punching holes, multiple holes in that Arctic environment. We are talking about a very isolated number of wells that are being planned, and being allowed to move those forward to just explore to see what is there. So, you know, we are hopeful that this is going to move forward given the tremendous investment that that brings, and also the opportunity to maybe help shore up TAPS as an ongoing resource for the country and for Alaska.

So, there's tremendous benefit to it, and we think that we have a strong system in place based upon the tailored way that this activity is being addressed.

Senator BEGICH. And just for those that are listening, TAPS is the Trans-Alaska Pipeline——

Mr. MILITO. I apologize.

Senator BEGICH.—which, the volume is decreasing rapidly every day.

Last question for the panel, and again, Mr. Milito, if I can ask you to follow up on Senator Rubio's concern, and I think Senator Nelson's concern, about Cuba, how, the proximity, the lack of jurisdiction we have, and more than likely, the inability for us to have a government relationship with Cuba for many reasons. We are still in for 40 plus years. But, put that aside.

Do you think industry folks, recognizing that as an issue and, you know, I don't know the details of it as much as the senators from Florida. But recognizing—and let's assume for a moment, for this discussion, it is a significant issue of concern if there is a spill there. Do you think the industry would be proactive in trying to figure out what kind of relationship, for example, I'll just use one example that's just kind of going through my mind that, for example, if there is a company doing offshore development in Cuba, that they would allow U.S. inspectors to review those platforms and facilities for standards? I'm throwing that out. I'm not asking you for a definitive answer. But, to be proactive, rather than waiting for something to happen, that, to be very frank with you, from someone from an oil and gas state, if something goes wrong in Cuba and it comes to Florida, it's going to have a ripple effect to the industry throughout the country, in a negative way.

So, do you think there's a proactive opportunity here, rather than waiting for something that could happen in the wrong direction?

Mr. MILITO. You know, the industry looks at its operations internationally, and we've seen all the standards that are being, created here, being shared with those in Europe and around the world, and vice versa. And even through the Department of Interior, we've seen ministerial forms put together. We've brought industry folks to participate in those 4-hour—all the regulators from around the world get together to discuss this. And the problem is, you know, very obviously, that Cuba's not at the table. We've seen Interior reach out to Mexico and have a dialogue with them.

And the industry fully supports trying to create consistency, because it doesn't make sense to go from one region to another and operate, not to have different standards in place.

So, I think there could be an opportunity there. I can't give you a definitive answer, but it would make sense, given that, those companies operating in Cuba, many of which are operating in the Gulf of Mexico. So, that might be a good opportunity to try to make sure we have consistency, and perhaps, ways to make sure that the capabilities that the U.S. has in the Gulf can be deployed to assist in those types of responses.

Senator BEGICH. Would you mind discussing with your association maybe a formal response to that question? You can address it to the Committee, and we'll all share it with the Senators from Florida. But, I, the thought would be, what is the proactive role here that we should be taking from our end, but also from, then, the industry's end prior to those kind of developments occurring, that we will—You know, Cuba will not come to the table. That's a——

Mr. MILITO. Right.

Senator BEGICH.—guarantee at this point. And so, what do we do to ensure that we have the best standards, even though maybe Cuba doesn't have those standards. But, how do we ensure the companies that do business there have the best standards, so if there's an impact it's, you know, we're prepared for it. Would that be acceptable to you, to ask your association for kind of a formal response to that?

Mr. MILITO. Yes, we'll go back and run that through.

[The information referred to follows:]

August 3, 2011

Hon. MARK BEGICH, Chairman,
U.S. Senate Committee on Commerce, Science, and Transportation,
Subcommittee on Oceans, Atmosphere, Fisheries, and Coast Guard,
Washington, DC.

Honorable Chairman Begich,

On July 20, 2011, I had the privilege of testifying before the Subcommittee on Oceans, Atmosphere, Fisheries, and Coast Guard during the hearing entitled, "Looking to the Future: Lessons in Prevention, Response and Restoration from the Gulf Oil Spill." During the hearing, you requested that API provide a response to the following question:

- Please provide a response to the Committee on the ability of the U.S. oil and gas industry to assist companies operating in Cuban waters in the prevention of, or response to, a potential oil spill from offshore drilling operations.

We respectfully provide the following response to the Subcommittee:

Unfortunately, due to the laws in place related to U.S. entities doing business with Cuba, the U.S. oil and gas industry is restricted in its ability to assist Cuban operators in prevention and response activities. Effective spill prevention and management requires: (1) prevention by incorporating industry best safety practices and proactive planning, (2) immediate response plans for capping and containment, including purchasing and setting aside any equipment which could be necessary and making plans for emergency delivery, and (3) long-term response plans for oil cleanup. Current U.S. sanctions prohibit U.S. firms from entering into agreements with contractors operating in Cuban waters for safety assistance on drilling projects.

Additionally, capping and containment requires manufacturing and setting aside equipment sufficient for an immediate emergency response to a particular offshore project. U.S. firms would not be permitted to do this at this time. Finally, in the event of a spill, U.S. firms would not likely be able to engage in spill cleanup in Cuban waters, since such activity would require cooperation with the drilling contractor operating in Cuban waters, as well as individual Cubans. Current sanctions

law does include an exception under which the U.S. Department of the Treasury is permitted to issue a specific license to firms requesting to do business with Cuban entities. However, this exception is rarely utilized and there are significant contractual and liability issues associated with seeking a license to engage in contracts with Cuban offshore operators.

Despite the restrictions in place under U.S. sanctions law, the U.S. oil and gas industry works constantly and diligently to create and maintain standardization of operations on a global basis. Offshore operators, drilling contractors, and service/supply companies are active internationally, and both safety and business concerns continue to drive the industry to achieve consistency throughout the world. API, the International Association of Drilling Contractors (IADC), the International Organization for Standardization (ISO), the International Oil and Gas Producers Association (OGP), and the International Petroleum Industry Environmental Conservation Association (IPIECA) all work individually and in coordination with each other and other groups to create global consistency in oil and gas operations.

Beginning with its first standard in 1924, API now maintains over 600 standards covering all segments of the oil and natural gas industry. API produces standards, recommended practices, specifications, codes and technical publications that cover all parts of the industry and its standards program is accredited by the American National Standards Institute. To provide just a few examples, for offshore exploration and production, API publications cover offshore structures and floating production systems, tubular goods (*i.e.,* casing, drill pipe), cementing practices, subsurface safety valves and wellhead equipment, and blowout preventers. Many API standards are being used by ISO as the basis for international standards. API is directly responsible for the administration of three major ISO subcommittees responsible for developing ISO oil and gas standards. Due to API's involvement in these committees, approximately 70 percent of all ISO exploration and production standards are based on API standards.

Currently, API is developing Recommended Practice 96, which will help improve deepwater well design and installation practices, and Bulletin 97, a joint effort with IADC, intended to help link the safety system of the drilling contractor with the safety system of the lease operator. API is also updating its standard 53 on blowout preventers. API staff and members of the standards committees coordinate these efforts with OGP so that we are integrating efforts on an international basis. Furthermore, in addition to some 100 API standards incorporated in the U.S. Code of Federal Regulations, API standards are the most widely cited standards by international regulators. A recent study by OGP on the use of standards by international regulators found, through 14 oil producing regions, that "API standards are dominating, with 225 references."

In addition to international standardization, the industry has a strong global program in place to ensure quality in the design and manufacture of industry equipment and materials. API publishes dozens of specifications that standardize the requirements for the design and manufacture of equipment, and API's Monogram Program provides a system for the manufacturers of this equipment to obtain a certification, or "monogram," of quality assurance. In order to receive the monogram, a manufacturer must have an approved quality management system in place and must demonstrate the continued ability to meet the technical requirements identified in the applicable API product specification(s). API's Monogram Program is worldwide, with nearly 4000 certified manufacturers in 76 countries. Eighty percent of the monograms are issued outside of the U.S. Purchasers of industry equipment around the globe rely upon the program in the purchase of high-quality, reliable equipment.

With regard to spill response, the U.S. oil and gas industry relies upon the utilization of the resources and capabilities of Oil Spill Response Organizations, or OSROs, in order to effectively respond to an offshore spill. OSROs are active around the world, including in the Latin American region. In addition, oil spill response research is coordinated closely through the various organizations identified above, so that the underlying data and the associate capabilities to respond are understood and developed with consistency around the world. For example, API has initiated a review of such issues such as dispersant use, in-situ burning, and mechanical recovery. This review effort involves both U.S. and international stakeholders, and we are coordinating closely with the international oil and gas organizations. Furthermore, both OGP and IPIECA are very active in addressing issues related to spill response at the international level.

