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RESPONSE EFFORTS TO THE GULF COAST OIL SPILL

HEARING

BEFORE THE

COMMITTEE ON COMMERCE, SCIENCE, AND TRANSPORTATION UNITED STATES SENATE

ONE HUNDRED ELEVENTH CONGRESS

SECOND SESSION

MAY 18, 2010

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ONE HUNDRED ELEVENTH CONGRESS

SECOND SESSION

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RESPONSE EFFORTS TO THE GULF COAST OIL SPILL

TUESDAY, MAY 18, 2010

U.S. SENATE,
COMMITTEE ON COMMERCE, SCIENCE, AND TRANSPORTATION,
Washington, DC.

The Committee met, pursuant to notice, at 2:32 p.m. in room SR–253, Russell Senate Office Building, Hon. John D. Rockefeller IV, Chairman of the Committee, presiding.

OPENING STATEMENT OF HON. JOHN D. ROCKEFELLER IV, U.S. SENATOR FROM WEST VIRGINIA

The CHAIRMAN. The hearing will come to order.

Members will be arriving. I'll give the opening statement, and then I believe Senator Hutchison's on her way, and we will have some opening statements. And you will, hopefully, be patient, because I know there's—you've never had to answer any questions on this subject before, right?

On April 20, an explosion occurred on the *Deepwater Horizon,* a mobile offshore drilling unit in the Gulf of Mexico. Eleven workers were killed, 17 were injured, and—setting into motion, therefore, an environmental disaster of virtually unprecedented proportions. It's estimated that millions of gallons of oil have leaked to date—and, in fact, who really knows?—causing irreparable harm to our economy, coastal communities, fragile wetlands, and workers' livelihoods.

Our goal at today's hearing is to learn more about why BP, Transocean, and Federal regulators were so unprepared for this accident. Why did they rely on a single type of technology—in this case, I'm looking at companies—that might prevent a blowout? Perhaps there is more than one, or research is being done on more than one; I don't know, but I want to find out. And, once the blowout happened, why weren't they ready to respond?

And, to be honest, I'm curious as to whether the companies took shortcuts. I'm familiar with shortcuts, because I come from West Virginia, where there are a lot of coal mines, and, in bad times, people take shortcuts. "Profits before safety" is just the way the world works.

A lot of pressure on workers—pressures for profits, and so on. That disturbs me.

Unfortunately, it seems to me that drilling has always come first, and that safety and disaster planning came only second. It has been 4 weeks since the accident, and BP has finally figured out how to capture just a very small portion of the thousands of barrels

of oil that continue to pour into the Gulf each day. It will be many more days, many more weeks, many more months—who knows, at this point?—before the devastation can be brought fully to a halt.

Safety and responsibility are enormously important in every industry. And when workers' lives, entire regional economies, and vast fragile ecosystems are at stake, safety, good practice, best practice, must never come second to production or profit.

Under the Coast Guard's exceptional leadership and coordination, a widespread search-and-rescue response involved numerous helicopters, airplanes, ships, saving crewmembers after the explosion. More than 10,000 personnel—and, in fact, I—it may be well more than that, I'm not sure—are responding to this crisis, deploying miles upon miles of oil booms to protect vulnerable areas. In some cases, they are working to dilute the oil; in others, they're burning it off the surface of the water. A joint investigation, from the Coast Guard and Minerals Management Service, into the cause of the explosion, and subsequent spill, is underway.

I want to be very clear about my views on this oil spill. The people who created this terrible mess must be fully responsible for cleaning it up. And the American taxpayers should not be asked to foot the bill. On that, I see no compromise. We deserve a complete and transparent accounting of exactly what went wrong, and why.

Today, and in the days and months ahead, the American people will expect full and honest answers from BP, Transocean, and Halliburton.

I want to close by saying that it's no secret that drilling on the Outer Continental Shelf has been a subject of heated debate for several decades. Today, there are approximately 278 active offshore drilling pieces at work.

The Administration's proposal to increase energy exploration in—on the Outer Continental Shelf will likely lead to more offshore drilling units in the future, and that does concern me. If left unchecked and uncorrected, we may very well see another terrible disaster of this magnitude. And if they happen once every 10 years—it takes 10, 15, 20 years to recover from the last one, so—you know, saying it doesn't happen very often doesn't carry a lot of water with me—if it happens at all, that's what matters.

And until we can fully investigate this instance, I will have a hard time supporting any future offshore drilling.

I want to welcome our witnesses today, two of them before us in the first panel. And that is: Admiral Thad Allen, a Commandant of the Coast Guard for whom I have enormous respect, and the national incident commander for the Gulf oil spill, who is meant to retire, but I hope is going to stay on a little bit longer.

With only 1 week left as Commandant, Admiral Allen—you're kind of the combatant commander. You're facing this challenge with the same strength and vision that have been the hallmark of your service to our Nation. It's a very military effort, in some ways, and a—very scientific, in others.

Dr. Jane Lubchenco, the superb Administrator of the National Oceanic and Atmospheric Administration, is our other witnesses on the first panel, and we're very proud of her.

Mr. Lamar McKay, Chairman and President of BP America; and Mr. Steven Newman, President and CEO of Transocean; and Dr.

Deborah French-McCay, a Zoologist and Biological Oceanographer, by training, with extensive expertise on the effects of oil and other pollutants on open-ocean and coastal ecosystems. The last three will be our second panel.

Thank you all for coming.

And I turn now to my partner on this committee, Senator Hutchison.

STATEMENT OF HON. KAY BAILEY HUTCHISON, U.S. SENATOR FROM TEXAS

Senator HUTCHISON. Thank you very much, Mr. Chairman.

I certainly appreciate that we are holding this hearing today, because this is a story that is continuing to grip the American public and all Members of Congress, as well.

As we examine the responses to this spill, I want to make sure we do not forget the 11 individuals who lost their lives in this accident.

This hearing is an important step in sorting through the lessons, from the accident, that we have learned since April 20 and to ensure that all appropriate actions are being taken to respond to the ongoing spill. Equally important, it is critical that everyone involved in the offshore oil industry learns from this tragedy so that we can prevent any such accidents in the future.

Naturally, we are all concerned about the potential environmental and economic impacts caused by the oil spill. We expect that the responsible parties will stand by their commitments to pay for both the clean-up costs and economic damages. I agree with the Chairman's statement that taxpayers should not be asked to spend any part of the Treasury of the United States in this clean-up.

But, we also cannot be shortsighted. Offshore oil and gas development is vital to both our current and future economic and national security. The drilling operations in the waters off our Nation's shores currently account for about 27 percent of America's total oil production, and 15 percent of our domestic natural gas production.

Not only does this generate billions of dollars in economic activity and thousands of jobs for Americans, it significantly reduces our dependence on foreign oil. This oil spill should serve as a clarion call for safer drilling, but not as a reason to halt development of this critical energy source that helps us reduce our reliance on foreign sources of energy.

According to the Congressional Research Service, the Outer Continental Shelf is rich in natural resources, containing over 85 billion barrels of undiscovered, recoverable oil. This represents over half of the Nation's entire endowment of recoverable oil. Additionally, the OCS contains 420 of the 1,400 trillion cubic feet of undiscovered recoverable, clean-burning natural gas in the United States. These figures represent significant resource potential for our country. This energy translates into jobs and will enhance economic and national security. Development of these resources can mean more revenue for cities, states, and the Federal Government, and less reliance on foreign energy sources. These energy resources are critical for our country, and it is our responsibility to ensure safe and responsible environmental pursuing of these resources.

Let me just say that I also agree with the Chairman regarding Admiral Allen. Admiral, you have presided over the transformation of the Coast Guard. It has become a more military, more nationally security-based part of our defense structure. And you have done yeoman's service.

I am afraid that you are going to be extended in the position—I know—looks resigned on your face—but I know that you'll answer the call of the President to stay as the coordinator of this particular accident, because you have done a great job, so far, under very grueling circumstances. But, we must continue until this oil spill is stopped, and you are the one who has the experience to do it. So, I do hope that you will stay and see it through, even though I know it will be a personal sacrifice for you.

Thank you, Mr. Chairman.

The CHAIRMAN. Thank you, Senator Hutchison.

Senator Cantwell, not being here, as head of the Oceans chair—Subcommittee Chair—Senator Snowe.

And might I just inform my colleagues that, after Senator Snowe and Senator Cantwell, if she comes, which I'm sure she will speak, then everybody will have a chance to speak, but we have to exercise what we call 3-minute restraint. Otherwise, our witnesses will get up and walk out.

STATEMENT OF HON. OLYMPIA J. SNOWE, U.S. SENATOR FROM MAINE

Senator SNOWE. Thank you, Mr. Chairman. And thank you for convening this hearing on this catastrophe that has tragically claimed 11 lives, could devastate an entire ecosystem for decades, and has been characterized by an abundance of failure, of staggering proportions.

As Ranking Member of the Subcommittee that oversees the two lead agencies that are before us today—represented by Admiral Allen, as Commandant of the Coast Guard, and Dr. Lubchenco, as NOAA Administrator—it's astonishing that these two key agencies, the most knowledgeable, and with the most expertise in a variety of areas, including marine biology, and environmental sensitivities—have not had a mandatory statutory role in the permitting process of offshore oil and gas development. Unfortunately, this process has relegated these two agencies, and in my opinion, to the back bench—an egregious mistake that could have ultimately averted this catastrophe.

According to the *New York Times,* the Minerals Management Service, the Federal agency that does the permitting on offshore oil and gas activity, rubber-stamped 346 permits since January of 2009, including the one for the *Deepwater Horizon* well, even though they lacked the environmental assessments and permits required by NOAA.

Meanwhile, Dr. Lubchenco—and I want to commend her for this—provided accurate comments on the future drilling plans of the Minerals Management Service between 2010 and 2015. She stated that that MMS had underestimated the environmental impacts, had cherry-picked the data to understate the risks as well, and blatantly ignored 12 million gallons of oil that was spilled dur-

ing Hurricanes Katrina and Rita in its risk assessment, all of which went unheeded.

Dr. Lubchenco, you and the Coast Guard Commandant, Admiral Allen, who is very well versed in managing disasters off the Gulf Coast, and has demonstrated exceptional leadership—and we appreciate your willingness to continue, Admiral Allen, in the capacity of overseeing and managing this disaster, as well—I want to commend both of you, because we know these are very difficult circumstances, in trying to understand the ramifications and the dimensions of this oil spill.

Meanwhile, the reactions of BP and Transocean to this calamity have been severely understated. They have attempted to downplay the extent of this calamity, and certainly soft-pedaled the potential worst-case scenario when they first filed their exploration plan.

Just a few weeks ago, on April 28, in the *Wall Street Journal,* a BP spokesman called the spill "stable," and said it was moving farther away from the coastline, a claim that now seems preposterous, as oil is now washing ashore in Louisiana and Mississippi, and possibly as far afield as Key West, Florida, where 20 tar balls have been found. I know it hasn't been determined yet, but this points to the serious concern: that oil could enter the Loop Current which would then carry it into the Gulf Stream and then up the Atlantic coast.

Mr. Chairman, I truly think that what is going to be required in this instance is to ensure that NOAA and the Coast Guard have an integral role in the decisionmaking process. I will propose that they are at the table during the permitting process and the development so that the Minerals Management Service cannot turn a blind eye to the vital input from these critical agencies. They're integral to this process.

We should have the best of the ocean scientists analyzing this situation, which I understand BP is now preventing, in terms of understanding the dimensions of this problem, and the amount of oil that has been spilled.

So, I think that it is critical for both of these agencies to be involved, from day one. And, it has to be required through statute. The Coast Guard is the lead response agency in the Federal Government to oil spills to the marine environment, and to oil spills from vessels, but not for underwater sea operations, like the *Deepwater Horizon* rig, which is tasked to the Minerals Management Service.

As we now know, the MMS approved a response plan that did not provide for any mitigation or any solution to a potential problem like we have today, the failure of this blowout preventer, in the depths that we're talking about. In fact, Secretary Napolitano indicated yesterday that the Federal Government doesn't even have a solution or the capability to deal with a spill at this depth.

Also, I believe the expertise embedded in both of these agencies is also derived from the oil spill drills that are required every 3 years, the most recent of which occurred in my home State of Maine—in Portland, Maine—just 2 months ago. I happen to think that all of the information and the responses that are developed through these drills should be incorporated and brought to bear in the regulatory process.

Similarly, I think we should apply it to industry. The industry should be working out true worst-case scenarios so that, if the worst-case scenario should arise, they're not solving the problem by trial and error.

So, these are the things that I'm going to be proposing, Mr. Chairman, because I happen to think it's very critical that we have available to us all of the expertise that's embedded and incorporated throughout our Federal agencies, and certainly most represented by the two agencies before us today, so that we can, one, immediately take any and all actions necessary to literally turn the tide on this epic spill; and then, second, overhaul our practices and review our statutes so that we can prevent a reoccurrence in the future.

I share your position, with respect to liability. Absolutely, the taxpayers should not be on the hook for assuming the financial responsibilities of this clean-up and to mitigate this serious crisis.

Thank you, Mr. Chairman.

[The prepared statement of Senator Snowe follows:]

PREPARED STATEMENT OF HON. OLYMPIA J. SNOWE, U.S. SENATOR FROM MAINE

Thank you, Mr. Chairman. This catastrophe that claimed *eleven lives* and could devastate an entire ecosystem for *decades* has been characterized by an abundance of failure and an *ineffectiveness* of *truly staggering proportions*. As Ranking Member of the Subcommittee on Oceans, Atmosphere, Fisheries, and Coast Guard, I find it *astonishing* that NOAA and the Coast Guard have not been given a mandatory statutory role in permitting offshore oil and gas development. Relegating them to the back bench is an egregious mistake that could have helped avert this devastation.

According to the *New York Times*, the Minerals Management Service—the Federal agency that permits offshore oil and gas activity—has rubber-stamped 346 drilling plans since January 2009, including one for the *Deepwater Horizon* rig, even though they lacked the environmental permits required by NOAA. Meanwhile, Dr. Lubchenco, the *accurate* comments you submitted on the MMS's proposed 5-Year offshore drilling program for 2010 through 2015—saying MMS understated environmental impacts, and that it *cherry-picked* its data to understate risk, blatantly *ignoring* the nearly *12 million gallons* of oil that spilled during Hurricanes Katrina and Rita in its risk assessments—have gone unheeded. Now you and the Coast Guard Commandant, Admiral Allen, who is regrettably well-versed in managing disasters along the Gulf Coast, are left to manage what is rapidly becoming one of the worst offshore oil spills the world has ever seen.

Meanwhile, the reactions of BP and Transocean to this calamity have been little more than a series of efforts to downplay its severity. Notably:

- In an article in the *Wall Street Journal* on April 28, BP called the spill "stable" and said it was moving farther away from the coastline—a claim that now seems preposterous as oil is fouling shores in Louisiana and Mississippi and possibly as far afield as Key West Florida where 20 tar balls were found potentially brought by a current that could carry the oil into the Gulf Stream and up the Atlantic coast.
- In the face of suggestions that the actual amount of oil leaking may be as high as 80,000 barrels per day, sixteen times the current estimate, BP is stonewalling, with a spokesman saying to scientists requesting to do an assessment "the answer is no to that."
- A "60 Minutes" report that aired this weekend quoted a worker from the rig asserting that prior to the accident, BP and Transocean were pushing to drill faster, ignoring potential problems with their most vital piece of equipment, the blowout preventer, including the appearance of shards of rubber from a key safety device that were shot to the surface in drilling fluid.
- A 2007 report by former Secretary of State James Baker—commissioned in the aftermath of a 2005 refinery fire in Texas City, Texas, that took the lives of 15 employees—found that "BP did not effectively incorporate safety into management decisionmaking" and "tended to have a short-term focus . . . without defining safety expectations, responsibilities, or accountabilities.

Frankly, BP's response to this spill shouldn't be surprising since the company has continuously soft-pedaled the potential extent of damage. When the company first filed its exploration plan for this well, it stated that the "worst-case scenario" would not exceed *162,000* gallons spilled per day. Now the estimate is, of course, 210,000 gallons per day. And earlier this month, BP executives themselves said this spill could be a release of up to *2.5 million* gallons per day, more than *fifteen times* the estimate provided in its exploration plan.

As the agency tasked with managing our living marine resources and carrying out fundamental oceanographic research, NOAA clearly understands the dangers inherent in offshore oil and gas activities. The Coast Guard is also well-versed in spill response, serving as the lead agency for the Federal response to oil spills in the marine environment and approving all oil spill response plans from vessels, but not undersea operations like the *Deepwater Horizon* well—this task falls to the MMS. I see no reason why these two inherently similar practices should be handled by different agencies, particularly when MMS is willing to approve response plans—as it did in this case—despite the fact that it contained no description of how a blowout of this magnitude would be dealt with, and as the Secretary of Homeland Security admitted yesterday, the government does not have the capability to deal with a spill at this depth.

Yet, there has been no Federal mandate for NOAA or the Coast Guard to be an integral part of developing *from the ground up* the assessments that govern offshore exploration. I find it shocking that our Nation's best ocean scientists would be relegated to the sidelines during development of such a strategy instead of being involved *from day one*. I intend to make it a requirement for NOAA and the Coast Guard to be at the table when these permits are approved so MMS will not be able to simply turn a blind eye to the vital input of these agencies.

Part of this expertise comes from spill response drills held every 3 years, the most recent of which took place in Portland, Maine, 2 months ago. Lessons learned from these drills must be brought to bear on the regulatory and response processes. The industry must take similar actions to demonstrate to the satisfaction of regulators and the American public that when true worst-case scenarios arise, we will not be left to solve the problem by trial-and-error.

I cannot put into words my horror at the extent of this tragedy that could change the fundamental makeup of Gulf Coast communities for generations. This is a failure on innumerable levels, and we must do all in our power to ensure that those responsible are held to account and we bring all available expertise to bear on future decisions about offshore drilling activities. Thank you, Mr. Chairman.

The CHAIRMAN. Thank you, Senator Snowe.

Senator Nelson.

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

Senator NELSON. Mr. Chairman, it took Senator Boxer and me several days of insisting before BP would release any additional video. They have. I have put it on my website. And yet, it is video only of the leaks coming out of the riser, not out of the main wellhead. So, we look forward to additional video being released so that we can get the scientific community to give us a more accurate estimate of how much is actually going in.

Now, Dr. Lubchenco just told me that the aerial surveys show that some of the oil is getting into the Loop Current. She will know by the end of the day whether that is confirmed, or not.

But, I want to show the Committee what this does. In 5 days—this, of course, being the spill, and this portion coming to the south—it gets—this is the Loop Current, coming up past the Yucatan Peninsula, up into the northern Gulf of Mexico, looping around, and then coming around here to the Florida Keys. This is the southern tip of Florida. This is the Keys of Florida.

Now, this is an estimate, by the researchers at the University of South Florida which are some of the best in the world on currents, of where this oil will go in only 5 days from now. Now, look where

it's going to be in 8 days from now. On the 26th of May, it has come all the way and is just off of—past Dry Tortugas, past Key West, and is coming up the Gulf Stream.

And look where it is in 10 days, Mr. Chairman. In 10 days—the Gulf Stream, here, hugs the coast of Florida within a mile of the beach, and it's coming right on up, will continue up, north of West Palm; right about, Fort Pierce, Florida, it's about 10 miles offshore. And then the Gulf Stream continues and parallels the eastern seaboard all the way to Cape Hatteras, North Carolina, where it leaves and goes across the Atlantic to Scotland.

Mr. Chairman, this is what we are looking at. It is—my worst nightmare is apparently becoming reality.

The CHAIRMAN. Thank you, Senator Nelson.

Senator Wicker.

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

Senator WICKER. Thank you very much. Two points and a brief statement.

I was told 3 minutes, but I see 2 on my clock. I guess that'll be a warning.

Humans have been flying for a long time. You'd think by now we would know how to prevent an airliner from crashing, but occasionally it happens. You would think, as much as we know, we'd be able to prevent a levee from breaking, a bridge from collapsing, or a coal mine disaster; and yet, these things continue to occur, and continue to be tragic.

Now, if you think we need to shut down all offshore drilling in the United States of America, perhaps you're not as concerned about how to make offshore drilling and deepwater drilling completely safe. But, if you believe, as Senator Hutchison does, that it's vital for our economy, it's vital for the standard of living of Americans, as well as other people on the face of the Earth, that we continue this, then we'd better learn what we can at these hearings, and in other venues, and continue the practice of finding out how to make offshore drilling as safe as humanly possible, realizing there's always going to be a human involved and there's always going to be a chance of that.

Now, the other point I want to make, by way of this opening statement: I noticed that there was a lot to be said about previous hearings with industry, and a lot of criticism of the finger-pointing. President Obama had harsh words, Friday, for the "ridiculous spectacle," those are his words, of all the industry finger-pointing.

Let me just take issue with my President on that. It may be embarrassing to listen to. It may make us cringe. But, I think, to the extent that Congress is here with different viewpoints at the table, particularly with panel two, Mr. Chairman, I think the finger-pointing is actually instructive.

If, indeed, one party is more responsible than the other about this blowout preventer, we need to hear what the rules are on that, what the practices are, and what they've done before on that.

If someone was pouring a new kind of concrete down inside the steel tubing, and that concrete caused extra heat which caused a problem for the people on the rig; if a premature decision was

made to put saltwater down in that well, rather than the mud, which would have been a better preventer, then I appreciate the fact that industry hasn't huddled together and "gotten their story straight" and kept it from us.

So, to that extent, it's OK, today, from my point of view, if industry continues to tell the truth; and if that amounts to pointing the finger at regulators, at themselves, at others, I think it helps it all come out in the wash, and helps us arrive at the truth.

Thank you, Mr. Chairman.

The CHAIRMAN. Thank you, Senator.

The Chair of the Oceans Subcommittee is here now.

Senator Cantwell.

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

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

And it's good to see both Dr. Lubchenco and Admiral Allen here, because there are probably no two people who have dealt more with the impacts from this than those two individuals. And I thank you both for your service.

Like my colleagues, I'd like to begin, this afternoon, by recognizing the most tragic part of the *Deepwater Horizon* accident: the 11 workers, who lost their lives. And I'd like to express my condolences to their families and friends, and say that, while much of the media attention has moved beyond that, that it is the loss of those 11 lives that we shouldn't forget.

Whether one chooses to focus on those 11 lives, the oil spill continues to spread, and the consequences to the economy and the environment of the coastal region of the Gulf of Mexico. There is no doubt that the *Deepwater Horizon* accident will be, and is continuing to be, devastating.

We must work tirelessly to contain the oil spill and the damage, because the future of the coastal region depends on it. But, while we must work tirelessly to figure out what went wrong, we should also do things differently in the future.

The *Exxon Valdez* oil spill taught us a great deal. And while this spill is very different, the warning of the *Exxon Valdez* can be very instructive. It taught us that oil spills can be devastating to many sectors of the economy, tourism and commercial fisheries. It taught us that the damage can last for decades, as the oil can still be found on the beaches of Prince William Sound, even today. And it has taught us that some parts of the environment may not recover at all. The herring fishery was wiped out by the *Exxon Valdez,* and still has not recovered.

I have here a jar of oil rocks that was just given to me, that was collected last February from the Prince William Sound beaches, by a fisherman there. Clearly, the legacy of the *Exxon Valdez* still lives with us.

Oil spills, like the *Exxon Valdez,* and now BP and Transocean's deepwater incident, aren't just a one-time event. They are destructive, both environmentally and economically, and last for generations.

So, as we try to get to how we're going to deal with this particular situation, Mr. Chairman, I hope that we'll also look for solutions on how we're going to wean ourselves off of our over-addiction on fossil fuels and continue to look for ways to create what we're doing now in the safer environment.

The real short-, mid-term, and long-term solution here is to move beyond petroleum and transition away to other sources, and to make sure what we're doing today continues to be done in a safe and effective manner.

I know that my colleagues and I are going to continue to have hearings in other committees. And I hope that we optimize on making sure that we are getting a solution to the environmental impact that is going to be felt from the Gulf for many years to come.

I thank the Chair.

[The prepared statement of Senator Cantwell follows:]

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

Like many of my colleagues, I'd like to begin this afternoon by recognizing the most tragic part of the *Deepwater Horizon* accident—the eleven workers who lost their lives.

I'd like to express my condolences to their families and friends, and say that while much of the media attention has moved to the oil spill and longer-term aftermath of this accident, it is the loss of those eleven lives that we must never forget.

Whether one chooses to focus on the loss of those eleven lives, the oil spill that continues to spread, or the looming consequences for the economy and environment of the coastal Gulf of Mexico, there is no doubt that the *Deepwater Horizon* accident has been—and will continue to be—devastating.

We must work tirelessly to contain the spill and its damage, because the future of these coastal regions depends on it.

But we must also work tirelessly to figure out what went wrong and what we should do differently in the future.

The *Exxon Valdez* oil spill taught us a great deal, and while this spill is very different, the warnings of *Exxon Valdez* can be very instructive:

- It taught us that an oil spill can be devastating to many sectors of the economy, from tourism to commercial fisheries;
- It taught us that the damage can last for decades, as oil can still be found on the beaches of Prince William Sound even today;
- And it taught us that some parts of the environment may not recover at all, as the herring fishery wiped out by *Exxon Valdez* has still not recovered.

I have here a jar of oiled rocks that was collected *last February* from Prince William Sound's beaches. Clearly, the legacy of the *Exxon Valdez* is still with us.

Oil spills like *Exxon Valdez* and now BP and Transocean's *Deepwater Horizon* incident aren't just a one-time event. Their destruction—both environmental and economic—lasts for generations.

But we also have to remember a much larger point: the need to wean America off our unsustainable and increasingly destructive addiction to fossil fuels.

This slow-motion Katrina must be a wake-up call, and I hope this time Congress doesn't just hit the snooze button.

The fact is, no amount of drilling will lower our dependence on foreign oil or lower the prices families pay at the pump.

The real short-, mid-, and long-term solution here is to move "beyond petroleum" and transition away from oil to other ways to power our economy. The only truly fail-safe blowout preventer is not disturbing the thousands of feet of rock covering highly pressurized pockets of oil and natural gas.

For this reason, and so many others, we need to put a price on carbon. It should be gradual. It should be predictable. It should be reasonable. But we need to do it now.

The CHAIRMAN. Thank you, Senator Cantwell.

Senator LeMieux.

STATEMENT OF HON. GEORGE S. LEMIEUX, U.S. SENATOR FROM FLORIDA

Senator LEMIEUX. Thank you, Mr. Chairman. Thank you for holding this hearing.

Thank you both for being here today.

I share the comments of colleagues, Admiral Allen, that we look forward to your continued service, at least for a short period of time. Thank you for the good job that you've been doing.

Just as oil and water do not mix, neither do tar balls and tourism. We are very concerned, in Florida, as to the effects of this oil spill upon an industry that brings in more than 80 million people to Florida and is responsible for more than $65 billion worth of economic impact.

My colleague just showed you the charts of the Loop Current and what that could do to Florida. If it is true the 20 tar balls that were found in Key West yesterday afternoon are from this spill, then unfortunately, the oil is further along than we projected. Unfortunately, that means what we're seeing on top of the water might not be as bad as what's going on beneath the water.

I am very concerned, as all my colleagues are, about what caused this problem and what could have been done. I'm going to have a lot of questions for you today about what we could have done better in our government to try to prevent and mitigate this problem and lessened its environmental impact.

I also want to make sure that we are addressing every effort possible to prevent this oil from coming ashore, and to mitigate the damage that it could have to our coasts, along all the Gulf States, but especially, parochially, for Florida.

I have called upon British Petroleum to set up a billion-dollar fund that the five states can draw down upon. They have contributed, I think, now $50 million to each state. That's good, it is not enough.

I don't want to wait until the oil comes on our shores and then do something about it and pay claims. I want to do everything we can to get folks out there—local community folks—cities, counties, businesses, volunteers, state government—to try to do everything we can to stop this oil from coming ashore.

I just saw something, Mr. Chairman, from OSHA, saying that volunteers should not approach the tar balls, that they should have hours of training before approaching a tar ball, which seems a little ridiculous to me. We need to get folks involved in trying to clean up this spill.

What this could do to Florida, if all of this oil washes along our shores; what it's going to do to our tourism industry, what it's going to do to our fishing business, what it's going to do to recreational boating, what it's going to do to our environment? It cannot be over-estimated.

I'm going to ask some questions today about why, in my opinion, it appears that we outsource the responsibility for cleaning this up. Why should we just rely upon British Petroleum?

My friend from Mississippi gave instances of a lot of other things that can go wrong in society: bridges falling, coal mines incidents, and all sorts of things. Planes falling out of the sky. I'm not sure, in any of those other situations, we look for only the party respon-

sible to help solve the problem. In those other situations, the government takes a leading role. I would think that we shouldn't outsource our responsibility for cleaning this up. I would hope that we would have the ability, within the inside of government, if needed, to help stop or contain these emergencies to our best of ability.

So, I look forward to your testimony.

Thank you, Mr. Chairman.

The CHAIRMAN. Thank you, Senator.

Senator Vitter.

STATEMENT OF HON. DAVID VITTER, U.S. SENATOR FROM LOUISIANA

Senator VITTER. Thank you, Mr. Chairman.

As everyone has stated, this is an ongoing tragedy, starting with the loss of 11 lives and the horrible impact on those folks' families, as well as pollution and economic impact all along the Gulf Coast.

Of course, unfortunately for us, the epicenter right now is Louisiana. I've visited all of those coastal parishes, met with fishing communities and others, and have certainly seen that ongoing impact.

I wanted to focus my participation in this hearing on five questions. I'm going to outline them here, because we're going to have a vote soon. I also have a similar hearing in the EPW Committee, on which I serve. I hope the participants here can respond to these questions today and/or through follow-up written answers.

Number one, what is the most up-to-date, precise information about the flow of oil? We are capturing some of it now. Presumably, that gives us more ability to measure that. So, what is the most up-to-date information about the volume of flow, and the most up-to-date estimate of using the pipe, which has been successfully connected, to stop the flow?

Number two, why hasn't a fisheries failure been officially declared under the Magnuson-Stevens Act? It's hard for me to imagine an event which is a more obvious candidate for the cause of a fisheries failure. This would give immediate help to our fisheries, not letting BP off the hook, but would offer some immediate help.

Number three, under the OPA Act, Section 2713(f) mandates that the President set up a loan program to help fisherman and fishery-dependent businesses. This is not an option, it is a mandate. It is not to get BP off the hook for any damages, it's to get more immediate help, in the meantime, to our fisherman and fisheries as those damages are being settled. So, I'd urge the President to act on this mandate, and I'd like your response to that.

Number four, I'm concerned about the deployment of boom being inequitable between states, and still only ramping up. I've talked, several times, with Admiral Allen, and I appreciate his work, which has made it better. But, I'd love an update on that.

And, number five, what is the timeline along which, Admiral, you and the Corps and others will make a decision regarding the emergency dredging buildup of Barrier Island proposal, that we have talked about, that I think could be a considerable help in protecting the Louisiana coastline?

Thank you, Mr. Chairman.

The CHAIRMAN. Thank you, Senator.

And now, Senator Thune.

STATEMENT OF HON. JOHN THUNE,
U.S. SENATOR FROM SOUTH DAKOTA

Senator THUNE. Thank you, Mr. Chairman and Senator Hutchison, for holding this hearing today.

And I, too, want to express my condolences to the families who lost loved ones. This was a tragedy on so many levels.

Today's hearing, of course, along with the hearings that are being held in the other committees of jurisdiction, is an important part of learning why this disaster happened, and what can be done to make sure that this type of oil spill never happens again.

We also, I think, need to closely scrutinize the response of our Federal agencies. Obviously, BP is the responsible party for this oil spill, but the Federal Government has the ultimate responsibility to ensure that all the appropriate safety measures were followed and all the available resources are, indeed, being deployed in response to this spill.

As we speak, there are a few thousand, and potentially tens of thousands, of barrels of oil that are leaking into the Gulf of Mexico each day, and this leak is going to continue for the foreseeable future, causing environmental and economic damage that will last for several years to come.

About one-third of our U.S. oil production comes from the Gulf. In coming years more of the Gulf Coast oil production will come from deepwater wells, such as the well that was drilled by BP and its partner companies. So, clearly we cannot remove deepwater oil production from our current or future energy supply. And clearly we can't continue with business as usual, either, in terms of regulating offshore energy production.

While continuing an aggressive response to the oil spill, we must move forward as quickly as possible with reasonable and effective measures that will protect our environment, our coastal communities, and our supply of domestic energy.

I want to, Mr. Chairman, thank our witnesses for being with us today. And I look forward to working with members of this committee.

I do think, and to the degree that I've got a gazillion questions here, like I think everyone else does, and it's going to be hard, probably, for us to get them all in today but, I, too, am interested in knowing, Admiral, about the issue about fire-resistant boom, and how much was pre-positioned, and how that, even now, is working, and what we're doing to try and prevent the oil from leaking further. I'm interested in knowing what BP has publicly stated, I think, that it'll cover all legitimate claims of economic damage associated with the oil spill, but I'm very interested in knowing what is the historical standard for determining what a legitimate claim is for economic damages associated with an oil spill.

As I said, Mr. Chairman, I have a series of other questions, that, if I can't get them in today, will try and get them asked for the record.

But, I do appreciate the opportunity to hear from our witnesses today and to get to the bottom of why this occurred and what we can do to prevent it in the future.

Thank you, Mr. Chairman.

[The prepared statement of Senator Thune follows:]

PREPARED STATEMENT OF HON. JOHN THUNE, U.S. SENATOR FROM SOUTH DAKOTA

I would like to thank the Chairman and Ranking Member for holding today's hearing.

Today's hearing, along with hearings in the other committees of jurisdiction, is an important part of learning why this disaster happened and what can be done to make sure this type of oil spill never happens again.

We must also closely scrutinize the response of our Federal agencies. Although British Petroleum is the responsible party for this oil spill, the Federal Government has the ultimate responsibility to ensure that all the appropriate safety measures were followed and all the available resources are indeed being deployed in response to this spill.

As we speak, a few thousand to potentially tens of thousands of barrels of oil are leaking into the Gulf of Mexico each day.

This leak will likely continue for the foreseeable future causing environmental and economic damage that will last for several years to come.

About one-third of U.S. oil production comes from the Gulf of Mexico. In coming years, more of the Gulf Coast oil production will come from deepwater wells such as the well drilled by BP and its partner companies.

Clearly we cannot remove deep water oil production from our current future energy supply, and clearly we cannot continue with business as usual in terms of regulating offshore energy production.

While continuing an aggressive response to the oil spill, we must move forward as quickly as possible with reasonable and effective measures that will protect our environment, our coastal communities, and our supply of domestic energy.

I thank our witnesses for joining us today, and I look forward to working with the members of this committee as we improve our approach to offshore oil and gas exploration.

The CHAIRMAN. Thank you, Senator Thune.

Senator Pryor.

STATEMENT OF HON. MARK PRYOR, U.S. SENATOR FROM ARKANSAS

Senator PRYOR. Thank you, Mr. Chairman and Ranking Member Hutchison. Thank you all for doing this hearing.

Stopping the gush of the oil spill has been marred by guesswork, failures, frustration, and now a partial solution. Cleaning up this mess will be an even more daunting challenge.

This is not the first hearing that has been held in the Senate on the response efforts, and I'm sure it won't be the last. And BP and other companies involved in this spill, of course, will have their feet held to the fire.

But, today I want to just make a few points. And I'd love to hear from the witnesses very soon.