In conclusion, while the U.S. oil and gas industry remains limited in its ability to assist companies operating in Cuban waters due to current sanctions laws, the industry has been committed to enhancing operations around the world through international standardization, research, coordination, and information sharing.

Please feel free to contact API should you have any further questions. We greatly appreciated the opportunity to appear before you and the subcommittee on this critical topic, and the industry remains steadfast in its commitment to operate safely and in an environmentally responsible manner.

Sincerely,

ERIK MILITO

Senator BEGICH. Great. Thank you very much.

Let me thank the panel in total. Again, thank you very much. And, again, there are some additional questions that members have already submitted that you'll see, and I hope you can respond to those.

Let me just check with staff and make sure I have to do anything official here. The record will be kept open for the next 2 weeks for additional questions that will be submitted, and then responded to.

Again, thank you all for participating.

At this time the hearing is adjourned.

[Whereupon, at 4:33 p.m. the hearing was adjourned.]

A P P E N D I X

RESPONSE TO WRITTEN QUESTION SUBMITTED BY HON. JOHN D. ROCKEFELLER IV TO DAVID M. KENNEDY

Question. The Department of Justice, working with NRDA Trustees, secured an agreement from BP to provide the early release of $1 billion in funding toward restoration projects in the Gulf of Mexico. While that initial step was commendable, most experts agree that restoration from the spill will take many years, and that there is a need for long-term monitoring and assessment. Questions remain about how best to establish the needed sideboards that will guide the restoration effort in the years to come. Mr. Kennedy, as you're aware, this Committee has sought to advance the SHORE Act, legislation that would provide agencies, coastal states, and stakeholders with the resources needed to better prevent spills in the future, and to ensure the long-term restoration of the Gulf. We are currently working to update that legislation. What advice do you have for the Committee as we seek to update the legislation to help guide the long-term Gulf restoration effort?

Answer. While we support many of the provisions in subtitle A, the Administration requires greater flexibility in supporting new programs and additional activities in light of its fiscal constraints. In addition, some of the provisions appear to create inconsistencies in the treatment of agencies under the Oil Pollution Act of 1990 and others could hamper efficient and effective implementation of the law.

In October 2011, the Gulf Coast Ecosystem Restoration Task Force, established by Presidential Executive Order 13554 on October 5, 2010, is to release a Preliminary Gulf of Mexico Regional Ecosystem Restoration Strategy (Preliminary Strategy). This Preliminary Strategy will outline Gulf Coast ecosystem restoration agenda, including goals for ecosystem restoration. The Preliminary Strategy is to identify monitoring, research, and scientific assessments needed to support decisionmaking for ecosystem restoration efforts and evaluate existing monitoring programs and gaps in current data collection. Given the focus of the Task Force, the Preliminary Strategy may include recommendations that the Senate Commerce Committee may wish to include in a revamped SHORE Act.

In addition, as the Committee updates the legislation, NOAA suggests visiting the recommendations from the President's National Commission on the BP *Deepwater Horizon* Oil Spill and Offshore Drilling report and recommendations released January 11, 2011 (*http://www.oilspillcommission.gov/final-report*). Many of the recommendations relevant to NOAA were included in the SHORE Act. The Commission was charged with determining the causes of the disaster, and providing recommendations to improve the country's ability to respond to spills, and reforms to make offshore energy production safer.

NOAA appreciates the opportunity to work with Congress on the legislation as it moves forward in the 112th Congress.

RESPONSE TO WRITTEN QUESTION SUBMITTED BY HON. MARK BEGICH TO DAVID M. KENNEDY

Question. The Outer Continental Shelf lands Act (OCSLA) has a provision directing the Department of Interior to utilize NOAA science to support decisionmaking and even authorizes NOAA to bill them. Since *Deepwater Horizon,* NOAA and BOEMRE have established a Memorandum of Understanding (MOU) to better facilitate coordination and collaboration between the agencies to ensure that decisionmaking relating to outer continental shelf energy resources is based on updated science and the expertise of both agencies. NOAA has in the past cited capacity limitations as a primary impediment to the ability to provide relevant scientific input to the Department of Interior. Since the MOU was established, has the Department of Interior utilized its existing authority under OCSLA to fund any of NOAA's scientific efforts in support of improving offshore energy decisionmaking?

Answer. Since the signing of the Memorandum of Understanding, on May 19, 2011, NOAA has not entered into any new financial agreements with BOEMRE for its implementation. However, NOAA and BOEMRE have collaborated on the scientific review of multiple BOEMRE documents since May, including National Environmental Policy Act (NEPA) documents and an analysis of the potential impacts of a very large oil spill in the Arctic.

NOAA has historically received funding for specific research projects, many of which are ongoing, relevant to offshore oil and gas activities through the BOEMRE Environmental Studies Program. For example, NMFS has been working productively with BOEMRE/MMS in the Alaska region on science relevant to living marine resources, including several successful scientific projects addressing high priority research topics. A large portion of the research supported by BOEMRE in recent years in Alaska has been focused on research topics of highest priority to BOEMRE, including improved information on marine mammal distribution and movements in lease sale areas. In addition to ongoing studies, NMFS has identified numerous data gaps that are critical to NMFS managers that would complement and strengthen the information produced by current and past environmental studies.

NOAA looks forward to continuing to work with BOEMRE under the MOU to ensure that high priority needs of mutual concern to both agencies will be addressed.

RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. JOHN D. ROCKEFELLER IV TO ERIK MILITO

Question 1. Going forward, do you think we need greater consultation and coordination between agencies like BOEMRE and NOAA on OCS decision-making, particularly as it relates to identifying areas that should be excluded from lease sales due to their high ecological importance and sensitivity?

Answer. NOAA, the Coast Guard and other agencies have been very active in the planning and leasing processes for offshore oil and gas development and have played a significant role in this process. In fact, BOEMRE relies largely upon data produced and provided by NOAA in completing its analysis of the environmental sensitivities of the various planning areas, which is a statutory requirement in the planning process.

The interagency consultation and coordination that exists between Federal agencies is a result of the existing regulatory framework implemented pursuant to the Outer Continental Shelf Lands Act (OCSLA). The OCSLA provides multiple opportunities for engagement among BOEMRE, other Federal agencies, and state/local governments so that environmental, ecological and socioeconomic issues are effectively considered and addressed.

With regard to the development of a proposed leasing program (Five-Year Program), Section 18 of the OCSLA states "the Secretary *shall* invite and consider suggestions for such program from any interested Federal agency, including the Attorney General, in consultation with the Federal Trade Commission, and from the Governor of any State which may become an affected State under such proposed program." Section 18 further states, "The heads of all Federal departments and agencies *shall* provide the Secretary [of the Department of the Interior] with any nonprivileged or nonproprietary information he requests to assist him in preparing the leasing program and may provide the Secretary with any privileged or proprietary information he requests to assist him in preparing the leasing program. . . . In addition, the Secretary *shall* utilize the existing capabilities and resources of such Federal departments and agencies by appropriate agreement." (emphasis added)

But the requirement to consult and coordinate with other agencies is much broader than the Five-Year Program. Section 5 of the OCSLA quite simply states, "[i]n the enforcement of safety, environmental, and conservation laws and regulations, the Secretary *shall* cooperate with the relevant departments and agencies of the Federal Government and of the affected States." (emphasis added)

Thus, based upon the plain language of the OCSLA, the existing framework provides for, and in many cases mandates, opportunities for interagency engagement. To that end, NOAA and other agencies have consistently participated in the process, by providing important information for consideration, by providing comments to BOEMRE and by coordinating key decisions with BOEMRE. A review of the 2007–2012 Proposed Final OCS Leasing Program, the Revised 2007–2012 Final OCS Leasing Program, the 2007–2012 Multi-Sale Gulf of Mexico Final Environmental Impact Statement, Final Environmental Impact Statement for Chukchi Lease Sale 193, and the recently completed Final Environmental Impact Statement for Gulf of Mexico Lease Sale 218 in the Western Planning Area demonstrate that NOAA and

other Federal agencies are very involved in the consultation and coordination with BOEMRE on OCS decisionmaking.

In conclusion, the existing framework provides many levels for decisionmaking and for environmental analysis and consideration, including the development of the Five Year Program, the lease sale process, exploration plan approval, and permit approval. There are 27 statutory authorities that apply to OCS oil and gas operations and 88 Code of Federal Regulations parts implementing these statutory authorities, and there are 24 significant approvals and permits applicable to OCS oil and gas operations. This system provides an effective means of balancing the expeditious and orderly development of the OCS with environmental protection and national security.

Question 2. How does industry think we can best balance encouraging offshore development while at the same time taking potential environmental impacts into account?

Answer. As discussed in the response to question (1) above, there is a robust, multi-phase approach in place that allows the government to effectively encourage offshore development while taking potential environmental impacts into account. Environmental review occurs during the development of the Five-Year Program, during the completion of multi-sale environmental impact statements, during the completion of NEPA documentation for individual lease sales, and during the completion of NEPA documentation for exploration and development and production plans.

As mentioned above, the OCSLA provides a comprehensive system for planning for and conducting oil and natural gas development on the Outer Continental Shelf. Pursuant to Section 18 of the OCSLA, the OCS oil and gas leasing program is developed in several stages, with requirements for collaboration, consultation, and coordination with Federal, state and local governments. In addition, the various stages provide significant opportunities for public comment so that the viewpoints of all stakeholders can be adequately considered.

Furthermore, the requirements for preparing an oil and gas leasing program under the OCSLA ensure that consideration is given to ecosystem management. Section 18 of the OCSLA requires that the program be prepared consistent with the following:

> (1) Management of the outer Continental Shelf shall be conducted in a manner which considers economic, social, and environmental values of the renewable and nonrenewable resources contained in the outer Continental Shelf, and the potential impact of oil and gas exploration on other resource values of the outer Continental Shelf and the marine, coastal, and human environments.
>
> (2) Timing and location of exploration, development and production of oil and gas among the oil- and gas-bearing physiographic regions of the outer Continental Shelf shall be based on a consideration of——
>
> > (A) existing information concerning the geographical, geological, and ecological characteristics of such regions;
> >
> > (B) an equitable sharing of developmental benefits and environmental risks among the various regions;
> >
> > (C) the location of such regions with respect to, and the relative needs of, regional and national energy markets;
> >
> > (D) the location of such regions with respect to other uses of the sea and seabed, including fisheries, navigation, existing or proposed sealanes, potential sites of deepwater ports, and other anticipated uses of the resources and space of the outer Continental Shelf;
> >
> > (E) the interest of potential oil and gas producers in the development of oil and gas resources as indicated by exploration or nomination;
> >
> > (F) laws, goals, and policies of affected States which have been specifically identified by the Governors of such States as relevant matters for the Secretary's consideration;
> >
> > (G) the relative environmental sensitivity and marine productivity of different areas of the outer Continental Shelf; and
> >
> > (H) relevant environmental and predictive information for different areas of the outer Continental Shelf.
>
> (3) The Secretary shall select the timing and location of leasing, to the maximum extent practicable, so as to obtain a proper balance between the potential for environmental damage, the potential for the discovery of oil and gas, and the potential for adverse impact on the coastal zone.

Furthermore, various other statutes and regulations apply to offshore activities, including, among others, the Coastal Zone Management Act, the Marine Mammal Protection Act, the Endangered Species Act, the Clean Water Act, the Clean Air Act, the Marine Protection, Research and Sanctuaries Act, the Comprehensive Environmental Response, Compensation and Liability Act, the Resource Conservation and Recovery Act, and the Migratory Bird Treaty Act. We therefore believe that we currently have an effective statutory framework in place to effectively encourage offshore development while at the same time taking potential environmental impacts into account. However, we do remain concerned that decisions that have been made during the regulatory process could have the impact of discouraging domestic offshore development and thus dampen prospects for domestic job creation and government revenues in the billions of dollars. Enclosed are two studies that demonstrate the impacts of slow government permitting in offshore oil and gas projects. Also attached is a study that demonstrates that more than 500,000 jobs and $190 billion in Federal revenues could be created if the government allowed access to additional Federal lands that have been kept off-limits to development, including offshore lands.

[To view "Restarting "the Engine"—Securing American Jobs, Investment, and Energy Security" go to: *http://www.gulfeconomicsurvival.org/phx-content/assets/files/IHS__Report__Restarting__the__Engine__21July11__FINAL.pdf*].

[To view "United States Gulf of Mexico Oil and Natural Gas Industry Economic Impact Analysis" go to: *http://www.noia.org/website/staticdownload.asp?id=45798*].

[To view "Energy Policy at a Crossroads: An Assessment of the Impacts of Increased Access versus Higher Taxes on U.S. Oil and Natural Gas Production, Government Revenue, and Employment" go to: *http://www.api.org/Newsrooom/upload/SOAE__Wood__Mackenzie__Access__vs__Taxes.pdf*].

RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. MARK BEGICH TO REAR ADMIRAL PAUL F. ZUKUNFT

Question 1. If a *Deepwater Horizon*-like explosion and subsequent spill happened tomorrow, what if anything would the Coast Guard do differently?

Answer. The *Deepwater Horizon* oil spill was the first event in U.S. history to be declared a Spill of National Significance (SONS) and the first in which a National Incident Commander (NIC) was designated. Despite the unprecedented scope of the disaster, many aspects of the response worked very well.

The National Contingency Plan (NCP) served the Nation well and proved effective during the *Deepwater Horizon* response. The NCP provided a sound framework that facilitated the discretion and freedom of action required to address contingencies that arose during the response.

Although the NIC's role and function evolved through the course of the response, the NIC proved to be an effective command organization that served its intended purpose to promote unity of effort across the whole-of-government.

After several near mishaps in the airspace above the oil spill response, the NIC, in coordination with U.S. Northern Command and the U.S. Air Force, established the Aviation Coordination Center (ACC) at Tyndall Air Force Base in Florida to establish command and control over the airspace. The ACC helped prevent midair collisions, improved situational awareness, validated oil trajectory monitoring, tracked skimmers and vessels of opportunity, and directed boom deployment to where it was most needed.

As discussed below, the Coast guard has reviewed and analyzed the various *Deepwater Horizon* reports to identify lessons for preparedness improvements and develop national implementation strategies. The Coast guard has also implemented numerous initiatives on the lessons learned.

Question 2. As we approach the one-year anniversary of the capping of the *Deepwater Horizon* well, what are some of the biggest lessons the Coast Guard has learned from that historic response?

Answer. The Coast Guard has gathered a large body of observations, perspectives, and opinions regarding the response to the *Deepwater Horizon* oil spill from its internal work to identify strategic lessons impacting contingency preparedness, as well as from various other *Deepwater Horizon* reports, such as the President's National Commission on the BP *Deepwater Horizon* Oil Spill and Offshore Drilling's findings, the National Incident Commander's (NIC) Report, the Joint Investigation Team (JIT) report, and the Incident Specific Performance Review. The Coast Guard has reviewed and analyzed this body of work to identify lessons for preparedness improvement and to develop appropriate national implementation strategies. We are

also working with other U.S. Government agencies to share lessons learned from *Deepwater Horizon* with our international partners through appropriate bodies such as the International Maritime Organization, Arctic Council and others. These lessons are currently under review by the Coast Guard for prioritization and initiation of the recommended corrective actions.

The lessons learned from the *Deepwater Horizon* oil spill emphasized the importance of updated and comprehensive Regional Contingency Plans (RCPs) and Area Contingency Plans (ACPs) around the Nation. The Coast Guard, as the Federal On-Scene Coordinator for oil spills in the coastal zone, is ensuring the Worst Case Discharge (WCD) planning scenarios are accurate and reflect all potential sources for oil spills, including offshore facilities. The Coast Guard and the Bureau of Ocean Energy Management and Regulatory Enforcement (BOEMRE) have formed a joint Response Work Group to improve interagency partnerships and collaboratively work on improving preparedness efforts in several areas post-*Deepwater Horizon.* Significant work group initiatives include joint Oil Spill Response Plan (OSRP) Review, RCP and ACP WCD Gap Analysis, and joint BOEMRE/Coast Guard pollution equipment compliance inspections. The Coast Guard and BOEMRE have conducted a joint review of OSRPs in BOEMRE's U.S. Outer Continental Shelf (OCS) Gulf of Mexico, Pacific, and Alaska regions. This review, which included Coast Guard participants from each region, identified the most accurate and up-to-date WCD information for offshore facilities. In addition to the OSRP review, a comprehensive analysis of RCPs and ACPs was conducted to identify significant WCD preparedness gaps. The Coast Guard directed Area Committees to address these gaps and ensure WCD planning scenarios in all oil spill contingency plans reflect WCD information identified during the joint OSRP review. As mentioned in several key *Deepwater Horizon* lessons learned reports, the Coast Guard identified the need for Area Committees to encourage more participation from state and local officials in oil spill planning and preparedness efforts. The Coast Guard also re-emphasized existing guidance for District and Sector Commanders to develop aggressive outreach programs with state, parish, county, and other local officials.