I understand that BP has agreed to pay all legitimate claims for the clean-up costs and personal business losses. During the hearing, I hope that we get a better understanding of what constitutes a legitimate claim. BP should be prepared to go beyond the $75-million statutory cap. BB—BP should pay the cost of oil spills in full, with no equivocation. And, if you think that the taxpayers are upset about the Wall Street bailout, just wait until they learn that they may have to pay for cleaning up this economic and ecological disaster on our coastline.

Second, I'm also troubled by Transocean's decision to try to limit its liabilities to the $27 million in salvage value for the destroyed rig. Several newspapers are reporting that Transocean had insured

the rig for $560 million, but apparently never spent that much money actually building it. Since the rig collapsed and is now on the ocean floor, the company said it has already received $401 million for their—or, from their insurance policy.

And finally, I'm disturbed by the February 2009 document that BP submitted to the Minerals Management Service. It states, "A blowout, resulting in an oil spill is unlikely to have an impact, because industry equipment, technology, and response plans were up to the task." And we need to not only look at the failures here, but to ensure that this company, and others in the future, don't make these same series of mistakes in the future.

So, with that, Mr. Chairman, I really look forward to having this hearing today.

Thank you.

[The prepared statement of Senator Pryor follows:]

PREPARED STATEMENT OF HON. MARK PRYOR, U.S. SENATOR FROM ARKANSAS

Mr. Chairman and Ranking Member Hutchison, on April 20, 2010, an explosion occurred at the *Deepwater Horizon* drilling platform in the Gulf of Mexico. The explosion killed 11 workers, caused a significant fire disabling the facility and lead to a full evacuation. The fire continued to burn until the platform sank into the Gulf on April 22.

I regret the loss of life and my condolences go out to the families of these people.

At last week's hearings, BP, Transocean and Halliburton pointed fingers at each other. Just 2 weeks ago, I questioned Goldman Sachs executives who came before Congress and gave excuses, parsed words, and declared they had no responsibility for the mortgage market meltdown and global financial crisis. Whether it be a bank or an oil company, shifting the blame is not acceptable.

I understand that BP has agreed to pay all legitimate claims for the clean-up cost and personal and business losses. However, BP's costs should not be limited to the $75 million statutory cap.

I am also troubled by Transocean's decision to try to limit its liabilities to the $27 million salvage value of the destroyed rig. Several newspapers are reporting that Transocean had insured the rig for $560 million, but apparently never spent that much money actually building it. Since the rig collapsed, the company said they've already received *$401 million* from their insurance policy.

The American taxpayers should not have to pay for cleaning up this ecological disaster. The "blame game" must stop. Congress will get to the bottom of this accident and, when we do, we will know who is at fault.

The CHAIRMAN. Thank you.

And Senator Begich.

And, Senator Begich, I'm going to be voting now, so that—you will chair——

Senator BEGICH. Yes.

The CHAIRMAN.—until Senator Nelson comes back.

Senator BEGICH [presiding]. Yes, Mr. Chairman.

Thank you very much. I'll make some comments, and then we'll—I'm assuming, go right to you folks for your comments. I'll look to staff to help me—direct me; if not, that's the way it's going to be.

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

Senator BEGICH. First, thank you both for being here. Thanks, for the next panel, also.

And someone from Alaska—as a Senator from Alaska, you know, we have experienced a spill of incredible magnitude before, so we

understand what this may entail, and what it could entail over the long haul.

But, first, to the 11 workers that perished, and to the families, we express—I express my condolences for their loss and their tragedy that they're going through as we're dealing with the larger issue of the clean-up, but not to forget the families, but also the many future impacts of the families and the businesses and individuals' livelihoods that, again, from Alaska's experience, we have seen it, still, 20 years later and beyond, that are having an incredible impact.

I also—I want to just put on the record, I want to thank a lot of Alaskans, from the businesses as well as the Air Force and many of our Department of Defense folks, that have stepped up to the plate, in an enormous amount of resource and effort.

Admiral Allen, I'm—I know you're stepping down as Commandant soon, but your experience and understanding of these types of tragedies is a valuable asset. And I thank you for continuing to be the incident commander in this situation.

It is a tragedy. And I think these hearings, may they be plentiful as we go through the next process—part of this is to learn and understand what went wrong, what kind of resources we need to have on our side of the equation, but, also, from the industry side, what they need to be doing better.

There is no question in my mind that, when it comes to offshore development, this country needs to be the best of the best. There should be no hesitation in utilizing whatever resource we can, ensuring that the agencies that are in the Federal Government have the investment in research and other issues.

I know, Administrator Lubchenco, we've talked about that a lot, about NOAA's role, not only here, what's going on down in the Gulf, but in the Arctic, and the future potential of what's going to go on up there. So, I'm anxious to hear, as we go through this testimony, but also through the efforts we're going to have over the next several months, is my guess, of what we can do to improve our technology and advance our technology.

It is realistic—it is not realistic to think that we will not have OCS. There will be OCS development. The question is, How do we manage that in the right way in our overall energy plans and energy structure for this country?

So, first, again, I want to thank you for all the efforts you all are doing with "all hands on deck," is the way I describe it. So, thank you for your participation today, even though the spill is moving forward very aggressively, and the efforts down there. So, thank you very much.

I'm going to close my comments.

And, Senator Kerry—have you spoken already, Senator Kerry?

Senator KERRY. No, I'm going to——

Senator BEGICH. I will turn it to you next.

Senator KERRY. Thank you.

Have you voted?

Senator BEGICH. I have voted the first one.

Senator KERRY. OK.

Senator BEGICH. Have you——

Senator KERRY. All right.

Senator BEGICH. You've done that also?
Senator KERRY. Beg your pardon?
Senator BEGICH. You've done the first vote, too?
Senator KERRY. Yes.
Senator BEGICH. Yes.

STATEMENT OF HON. JOHN F. KERRY, U.S. SENATOR FROM MASSACHUSETTS

Senator KERRY [presiding]. Dr. Lubchenco and Admiral Allen, thanks for being here with us today. We appreciate it. We know you've been unbelievably busy and enormously concerned and involved in trying to manage this challenge.

This an important hearing to try to understand, not just the current status of the clean-up efforts, obviously, but really to explore what policies and requirements are needed to prevent this from happening again, to stop history from repeating itself.

And this committee has an important jurisdiction, an important oversight role to play. We have jurisdiction over the two Federal agencies that hold the primary responsibility for the oil spills—that is, the clean-up and the, sort of, management of them—as well as understanding the impact of those spills on marine and coastal environment.

I agree with Senator Begich and others, you know, given our dependency on oil, given the nature of our economy and life in America and the world, it's just unrealistic for anybody to assume that suddenly drilling is going to stop. It's not. And for the next 20, 30, 40 years, even if we make our very best efforts, with respect to alternative and renewable and efficiency and clean coal technology or whatever the options are going to be—nuclear, et cetera—we're still going to be drilling, and we're still going to be reliant on some fossil fuels.

The President has already made it clear that change is needed, at the agency level. And he has accepted Secretary Salazar's judgment to split the MMS into two pieces so that regulators are no longer also making the deal with the industry on the leasing itself, but they're making changes to the leadership itself. And it's going to be up to this committee to exercise the oversight and ask the tough questions to find out whether other changes are required, as well.

Over the past 72 hours, we are pleased to note that it seems that significant progress has been made in slowing the flow of oil in the—to the surface, by inserting the tube into the pipe from which most of the oil has been leaking. And BP has indicated plans to seal off the well, hopefully as early as this weekend. And we obviously wish them well and hope that that will happen.

So, while I'm encouraged by that progress, obviously the chart showed by our colleague Senator Nelson has always been of concern with respect to the potential of the spills in the Gulf. And we all have very significant concerns about what went wrong on board *Deepwater Horizon* that has resulted in economic and environmental harm to the Gulf and to the coastal communities. And some of that is not even yet capable of being fully measured.

I'm also deeply concerned, personally, as the former Chair of the Ocean Subcommittee, and a continued member of it for some 26

years here, about the potential disruption of the underwater ecosystem, particularly due to the application of toxic underwater dispersants. I think there are serious questions about the impact of those dispersants on living organisms in the Gulf and perhaps even, depending on what happens with currents, elsewhere.

As we work to develop the legislation that's going to create a vibrant clean energy future for our Nation—and let me just say, I want to recognize this, that BP and other oil companies have been an important and constructive part of working toward that with us, and we're grateful for that—but, we have to get serious about the management and oversight of our energy resources, overall.

I'm frustrated by the finger-pointing that appears to have dominated the public discourse over the disaster. That's the easy stuff, folks. What's harder is to bear down and figure out what the options are, and execute on them. We need to quickly and honestly clarify what went wrong, determine whether there was carelessness or negligence, evaluate the extent of the damages, identify who's responsible to cover what costs.

And on this point, let me say, I'm encouraged by BP's statements, which I think have been forthcoming and direct, that they will provide full compensation.

But, Mr. Chairman, one point, which I feel very strongly about, is that, no matter what BP does, no matter what any oil company does, on our current course, so long as we are dependent on fossil fuels imported from elsewhere for the bulk of our energy needs, we will continue to run a set of risks—not always the same as what we've just witnessed in the Gulf, but some may even be riskier, in some ways.

Today, as we speak, tankers are moving through narrow straits around the globe, some of them bordering dangerous countries with dangerous intentions, in order to bring oil to our shores, from abroad. These are also oil spills waiting to happen, as we've seen in the past.

And it seems to me that we need to understand that there is a huge impact to the downside to America's economy in sending $1 billion a day, or more, abroad to other nations, some of which are not particularly friendly to the United States. I don't know how many Americans know it, but we pay an Iran tax for our current policy. Every day, $100 million goes to Iran today, even as we are poised to sanction them with respect to nuclear proliferation. We do that because of our dependency on oil for transportation in this country. So, the risks should surprise no one.

I was, frankly, amazed to hear some people, in the wake of what happened in the Gulf, say that this spill made passing energy independence legislation this year even more difficult. I honestly don't understand that kind of reasoning. I don't know where the connection to common sense is in that statement. Nothing could be further from the truth.

If the Gulf events tell us anything, it ought to be the opposite. This disaster ought to force Congress and the Administration to revisit our existing laws governing liability, safety, permitting, preparedness, and environmental review when it comes to offshore exploration. But, make no mistake, above all else, it ought to drive a serious national dialogue and a debate and action on legislation

this year to advance our energy independence, which strengthens our national security; create jobs here at home, that can't be exported, by producing our energy here at home—the jobs stay here, and the energy stays here; and finally, we will advance our Nation's clean energy future by doing something that we used to do and take for granted, which was called reducing pollution. Hopefully, that will be the outcome of what happened in the Gulf.

Senator LeMieux, have you—you've had your opening?

Senator LEMIEUX. I have.

Senator KERRY. And, Senator Begich, you've had your opening.

So, I think what we should do is go into the questioning, then——

Voice: When do the witnesses give statements?

Senator KERRY. Oh. Excuse me. We have the witnesses. Oh, well, the heck with the witnesses. Let's just question them.

[Laughter.]

Senator KERRY. You're absolutely correct.

So, Dr. Lubchenco, if you would lead off.

And, Admiral Allen, thank you for your patience, we appreciate it.

If you want to summarize your statement, we'll put the full text in the record as if read in full. And then—you saw a lot of Senators here. They will be coming back after this vote, and there'll be a fairly significant amount of questions, I'm sure.

[The prepared statement of Senator Kerry follows:]

PREPARED STATEMENT OF HON. JOHN F. KERRY,
U.S. SENATOR FROM MASSACHUSETTS

Mr. Chairman, this is a critical hearing for both the short-term and the long haul, both to help us understand the current status of clean-up efforts in the Gulf, but also to explore what policies and requirements are needed to prevent history from repeating itself.

This committee has an important oversight role to play. We have jurisdiction over the two Federal agencies represented here today, which hold primary responsibility for responding to oil spills, as well as understanding the impact of those spills on the marine and coastal environment. Already, the President has made it clear that change is needed at the agency level—accepting Secretary Salazar's judgment to split MMS into two pieces so that the regulators are no longer also making deals with the industries on leasing, but also making changes in the leadership itself. It will be up to this committee to exercise oversight and ask tough questions to find out whether other changes are required as well.

Mr. Chairman, over the past 72 hours, it seems that significant progress has been made in slowing the flow of oil to the surface by inserting a tube into the pipe from which most of the oil has been leaking. In addition, BP has indicated plans to seal off the well as early as this weekend.

While I am encouraged by this progress, I have significant concerns regarding what went wrong aboard the *Deepwater Horizon,* resulting in economic and environmental harm to the Gulf and its coastal communities which is not yet even capable of being measured. I also am deeply concerned about the potential disruption of the underwater ecosystem—particularly due to the application of toxic underwater dispersants.

As we work to develop legislation that would create a vibrant clean energy future for our Nation, we must get serious about the management and oversight of our energy resources. I am frustrated by the finger-pointing that has dominated the public discourse over this disaster. We need to quickly and honestly clarify what went wrong, determine whether there was any carelessness or negligence, evaluate the extent of the damages, and identify who is responsible to cover what costs. On this final point, I am encouraged by BP's statements that they will provide full compensation.

But Mr. Chairman, one point about which I feel very strongly, is that no matter what BP does, no matter what any oil company does, so long as we're dependent on fossil fuels for the bulk of our energy needs, we're in danger. Today—as we speak—tankers are moving through narrow straits around the globe to bring oil to our shores from abroad. Those are oil spills waiting to happen. So long as we're so dependent, we'll be drilling deeper and deeper and shipping oil farther and farther. The risk should surprise no one.

I was stunned to hear some say the spill made passing energy independence legislation this year more difficult. Nothing should be further from the truth. Quite the opposite—this disaster should force Congress and the Administration to revisit our existing laws governing liability, safety, permitting, preparedness and environmental review when it comes to offshore exploration—but make no mistake, above all else, it should also drive a serious national dialogue and a debate on legislation this year to advance our Nation's clean energy future.

STATEMENT OF HON. JANE LUBCHENCO, PH.D., UNDER SECRETARY OF COMMERCE FOR OCEANS AND ATMOSPHERE AND NOAA ADMINISTRATOR, NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION, U.S. DEPARTMENT OF COMMERCE

Dr. LUBCHENCO. Thank you, Senator.

I appreciate the opportunity to testify on behalf of the National Oceanic and Atmospheric Administration about NOAA's role in the response to the *Deepwater Horizon* oil spill.

I greatly appreciate the opportunity to discuss the critical roles that NOAA serves during oil spills, and the importance of maximizing our contributions to protect and restore the resources, communities, and economies that are affected by this tragic event.

Before I move to discuss NOAA's efforts, I want to first express my condolences to the family—families of the 11 people who lost their lives in the explosion and the sinking of the *Deepwater Horizon.* This is, indeed, a difficult time, and our thoughts are with them as we work aggressively to deal with the aftermath of the explosion.

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 economic, social, and environmental needs.

NOAA is also a natural resource trustee and one of the Federal agencies responsible for protecting and restoring the public's coastal natural resources when they are affected by oil spills or other hazardous-substance releases. As such, the entire agency 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 *Deepwater Horizon* oil spill.

NOAA's experts have been assisting with the response from the very beginning of this oil spill, providing coordinated scientific weather and biological response services when and where they are needed most. Offices throughout the agency have been mobilized, and hundreds of NOAA personnel are dedicating themselves to assist.

Over the past few weeks, NOAA has provided 24/7 scientific support to the U.S. Coast Guard in its role as Federal on-scene coordinator, both on scene and through our Seattle operations center. This NOAA-wide support includes twice-daily trajectories of the oil spill, information management, overflight observations and map-

ping, weather and river flow forecasts, shoreline and resource risk assessment, and oceanographic modeling support.

NOAA has also been supporting the Unified Command in planning for open-water and shoreline remediation and analyses of various techniques for handling the spill, including open-water burning, and surface and deepwater application of dispersants.

Hundreds of miles of coastal shoreline were surveyed to support clean-up activities. NOAA's National Marine Fisheries Service is addressing issues related to marine mammals, sea turtles, seafood safety, and fishery resources, which includes the closure of commercial and recreational fishing in oil-affected portions of Federal waters in the Gulf, and updating the dimensions of the closed area, as necessary, to ensure fisher and consumer safety without needlessly restricting productive fisheries in areas that are not affected by the spill.

As the lead Federal trustee for many of the NOAA's—many of the Nation's coastal and marine resources, the Secretary of Commerce, acting through NOAA, is authorized, pursuant to the Oil Pollution Act of 1990, to recover damages on behalf of the public to address injuries to natural resources resulting from an oil spill. OPA encourages compensation in the form of restoration, and this is accomplished through the Natural Resources Damage Assessment Process by assessing injury and service loss, then developing a restoration plan that appropriately compensates the public for injured resources. NOAA is coordinating the damage assessment effort within the Department of the Interior as a Federal co-trustee, as well as co-trustees in five states and representatives for at least one responsible party, BP.

This event is a grave reminder that spills of national significance can occur, despite the many improvements that have been put in place since the passage of the Oil Pollution Act. Although the best remedy is prevention, oil spills remain a grave concern, given the offshore and onshore oil infrastructure, pipes, and vessels that move huge volumes of oil through our waterways.

To mitigate environmental effects of future spills, responders must be equipped with sufficient capacity and capabilities to address the challenge. Response training and exercises are essential to maintain those capabilities. Continuous training, improvement of our capabilities, maintenance of our capacity, and investments in high- priority response-related research-and-development efforts will ensure that the Nation's response to these events remains effective. Training and coordination with other Federal, state, and local agencies that might have response and restoration responsibilities is also critical to success in mitigating effects of future spills.

There are a number of improvements to our ability to quickly respond to, and mitigate damages from future oil spills that would benefit the Nation.

One such activity is increasing our response capacity. If another large spill was to occur simultaneously in another location in the United States, NOAA would have difficulty providing the level of response needed. In addition, the use of simulated drills and the continued development of tools and strategies can only increase the effectiveness of oil spill response.