Additionally, the *Deepwater Horizon* incident and others have prompted the Coast Guard to review all operations and systems under its responsibility for potential improvements to both regulations and the inspection regime of foreign-flagged Mobile Offshore Drilling Units (MODU) on the U.S. OCS. Prior to the casualty, we were already pursuing improvements to our offshore inspection capability through our marine safety improvement program. We recently increased our inspection efforts and established an Offshore National Center of Expertise that greatly enhances inspector competency. Following the casualty we implemented further improvements and are pursuing more. All MODUs operating in the United States are subject to annual examinations to verify compliance with area laws and international conventions. If that exam finds "questionable equipment, systems, or crew competency issues" the Coast Guard can expand its investigation to determine whether a deficiency exists and may require additional tests, inspections, or crew drills in MODUs which will result in more frequent examinations of the highest risk MODUs based on accident history, past discrepancies, flag state performance, and classification society performance.

Marine inspectors will focus on critical systems representing the most risk, such as dynamic positioning systems and operator competency. Additionally, we are actively engaged in oversight of the rapidly developing well spill containment capability (Marine Well Containment System and Helix Well Control Group) to promote rigorous testing to ensure these response vessels are capable of responding to a deepwater well spill and meet applicable safety and environmental requirements. We recently established an OCS Activities Matrix Team to leverage expertise throughout the Coast Guard including various headquarters offices, the Marine Safety Center, the Eighth Coast Guard District in New Orleans, LA, and the OCS Center of Expertise. This team will maintain attention on emerging OCS issues and enhance the Coast Guard's ability to address them, increase our plan review and inspection oversight, support investigations and casualty analysis, and provide a holistic approach to management of OCS safety programs.

Question 3. What did we get right and what could we have done better?

Answer. The *Deepwater Horizon* oil spill was the first event in U.S. history to be declared a Spill of National Significance (SONS) and the first to designate a National Incident Commander (NIC). Despite the unprecedented scope of the disaster, many aspects of the response worked very well.

The National Contingency Plan (NCP) served the Nation well and proved effective during the *Deepwater Horizon* response. The NCP provided a sound framework that allowed for the needed discretion and freedom of action to address contingencies that arose during the response.

Although the NIC's role and function evolved through the course of the response, the NIC proved to be an effective command organization that served its intended purpose to promote unity of effort across the whole-of-government. This whole-of-government approach was highlighted when we also created a supporting plan with the Federal Emergency Management Agency's (FEMA) Deepwater Integrated Services Team (DIST), comprised of officials from different offices within Department of Homeland Security, Department of Health and Human Services, the Department of Labor, and the Department of Justice. This supporting plan provided a coordinated strategy to fill identified gaps in providing affected individual and small businesses benefits and assistance. In short, we attempted to meet the human needs of the oil spill through several strategies, one of which included a plan to ensure equal access to public information through language assistance for limited English proficient populations, and documents in alternate formats for those with disabilities or functional needs.

After several near mishaps in the airspace above the oil spill response, the NIC, in coordination with U.S. Northern Command and the U.S. Air Force, established the Aviation Coordination Center (ACC) at Tyndall Air Force Base in Florida to establish command and control over the airspace. The ACC helped prevent midair collisions, improved situational awareness, validated oil trajectory monitoring, tracked skimmers and vessels of opportunity, and directed boom deployment to where it was most needed.

The Coast Guard is also conducting a review of the President's National Commission on the BP *Deepwater Horizon* Oil Spill and Offshore Drilling's findings, the NIC's Report, Incident Specific Preparedness Review along with the other *Deepwater Horizon* reports that provide a body of observations, perspectives, and opinions. The Coast Guard is carefully reviewing these reports to identify areas of positive and effective preparedness improvements to develop effective and appropriate national implementation strategies. The Coast Guard has already taken several actions to address areas where planning and preparedness will be improved, including: directing Captains of the Port to review Oil Spill Response Plans for offshore facilities; requiring Area Committees to include Worst Case Discharge scenarios for offshore facilities in their respective Area Contingency Plans; increasing State and local outreach and participation in Area Committee meetings and activities; participating in a Coast Guard, Federal Emergency Management Agency, and Environmental Protection Agency workgroup to develop recommendations to harmonize the National Contingency Plan and National Response Framework governance constructs. Additionally on July 7, 2011, the Coast Guard issued a *Federal Register* Notice announcing an updated policy employing risk based targeting to prioritize inspections of foreign-flagged Mobile Offshore Drilling Units operating on the Outer Continental Shelf.

Question 4. The Coast Guard's Incident Specific Preparedness Review (ISPR) acknowledged there was confusion among the state and local emergency managers between the National Contingency Plan (NCP) top-down construct set forth in OPA-90, and the National Response Framework (NRF) bottom-up construct used for Stafford Act responses such as hurricanes, floods, and earthquakes. Many local government officials suggest OPA-90 failed to provide an adequate response to the oil spill. Many local officials believe that this response should have been a Stafford Act response and that OPA-90 and the NCP hindered the local response effort. I understand that the Coast Guard developed policy in 2009 addressing the connectivity of the NCP and the NRF, yet there is little to show that it was effective. Can you describe the Coast Guard's efforts in connecting the NCP with the NRF?

Answer. The policy, Commandant Instruction 16000.22—Coast Guard Connectivity to the National Response Framework (NRF), dated November 09, 2009, describes Coast Guard support and coordination with Federal Emergency Management Agency (FEMA) and the States during a Stafford Act funded event under the NRF. This policy is not an instruction on the alignment between the NRF and the National Contingency Plan (NCP).

The Coast Guard is actively engaged with FEMA, Environmental Protection Agency (EPA), and other interagency partners including State, local, and private sector experts to better align the NCP and NRF based on statutory requirements, Homeland Security Presidential Directive—5, and Presidential Policy Directive—8 (PPD–8). The Coast Guard accompanied with other workgroup partners is developing change recommendations to better align the NCP and NRF as part of the revision to the NRF required by PPD–8.

Question 5. How should the Coast Guard improve local involvement in preparedness activities and familiarity of oil spill response processes?

Answer. As the designated Federal On-Scene Coordinator under the National Oil and Hazardous Substance Contingency Plan (NCP) in the coastal zone, the local Coast Guard Captain of the Port (COTP) is responsible for coordinating local preparedness and response activities for their respective coastal zone. These responsibilities include overseeing the development of the Area Contingency Plan and organizing the Area Committee whose membership is comprised of stakeholders from other Federal agencies as well as state, local, tribal and industry representatives.

As mentioned in several key *Deepwater Horizon* lessons learned reports, the Coast Guard has identified the need for Area Committees to encourage more participation from state & local officials in oil spill planning and preparedness efforts. The Coast Guard has placed a reemphasis on its past guidance for District and Sector Commanders to develop aggressive outreach programs with States, Parishes, and County officials. The Coast Guard's 2011 Strategic Planning Direction directs Coast Guard COTPs to conduct outreach on the NCP with a focus on engaging both environmental and emergency departments at the state and local level. The Coast Guard will continue to encourage more participation from state & local officials in oil spill planning and preparedness efforts in the form of participation in industry and government led drills and exercises as well as Area Committee sponsored training and workshops in oil spill preparedness and response.

The Coast Guard is also updating its national policy guidance to address major contingency plan gaps identified in *Deepwater Horizon* lessons learned reports for the identification and protection of environmentally sensitive areas, development of oil spill protection strategies, Area Committee outreach and coordination, and many other areas of improvement.

Additionally, the Coast Guard co-leads an NCP/National Response Framework Alignment Work Group that focuses on ensuring NCP alignment language as provided in the Presidential Policy Directive –8 driven rewrite of the National Response Framework. This will include having both state environmental and emergency management contributors.

Question 6. Reports suggest the Area Contingency Plans in the Gulf of Mexico were inadequate for an incident of this magnitude. The oil response plans were not linked to the local Area Contingency Plans and a worst case discharge scenario was not contemplated. Local officials did not participate in the Area Contingency Plan development. There was also a consistent lack of identifying and prioritizing environmentally sensitive areas, economically important areas, and the development of protective strategies for these areas. Can you describe some of the changes the Coast Guard is making to Area Contingency Plans as a result of the spill?

Answer. The Coast Guard and Bureau of Ocean Energy Management, Regulation, and Enforcement (BOEMRE) conducted a comprehensive joint analysis of Regional Contingency Plans and Area Contingency Plans (ACP) to identify significant worst case discharge (WCD) preparedness gaps. Some of the critical Worst Case Discharge (WCD) gaps include: Missing or incomplete planning assumptions and scenarios, adequacy of WCD oil spill response resources, adequacy of WCD protection & recovery strategies, and adequacy of WCD dispersant use, in-situ burning, and subsea containment strategies.

As a result of this joint analysis, the Coast Guard is preparing detailed WCD process guidance on how to immediately address these gaps in Area Contingency Plans. As part of the Coast Guard's FY 2012 Strategic Planning Direction (SPD), the Coast Guard has directed its field commanders to ensure WCD planning scenarios in all oil spill contingency plans reflect WCD planning information identified during the joint Oil Spill Response Plan review. This SPD also directs Coast Guard field units to conduct outreach on the NCP with a focus on engaging both environmental and emergency departments at the state level. The Coast Guard will continue to encourage its field commanders to ensure more participation from state & local officials in oil spill planning and preparedness efforts.

The Coast Guard is also updating its national ACP policy guidance to address major contingency plan gaps identified in joint analysis as well as several *Deepwater Horizon* lessons learned reports. Priorities for improvements in Coast Guard ACP guidance include: Area Committee outreach and coordination, identification and prioritization of environmentally and economically significant areas, and development of protection strategies.

Question 7. What kind of guidance should the Coast Guard provide to ensure that critical components of the Area Contingency Plan are incorporated nationwide? Is this already taking place?

Answer. The Coast Guard publishes internal policy guidance on development and implementation of Area Contingency Plans. The Coast Guard is updating its national policy guidance to address contingency plan gaps identified in *Deepwater Ho-*

rizon lessons learned reports, including: identification and protection of environmentally and economically significant areas, development of oil spill protection strategies, improving state and local participation in oil spill planning efforts, and many other areas of improvement. This guidance will also stress the importance of Environmentally Sensitive Index (ESI) maps, which are produced by National Oceanic and Atmospheric Administration, during oil spill planning and response in making informed operational decisions to protect sensitive shoreline and habitat.

To date, the Coast Guard and Bureau of Ocean Energy Management, Regulation, and Enforcement (BOEMRE) conducted a comprehensive analysis of Regional Contingency Plans (RCP) & Area Contingency Plans (ACP) was conducted to identify significant worst case discharge (WCD) preparedness gaps. The Coast Guard has directed Area Committees to address these gaps ensure WCD planning scenarios in all oil spill contingency plans reflect WCD information identified during the joint Oil Spill Response Plan review.

The Coast Guard's 2011 Strategic Planning Direction directs Coast Guard field units to conduct outreach on the National Oil and Hazardous Substances Pollution Contingency Plan with a focus on engaging both environmental and emergency departments at the state level. The Coast Guard will continue to encourage its field commanders to ensure more participation from state & local officials in oil spill planning and preparedness efforts.

Question 8. OPA-90 requires that Area Contingency Plans identify sensitive environmental areas with general protection strategies. But there is no nationally recognized, standardized process or the identification and prioritization of these environmentally sensitive areas. What kind of oversight should the Coast Guard provide to ensure adequate local stakeholder participation and identification, prioritization, and protection strategies for environmentally sensitive areas?

Answer. As mentioned in several key *Deepwater Horizon* lessons learned reports, the Coast Guard has identified the need for Area Committees to encourage more participation from state and local officials in oil spill planning and preparedness efforts. The Coast Guard has placed a reemphasis on its past guidance for District and Sector Commanders to develop aggressive outreach programs with State, Parish, and County officials. The Coast Guard's 2011 Strategic Planning Direction directs Coast Guard field units to conduct outreach on the National Oil and Hazardous Substances Pollution Contingency Plan with a focus on engaging both environmental and emergency departments at the state level. The Coast Guard will continue to encourage its field commanders to ensure more participation from state & local officials in oil spill planning and preparedness efforts.

The Coast Guard is updating its national policy guidance to address major contingency plan gaps identified in *Deepwater Horizon* lessons learned reports for the identification and protection of environmentally sensitive areas, development of oil spill protection strategies, Area Committee outreach and coordination, and many other areas of improvement.

Question 9. How big of a burden would this be on the Coast Guard? Is this something that the Coast Guard could easily do?

Answer. The identification and prioritization of environmentally sensitive areas and development of protection strategies are tasks that require significant funding, resources, and long-term commitment from key Area Committee members. Those activities can be very burdensome on many Area Committees, especially those without state-sponsored oil spill programs, to carry out these important preparedness activities.

Significant participation and input from key Area Committee stakeholders, especially natural resource trustees and land managers that have local knowledge of critical habitat, endangered or protected species, or sensitive shorelines, is critical to the successful accomplishment of these tasks. As described in the National Contingency Plan, the Coast Guard leverages the expertise from lead Federal natural resource trustees, specifically National Oceanic and Atmospheric Administration (NOAA) and Department of the Interior, to engage Area Committees in these important discussions. Ecological Risk Assessments (ERA) are valuable science-based tools which assist Area Committees and Coast Guard Federal On-Scene Coordinator in making well-informed, scientific-based decisions on best response strategies to minimize impacts to environmentally sensitive areas. In addition, the Coast Guard regularly uses Environmental Sensitive Index maps, which are produced by NOAA, during oil spill responses in making informed operational decisions.

Question 10. The Coast Guard expertise in marine safety has waned over the last decade due to several factors. The Service has been tasked by Congress to focus on homeland security centric missions. The successes of OPA-90 and spill prevention programs have also resulted in fewer offshore spills and less frequency in large spill

events, creating the perception that fewer resources are adequate to accomplish spill prevention and response objectives.

The Coast Guard's "Incident Specific Preparedness Reviews" also that the reorganization to 'sectors' merged the services marine safety and response with law enforcement and search and rescue, resulting in people with little oil spill response training sometimes overseeing initial response activities. How can the Coast Guard make "sector" organization work for all of its missions, including oil spill response?

Answer. The Coast Guard plans on executing the following initiatives to enhance oil spill response capability at Sectors:

- *Institute a Coast Guard Federal On-Scene Commander's Representative (FOSCR) course*: Develop a FOSCR course as recommended by the FOSCR Front End Analysis to improve marine environmental response competency among junior officers and enlisted personnel at Sectors who may be called upon to provide command and control functions during a range of oil spill and hazardous material incidents. The first class was held in September 2011.
- *Establish Permanent Regional Response Team (RRT) Co-Chairs at Districts:* Establish civilian, permanent RRT Co-Chairs at each District as provided in the FY 2011 budget process. Permanent Co-Chairs will provide leadership, continuity, and subject matter expertise to the Coast Guard's regional elements of the National Response System (NRS) and National Response Framework (NRF), directly supporting operations carried out at Sectors by Federal On-Scene Commanders (FOSCs).
- *Establish CG National Incident Management Assist Team (IMAT)*: Establish a full time CG National IMAT as provided in the President's FY 2012 budget request. A Coast Guard National IMAT will provide immediate deployable incident management surge capacity to Coast Guard Incident Commanders nationwide.
- *Enhance Crisis Communications and Incident Management Training:* Establish position-specific and career-path based ICS competency requirements for key personnel throughout the Coast Guard, and ensure integration into existing guidance for both enlisted and officer career paths. Expand the existing crisis communications training, as well as incident management training available for FOSCs to address all hazards contingency responses expected under the NRF.

Question 11. As a result of the *Deepwater Horizon* explosion and spill, the memorandum of understanding (MOU) between the Coast Guard and BOEMRE is being currently revised. It has been reported that officials from both agencies are meeting periodically to discuss findings and lessons learned from the joint investigation report. As it stands right now, the Coast Guard generally has regulatory responsibility for systems on MODUs and other offshore structures that are above the waterline; BOEMRE is responsible for systems below the waterline. It's my understanding the Coast Guard and BOEMRE either are, or soon will be, revising the MOU dealing with MODUs and other offshore structures.

Given the broad array of demands we as a nation place on the Coast Guard, I'm concerned at the end of that process the Coast Guard may end up doing less (and BOEMRE more) when it comes to inspecting offshore oil platforms. How do you expect the new division of responsibilities to shake out?

Answer. The Coast Guard and Bureau of Ocean Energy Management and Regulatory Enforcement have agreed to review the Memorandums of Agreement and make changes and/or improvements as necessary. The Coast Guard will increase focus on inspecting offshore platforms. The Coast Guard's Outer Continental Shelf Activities Matrix Team has already identified several areas to increase the Coast Guard's plan review and inspection oversight efforts, such as: gas detection systems; emergency disconnect and shutdown systems; dynamic positioning; and blow out preventers. Finally, the Coast Guard is reviewing offshore manning and training policies in order to ensure they meet current needs.