Specific activities that would increase response effectiveness include updating environmental sensitivity index maps, data management tools for decisionmaking, use of relevant technologies, and real-time observation systems.

Research and development is also critical to ensure the latest scientific—response efforts. Priority areas for future research and development include fate and behavior of oil released at depth, long-term effects of oil, responding to potential oil spills in the Arctic, mapping oil extent, oil detection in the water column and sea floor, and human dimensions, including social issues, community effects, and risk communication methods.

Finally, 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 the spill. From the outset, our efforts have been aggressive, strategic, and science-based. We will continue along that path.

Thank you for the opportunity to focus on NOAA's response efforts. And I'm happy to answer any questions.

[The prepared statement of Dr. Lubchenco follows:]

PREPARED STATEMENT OF HON. JANE LUBCHENCO, PH.D., UNDER SECRETARY OF COMMERCE FOR OCEANS AND ATMOSPHERE AND NOAA ADMINISTRATOR, NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION, U.S. DEPARTMENT OF COMMERCE

Thank you, Chairman Oberstar and members of the Committee, for the opportunity to testify on the Department of Commerce National Oceanic and Atmospheric Administration's (NOAA's) role in the response to the *Deepwater Horizon* oil spill. My name is Dr. Jane Lubchenco and I am the Under Secretary of Commerce for Oceans and Atmosphere and the Administrator of NOAA. I appreciate the opportunity to discuss the critical roles NOAA serves during oil spills and the importance of maximizing our contributions to protect and restore the resources, communities, and economies affected by this tragic event. Before I move to discuss NOAA's efforts, I would first like to express my condolences to the families of the 11 people who lost their lives in the explosion and sinking of the *Deepwater Horizon*.

NOAA's mission is to understand and predict changes in Earth's environment and conserve and manage coastal and marine resources to meet our Nation's economic, social, and environmental needs. NOAA is also a natural resource trustee and is one of the Federal agencies responsible for protecting and restoring the public's coastal natural resources when they are impacted by oil spills, hazardous substance releases, and impacts from vessel groundings on corals and seagrass beds. As such, the entire agency 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 *Deepwater Horizon* oil spill. NOAA is fully mobilized and working tirelessly 24/7 to lessen impacts on the Gulf Coast and will continue to do so until the spill is controlled, the oil is cleaned up, the natural resource damages are assessed, and the restoration is complete.

My testimony today will discuss NOAA's role in the *Deepwater Horizon* response, natural resource damage assessment, and restoration; NOAA's assets, data, and tools on-scene; the importance of preparedness; and necessary future actions.

NOAA's Roles During Oil Spills

NOAA has three critical roles mandated by the Oil Pollution Act of 1990 and the National Contingency Plan:

1. Serves as a conduit for scientific information to the Federal On-Scene Coordinator to provide trajectory predictions for spilled oil, overflight observations of oil on water, identification of environmental areas that are highly valued or sensitive, and shoreline surveys of oil to determine clean-up priorities.

2. Conduct a joint natural resource damage assessment with other trustees with the goal of restoring any ocean and coastal resources harmed by the spill. This includes fulfilling the role of Natural Resource Trustee for impacted marine resources.

3. Represent Department of Commerce interests in spill response decision-making activities through the Regional Response Team.

The U.S. Coast Guard (USCG) has the primary responsibility for managing coastal oil spill response and clean-up activities in the coastal zone. During an oil spill, NOAA's Scientific Support Coordinator delivers expert scientific support to the USCG in its role as Federal On-Scene Coordinator. NOAA's Scientific Support Coordinators are located around the country in USCG Districts, ready to respond around the clock to any emergencies involving the release of oil or hazardous materials into the oceans or atmosphere.

Using experience, expertise, and state-of-the-art technology, NOAA forecasts the movement and behavior of spilled oil, evaluates the risk to resources, conducts overflight observations and shoreline surveys, and recommends protection priorities and appropriate clean-up actions. NOAA also provides spot weather forecasts, emergency coastal survey and charting capabilities, aerial and satellite imagery, and real-time coastal ocean observation data to assist response efforts. Federal, state, and local entities look to NOAA for assistance, experience, local perspective, and scientific knowledge.

NOAA serves the Nation by providing expertise and a suite of products and services critical for making science-based response decisions that prevent further harm, restore natural resources, and promote effective planning for future spills. Federal, state, and local agencies across the country called upon NOAA's Office of Response and Restoration (OR&R) for scientific support 200 times in 2009.

NOAA's Response Efforts for *Deepwater Horizon* Oil Spill

NOAA's experts have been assisting with the response from the beginning, providing coordinated scientific weather and biological response services when and where they are needed most.

At 2:24 a.m. (central time) on April 21, 2010, NOAA's OR&R was notified by the USCG of an explosion and fire on the Mobile Operating Drilling Unit (MODU) *Deepwater Horizon,* approximately 50 miles southeast of the Mississippi Delta. The explosion occurred at approximately 10:00 p.m. on April 20, 2010. Two hours, 17 minutes after notification by the USCG, NOAA provided our first spill forecast predictions to the Unified Command in Robert, Louisiana. NOAA's National Weather Service Weather Forecast Office in Slidell, LA, received the first request for weather support information from the USCG at 9:10 a.m. on April, 21, 2010 via telephone. The first graphical weather forecast was sent at 10:59 a.m. to the USCG District Eight Command Center in New Orleans. Support has not stopped since that first request for information by the USCG. Over the past few weeks, NOAA has provided 24/7 scientific support, both on-scene and through our Seattle Operation Center. This NOAA-wide support includes twice daily trajectories of the spilled oil, information management, overflight observations and mapping, weather and river flow forecasts, shoreline and resource risk assessment, and oceanographic modeling support. NOAA has also been supporting the Unified Command in planning for open water and shoreline remediation and analyses of various techniques for handling the spill, including open water burning and surface and deepwater application of dispersants. Hundreds of miles of coastal shoreline were surveyed to support clean-up activities.

Offices throughout the agency have been mobilized and hundreds of NOAA personnel are dedicating themselves to assist. In addition to these activities, I would like to highlight several of NOAA's assets that are assisting with the overall oil spill response and assessment efforts:

- NOAA's National Weather Service is providing critical 24/7 weather support dedicated to the spill, as well as on-site weather support at multiple command centers. Special aviation marine wind and wave forecasts are being prepared to support response activities. A marine meteorologist was deployed to the Joint Operations Center in Houma, LA, on April, 27, 2010. Beginning on April 28, 2010, hourly localized "spot" forecasts were requested by USCG and NOAA OR&R in support of oil burns and eventually chemical dispersion techniques. Longer range forecasts are a critical component to plan containment and response actions. NOAA's National Data Buoy Center data is also being incorporated into oil trajectory forecasts.
- NOAA's National Ocean Service is providing: custom navigation products and updated charts to help keep mariners out of oil areas; updates from NOAA's extensive network of water-level, meteorological, and near-shore current meters throughout the Gulf; in-situ observations data; economic assessment expertise; aerial photo surveys to assess pre- and post-landfall assessments; and pre- and post-oil contamination assessments of oysters at Mussel Watch sites.

- NOAA's Office of Oceanic and Atmospheric Research (OAR) dispatched the R/V Pelican ship along with National Institute for Undersea Science and Technology cooperative scientists to collect samples as soon as possible. OAR is advising on airborne and oceanic dispersion modeling. NOAA and university scientists are also flying NOAA's P3 hurricane hunter aircraft to drop expendable probes to map the ocean current, salinity, and thermal structure from 1,000 m depth to the surface that will refine and calibrate loop current modeling. These deployments will be critical for helping to track where the oil might be headed and whether other areas of the United States will be impacted by the *Deepwater Horizon* oil spill. In addition, NOAA-funded Sea Grant programs in Louisiana and other Gulf Coast states will be awarding grants for rapid response projects to monitor the effects of the oil spill on Louisiana's coastal marshes and fishery species.
- NOAA's National Marine Fisheries Service (NMFS) is addressing issues related to marine mammals, sea turtles, seafood safety, and fishery resources. On May 2, 2010, NMFS closed commercial and recreational fishing in oil-affected portions of Federal waters in the Gulf for 10 days. NOAA scientists are on the ground in the spill area taking water and seafood samples to ensure the safety of seafood and fishing activities. On May 7, NMFS made effective an amendment to the emergency closure rule which adjusted the shape of the closed area to be more consistent with the actual spill location. On May 11, 2010, NMFS filed an emergency rule to establish a protocol to more quickly and effectively revise the closing and opening of areas affected by the oil spill. Due to the shifting currents and winds, rapid changes in the location and extent of the spill are occurring, which requires NMFS to update the dimensions of the closed area, as necessary, to ensure fisher and consumer safety without needlessly restricting productive fisheries in areas that are not affected by the spill. In addition, NOAA's Marine Animal Health and Stranding Response Program is assisting the Wildlife Operations Branch of the Unified Command to provide expertise and support for the response efforts to the *Deepwater Horizon* oil spill. Established protocols and procedures for treating marine wildlife impacted by oil have been developed by NOAA and its partners and are being adapted to address the particular needs of this event.
- NOAA's National Environmental Satellite, Data, and Information Service is providing satellite imagery from NOAA's Geostationary Operational Environmental Satellites and Polar Operational Environmental Satellites, and is leveraging data from the National Aeronautics and Space Administration and international satellites to develop experimental and customized products to assist weather forecasters and oil spill response efforts. NOAA's National Data Centers are also providing data from its archives that are being used to help provide mapping services for the impacted areas, and temperature, salinity, current, and surface elevation (tides) with forecasts up to 72 hours out from the Navy Global Ocean Coastal Model.
- NOAA's Office of Marine and Aviation Operations has 3 aircraft providing support for overflights that are being conducted on a near daily basis.
- The NOAA General Counsel's Office is working closely with state and Federal co-trustee agencies to undertake a natural resource damage assessment and other steps to prepare claims for response costs and damages for natural resource injuries associated with the oil spill. The Office is also addressing a wide range of legal questions that arise in conjunction with the spill.
- The NOAA Communications office has provided two to three communications specialists to assist in the Joint Incident Center with press and all communications efforts. Within NOAA, the staff has been facilitating scientist interviews with media and working with the Office of Response and Restoration to update daily a dedicated NOAA *Deepwater Horizon* response website with the latest information and easy-to-use fact sheets on topics ranging from oil and coral reefs to an explanation of the booms being used.

NOAA's Role in Damage Assessment and Restoration

Oil spills affect our natural resources in a variety of ways. They can directly impact our natural resources, such as the oiling of marine mammals. They can diminish the ecological services provided by coastal and marine ecosystems, such as the loss of critical nursery habitat for shrimp, fish, and other wildlife that may result from oiled marshes. Oil spills may also diminish how we use these resources, by affecting fishing, boating, beach going, and wildlife viewing opportunities.

Stewardship of the Nation's natural resources is shared among several Federal agencies, states, and tribal trustees. NOAA, acting on behalf of the Secretary of

Commerce, is the lead Federal trustee for many of the Nation's coastal and marine resources, and is authorized pursuant to the Oil Pollution Act of 1990 (OPA) to recover damages on behalf of the public for injuries to trust resources resulting from an oil spill. OPA encourages compensation in the form of restoration and this is accomplished through the Natural Resource Damage Assessment (NRDA) process by assessing injury and service loss, then developing a restoration plan that appropriately compensates the public for the injured resources. NOAA scientists and economists provide the technical information for natural resource damage assessments and work with other trustees and responsible parties to restore resources injured by oil spills. To accomplish this effort, NOAA experts collect data, conduct studies, and perform analyses needed to determine whether and to what degree coastal and marine resources have sustained injury from oil spills. They determine how best to restore injured resources and develop the most appropriate restoration projects to compensate the public for associated lost services. Over the past 20 years, NOAA and other natural resource trustees have recovered over $500 million worth of restoration projects from responsible parties for the restoration of the public's wetlands, coral reefs, oyster reefs, and other important habitats.

The successful recovery of injured natural resources depends upon integrated spill response and restoration approaches. The initial goals of a response include containment and recovery of floating oil because recovery rates for floating oil can be quite high under certain conditions. As the oil reaches the shoreline, clean-up efforts become more intrusive and oil recovery rates decline. At this point, it becomes important to recognize that certain spill response activities can cause additional harm to natural resources and actually slow recovery rates. Such decision points need to be understood so that cost effective and successful restoration can take place. NOAA brings to bear over 20 years of experience and expertise to these issues. Continued research on clean-up and restoration techniques and the recovery of environmental and human services after oil spills may improve such decisionmaking.

NOAA's Damage Assessment and Restoration Efforts for the *Deepwater Horizon* Oil Spill

At the onset of this oil spill, NOAA quickly mobilized staff from its Damage Assessment Remediation and Restoration Program to begin coordinating with Federal and state co-trustees and the responsible parties, to begin collecting a variety of data that are critical to help inform the NRDA. NOAA is coordinating the NRDA effort with the Department of the Interior as a Federal co-trustee, as well as co-trustees in five states and representatives for at least one responsible party (BP).

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 factors that affect how quickly resources are assessed and restoration and recovery occurs. The rigorous scientific studies that are necessary to prove injury to resources and services may also take years to implement and complete. The NRDA process described above ensures an objective and cost-effective assessment of injuries—and that harm to the public's resources is fully addressed.

While it is still too early in the process to know what the full scope of the damage assessment will be, NOAA is concerned about the potential impacts to fish, shellfish, marine mammals, sea turtles, birds, and other sensitive resources, as well as their habitats, including wetlands, beaches, bottom sediments, and the water column. This may include national estuarine research reserves and national marine sanctuaries. The natural resources co-trustees may also evaluate any lost value related to the use of these resources, for example, as a result of fishery and beach closures.

Value of Readiness

This event is a grave reminder that spills of national significance can occur despite the many safeguards and improvements that have been put in place since the passage of the OPA. Although the best remedy is to prevent oil spills, oil spills remain a concern given the offshore and onshore oil infrastructure, pipes and vessels that move huge volumes of oil through our waterways.

To mitigate environmental effects of future spills, responders must be equipped with sufficient capacity and capabilities to address the challenge. Response training and exercises are essential to maintaining capabilities. Continuous training, improvement of our capabilities, maintenance of our capacity, and investments in high priority, response-related research and development efforts will ensure that the Nation's response to these events remains effective. Training and coordination with

other Federal, state and local agencies that might have response and restoration responsibilities is critical to success in mitigating effects of future spills.

Just 2 months ago, NOAA participated in an oil spill exercise that focused on a hypothetical spill of national significance. This type of exercise is held every 3 years to sharpen the Nation's ability to respond to major oil spills at all levels of government. Led by the USCG, this exercise included more than 1,000 people from 20 state and Federal agencies as well as industry. This year's exercise centered on a simulated tanker collision off the coast of Portland, ME resulting in a major oil spill causing environmental and economic impacts from Maine to Massachusetts. Lessons learned from this and similar drills have improved our readiness to respond to oil spills. One tool that was successfully incorporated into this recent exercise is called the Environmental Response and Management Application (ERMA). This tool was developed by NOAA to streamline the integration and sharing of data and information, and certain components of this tool are now being used in the *Deepwater Horizon* response effort. ERMA is a web-based Geographic Information System tool designed to assist both emergency responders and environmental resource managers who deal with events that may adversely impact the environment. In the recent drill, ERMA allowed for the integration of current science, information technology, and real-time observational data into response decisionmaking. It allowed the latest information that was collected from a variety of efforts related to spills of national significance to be integrated, displayed on a map and shared for use across the Incident Command structure. Although not fully functional in the Gulf of Mexico, ERMA is providing benefits for the *Deepwater Horizon* response, many of which were first tested during the recent oil spill exercise. This recent drill also incorporated the damage assessment efforts of the trustees, which resulted in improved communications and leveraging of resources and information.

Activities to Improve Future Response Efforts

Activities that would benefit the Nation by improving our ability to quickly respond to and mitigate damages from future spills include:

- *Response capacity*—NOAA's Office of Response and Restoration is fully engaged in responding to the *Deepwater Horizon* spill. Although unlikely, if another large spill was to occur simultaneously in another location across the United States, NOAA would have difficulty responding to its complete ability. Additional expertise in analytical chemistry, environmental chemistry, biology, oceanography, natural resource damage assessment, administrative functions, and information management would help plan and prepare activities between spills including training, development of area plans and response protocols, drafting and reviewing response job aids, and coordinating with regional responders.
- *Response effectiveness*—The use of simulated drills and the continued development of tools and strategies can only increase the effectiveness of oil spill response. Specific activities that would increase response effectiveness include:
  - *Environmental Sensitivity Index Maps*—Environmental Sensitivity Index (ESI) maps provide information that helps reduce the environmental, economic, and social impacts from oil and chemical spills. Spill responders are utilizing NOAA's ESI maps to identify priority areas to protect from spreading oil, develop cleanup strategies to minimize impacts to the environment and coastal communities, and reduce overall cleanup costs.
  - *Data Management Tools for Decisionmaking*—The key to effective emergency response is efficiently integrating current science, information technology, and real-time observational data into response decisionmaking. NOAA has developed the ERMA, which integrates real-time observations (*e.g.,* NOAA National Buoy Data Center data, weather data, shoreline data, vessel traffic information, etc.) with archived data sources (*e.g.,* NOAA's National Oceanographic Data Center's historical data) to aid in evaluating resources at risk, visualizing oil trajectories, and for planning rapid tactical response operations, injury assessment and habitat restoration. Having access to retrospective data is critical to bring value to real-time observational data being collected. For the *Deepwater Horizon* oil spill, certain components of the Gulf of Mexico ERMA are functional and being used on an *ad hoc* basis. The only fully functional ERMA are in the U.S. Caribbean and New England.
  - *Use of Relevant Technologies*—Better use of remote-sensing technologies, unmanned aerial vehicles, and an improved ability to access and use real-time observation systems would optimize clean-up operations. For example, when oil spreads across the water it does not do so in a uniform manner. Oil slicks

can be quite patchy and vary in thickness. The effectiveness of response options—the booms, skimmers, and dispersants—depends on whether they are applied in the areas of the heaviest oil. NOAA's trajectory modeling and visual observations obtained through overflights are helping direct the application of spill technologies, but remote sensing technology could be used to more effectively detect oil, determine areas of heaviest amounts of oil, and then this information could be used to direct oil skimming operations and increase the recovery of spilled oil. Traditional methods of visual observation can be difficult at night or in low visibility conditions, as is the case with *Deepwater Horizon.* In such situations, enhanced remote sensing technology would allow NOAA to improve the trajectory models it produces for the Unified Command.

- *Real-time Observation Systems*—Real-time data on currents, tides, and winds are important in driving the models that inform us on the likely trajectory of the spilled oil. As the Integrated Ocean Observing System generates more data from technological advances like high frequency radar, the prediction of oil location can be improved by pulling these observations into trajectory models in real-time.

- *Research and Development*—Research and development is critical to ensure the latest science informs response efforts. Priority areas for future research and development include:
  - *Fate and Behavior of Oil Released at Deep Depths*—A better understanding is needed of how oil behaves and disperses within the water column when released at deep depths, such as happened with the *Deepwater Horizon* oil spill. This is also true regarding the use of dispersants in deep water. This information is critical to develop oil spill trajectory models and improve our understanding of the potential short- and long-term effects of dispersants on the environment.
  - *Long-Term Affects of Oil*—Spilled oil can remain on the shoreline and in wetlands and other environments for years. More than twenty years later, there is still oil in Prince William Sound from the *Exxon Valdez* spill. Research is needed to improve our understanding of the long-term effects of oil on sensitive and economically important species. This understanding will improve decisionmaking during a response and allow us to determine the best approach to clean up.
  - *Arctic*—Continued acceleration of sea-ice decline in the Arctic Ocean as a consequence of global warming may lead to increased Arctic maritime transportation and energy exploration that in turn may increase the potential of oil spills in the Arctic. Recent studies, such as the Arctic Monitoring and Assessment Programme's Oil and Gas Assessment, indicate that we currently lack the information to determine how oil will behave in icy environments or when it sinks below the surface. We also lack a basic understanding of the current environmental conditions, which is important for conducting injury assessments and developing restoration strategies.
  - *Mapping Oil Extent*—Current use of NOAA-generated experimental products suggest that data from space-based synthetic aperture radar could assist us in detecting and refining the areal extent of oil and provide information in the decisions about where resources could be deployed.
  - *Oil Detection in Water Column and Seafloor*—In addition to depth data, modern multibeam echo sounders record acoustic returns from the water column and acoustic backscatter amplitude returns from the seafloor. In limited research applications, these systems have been able to detect oil in the water column and on the seafloor. Sensors on autonomous vehicles that detect the presence of oil and gas in the water column are another detection technology. If these technologies could be used to provide highly accurate information on where oil is, and where it isn't, such information would be of significant benefit to a spill response such as *Deepwater Horizon,* where timely and precise placement of limited resources are critical to mitigate spill impacts. This developmental effort could provide very useful data for later response and restoration efforts.
  - *Human Dimensions*—Research on how to incorporate impacted communities into the preparedness and response processes could help to address the human dimensions of spills, including social issues, community effects, risk communication methods, and valuation of natural resources.

Conclusion

NOAA will continue to provide scientific support to the Unified Command. NRDA efforts in coordination with our Federal and state co-trustees have begun. 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. Thank you for allowing me to testify on NOAA's response efforts. I am happy to answer any questions you may have.

Senator KERRY. Thank you, Dr. Lubchenco.

Admiral Allen.

STATEMENT OF ADMIRAL THAD ALLEN, COMMANDANT, UNITED STATES COAST GUARD AND NATIONAL INCIDENT COMMANDER ON THE DEEPWATER HORIZON FIRE AND MC 252 OIL SPILL

Admiral ALLEN. Thank you, sir.

I'd like to submit my statement for the record and actually provide an operational update this morning that takes us——

Senator KERRY. Thank you very much.

Admiral ALLEN.—to the current——

Senator KERRY. Without objection, the full statement will be in the record.

Admiral ALLEN. Senator, I'd like to start with just a brief discussion of the life cycle of this event, and then move in to the current status of our response operations.

As you know, this event occurred on the night of the 20th of April. This started out as a massive explosion and a search-and-rescue operation.

I add my condolences to the families of the men who were lost.

I'd also like to just point out the extraordinary response of industry vessels that were in the area, offshore supply vessels who came under that rig while it was on fire, and were instrumental in saving well over a hundred people. And I think it's often not well understood how much they had to do with it.

I'm also pleased to be here with my very good friend, Dr. Jane Lubchenco, who I've worked with, well over a year now. And you need to know we are committed partners in this effort.

Right after we were aware of the incident itself, and I got notified personally about an hour and a half after the Coast Guard was notified, we immediately sent rescue units to the scene—helicopters, cutters—and, over a multi-day search, covered about 5,000 square miles, with about 30 sorties, ultimately suspended the search when there was no indicated chance that there would be survivors. And again, we pass our condolences to the family.

Early on, we brought salvage experts into Morgan City and Houma to take a look at the structural issues associated with the mobile drilling unit and, at that time, started mobilizing resources for what we thought might be a worst-case discharge associated with the event.

As it turned out, the drill sunk on the 22nd of April. Several hours later, I was in the Oval Office, along with Secretary Napolitano and Secretary Salazar, briefing the President on the implications of that.

In the time in between that, we raised the level of command from the local Coast Guard captain of the port to Rear Admiral

Mary Landry, who has led the response since then, as the Federal on-scene coordinator for the entire area. She's done a terrific job down there, with all the Federal partners, working with the private industry to make sure we optimize this response.

What we have found, over the course of attacking this spill, is that now we are dealing with something that's much more complicated in many ways than any spill I've ever dealt with. The first spill I actually was involved in was actually in 1980, so I've been doing this for quite a while. And we'll get into this in the—in some of the questions. But, we are not dealing with a large monolithic spill anymore.

Depending on when the oil came to the surface, whether or not dispersants were being used, in situ burning, or mechanical skimming, we now have a very, very wide perimeter, with different concentrations of different types of oil, which covers a vast area, but there is not a single, large monolithic spill. For that reason, there are—there's a chance that some of it could get in the Loop Current. We can talk about that. Some of it has come ashore in Louisiana. Tar balls are impacting Alabama. We've seen tar balls, actually, in Texas.

So, what we're doing is fighting an omnidirectional and almost indeterminate threat, here. And the reason I bring that up, it's creating severe challenges for where to employ resources, where we might need them as the oil comes ashore. And this has manifested itself mostly in the booming requirements for the various states that could be impacted. And I'd be glad to go into that in greater detail.

But, as we sit here today, there are probably about 20,000 people that are employed down in the Gulf that are both Active-Duty Coast Guard, Federal partners, state and local volunteers, and private sector.

Regarding the boom, we have about 1.9 million—I'm sorry—1.3 million feet of boom deployed. We believe, to cover everything that we need, including some of the parishes in Louisiana to the west, we need about 1.9 million feet of boom. The delta is being covered with a boom that is on order. When we get everything that we have currently on order in pipeline, we will have over 3 million feet of boom available. This is important as we start to look at the potential implications of the Loop Current, and what might be needed in South Florida. And we are staying right on that.

We continue to attack this spill on the surface through mechanical skimming, in situ burning, when conditions allow, and application of dispersants. There is some evaporation of the oil, as well. These are conditions-based. You have to have good weather for in situ burning, you have to have the right air conditions to meet the protocols, and in order to be able safely do that. And——

Senator KERRY. Admiral, do you mind if I interrupt there?

Admiral ALLEN. Yes, sir.

[The prepared statement of Admiral Allen follows:]

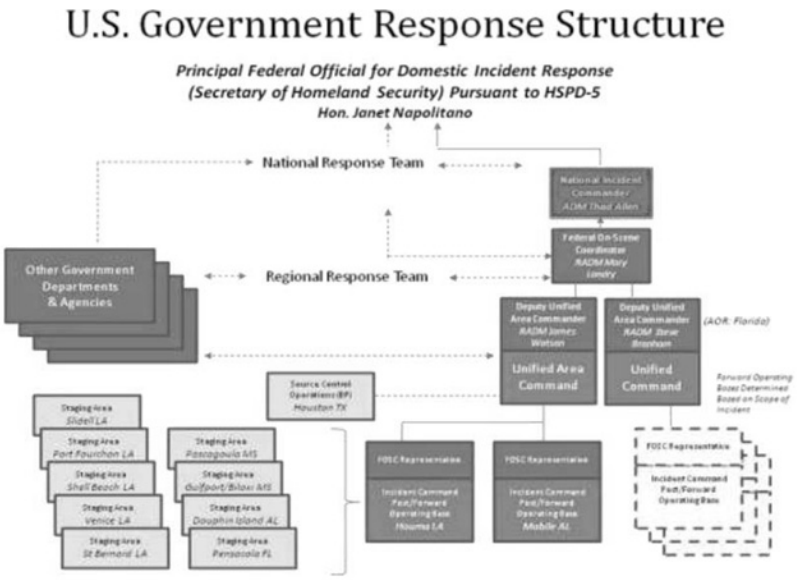
PREPARED STATEMENT OF ADMIRAL THAD ALLEN, COMMANDANT, UNITED STATES COAST GUARD AND NATIONAL INCIDENT COMMANDER ON THE DEEPWATER HORIZON FIRE AND MC 252 OIL SPILL

Good afternoon Chairman Rockefeller, Senator Hutchison, and distinguished members of the Committee. I am grateful for the opportunity to testify before this committee on the subject of the BP *Deepwater Horizon* oil spill currently ongoing in the Gulf of Mexico.

On the evening of April 20, 2010, the Transocean-owned, British Petroleum-chartered, Marshall Islands-flagged Mobile Offshore Drilling Unit (MODU) *Deepwater Horizon*, located approximately 72 miles Southeast of Venice, Louisiana, reported an explosion and fire onboard. This began as a Search and Rescue (SAR) mission—within the first few hours, 115 of the 126 crewmembers were safely recovered; SAR activities continued through April 23, though the other 11 crewmembers remain missing.

Concurrent with the SAR effort, the response to extinguishing the fire and mitigating the impacts of the approximate 700,000 gallons of diesel fuel onboard began almost immediately, in accordance with the operator's Minerals Management Service (MMS)—approved Response Plan, oil spill response resources, including Oil Spill Response Vessels (OSRVs), were dispatched to the scene. After 2 days of fighting the fire, the MODU sank into approximately 5,000 feet of water on April 22. On April 23, remotely operated vehicles (ROVs) located the MODU on seafloor, and, on April 24, BP found the first two leaks in the riser pipe and alerted the Federal Government. ROVs continue to monitor the flow of oil.

As the event unfolded, a robust Incident Command System (ICS) response organization was stood up in accordance with the National Response Framework (NRF) and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). ICS is utilized to provide a common method for developing and implementing tactical plans to efficiently and effectively manage the response to oil spills. The ICS organization for this response includes Incident Command Posts and Unified Commands at the local level, and Unified Area Commands at the regional level. It is comprised of representatives from the Coast Guard (Federal On-Scene Coordinator (FOSC)), other Federal, state, and local agencies, as well as BP as a Responsible Party.



The Federal Government has addressed the Gulf Oil Spill with an all-hands-on deck approach from the moment the explosion occurred. During the night of April 20—the date of the explosion—a command center was stood up on the Gulf Coast to address the potential environmental impact of the event and to coordinate with all state and local governments. After the MODU sank on the 22nd, the National Response Team (NRT), led by the Secretary of Homeland Security and comprised of 16 Federal agencies including the Coast Guard, other DHS offices, the Environmental Protection Agency (EPA), National Oceanic and Atmospheric Administration (NOAA), Department of Interior (DOI), as well as Regional Response Teams (RRT), were activated.

On April 29, Secretary Napolitano declared the event a Spill of National Significance (SONS), which enhanced operational and policy coordination at the national level and concurrently allowed my appointment as the National Incident Commander (NIC) for the Administration's continued, coordinated response. The NIC's role is to coordinate strategic communications, national policy, and resource support, and to facilitate collaboration with key parts of the Federal, state and local government.

The NIC staff is comprised of subject matter experts from across the Federal Government, allowing for immediate interagency collaboration, approval and coordination. While the FOSC maintains authorities for response operations as directed in the National Contingency Plan, the NIC's primary focus is providing national-level support to the operational response. This means providing the Unified Command with everything that they need—from resources to policy decisions—to sustain their efforts to secure the source and mitigate the impact. This will be a sustained effort that will continue until the discharges are permanently stopped and the effects of the spill are mitigated to the greatest extent possible. Beyond securing the source of the spill, the Unified Command committed to minimizing the economic and social impacts to the affected communities and the Nation.

Unified Recovery Efforts

The Unified Command continues to attack the spill offshore. As of May 13, 2010, over 5 million gallons of oily water have been successfully recovered using mechanical surface cleaning methods. Further, approximately 475,000 gallons of dispersants have been applied to break up the slick, and controlled burns have been used as weather conditions have allowed. In addition to the ongoing offshore oil recovery operations, significant containment and exclusion booms have been deployed and staged strategically throughout the Gulf region. These booms are used to protect sensitive areas including: environmental and cultural resources, and critical infrastructure, as identified in the applicable Area Contingency Plans (ACPs). To date,

more than a million feet of boom have been positioned to protect environmentally sensitive areas. Fourteen staging areas have been established across the Gulf Coast states and three regional command centers. The Department of Defense has activated National Guard troops; over 1,000 are currently deployed, and up to 17,500 have been approved for deployment.

Volunteerism and Communication with Local Communities

A critical aspect of response operations is active engagement and communication with the local communities. Several initiatives are underway to ensure regular communications with the local communities.

1. Active participation and engagement in town hall meetings across the region with industry and government involvement.
2. Daily phone calls with affected trade associations.
3. Coordination of public involvement through a volunteer registration hotline (1–866–448–5816), alternative technology, products and services e-mail (*horizonsupport@aol.com*), and response and safety training scheduled and conducted in numerous locations.
4. More than 7,100 inquiries received online via the response website (*www.deepwaterhorizonresponse.com*) with more than 6,121 inquiries completed, with 4-hour average time of response.
5. Over 568,000 page hits on response website.
6. Over 110 documents created/posted to response website for public consumption.
7. News, photo/video releases, advisories to more than 5,000 media/governmental/private contacts.
8. Full utilization of social media including Facebook, YouTube, Twitter and Flickr.
9. Establishment of Local Government hotlines in Houma, LA (985–493–7835); Mobile, AL (251–445–8968); Robert, LA (985–902–5253).

MODU Regulatory Compliance Requirements

43 U.S.C. 1331, *et seq.* mandates that MODUs documented under the laws of a foreign nation, such as the *Deepwater Horizon,* be examined by the Coast Guard. These MODUs are required to obtain a U.S. Coast Guard Certificate of Compliance (COC) prior to operating on the U.S. Outer Continental Shelf (OCS).

In order for the Coast Guard to issue a COC, one of three conditions must be met:

1. The MODU must be constructed to meet the design and equipment standards of 46 CFR part 108.

2. The MODU must be constructed to meet the design and equipment standards of the documenting nation (flag state) if the standards provide a level of safety generally equivalent to or greater than that provided under 46 CFR part 108.

3. The MODU must be constructed to meet the design and equipment standards for MOD Us contained in the International Maritime Organization Code for the Construction and Equipment of MODUs.

The *Deepwater Horizon* had a valid COC at the time of the incident, which was renewed July 29, 2009, with no deficiencies noted. The COC was issued based on compliance with number three, stated above. COCs are valid for a period of 2 years.

In addition to Coast Guard safety and design standards, MMS and the Occupational Safety and Health Administration (OSHA) also have safety requirements for MODUs. MMS governs safety and health regulations in regard to drilling and production operations in accordance 30 CFR Part 250, and OSHA maintains responsibility for certain hazardous working conditions not covered by either the Coast Guard or MMS, as per 29 U.S.C. 653(a) and (b)(1).

Coast Guard/MMS Joint Investigation Responsibilities

On April 27, Secretary Napolitano and Secretary of the Interior Ken Salazar signed the order that outlined the joint Coast Guard-MMS investigation into the *Deepwater Horizon* incident.

Information gathering began immediately after the explosion—investigators from both agencies launched a preliminary investigation that included evidence collection, interviews, witness statements from surviving crew members, and completion of chemical tests of the crew. The aim of this investigation is to gain an understanding of the causal factors involved in the explosion, fire, sinking and tragic loss of 11 crewmembers.

The joint investigation will include public hearings, which—have already begun in Kenner, LA. The formal joint investigation team consists of equal representation of Coast Guard and MMS members. The Coast Guard has also provided subject matter experts and support staff to assist in the investigation.

Lessons Learned from Past Responses

The Coast Guard has been combating oil and hazardous materials spills for many years; in particular, the 1989 major oil spill from the *Exxon Valdez* yielded comprehensive spill preparedness and response responsibilities.

In the 20 years since the *Exxon Valdez*, the Coast Guard has diligently addressed the Nation's mandates and needs for better spill response and coordination. For example, a SONS Exercise is held every 3 years. In 2002, the SONS Exercise was held in New Orleans to deal with the implications of a wellhead loss in the Gulf of Mexico. In that exercise, the SONS team created a vertically integrated organization to link local response requirements to a RRT. The requirements of the RRT are then passed to the NRT in Washington, D.C., thereby integrating the spill management and decision processes across the Federal Government. The response protocols used in the current response are a direct result of past lessons learned from real world events and exercises including SONS.