Question 12. Can you assure us that the Coast Guard's responsibilities in inspecting offshore installations will not decrease?

Answer. The Coast Guard has no intention of decreasing activities that might lessen the safety and security on offshore installations.

Question 13. As a result of the *Deepwater Horizon* explosion and spill, the memorandum of understanding (MOU) between the Coast Guard and BOEMRE is being currently revised. It has been reported that officials from both agencies are meeting periodically to discuss findings and lessons learned from the joint investigation report. As it stands right now, the Coast Guard generally has regulatory responsible for systems on MODUs and other offshore structures that are above the waterline; BOEMRE is responsible for systems below the waterline.

The MOU between the Coast Guard and BOEMRE is designed to promote interagency consistency in the regulation of Outer Continental Shelf, minimize duplication of effort, and aid the agencies in the successful completion of their assigned missions. It seems, however, a duplication of effort can be a good thing when it comes to the inspection of safety systems. I wonder if there needs to be a holistic approach to inspecting the offshore drilling platforms. The software that controls all of the computerized systems on these high tech rigs is often overlooked, but it has clear implications for the safety of life and property at sea. Who do you think should inspect the software that controls all of the computerized systems of the drilling rigs?

Answer. Mobile offshore drilling units (MODU) and floating facilities typically automate systems on board, such as dynamic positioning and ballast control systems. The Coast Guard does not directly inspect the "software" and "lines of computer code" associated with these systems. However, during the course of a MODU inspection, the Coast Guard will verify that automated critical safety systems and associated software, such as dynamic positioning systems and ballast control systems, undergo extensive testing to confirm the robustness and reliability of that particular system.

Question 14. Do you think there needs to be some duplication of effort-some intentional redundancies—when it comes to inspecting safety systems?

Answer. Yes, some redundancy with respect to inspection of critical safety items closely integrated and interdependent with one another, such as the gas detection system, emergency disconnect and shutdown systems, and blow out preventer is appropriate, given the potential impacts should a failure occur.

Question 15. How do you find the right balance between redundancy and efficiency in terms of inspecting offshore platforms?

Answer. The Coast Guard will seek to achieve the best balance between redundancy and efficiency through coordination with primary stakeholders operating on the outer continental shelf (OCS). The Coast Guard (subject to the availability of funding) will continue to engage safety advisory committees, such as National Offshore Safety Advisory Committee and Offshore Marine Service Association and participate in major industry gatherings such as the Offshore Technology, Floating Production, Storage and Offloading Vessel and Dynamic Positioning conferences and Deepwater Symposium. Finally, the Coast Guard will engage standards development organizations, such as the American Petroleum Institute and International Standards Organization, to participate in the development of industry consensus standards and the Coast Guard will host regional inspectors meetings and invite OCS industry participation.

Question 16. It is evident that the Vessels of Opportunity program played a huge role in the response effort. Prior to the oil spill there was no VOO program in the area. It was modeled after similar programs in other States, most notably Alaska. Yet in the early stages of the response there was widespread frustration by for-hire captains because there was a big difference between the number requested and the number actually needed. Is the Coast Guard developing a national policy for incorporating VOO into Area Contingency Plans?

Answer. The Coast Guard is reviewing the lessons learned and recommendations from several *Deepwater Horizon* lessons learned reports, including those related to Vessels of Opportunity (VOO). Although many reports indicate the VOO program during *Deepwater Horizon* was successful, there are many issues associated with establishing a national VOO program, including funding, maintaining trained VOO operators, administration, oversight, selection criteria, and many others.

The VOO program in Alaska is funded and administered by the oil industry, with some oversight from the Coast Guard. There are many reasons why this program was started in Alaska, most notably the remoteness of many of the port areas which greatly increases response times of Oil Spill Response Organization (OSRO) and the lack of availability of OSRO resources. Establishing VOO programs similar to the one in Alaska is not practical for most areas around the country. VOO programs have not been established in other areas because there are enough OSRO resources available. In addition, the development and management of a national VOO program requires a tremendous amount of funding and resources as well as training, which is not practical to sustain in geographic locations where OSRO resources are available.

Question 17. What are your thoughts on the VOO program and what were the greatest lessons learned?

Answer. Over 9,000 Vessels of Opportunity (VOOs) were contracted to assist with the spill response to perform duties such as placing boom, skimming oil, and on-water transportation and support services.

In response to these challenges, the Federal On-Scene Coordinator and the Responsible Party (RP) signed a *Deepwater Horizon* VOO policy letter outlining the strategy for standardized VOO usage, organizational structure, required training and safety measures, and contractual and logistical requirements of the *Deepwater Horizon* VOO program.

This program was funded and managed by the RP with considerable oversight by the Federal On-Scene Coordinator. The large and variable number of VOOs under contract on a daily basis and the unprecedented breadth and scope of the VOO program also presented logistical challenges to track and outfit VOOs, arrange waste disposal, and ensure integration of the VOO fleet into the common operating picture.

The *Deepwater Horizon* response VOO program matured significantly during the course of the *Deepwater Horizon* response. VOO's performed oil recovery operations, transported shoreline cleanup workers, placed and tended boom, and provided general response support to keep operations moving. Because of the unprecedented size and scope of this spill, VOO's were used effectively to complement and supplement Oil Spill Removal Organization capabilities.

RESPONSE TO WRITTEN QUESTION SUBMITTED BY HON. MARK BEGICH TO HON. GROVER C. ROBINSON

Question. You stated that the National Contingency plan-top down approach- outlined in OPA-90 "simply does not work in a disaster situation." Yet expert reports highlight that the OPA-90 structure is sound and appropriate for a spill of national significance, although the connectivity of the NCP and National Response Framework (NRF) needs fixing. Do you think that an expansive outreach program to familiarize you and other State and local emergency managers with the NCP will help ensure the NCP remains a viable plan for catastrophic oil spill response? If so, what ideas do you have?

Answer. After further research of OPA-90 and the NCP, I feel that the training of policies should include all levels of governments which will help in defining roles and responsibilities should future events occur. It needs to be reinforced that all levels of government having jurisdictional responsibilities. Command and Control is key in any event regardless of the size of the incident. All parties need to have a seat at the table to appropriately address all issues.

The National Response Framework Flow Chart defines that the On Scene Commander determines the status of the response by state and local government responders and the company responsible for the release or spill (called the potentially responsible party (PRP)). The OSC also monitors the situation to determine whether, or how much, Federal involvement is necessary.

The National Contingency Plan § 300.115 describes the establishment of Regional Response Teams and their roles and responsibilities in the National Response System, including, coordinating preparedness, planning, and response at the *regional level*. The RRT consists of a standing team made up of representatives of each Federal agency that is a member of the NRT, as well as state and local government representatives, and also an incident-specific team made up of members of the standing team that is activated for a response. The RRT also provides oversight and consistency review for area plans within a given region. I am not aware of this existing in our region or anywhere else in the State of Florida and the lack of the team may have contributed to some of the DWH issues that we experienced.

Sorry for being long winded. A short answer to your question is, training is always a plus for future responses.

My suggestion in accomplish this goal would be to establish a Regional Response Team and train together as defined in the NCP.

RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. MARK BEGICH TO DR. R. EUGENE TURNER

Question 1. You stated that the state of knowledge about coastal ecosystem restoration has not kept up with the pace of development of restoration projects. Have you seen any instances where restoration efforts have been undertaken with too little scientific input and have done more harm than good?

Answer. We all make mistakes by omission and without harmful intentions. Which is why we have reviews, oversight, and regulations. But some are noteworthy because of the frequency of occurrence or scale of the consequences. Repetitive errors of large scale are especially noteworthy.

A notable combining both is described by Kearney *et al.,* (2011). They describe the failure of three river diversions in coastal Louisiana. River diversions are a major part of the restoration policy, and the State is asking for funds from the Macondo oil spill fines to pay for more. These authors analyzed patterns in land loss in the flow path of the Caernarvon river diversion, and for two other river diversions. It examined whether they do what they are supposed to do. The supplemental materials has a video recording a flyover across the northern part of the diversion flow path in spring. There is lots of open water where there once was land. Google Earth has similar comparisons to make if you use the pull-down timeline function.

They used two different methods to calculate land and lots of imagery. It is a credentialed analysis, it is published in an excellent journal (by the American Geophysical Union), and the first author invented the methodology and used it in Chesapeake Bay.

Some key points.

There were no net gains from the diversions at any of the three diversions *before* the hurricanes (1992 to 2005). This means that the diversions were not successful in creating land or restoring land. (A related analysis demonstrated that the losses before the diversion opened were directly related to dredging, which had dropped off to practically zero by the time these diversions began operation. Losses then were around 0.8 percent annually).

There were huge losses in the diversion flow path wetlands *after* Katrina/Rita, but not in the reference sites. These losses were about 142 km^2 (55 mi^2), or 33 percent of the area of land in the 1930s.

These losses are many times more than the projected benefits (about one third are area created) of 21 sq mi from ALL the projects in the 2007 GAO report. By comparison, Washington, D.C. is 68 sq mi. About 2/3rd of the projects funded (identified in the GAO report) were related to a redistribution of freshwater. Diversions are, therefore, the central planning element of restoration—and they don't work. They also cost a lot—the proposed Myrtle Grove diversion, for example, is a few hundred millions to build.

The losses, in fact, are many times larger than the total combined area that might be gained from all other projects (projects not involving freshwater diversions) identified in the 2007 GAO report. If these other projects work, and at the projected cost, then it would take 2 billion to restored the lost land in the Caernarvon flow path. This is, in other words, an estimate of the cost of misplaced, unused, or neglected science infrastructure. That could have been noticed at any time in the last 26 years; but it wasn't because, I think, many thought this river diversions could not fail, that they were "natural," or that it was better than doing nothing. They did fail because, we think, the river is now full of nutrients that were not there when the river formed the marshes 1000s of years ago, and because there is a misplaced emphasis on sediments. This mis-placed emphasis resulted in overemphasizing the role of sediments, neglecting alternative hypotheses, and assuming that flooding the marshes during the river diversion was an insignificant stressor. As a result, rigorous monitoring of land gain/loss was not done.

Monitoring of land gain and loss would be the essential monitoring data for coastal restoration. There are no data on land change for these projects. Not measuring gains and loss is a fatal flaw when doing 'adaptive management' or assigning success.

The reason we pose why these diversions are not helpful is that there are nutrients in the river that cause organic soils to decompose faster, and to decrease the biomass of live roots. Roots add to soil growth and hold it in place during hurricanes. Mineral soils like those at the tip of the river or in the Atchafalaya will behave differently from the organic soils where most of the diversions are in place or planned. People usually ignore this distinction.

The "cost" of the missing science can be estimated by estimating how much it would cost to restore the lost 55 sq miles using the present restoration costs (note: this restoration may not be any more successful than the diversions). That cost runs in the billions of dollars.

Question 2. Which scientific information gaps need to be filled to go about restoration in a smarter and more effective way?

Answer. Improve the infrastructure and the necessary information will be developed.

The science infrastructure needs to be improved in at least three ways: (1) Modeling is a potentially helpful component of restoration, but is not a substitute for data. (2) information about the ecological systems needs to be constantly monitored and upgraded. (3) we need to have some humility about what we do not know, and to temper the sense that "controlling nature" is possible, or even desirable.

(1) Ecosystem Models

Models are a potentially useful means to overcome some of the problems managing both complicated and complex systems. But modeling can be conducted and received within very different levels of certainty and acceptance. If the model is assumed to faithfully predict the future, then there may be little interest in defining the bounds of expectation. Even if these bounds of expectation are identified, the prediction may be useless in the long term. If the ecosystem model of an undisturbed estuary, for example, is based on the average conditions, perhaps because of limited field data or foregoing data incorporation, then model predictions may give comforting, but erroneous, results when novel conditions arise and interact with other factors. For example, a 20-year record of monthly precipitation may be useful to predict estuarine salinity—until there is a hurricane. In this case, the prediction of estuarine salinity may be accurate 99 percent of the time, but not accumulate during the 1 percent of the time during which a surge of saltwater is trapped behind a flood protection levee, causing plant death. But, if the model is assumed to have significant unknowns, then it will have wide bounds of expectation, perhaps demonstrating the model's heuristic value, but undermining confidence applying it for management purposes.

Some models are, unfortunately, sometimes mis-used to stifle discussion of alternative discussion by creating the aura of a mis-placed level of certainty to create a political advantage that suppresses debate, especially if the model is opaque. This is not to say that models are inherently unconstructive—they aren't. The climate change models, for example, are well-ventilated by an inclusive participant list, alternative views are sought, and there is an abundance of data to test the models. It is the context in which the models are developed and discussed that makes the global climate change models useful, rather than a hindrance. And that context is a key—to create an accepted and useful network of communication and information exchange that illuminates the areas of risks inherent in accepting different levels of certainty represented in models, how to adapt to new information, and to accurately identify complex system behaviors.

(2) Adaptive management and monitoring (AMM)

There is an undeniable and striking absence of effective monitoring and adaptive management in restoration. This situation reveals a resistance to: (1) effective monitoring of project design, (2) implementation and assessment of post-construction developments in meaningful ways, (3) consideration of alternative outcomes in the beginning, including project failure, (4) intellectual audits, and, (5) introduction of new information. Ralph and Poole (2003) said "Contemporary approaches to adaptive management preclude iterative, self-correcting management approaches by promising, but failing to implement, adequate and integrated monitoring programs." (p. 244). If restoration efforts actively embraced the AMM, then monitoring is independent to better close the feedback loop, questions arising are used to direct the restoration, a strong experimental framework is included, the design phase is well-ventilated, and the capabilities to monitor would drive the definition of goals—not the other way around. If goals are not monitored, then how else is "success" quantified and compared to some metric of success? If the AMM is adopted in fact, then monitoring program goals and metrics are developed before determining what management might be appropriate, before agreeing on management, and, before specific management actions are started. In this way management can optimize results and reduce the opportunities to do irrevocable harm when something unexpected happens—and unexpected things will happen in complex systems.

(3) Humility

The absence of humility jeopardizes opportunities to reduce financial waste, raise confidence in agency competency, and it may result in more damage.

Below are a few simple goals that that may help avoid potentially fatal flaws of logic, administration lapses, and financial waste.

(1) Assume that key pieces of information are missing and may not be revealed (ever);

(2) Because of the collective and respected ignorance, be flexible in how to develop, evaluate and apply new information and perspectives; learn how to create the context for that situation;

(3) Include many small steps that are addressed in multiple ways;

(4) Let data trump concepts, not the reverse. If "the bigger, the better" is the operating model, then the model is likely to be superficially abstract (this is not to dispute the need for hierarchy or a division of labor);

(5) Assume that surprises will occur;

(6) Develop exit strategies, including how to reverse interventions;

(7) Most important of all: *Do no harm;* do not implement plans that may be irreversible if they go awry; assume that they will go awry. Never assume that they will work exactly as planned. If irreversible outcomes are anticipated, then start with the smallest plans, not the largest ones. Do not assume absolute knowledge.

RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. OLYMPIA J. SNOWE TO REAR ADMIRAL PAUL F. ZUKUNFT

Question 1. What changes are the Coast Guard implementing, or do we need to make legislatively, to make sure that the rigs still operating on the Outer Continental Shelf have a response plan in place that is actually capable of doing what it says it will in the event of an explosion or spill?

Answer. A joint Response Workgroup (the Workgroup) between the Coast Guard and the Bureau of Ocean Energy Management, Regulation, and Enforcement (BOEMRE) was chartered to address lessons learned from the *Deepwater Horizon* oil spill and relevant recommendations of the Outer Continental Shelf Safety Oversight Board. The ultimate goal of the Workgroup is to improve national oil discharge planning, preparedness, and response for facilities located seaward of the coastline through improved alignment of BOEMRE and Coast Guard regulatory authorities and preparedness oversight activities.

As part of this workgroup, the Coast Guard & BOEMRE conducted a comprehensive joint analysis of Regional Contingency Plans (RCP) & Area Contingency Plans (ACP) to identify significant worst case discharge (WCD) preparedness gaps. Some of the critical WCD gaps include: Missing or incomplete planning assumptions and scenarios, adequacy of WCD oil spill response resources, adequacy of WCD protection & recovery strategies, and adequacy of WCD dispersant use, in-situ burning, and subsea containment strategies.

As a result of this joint analysis, the Coast Guard is preparing detailed WCD process guidance on how to immediately address these gaps in Area Contingency Plans. As part of the Coast Guard's FY 2012 Strategic Planning Direction (SPD), the Coast Guard has directed its field commanders to ensure WCD planning scenarios in all oil spill contingency plans reflect WCD planning information identified during the joint Oil Spill Response Plan (OSRP) review. The Coast Guard will continue to encourage its field commanders to ensure more participation from state & local officials in oil spill planning and preparedness efforts.