Although the *Exxon Valdez* spill shaped many of the preparedness and response requirements and legislation followed to this day, other significant events since 1989 have generated additional lessons learned that have informed our response strategies. For example, the M/V *Cosco Busan* discharged over 53,000 gallons of fuel oil into San Francisco Bay after colliding with the San Francisco-Oakland Bay Bridge in heavy fog. Through the recovery of over 40 percent of the spilled product, the Unified Command recognized improvements were needed in some areas. As a result, new guidance and policy was developed to better utilize volunteers in future responses. Additionally, standard operating procedures for emergency notifications were improved to ensure better vertical communications between the Federal responders and local governments. Furthermore, steps were taken to pre-identify incident command posts (ICPs) and improve booming strategies for environmentally sensitive areas.

Most recently, the Coast Guard led a SONS exercise in March, 2010. Nearly 600 people from over 37 agencies participated in the exercise. This exercise scenario was based on a catastrophic oil spill resulting from a collision between a loaded oil tanker and a car carrier off the coast of Portland, Maine. The exercise involved response preparedness activities in Portland, ME; Boston, MA; Portsmouth, NH; Portsmouth, VA; and Washington, D.C. The response to the SONS scenario involved the implementation of oil spill response plans, and response organizational elements including two Unified Commands, a Unified Area Command, and the NIC in accordance with the National Contingency Plan and national Response Framework. The exercise focused on three national-level strategic objectives:

1. Implement response organizations in applicable oil spill response plans.
2. Test the organization's ability to address multi-regional coordination issues using planned response organizations.
3. Communicate with the public and stakeholders outside the response organization using applicable organizational components.

The SONS 2010 exercise was considered a success, highlighting the maturity of the inter-agency and private oil spill response capabilities and the importance of national-level interactions to ensure optimal information flow and situational awareness. The timely planning and execution of this national-level exercise have paid huge dividends in the response to this potentially catastrophic oil spill in the Gulf of Mexico.

Role of the Oil Spill Liability Trust Fund

The Oil Spill Liability Trust Fund (OSLTF), established in the Treasury, is available to pay the expenses of Federal response to oil pollution under the Federal Water Pollution Control Act (FWPCA) (33 U.S.C. § 1321(c)) and to compensate claims for oil removal costs and certain damages caused by oil pollution as authorized by the Oil Pollution Act of 1990 (OPA) (33 U.S.C. § 2701 *et seq.*). These OSLTF uses will be recovered from responsible parties liable under OPA when there is a discharge of oil to navigable waters, adjoining shorelines or the Exclusive Economic Zone (EEZ).

The OSLTF is established under Revenue Code section 9509 (26 U.S.C. § 9509), which also describes the authorized revenue streams and certain broad limits on its use. The principal revenue stream is an 8 cent per barrel tax on oil produced or entered into the United States (see the tax provision at 26 U.S.C. § 4611). The barrel tax increases to 9 cents for 1 year beginning on January 1, 2017. The tax expires at the end of 2017. Other revenue streams include oil pollution-related penalties under 33 U.S.C. § 1319 and § 1321, interest earned through Treasury investments, and recoveries from liable responsible parties under OPA. The current OSLTF balance is approximately $1.6 billion. There is no cap on the fund balance but there are limits on its use per oil pollution incident. The maximum amount that may be paid from the OSLTF for any one incident is $1 billion. Of that amount, no more than $500 million may be paid for natural resource damages. 26 U.S.C. § 9509(c)(2).

OPA further provides that the OSLTF is available to the President for certain purposes (33 U.S.C. § 2712(a)). These include:

> Payment of *Federal removal costs* consistent with the NCP. This use is subject to further appropriation, except the President may make available up to $50 million annually to carry out 33 U.S.C. § 1321(c) (Federal response authority) and to initiate the assessment of natural resource damages. This so-called "emergency fund" amount is available until expended. If funding in the emergency fund is deemed inadequate to fund Federal response efforts, an additional $100 million may be advanced from the OSLTF when the emergency fund is inadequate subject to notification of Congress no later than 30 days after the advance. See 33 U.S.C. § 2752(b). Additional amounts from the OSLTF for Federal removal are subject to further appropriation.
>
> Payment of *claims for uncompensated removal costs and damages*. Payments are not subject to further appropriation from the OSLTF. 33 U.S.C. § 2752(b).
>
> Payment of Federal administrative, operating and personnel costs to implement and enforce the broad range of oil pollution prevention, response and compensation provisions addressed by the OPA. This use is subject to further appropriation to various responsible Federal agencies.

National Pollution Funds Center (NPFC) Funding and Cost Recovery

The NPFC is a Coast Guard unit that manages use of the emergency fund for Federal removal and trustee costs to initiate natural resource damage assessment. The NPFC also pays qualifying claims against the OSLTF that are not compensated by the responsible party. Damages include real and personal property damages, natural resource damages, loss of subsistence use of natural resources, lost profits and earnings of businesses and individuals, lost government revenues, and net costs of increased or additional public services that may be recovered by a State or political subdivision of a state.

In a typical scenario, the FOSC, Coast Guard or EPA accesses the emergency fund to carry out 33 U.S.C. § 1321(c), *i.e.,* to remove an oil discharge or prevent or mitigate a substantial threat of discharge of oil to navigable waters, the adjoining shoreline or the EEZ. Costs are documented and provided to NPFC for reconciliation and eventual cost recovery against liable responsible parties. Federal trustees may request funds to initiate an assessment of natural resource damages and the N PFC will provide those funds from the emergency fund as well.

Claims for OPA removal costs and damages that have been denied or not settled by the responsible party after 90 days may be presented to the NPFC for payment from the OSLTF. State claims for removal costs can be presented directly to the NPFC against the OSLTF. General claims provisions are delineated in 33 U.S.C. § 2713 and the implementing claims regulations for claims against the OSLTF in 33 CFR 136.

OPA provides that all claims for removal costs or damages shall be presented first to the responsible party. Any person or government may be a claimant. If the responsible party denies liability for the claim, or the claim is not settled within 90 days after it is presented, a claimant may elect to commence an action in court against the responsible party or to present the claim to the NPFC for payment from

the OSLTF. OPA provides an express exception to this order of presentment in respect to State removal cost claims. Such claims are not required to be presented first to the responsible party and may be presented direct to the NPFC for payment from the OSLTF. These and other general claims provisions are delineated in 33 U.S.C. section 2713 and the implementing regulations for claims against the OSLTF in 33 CFR Part 136. NPFC maintains information to assist claimants on its website at *www.uscg.mil/npfc*.

NPFC pursues cost recovery for all OSLTF expenses for removal costs and damages against liable responsible parties pursuant to Federal claims collection law including the Debt Collection Act, implementing regulations at 31 CFR Parts 901–904 and DHS regulations in 6 CFR Part 11.

Aggressive collection efforts are consistent with the "polluter pays" public policy underlying the OPA. Nevertheless, the OSLTF is intended to pay even when a responsible party does not pay.

OSLTF and the Deepwater Horizon

On May 12, the Administration proposed a legislative package that will: enable the *Deepwater Horizon* Oil Spill response to continue expeditiously; speed assistance to people affected by this spill; and strengthen and update the oil spill liability system to better address catastrophic events. The bill would permit the Coast Guard to obtain one or more advances—up to $100 million each—from the Principal Fund within the Oil Spill Liability Trust Fund to underwrite Federal response activities taken in connection with the discharge of oil that began in 2010 in connection with the explosion on, and sinking of, the mobile offshore drilling unit *Deepwater Horizon.* To deal more generally with the harms created by oil spills as well as to toughen and update these laws, the bill would, for any single incident, raise the statutory expenditure limitation for the Oil Spill Liability Trust Fund from $1 billion to $1.5 billion and the cap on natural resource damage assessments and claims from $500 million to $750 million.

The emergency fund has been accessed by the FOSC for $65 million as of May 11, 2010. BP, a responsible party, is conducting and paying for most response activities. The Coast Guard requested and received an advance of $100 million from the OSLTF principal fund to the emergency fund as authorized by 33 U.S.C. § 2752(b), because the balance remaining in the emergency fund was not adequate to fund anticipated Federal removal costs. The BP and Transocean have been notified of their responsibility to advertise to the public the process by which claims may be presented. As of May 13, 8160 claims have been opened with BP, and nearly $5.3 million has been disbursed; though Transocean has also already been designated as a responsible party, all claims are being processed centrally through BP.

Conclusion

Through the National Incident Command, we are ensuring all capabilities and resources—government, private, and commercial—are being leveraged to protect the environment and facilitate a rapid, robust clean-up effort. Every effort is being made to secure the source of the oil, remove the oil offshore, protect the coastline, include and inform the local communities in support of response operations, and mitigate any impacts of the discharge.

Thank you for the opportunity to testify today. I look forward to your questions.

Senator KERRY. I apologize for doing that. But I'm going to have to go vote in a minute. So, let me just ask you this, quickly.

Admiral ALLEN. Sure.

Senator KERRY. I understand that the—one—the principal dispersant chosen is COREXIT.

Admiral ALLEN. Yes, sir.

Senator KERRY. And I've seen some reports suggesting that COREXIT is, in fact, more toxic than other alternatives that are available. Is that true?

Admiral ALLEN. There are a range of dispersants that are available. The decision on the use of dispersants is based on the response plans and what has been stored for use. As we go forward, we're going to need to look at the relative toxicity of the different dispersants.

Senator KERRY. My question is, Is it more toxic than other alternatives?

Admiral ALLEN. There are other alternatives that are less toxic. There's quite a range, and we could answer that for the record, sir.

[The information referred to follows:]

The product specified is more toxic than some products, but less toxic than others.

In accordance with 40 CFR 300 Subpart J, EPA approves dispersants for use in U.S. waters based on tests for toxicity and effectiveness. Any product listed on the schedule must meet a threshold minimum for effectiveness and test for, and report on, toxicity. No states have expressed reservations about the use of these dispersants in the past, as long as the dispersant is employed in accordance with the Regional Response Team Dispersant-Use pre-authorizations agreements established between the states and their Federal partners at the regions around the country.

The toxicity data table at (*http://www.epa.gov/emergencies/content/ncp/tox_tables.htm*) provides toxicity data for the dispersants listed. Toxicity values should not be interpreted as absolute values, but rather, relative to one another in a general sense. For example, an LC50 of 4.49 should not be viewed as significantly different from an LC50 of 5.95. But, the LC50 of 4.49 can be viewed as significantly different from the LC50 of 42.00. Therefore, the toxicity values can be used to group dispersants (2 or 3 groups of similar toxicity), but should not be used to list dispersants according to toxicity (1 to 20).

All products on the National Contingency Plan Product Schedule are selected based on volume availability, specifics of the site, and concerns of the Federal On-Scene Coordinator. Toxicity tests are methods for determining the impact of a chemical or an effluent on living organisms and measure the degree of response using commonly tested species. Many different kinds of tests can be used to identify potential toxic effects, but since toxic effects differ, comparing the toxicity of one to another may not be appropriate.

In environmental studies, LC stands for "Lethal Concentration" and is the concentration of the chemical, given all at once, in the water that causes the death of 50 percent of a group of test animals in a given time (for example, during a 96-hour period). In general, the smaller the LC50 value, the more toxic the chemical. The opposite is also true: the larger the LC50 value, the lower the toxicity. For example, a chemical with an LC50 of 2 parts per million (ppm) would be more toxic than a chemical with an LC50 of 20 ppm. The LC50 is the measure of the immediate (or acute) toxicity of a chemical for the particular animal species being tested. The LC50 was not designed nor intended to give information on the long-term exposure effects of a chemical. It is also important to note that the LC50 value may be different for a given chemical depending on the route of exposure (*e.g.,* skin contact, ingested, inhaled) and can be different for different animal species, ages and sexes. The LC50 is only one source of toxicity information and only provides information for the species and concentrations of chemical being tested under laboratory conditions. Toxicity tests resulting from controlled laboratory experiments may not accurately represent the degree of toxicity seen in the environment because of factors such as breakdown of the chemical, different species, different routes of exposure, age, sex, and stage of development (*e.g.,* adult versus larval).

Senator KERRY. Do we know what the impact of this toxicity is, with respect to organisms in the water?

Admiral ALLEN. I might refer that to my colleague, Dr.——

Senator KERRY. Dr. Lubchenco?

Admiral ALLEN.—Lubchenco.

Dr. LUBCHENCO. Senator, the dispersants that are approved by EPA for use in an oil spill have been through extensive testing, and they are rated for their toxicity, relative to different species.

They have been approved by EPA, and then if—once they are on the list, they are available to be used.

Senator KERRY. My question is—you know, lists and prior, sort of, plans are one thing. We've just heard testimony that this is omnidirectional. If it's omnidirectional, it's also Omni-species capa-

ble of having an impact. Has it been tested with respect to every species it may come into contact with?

Dr. LUBCHENCO. Senator, that would probably be impossible to do. But, there are species that are considered to be indicator species, which have been used in tests.

Senator KERRY. They are?

Dr. LUBCHENCO. And—there are indicator species——

Senator KERRY. Like what? What are the indicator species?

Dr. LUBCHENCO. There's a shrimp that has been used in the tests. There are other species that are planktonic species that are typically used. And I think it's fair to say that there is legitimate concern about use of dispersants.

This is a situation where—this is a question of tradeoffs. The dispersants are less toxic than the oil. Even though some dispersants are more toxic than others, they are considerably less toxic than the oil. And the purpose of the dispersants is to break the oil up into smaller droplets so that they can biodegrade naturally.

And this is a question, I believe, of tradeoffs. We do not have complete information about the likely impact of the dispersants on every species in the ecosystem. We have never used dispersants, in the amounts that we're using now, within U.S. waters.

Senator KERRY. It's my understanding we've never used it underwater in the way that we've used it now. We've used it on the surface, but not shooting out with the plume itself underwater. Is that accurate?

Dr. LUBCHENCO. That's correct, Senator.

Senator KERRY. And some of that——

Dr. LUBCHENCO. And——

Senator KERRY.—clearly, does not touch the oil. Some of it floats free and goes off into the ocean. Does it sink to the bottom?

Dr. LUBCHENCO. The—because the dispersants had never been used subsurface at depths which were being considered, EPA and NOAA required extensive testing before there was permission given to apply the dispersants. That testing was done, and indicates that the dispersant is being—it is doing what it was intended to do, which is to break up the oil——

Senator KERRY. What happens——

Dr. LUBCHENCO.—and considerably——

Senator KERRY.—to the dispersant that doesn't connect to the oil? Does it sink to the bottom? Does it float free?

Dr. LUBCHENCO. It—the—it's inserted in a way that it goes right into the stream of oil that is coming out, but it biodegrades relatively rapidly. And I think that's one of the important messages.

The other is that there is continual monitoring that is in place as the subsurface dispersants are being used. So, I think this is a situation where there are tradeoffs. There was a decision made that this is the lesser of the evils. But, there are a lot of questions that remain about exactly what the impacts are, long term. And that's why we are being very aggressive in our monitoring, to try to get a better understanding of what those tradeoffs are.

There's also a mechanism if the dispersants are not doing what is intended, that they be—we can stop using them immediately. So,

there is ongoing monitoring and a turnoff switch that can be activated immediately.

Senator KERRY. Thank you very much.

I need to go and vote.

And I thank the Chair. And it's all yours.

The Chairman [presiding]. Thank you.

Senator KERRY. Thank you, sir.

The CHAIRMAN. I would like to address this to both of you. And this is the MMS question.

To be honest with you, I don't think most Americans have ever heard that. The name—what MMS is, and what it does. And it appears to me, at least from an outside view, that they haven't been very attentive. That could be recently, that could be over the last 10 years. I mean, I just don't know.

But, I have a lot of faith in the Coast Guard, and I have a lot of faith in NOAA. And it just seems to me—and this was brought up by—in some of the opening statements—that when it comes to permits, designs, approval of things to be done, not to be done, et cetera, that they ought to be sharing this with you, in order to be a—tripartite, so to speak, type of situation. And Senator Snowe, I think, said that that ought to be put into law, which I would tend to agree with.

You have experience, both of you, I admit—I suppose they do have experience, but it certainly hasn't surfaced, to this point. What is your view on that?

Dr. LUBCHENCO. Go ahead.

Admiral ALLEN. Senator, I'd like to address three areas, if I could. The first one is an inspection issue. The second one is a Coast Guard regulatory issue. And the third one is a response-plan issue.

If I could, as it relates to the regulatory responsibilities, MMS has responsible—responsibility for the drilling apparatus, itself. And in this case, the Coast Guard issues what's called a "Certificate of Compliance" for the mobile drilling unit, which is actually a floating ship connected by the riser pipe.

Regarding the mobile drilling unit itself, we regulate that under Title 46 of the U.S. Code. We have taken a look at the current set of regulations, and we think there are five areas where we might be able to do a better job with regulatory reform inside the Coast Guard. I would submit that they are: take a look at the current electrical standards on board the mobile drilling units, the machinery standards. Probably a real important one is dynamic positioning reliability. This is the system by which the ship is held in place while the operations are going on. That technology has probably gotten out in far—of the—ahead of the regulations. We probably need to take a look at certifying the reliability against a set of standards for dynamic positioning.

And we need to look at the difference between floating production units and mobile drilling units—floating production units are basically vessels or ships that are involved in production, as mobile drilling units actually are pontoon-based, and—looking at the standards related to that.

And, finally, lifesaving and firefighting equipment. And we'd like to engage in a conversation about those areas, if we could.

Regarding the actual drilling equipment itself, the blowout preventers that are down there right now are not under any regulatory regime. They're actually built to American Petroleum Institute specifications. There are three that are out there for industry to use. One is the ram operations and the blowout preventer, the choke-and-kill lines, and the control systems that control all of that.

API kind of goes out and issues a license to the manufacturers, and they do testing. MMS accepts those licenses in lieu of an inspection. I think there's an opportunity, moving forward, to take a look at whether or not we need a regulatory regime for the blowout preventers and the control systems associated with that, sir.

The CHAIRMAN. So, what you're saying, then, is that API, the American Petroleum Institute, is the regulator of some very sensitive machinery—the approver of.

Admiral ALLEN. They're not a regulator, sir. They set industry standards. Those are——

The CHAIRMAN. Yes.