The Coast Guard is also updating its national ACP policy guidance to address major contingency plan gaps identified in joint analysis as well as several *Deepwater Horizon* lessons learned reports. Priorities for improvements in Coast Guard ACP guidance include: Area Committee outreach and coordination, identification and prioritization of environmentally and economically significant areas, and development of protection strategies.

Question 2. The Coast Guard's Incident Specific. Preparedness Review found that in fact, the recruitment of these vessels and the management of their operations suffered from several challenges. The extensive on-the-water experience of the fishing industry was not utilized to its fullest extent, and the large number of vessels lacked efficient activation, coordination and clear communications with the Incident Command Posts and local authorities.

Is USCG evaluating this program in a formal manner, or soliciting feedback from the vessels of opportunity on how this program might have been more effective? How can we better utilize the expertise and important local knowledge offered by the fishing and marine communities should the need arise in the future?

Answer. The Coast Guard is reviewing the lessons learned and recommendations from several *Deepwater Horizon* lessons learned reports, including those related to Vessels of Opportunity (VOO). As mentioned in the Incident Specific Preparedness Review, the unprecedented breadth and scope of the VOO program presented logistical challenges to track and outfit VOOs, arrange waste disposal, and ensure integration of the VOO fleet into the common operating picture.

There are many issues associated with addressing these challenges; including funding for exercises and training, oversight, and administration of VOO programs, whether implemented at the local, regional, or national level. There is also a question of determination of need for and value of VOO programs around the country. Early assessment indicates that during a major spill event, the best use of fisherman and marine community resources may be to focus their efforts toward transport of personnel and equipment between bases and active response operations platforms to support vessel traffic management in the vicinity of impacted areas, and as subject matter experts in local geography and hydrography.

The Coast Guard has been and will continue to work at the Area Committee, regional, and national levels to ensure better employment of these important local resources in future spill events.

Question 3. Faced with an emergency, the government had to make decisions about high-volume and subsea dispersant use within time frames that denied officials the opportunity to gather necessary information. Has the Coast Guard made any changes in their response plans as a result of the controversy surrounding use of dispersants?

Answer. Except when human life is immediately and imminently threatened, the decision whether to authorize the use of dispersants requires the advice and consent of the Environmental Protection Agency (EPA), and, as appropriate, the affected state representative to the Regional Response Team (RRT), and consultation with the Department of Commerce (DOC), the Department of the Interior (DOI), when practicable.

Prior to *Deepwater Horizon* (DWH), this decision-making process was routinely executed at the RRT level for incidents involving an instantaneous discharge at or near the surface of the water.

Post DWH, the Coast Guard is coordinating with RRTs and Area Committees (who oversee Area Contingency Plans) to review existing pre-authorization agreements regarding dispersant application. The Coast Guard is working with National Response Team representatives from the EPA, DOC, and the DOI to develop a framework for RRTs to make sound decisions regarding subsea dispersant use. The EPA is revising the regulations governing the criteria for listing dispersants on the Product Schedule in Subpart J of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) and the Coast Guard will work with the EPA in that process. The Coast Guard is also participating in a National Oceanic and Atmospheric Administration led effort to conduct critical research projects on surface and subsurface dispersant use that will more fully inform future dispersant application decision-making processes.

RESPONSE TO WRITTEN QUESTION SUBMITTED BY HON. OLYMPIA J. SNOWE TO DAVID M. KENNEDY

Question 1. Faced with an emergency, the government had to make decisions about high-volume and subsea dispersant use within time frames that denied officials the opportunity to gather necessary information. Has NOAA conducted any research on the impact of this dispersant use in the past year, and if so, what has been learned?

Answer. NOAA is conducting work on dispersants since the *Deepwater Horizon* oil spill in two main areas. First, NOAA is conducting a project focused on compiling and analyzing operational response data from the spill to improve our understanding of, among other things, the efficacy and trade-offs of dispersant use. This is being conducted with $1 million from NOAA's FY 2010 supplemental appropriations funding through an existing partnership with the University of New Hampshire's Coastal Response Research Center. The NOAA project involves a broad synthesis of oil spill response data, with the goal of determining whether existing (pre-*Deepwater Horizon* spill) research and development (R&D) priorities are still appropriate, and which new areas of R&D are needed. The project is broadly examining R&D needs including fate, transport, effectiveness, toxicity, and human dimensions. The lessons learned will be shared at the appropriate stages within the *Deepwater Horizon* Natural Resources Damage Assessment process. Approximately 50 percent of the funding authorized for this project has been set aside for R&D grants to address these gaps.

Second, NOAA continues to conduct R&D on dispersants and seafood safety. NOAA has studied the uptake and persistence of dispersant constituents in edible fish and shellfish tissues and found that it is low and not a significant concern for seafood safety. There are numerous dispersant formulations available or in development for mitigation of oil spills under different physical conditions of the marine environment.

A systematic assessment of less known dispersant constituents and their fate in aquatic species is warranted.

To avoid duplications of effort, NOAA's work is being coordinated with the thirteen-member Interagency Coordinating Committee on Oil Pollution Research (ICCOPR), which includes USCG, DOI and EPA. All of these agencies have participated as part of steering committee for the NOAA project and took part in a recent dispersant workshop at the NOAA Disaster Response Center in Mobile, AL. NOAA

is also coordinating with EPA on dispersant information that would be relative to spills in foreign waters that could impact the U.S. (*i.e.,* Bahamas and Cuba).

Independent of the Natural Resource Damage Assessment activities, the U.S. Geological Survey (USGS) has developed and published methods for the chemical analysis of water samples containing dispersant allowing for improved detection limits. Currently, USGS scientists are applying these methods to water samples collected from nearshore and offshore sites in the northern Gulf of Mexico. NOAA will work with the USGS and DOI Trustees to integrate their results into planning activities for future scientific investigations on dispersants with a focus on how the dispersant concentrations relate to short- and long-term biological responses.

RESPONSE TO WRITTEN QUESTION SUBMITTED BY HON. OLYMPIA J. SNOWE TO HON. GROVER C. ROBINSON

Question. What recommendations would you make to ensure that Federal agencies coordinating a major response effort like the *Deepwater Horizon* are utilizing the knowledge and experience that local officials and community members bring to the table?

Answer. The best way to engage local officials is by reforming the Oil Pollution Act of 1990 to include them as part of the team. Currently it is my understanding the law requires coordination between the responsible party, Federal agencies and state agencies. Since the *Deepwater Horizon* spill has been contained, local governments have been advocating for inclusion in the event this occurs again. The only way that I see that we will definitively be included is by language in the law. Otherwise, it is too easy for the responsible party or Federal agencies to dismiss us by them saying they are simply following the law.

I would like to be clear that I do not believe anyone in the Federal agencies have an intent to exclude local governments. It is simply in the heat of the moment in trying to coordinate their own Federal response they overlook what local governments can provide.

The reason this occurs is first there is a national and Federal response that needs to be taken in Federal/international waters. Only the Federal Government and the responsible party have the tools and the expertise to administer and handle that response. However, once that oil spill moves from international Federal waters into state and local waters, including inland estuaries, it should be the response to engage local governments at that time both in the planning, implementation, and oversight role.

Please understand that if local governments are not engaged in all three roles the response would be less than effective. Additionally, if local governments are provided jurisdictional direction and oversight of their own local areas, that will also free up Federal resources to continue to fight any spill in the Federal/international waters. If any local jurisdiction is not capable of supplying the needed finances and manpower resources to handle these commitments, they can partner with state and even Federal agencies to assist. However, those local jurisdictions that do have proper funding and manpower should be able to hold some authority and decisionmaking within their jurisdiction.

All of this comes with the assumption that the total overall coordination will be through the Federal agencies, and local agencies will have to be in constant communication and provide information to the unified command for overall direction of the entire Federal response. While the total response will be made from Unified Command location, there should be decentralized decisionmaking for local theatres provided to the local governments within their own jurisdictions.

Please note that all of this can happen and would be the best alternative to provide complete and adequate protection for our mutual constituencies. The only obstacle prohibiting this approach currently is the Federal law which simply needs to be amended to again allow local governments to be involved in the planning, implementation and oversight of any response and recovery within their jurisdiction.

Clearly locals will still be under the authority of both the state and Federal Governments; however, they should .have the ability to make some determination within the new framework provided for autonomous decisions and oversight.

If you have any further questions or comments, please feel free to contact me. Thank you again for all the work you have been doing to evaluate this problem. We in local government greatly appreciate the opportunity to be involved and be a part of the team. Thank you again for making the difference.

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