Admiral ALLEN.—taken as——

The CHAIRMAN. Well——

Admiral ALLEN.—specifications for production.

The CHAIRMAN. But——

Admiral ALLEN. Yes, sir.

The CHAIRMAN.—nobody else is regulating. They're the only one——

Admiral ALLEN. There is no regulatory regime for blowout——

The CHAIRMAN. Right.

Admiral ALLEN.—preventers at this time. Yes, sir.

And, finally, on response plans. As you know, MMS approves their response plans for the drilling units in the Gulf of Mexico. We think there needs to be a closer integration in the review of those plans with the local—Federal on-scene coordinators that are responsible for developing protection plans for the coastal resources, and make sure that there's a match there, sir.

The CHAIRMAN. Dr. Lubchenco?

Dr. LUBCHENCO. Mr. Chairman, NOAA's role includes providing comments to MMS on their plans, their programs, and their NEPA documents. We do not have final approval authority for MMS leasing plans. We simply provide comments.

We also have responsibility to provide certification for—or authorization for incidental take, if, in fact, there is reason to believe that marine mammals might be harmed, for example, for specific activities.

The CHAIRMAN. Dr. Lubchenco, can I interrupt? I apologize, but I—I'm about to run out of time, and I want to ask you one question.

You have the sensitivity—environmental sensitivity index maps, and they are very crucial for judging exposure and the rest of it. My understanding is that these maps are outdated at—even to the extent of 10 years. Is that the case? And if it is, what are we doing about it?

Dr. LUBCHENCO. Mr. Chairman, those maps—the numbers that we have are that 21 of 50 atlases are more than 10 years old. So, it is a—the case that many of them are—do not reflect current in-

formation. It would—the—we have not had the resources to continually update those. This is a—primarily a resource issue. It's my understanding it would cost around $11 million to update those maps that are more than 10 years old. The current request in our President's budget includes updating of only one of those. So, this is a question where it's simply a matter of not having had the resources.

The CHAIRMAN. Well, that will certainly be taken for the record. I mean, if the lack of resources are causing that to happen, that's really bad. So, we have to attend to that.

I thank you.

Senator Hutchison.

Senator HUTCHISON. Thank you very much.

Admiral Allen, do you believe that BP is doing everything that is within its power, and that it can do, that could be done to clean up this spill?

Admiral ALLEN. Ma'am, the way I've been characterizing this, I think BP has been relentless in their responsibilities, but we've been relentless in our oversight. When you get to an anomalous situation like this, some of the things we're facing haven't been faced before. And there's a matter of translating our intent to what they can do, because they're the ones that have access to the discharge area.

I think one of the things that's—that sets this situation apart from anything I've ever dealt with is, there is no human access to the point of discharge. Everything we know is through remotely operated vehicles and remote sensing. And, as I think was indicated earlier, the entire elements of production and capacity to do anything with the sea floor rests in the private sector here. And so, the role of government is really to conduct oversight to make sure that we're doing everything we can.

I would say this. There has been a collection of folks in Houston, at the BP command center, which I have visited personally, including people, representing the National Labs, that have been inserted in there. There's a vigorous conversation going on. And I would say, it's—I—it's less a matter of responsiveness than resolving the issues on how to move forward, and making sure critical information is available and the assumptions are known to everybody—as they're looking at this "top kill" shot, for instance—to make sure we know the assumptions associated with the integrity of the casing and critical pressures, so we don't create a worse problem by putting mud into the pipeline there.

So, I would say it's a matter of coordination. And, at that point, it becomes an accountability issue and oversight issue for the Coast Guard, as well, ma'am.

Senator HUTCHISON. Well, let me just ask both of you, Dr. Lubchenco as well as Admiral Allen, in looking at this group that is trying to determine what to do, what is the right thing to do, and what are the consequences, do you feel like every bit of information, and the decisions that are being made, are truly collaborative between the two of you, your agencies, and the BP group?

Dr. LUBCHENCO. Senator, we have had very positive collaborative relationships with everyone at the incident command, led by the Coast Guard. And there have been really good exchanges of infor-

mation across the agencies. And I think the Coast Guard has done a spectacular job of providing leadership for that.

One of the things NOAA does is to provide the scientific support coordinator for each of the incident commands. And so, they have immediate access to the wealth of scientific information that resides within NOAA. But, there is a lot of interaction across the agencies, as well.

Admiral ALLEN. Ma'am, if I could follow up.

I think an instructive event took place on Sunday. There was a conference call, headed by Secretary Salazar and Secretary Chu, that was actually entitled a "Scientific Summit." It involved all of the engineers that are working in Houston, the embedded folks from the National Labs. And there was a step-by-step review of the current interventions that are being planned by British Petroleum, especially in regard to the top kill, which will be the injection of mud into the well that will basically seal it until the relief well can be drilled.

That was a 2-hour phone call. And I can tell you the questions were exhaustive, that the BP engineers were put on the spot to come up with their assumptions and provide information that would lead them to believe that a certain tactic would work. And they were grilled very, very hard over those 2 hours, ma'am. So, if that's any indication or way to explain to you the amount of involvement that's going on as these tactics are being developed, I think that's emblematic.

Senator HUTCHISON. Let me ask you, Dr. Lubchenco. In addition to the beaches, which we're seeing the pictures of, there are the wetlands. The coastal wetlands are an important part of the Gulf Coast ecosystems, as you know, I'm sure. If they are impacted by the oil spill, down the road, can NOAA do anything that would help in restoration of the wetlands? And is BP going to be responsible for funding wetland restoration as well as the beach and clean-up efforts that they are also committed to making?

Dr. LUBCHENCO. Senator, you're absolutely right to focus on the key role that those wetlands play in the entire Gulf region. And our efforts have been devoted, primarily, to keeping the oil from reaching them, because it does have the potential to have very serious impacts, not only on the wetlands, but on many of the species that reside in the Gulf but use the wetlands as nursery areas.

Around 80 to 90 percent of the fisheries in the Gulf—the—of the—80 to 90 percent of those fisheries have life stages that spend part of their life in those wetlands. And so, they are absolutely critical.

It's my understanding that part of the Natural Resources Damage Assessment process is intended to identify what—and quantify—what the impact is, and to remediate that, to the extent that it's possible. But, once oil gets into those marshes, it's very, very difficult to remove, and has to be done or—it's very difficult to remove it, let me say.

Senator HUTCHISON. Just one quick question.

Oh, did you have a comment?

Admiral ALLEN. Yes.

Senator HUTCHISON. Go ahead.

Admiral ALLEN. Just a quick footnote, ma'am. One of the significant changes made in the Oil Pollution Act of 1990, following the *Exxon Valdez,* was something called Natural Resources Damage Assessments, which are required, and are funded and recoverable, to assess the damages and mitigation plans, moving forward. That has been institutionalized since OPA–90, and we work very closely together. That process will start shortly in relation to this spill.

Dr. LUBCHENCO. Senator, could I add, just really quickly, that one of the things that NOAA has done immediately is to mobilize coastal surveys throughout the region to get very precise information about areas—wetlands and other areas before they are impacted, so we have the latest, most current, baseline information, both from the air coastal surveys, on the ground, water samples, species samples, taking chemical background information, et cetera. So, we've had sort of a blitzkrieg along the coast to do that.

Senator HUTCHISON. Well, I appreciate that, because it will be more complicated, even, than the beach, which is clearer. So, I'm glad that both of you are committed to, first, preventing, but, if that doesn't work, then going into the mitigation. And it will be difficult, I know. But, it's important. Thank you.

Can I just ask one quick question? Admiral Allen, are you going to stay on as the national incident commander after the change of command?

Admiral ALLEN. My change of command is scheduled for the 25th of May. My actual retirement date, because I was going to take leave, was 1 July. I am available to the Secretary and the President until my—I'm not needed any further, ma'am.

Senator HUTCHISON. Is that a July 1 cutoff?

Admiral ALLEN. If it wouldn't be on 1 July, it would have to be under a different set of circumstances, because I would no longer be in the Coast Guard, ma'am, on Active Duty.

Senator HUTCHISON. Thank you.

The CHAIRMAN. Thank you, Senator Hutchison.

Senator Nelson.

Senator NELSON. Admiral, I have a letter here from Rear Admiral Landry, of which—she sent it to BP, asking for full access to all information related to the oil discharge rate. Why is it necessary for her to send that letter? Was BP not providing full access to the video footage?

Admiral ALLEN. Sir, we've had full access to the video footage, in our command centers, since the event started. I think what she was looking for was archival information. We're trying to put together what we're calling a flow-rate technical team to try and establish what is exactly flowing out of the riser pipe right now, and try and get an estimate of the overall amount of oil that has been released. To do that, we do need some historical and archival information.

That—it has been fed to us real-time; we just wanted complete access to it. And she ensured that with her letter, sir.

Senator NELSON. So, you feel satisfied that you're having access to all the video footage?

Admiral ALLEN. It has been coming into the command centers real-time for us since the start of the event, sir.

I would say one other thing. At the Scientific Summit that was held with Secretary Salazar on Sunday, he made the same request regarding technical data associated with the assumptions on the integrity of the casing in the well, as it relates to the top kill option that's being considered.

Senator NELSON. Well, on the basis of this recent footage that you just released to Senator Boxer and me today—"you" the Coast Guard—maybe it was BP that released it after we wrote to you—have you made a new estimate?

Admiral ALLEN. Sir, the reason we need all that information is, we're pulling an interagency group of experts in. There has been a lot of prognostications about what the discharge rate is. As you know, it started out at 1,000 barrels-a-day. We are currently using 5,000 barrels-a-day.

One of our problems, I noted earlier, is that we're dealing with a discharge point that has no human access, and we're trying to make estimates from two-dimensional video from the remotely operated vehicles. And what we're trying to do is gather the best minds in the country in see how to—we can synthesize this information and come up with a more refined product, with higher fidelity, on the discharge rate, sir.

Dr. LUBCHENCO. Senator, could I add to that, just briefly?

I think it's important to note that the efforts of the Federal Government have not been constrained by the estimates of flow. We have, all along, assumed that we may be dealing with considerably more oil than is currently the estimate. And the efforts have been very aggressive and mobilized to deal with the possibilities that it might be more than that. That doesn't mean it's unimportant to get the flow rate right. It is.

Senator NELSON. Doctor, you and I talked about these flights. Is that costing NOAA, or is BP reimbursing for those flight expenses?

Dr. LUBCHENCO. Senator, we are currently funding those flights, with the expectation that they will be reimbursable by BP. And there is a special—specific process for documenting and requesting—you know, for making sure that all the right things are done to get that reimbursement.

Senator NELSON. And——

Admiral ALLEN. Senator, if I could maybe——

Senator NELSON. Let me——

Admiral ALLEN.—provide some more——

Senator NELSON. I'm running out of time. I want to follow up on that.

Doctor, have you confirmed the existence of the origin of the deep sea plumes?

Dr. LUBCHENCO. Have we confirmed the existence of the origin of the deep sea plumes?

Senator NELSON. Have you confirmed the existence of the deep sea plumes?

Dr. LUBCHENCO. Are you talking about the oil coming out of the riser?

Senator NELSON. No, I'm talking about those long—100 yards thick, 10 miles long, 3 miles wide.

Dr. LUBCHENCO. The researchers that were on the research vessel Pelican, that just got back into port, identified an anomaly that

is subsurface that may be oil, but that has not yet been confirmed. They took samples of that oil, and those samples are in the process of being analyzed. But, we won't know for a number of days yet whether it is oil or not. This is in the very early stages of identifying and characterizing what that actually is.

Senator NELSON. I see. So, you don't know whether or not the dispersants that have been released have affected that oil at those depths.

Dr. LUBCHENCO. If the plume that they discovered is indeed oil, we do not know what its origin may be. It's highly unlikely that it could be dispersants that had been used at the source of the leak, because there has not been much use of dispersant yet. It's only a very small amount that has been used. So, the mechanism for where—how that plume came to be is yet unknown. And I think we will be in the discovery phase of a lot of things as this event plays out, and that will be one of them.

Senator NELSON. Mr. Chairman, obviously what I'm trying to get at is—what we see on the surface is one thing—how much of it is underneath, that we don't see, that we're going to have to deal with for years.

Thank you, Mr. Chairman.

The CHAIRMAN. Thank you, Senator Nelson.

Senator Snowe.

Senator SNOWE. Thank you.

Dr. Lubchenco, just to follow up on that—truly the determination of the size of the spill can make a material difference, in terms of mitigation, could it not?

Dr. LUBCHENCO. Absolutely, Senator.

Senator SNOWE. OK. And that's the difficulty when we see the wide "spanse" and variations in estimates; 80,000 barrels-a-day, as opposed to 5,000 barrels, which could mean 210,000 gallons of oil. And the highest figures indicate the amount of oil already spilled could be as much as 2.3 million barrels, nearly seven times what was spilled during the *Exxon Valdez* crisis. So——

Dr. LUBCHENCO. Senator, we——

Senator SNOWE.—that's the ambiguity here, and the wide discrepancy, I think is a serious issue. And how to grapple with the question, and also for the mitigation efforts.

Dr. LUBCHENCO. Senator, we believe it is important to get a good estimate of what that—the flow rate is, and what the total amount of oil is, and where it is. That's not an easy thing to do, which is why Admiral Allen has set up a new flow-rate team, within the National Incident Command, to bring the best possible minds together, to try to nail this down. It is important. It's just very, very difficult to do.

Senator SNOWE. You know, it's interesting, what I find confounding about this entire crisis is the fact that these are, sort of, fundamentals that should have already been established. You know, having a response plan for the worst-case scenario. But, the worst-case scenario really wasn't established in the exploration plan. I mean, that was sidestepped, as I said earlier, understating the amount of oil that could be spilled, to the high estimates that we potentially have today.

Admiral Allen, in the response plan that you require of vessels within your realm of responsibilities, can you give us some idea as to what you would have done differently, or what should be done differently? What do you require of vessels? Would you consider this adequate in a worst-case scenario?

Admiral ALLEN. Ma'am, for a vessel response plan, we have several scenarios, including average most-probable discharge and a worst-case discharge, and then the resources identified that would be able to deal with those spills, given the operating area where the vessels are in. That then is reconciled by something called an "area committee," which is set up under the captain of the port, who's a Federal on-scene coordinator. And there's a reconciliation of the worst-case discharge, the resources to be protected, and the resources needed to do that.

As I mentioned earlier—and I think you were, maybe, out on a vote—one of the things we need to do is reconcile the development of the response plans, that are now approved by MMS, back to those area contingency plans and the resources to be protected, and make that linkage actually in the plans. Right now, they—the plans are focused on a discharge rate, not necessarily connected to the resources to be protected on the coastal zones.

Senator SNOWE. Well, for example, the use of a containment dome was listed as part of their strategy in the exploration plan for response to a failure of a blowout preventer, would you have approved a response plan for a vessel that did not acknowledge the possibility of a complete failure of the system? I mean, in terms of a worst-case scenario?

Admiral ALLEN. Well, ma'am, under the vessel plans, we do have worst-case scenario. I would—on the MMS plans that include a containment dome, the real difference here was that a containment dome has never been tried at the depth of water, and whether that was feasible or not. And I think that the significant issue is, What is feasible at 5,000 feet without human access? And I think that is the source of a lot of the challenges we're dealing with right now, including trying to determine the flow rate when you don't have access.

Senator SNOWE. Right. But, that is also possible in developing a plan and having a response that's viable, in a worst-case scenario, both in the amount, in terms of the exigencies; and, of course, it must have indicated in the plan how far they're going to go.

Admiral ALLEN. Yes, ma'am. The current planning process did not envision the situation we're having to deal with on the ocean floor right now.

Senator SNOWE. Dr. Lubchenco, following your comments on the permitting process, did you ever get any response from the Minerals Management Service during the environmental process on the permits, including the *Deepwater Horizon*? That specific one was approved in February 2009. Did you ever have any communications with the Service with respect to the environmental assessments, or environmental permitting that was required?

Dr. LUBCHENCO. So, I'm uncertain which ones you're asking about, Senator.

Senator SNOWE. On any of the ones that were approved since January 2009 that required permits.

Dr. LUBCHENCO. The permits——

Senator SNOWE. And including this one in the *Deepwater Horizon*.

Dr. LUBCHENCO. So, I don't know the answer to that. And I will get back to you on that.

Senator SNOWE. Because I think we need to understand the relationship that exists between the agencies. I know it's not in statute, which I think we have to correct, frankly.

And I think the Coast Guard, frankly, also ought to oversee, inherently, the same practices, both for vessels and for oil spills to the marine environment, also underwater operations like the *Deepwater Horizon*—but also with respect to your agency. So, I think it is important to submit to the Committee exactly what responses, if any, you received from the Minerals Management Service, with respect to your assessments—because how did they go forward with any of the permits, without getting your approval on the exploration plans on environmental issues?

Dr. LUBCHENCO. Senator, it was my understanding that the permits that were issued for this, for the *Deepwater Horizon,* were done quite a few years ago. But, I will look into that, and let you know. We will get back to you on that.

Senator SNOWE. OK. Thank you.

Thank you, Mr. Chairman.

The CHAIRMAN. Thank you, Senator Snowe.

I want to point out to my colleagues, before I call on Senator Wicker, that we are moving at a pace that, by the time we get through the second panel it'll be time for breakfast. Now, that's fine with me, because this subject is of that dimension. But, I think we're—we are going to have to exercise some restraint here.

And Senator Johanns and Senator Klobuchar have not given opening statements, and they will have questions. And I would hope that perhaps they could kind of blend those into one—let's say, putting 5 minutes on, as a total.

But, we have to proceed and ask our questions, but we have to keep our eye on the next panel.

Senator Wicker.

Senator WICKER. Thank you. I'll try to stay within my allotted time.

Dr. Lubchenco, when should you have the information that would allow you to get back to us with authority on the existence of the plumes?

Dr. LUBCHENCO. Senator, are you asking when will we know if the plumes have—are composed of small mists of oil? Is it oil that's in it? Is that what you're asking?

Senator WICKER. Yes. Right.

Dr. LUBCHENCO. The samples that were collected have been sent for analysis. I think—within a week, I am told, we should have information on that.

Senator WICKER. OK. At that point, would you be able to speak with a relatively high degree of certainty on whether these are oil plumes or something else?

Dr. LUBCHENCO. Yes, Senator. We expect to be able to know if it is oil. I think what the instruments are showing is a very fine mist of something.

Senator WICKER. So, it's a mist of something.

Dr. LUBCHENCO. It——

Senator WICKER. It's not a——

Dr. LUBCHENCO. It——

Senator WICKER.—glob of——

Dr. LUBCHENCO. It's not a glob.

Senator WICKER. All right.

Dr. LUBCHENCO. It's not big balls. It's not big drops. It's a fine mist.

Senator WICKER. What is the relative size of this mass of "mist"?

Dr. LUBCHENCO. I haven't seen all of the data from the crews. It's a relatively large area, but I can't give you the dimensions. The researchers are still working up those data. And we would be happy to share with the——

Senator WICKER. OK.

Dr. LUBCHENCO.—that information with you, as soon as we have it.

Senator WICKER. Well, I hope you'll do that. I'll ask you to do that on the record. I'm certain that you'll be making it available.

Now, with regard to the NOAA maps that had not been updated since before Katrina, had NOAA requested funds from Congress for the purpose of updating those environmental maps?

Dr. LUBCHENCO. Senator, I don't know the full history of our requests, going back that far. I—we could look that up and get that to you.

Senator WICKER. OK.

Dr. LUBCHENCO. I know that there have been very significant cuts to that program over the years that have significantly reduced ability to stay current with those maps.

Senator WICKER. OK.

Dr. LUBCHENCO. And it's pretty clear we need to play catch-up, here.

Senator WICKER. Now, you say the dispersant biodegrades. In response to Senator Rockefeller's question, once the dispersant biodegrades, what's the byproduct? Does the byproduct come to the surface, or does it sink?

Dr. LUBCHENCO. The dispersant are chemicals that are intended to—it's like a detergent that breaks up oil into very, very small drops so that they can be naturally biodegraded faster than they would if they were in a solid surface.

Senator WICKER. Do they come to the surface to do that or do they sink to the——

Dr. LUBCHENCO. No.

Senator WICKER.—bottom?

Dr. LUBCHENCO. They—neither. They are—they stay in the water——

Senator WICKER. OK.

Dr. LUBCHENCO.—column. And if the dispersant is just injected into pure seawater, without the oil, which I think is part of what Senator——

Senator WICKER. No. Rockefeller.

Dr. LUBCHENCO.—Kerry was asking, it actually——

Senator WICKER. Was that who I said it was?

Dr. LUBCHENCO.—biodegrades within 4 to 5 days.

Senator WICKER. I see.

Dr. LUBCHENCO. And so, it's benign, then. It would not be any substance to worry about.

Senator WICKER. OK. And you're right, that was Senator Kerry's question, not Senator Rockefeller's.

Admiral Allen, there are three kind of blowout preventers. The standards are set by industry. Is that your testimony?

Admiral ALLEN. Sir, what I meant was——

Oh. I'm sorry.

What I meant was, there are three different areas of subsea mining that there are specifications set out by the American Petroleum Institute. One are the rams on the blowout preventers, the choke-and-kill lines, and then the control systems. They're three different components of what we're—in what they——

Senator WICKER. OK. So——

Admiral ALLEN.—would call——

Senator WICKER.—on every rig, there's going to be a blowout preventer.

Admiral ALLEN. Yes, sir.

Senator WICKER. And the standards are set by API. Do you have any indication that those standards are less than acceptable? Or should we be more concerned about the adherence to those standards?

Admiral ALLEN. I'm not sure I'm in a position technically qualified to tell you about the standard. I will tell you this, that they are used by the American Bureau of Shipping to issue what's called a Certificate of Drilling Systems that says that those systems are in compliance with industry standards. So, there is a third-party verification through a classification society—in this case, the American Bureau of Shipping—that would do that, sir.

Senator WICKER. Finally, with regard to the response of the Federal Government, looking back over the 4 weeks of this tragedy, is there anything you wish the Coast Guard or the Department had done differently or earlier?

Admiral ALLEN. I think the biggest takeaway—and this is something that I don't think we anticipated—or maybe couldn't—could be anticipated—when you have a—what I call an omnidirectional indeterminate threat, any booming resources you have available for one particular area are going to be vastly exceeded when you start talking about an area of western Louisiana clear around, potentially, to Key West, is where we're talking about now.

The national system did not contemplate you would have to do all that at once. And so, I think the entire issue of boom inventory, booming strategy, and means of production is something we're going to have to take a good close look at, sir.

Senator WICKER. That was a decision that was made weeks and months and years beforehand.

Admiral ALLEN. It's usually indicated that, in one particular area, you would have a worst-case discharge, and you would protect that one particular area with a certain amount of boom and resources. What we're trying to do is basically protect the entire Gulf Coast at the same time. And when you do that, it multiplies the requirements for boom, and it's stressing the manufacturing

system. And I think a national supply strategy is probably going to be needed after this.

Senator WICKER. Thank you.

The CHAIRMAN. Thank you.

Senator LeMieux.

Senator LEMIEUX. Thank you, Mr. Chairman.

Admiral, I just saw a press release from the Coast Guard saying, in addition to the tar balls that we first heard about in Key West, there is an investigation of tar balls on the beach in Big Pine Key, as well as Loggerhead Key, in the Dry Tortugas; and at Smathers Beach, there has been a report, as well.

I don't think anyone estimated that we were going to have—if these tar balls are, in fact, from this Gulf oil spill—I know that you all are doing research to make sure that they are, because they can naturally occur—but, it seems somewhat coincidental, if that's the case. Since this is ahead of where we thought that the spill might be at this time, what is the plan for the Florida Keys? What is the Coast Guard ready to do to protect that valuable ecosystem from the oil that appears to be heading there?

Admiral ALLEN. Yes, sir. Let me tell you what we've already done, and then where I think we are today.

About a week and a half ago, I met with Governor Crist, and I recommended that they do a reconciliation between what is in the current area contingency plans for the State of Florida, and make sure that those resources to be protected were really what they wanted, there weren't any changes recently. It took us a while to get through that process in Louisiana and Mississippi and Alabama. We're still kind of vetting some issues about what should be protected, versus what the plan said. That resulted in a conference call with all the counties along the west coast, and our Coast Guard commanders start that. That process has basically gone through—so we know what's sensitive, what needs to be protected, how much boom it will take, so forth.

What we're dealing with now, though, is a different type of oil than we have further up in the Gulf. Tar balls are starting to show up. And Dr. Lubchenco and I were talking before the hearing. That could be a manifestation of oil that was released right at the start of this event, and not, maybe, associated with the slick that's out there now, that may be nearing the Loop.

Oil that does get down there, is likely to be a much more weathered oil, if it's on the surface, and won't be susceptible to in situ burning or dispersant use and, pretty much, mechanical recovery. That then drives your planning and your tactics for what you want to do there.

Our two commanders, Captain Close, in St. Petersburg, and Captain DeQuattro, in Key West, have activated their own local commands. There are shore assessment teams that are going out. We are testing the tar balls, as you know, in the Coast Guard Marine Safety Lab, to get an indication of whether or not they're associated with this spill.

But, I think we're probably two different sets of oil, or at least at different times, and weathered in different ways.

I'd ask Dr. Lubchenco to comment, though.

Dr. LUBCHENCO. Senator, we're not—as you pointed out, we need to know for sure where the oil came from. If, in fact, it is from this spill—if it has the same fingerprint—one possibility, that there's no real way to confirm but that makes sense, is that the initial explosion may have discharged oil that was an—sort of, an initial flush, and that that is a separate event from the continuous release of the oil that has been coming up since then. Of that, we—there's no way to confirm that. It would be consistent with what we're seeing, but I think we may never really know.

Senator LEMIEUX. Assuming that it is from the disaster, and maybe it is a separate case or it's the initial blastoff and not the spill that we're seeing. The spill we're seeing is coming. We saw those charts, a moment ago, about the Loop Current. This would certainly show a precursor, if this oil traveled along those same currents first. Are we going to put booming up to protect the Florida Keys?

We have this huge area between Key West and going up to southwest Florida, Cape Sable, and in between that is, Florida Bay, which the Federal Government and the state governments have spent hundreds of millions, if not billions, of dollars trying to keep clean from other pollutants. What are we going to do to try to prevent the oil from getting into Florida Bay, the Everglades, our reefs?

Dr. LUBCHENCO. Senator, let me clarify something about Loop Current and then ask the Admiral to talk about the booming strategy, if that's all right.

The oil that we believe is either close to or in the top part of the Loop Current is a very small amount of light sheen. Most of the bulk of the oil mass is dozens of miles away from the Loop Current now. So, it's just a small tendril that is streaking down toward the Loop Current. Some of that is likely to get entrained in an eddy that is going to carry it back north. Some of it might get into the Loop Current.

When it gets into the Loop Current, it's going to be significantly diluted. And by the time it makes its way to the Florida Strait, which is on the order of 8 to 12 days, it would likely be significantly weathered and degraded, as well as diluted. So that what we are looking at are likely emulsified streamers and possibly tar balls. It's not as if there's going to be a massive amount of fresh oil washing up.

The booming strategy is something the Commandant can focus on.

The CHAIRMAN. Time is up.

Senator Pryor.

Senator PRYOR. Mr. Chairman, I've been out on the phone, and voting, so I feel like I'm coming in, in the middle of a conversation. So, I think what I'll do is pass, for the moment, and maybe take my time at the end, if that's possible.

The CHAIRMAN. All right.

Then following would be Senator Cantwell, and then, to their amazement, Senator Johanns and Senator Klobuchar.

Senator CANTWELL. Thank you——

[Laughter.]

Senator CANTWELL. Thank you, Mr. Chairman.

Dr. Lubchenco, I'm not sure if my colleague Senator Snowe was asking about permits, specifically, which I think she was, but I'm very interested in—your agency sent a letter—NOAA sent a letter to MMS, in September of 2009, on the offshore drilling proposal.

This is a copy of the letter, here.

I asked Secretary Salazar about it this morning. And the reason I'm bringing it up here again at this hearing is, it's pretty clear, from what NOAA says in this, that the—basically, you're saying that MMS is understating the environmental impacts and the risks of spills, and, basically, that MMS's conclusions in this document are not based on science. Those are pretty strong statements.

I'm wondering, did you ever get a response back from MMS, to this document?

Dr. LUBCHENCO. Senator, those are the comments that we submit as part of the process where we comment on plans. And we did not get a formal response, but it's not typical that we—one would get a response. MMS sends out plans, agencies comment. They take those plans—or they take those comments into account when they make their final determination.

Senator CANTWELL. And so, what kind of informal comments did you get back?

Dr. LUBCHENCO. We have had many exchanges about the plans and the comments. And for the most recent announcement that Secretary Salazar made, they actually took many of our comments into account, and that is evidenced in the announcements that were made most recently.

Senator CANTWELL. Could we get—we asked Secretary Salazar for any of those documents. And if there are other documents, could the public have access to them? Because, I mean, this is part of the issue that I think some of us are concerned about. If you have an agency, such as yours, that is in charge of rendering the questions of the impact of oil spills on science, and yet you give that science to an agency that's supposed to do oversight, and they ignore it, I think those are the things that Members of Congress want to know. We want to know what's being ignored, when it comes to the science.

A follow-up on the recovery: I know that there are many—well, I mentioned that there are still 10 species that are recovering from the *Exxon Valdez,* and two species that show no sign of recovery. I have a list here of all of those, including, besides these species, there are intertidal communities and designated wilderness, all sorts of things that aren't recovering. Yet, we're talking 20 years later.

What are—do you think are the possibilities that there will be similar fisheries in the Gulf that will be impacted over a long period of time?

Dr. LUBCHENCO. Senator, I think it's fair to say that oil has both immediate as well as long-term impacts. The specific impacts are very much a function of the type of oil. This is a different type of oil from what we saw in *Exxon Valdez.* It's also very much a function of what species have very vulnerable life stages, eggs, or larvae that are in the plankton at the time. And we do not yet know the full environmental impact of this particular event. That's why we are very aggressively taking samples and monitoring it.

We know that there are a lot of vulnerable species. We know there're a lot of vulnerable habitats. There is great potential for extreme environmental harm, but to be more specific than that is very challenging.

Senator CANTWELL. Well, we hope that you'll keep this committee informed of the indicators to those species, so that we can have an idea, as soon as you have an idea, about those impacts.

Admiral Allen, your comments about API doing self-certification—basically, the industry certifying whether equipment is safe to use, or not—do you believe that ABS's—the American Shipping—I'm sorry—the American Bureau of Shipping—do you think that they should be expanded, their responsibilities, to do certification on things like blowout preventers, since they are such critical parts of the drilling apparatus? To do certification on whether they work?

Admiral ALLEN. They have the competency to do that right now. And they actually do issue certificates for drilling systems from time to time, but it's voluntary right now. I think what needs to be considered is whether or not we need a regulatory regime that would make it mandatory, then ABS could do that as a classification society.

We did some surveys. There are some countries in the world that do require this, and one of them is Norway.

Senator CANTWELL. So—and do you think that would be a positive development?

Admiral ALLEN. I think it certainly has to be considered, in the wake of what happened, ma'am.

Senator CANTWELL. Thank you.

I certainly think we should, Mr. Chairman. I know that might not be the—I'm not sure whose jurisdiction that is, but I actually think that more third-party validation of the equipment is a critical issue.

So, thank—I thank the Chair.

The CHAIRMAN. I agree with you. Thank you very much.

Senator Klobuchar.

STATEMENT OF HON. AMY KLOBUCHAR, U.S. SENATOR FROM MINNESOTA

Senator KLOBUCHAR. Thank you very much, Mr. Chairman.

And thank you.

I was at the hearing earlier in the Environment Committee, with Senator—I still call him Senator—with Secretary Salazar and Administrator Jackson and others. And I, first, want to let you know, Admiral Allen, that I was down there, a few weeks ago, with Congressman Oberstar and with the Coast Guard. We flew over the disaster and were briefed by people on the ground at your command center. It was clear to me, people in this horrible tragedy, that never should have happened, were working as well as they could together and trying to do the right thing. And so, I wanted to thank you for that.

The other thing, of course, I was struck by, that anyone that visits there is struck by, is just the magnitude of the oil on the sea; it's something you can never quite capture on TV, just the miles

and miles of orange, and the people, the small business owners, terrified that they will lose their livelihoods.

We had a hearing last week with some of the BP and Halliburton and Transocean people, and the heads of their companies. And, you know, I made clear there, I think one of the key things is going to be the liability and making sure the taxpayers are compensated for this. This idea that there was no redundancy, that there wasn't any other backup plans, this—that Senator Cantwell was just focusing on, the inspection of some of this equipment, and the failure of the Mineral Management Agency in catching some of this—and there's just a lot of blame to go around, clearly.

But, I had one—just one question, actually, of you—maybe both of you, but I'll lead with you, Dr. Lubchenco. And this came out of something one of the Coast Guard people said when we were down there. And I checked; it's not redundant with what everyone else has been asking. But, that is, one of the Coast Guard raised the issue that, if this just keeps going, and we're not able to plug it, or if it's—just goes on and on for another month or two, if—when hurricane season hits, it is possible that it could be even worse.

And so, I would like to know if you've made any projections, if there are hurricanes, the effect that could have, in terms of stirring up this oil. Even if they are successful in plugging the leak, what effect this could have with these tens and hundreds of thousands of barrels of oil. And, if the oil spill itself could somehow affect the hurricane season.

I'll lead with you.

Dr. LUBCHENCO. Senator, I think the short answer is, We don't really know the exact nature of the interaction that might be between hurricanes and this oil spill. Our folks have been working really hard to get some answers on that. We just don't have a lot of experience. There are a number of ideas that are out there. The oil may actually prevent some evaporation, and therefore, diminish the power of a hurricane. It's unlikely that it would be affecting its track.

On the other hand, it would sort of depend on where the oil is and where the hurricane is. There are a lot of factors that would go into play. And the bottom line is, we don't really know.

Senator KLOBUCHAR. Being a lake state, when does the hurricane season really start?

Dr. LUBCHENCO. Hurricane season is—officially starts the beginning of June. Next week is Hurricane Preparedness Week, and we will be announcing the NOAA outlook of what we expect—given current atmospheric and oceanographic conditions, what we expect this hurricane season to look like.

Senator KLOBUCHAR. And is it possible, though, it could stir it up even more, and bring the oil places you don't want it to go?

Dr. LUBCHENCO. It's certainly possible that some—we don't know exactly what that—you know, there are all sorts of things that are possible, and I think it's just speculation.

Senator KLOBUCHAR. All right.

Admiral do you want to add anything?

Admiral ALLEN. Just two things, ma'am. Any kind of weather that's rough inhibits on-water response. And we're trying to deal—

if we can't stop the leak, then we want to fight this as far offshore as possible.

Now, we—we're finding out, just with the frontal passages of spring storms coming through the region, that we've had to pull ships back.

Senator KLOBUCHAR. Right.

Admiral ALLEN. So, there's an impact on the response capability. Beyond that—and this might be a question for the second panel—a lot of the stuff that's going on out there right now is weather-related, and there are drilling operations and other offshore supply vessels that are working. So, I think you would need to assess the impact on the relief wells that are being drilled, and at what point would hurricane-type weather cause them to have to secure those operations, which would then insert a time element into the ultimate relief-well drilling timeline.

Senator KLOBUCHAR. And when's the height of the hurricane season, usually?

Admiral ALLEN. I would—I've got the expert next to me, but I think, when you get toward the end of August through the month of September, is the height of the season.

Senator KLOBUCHAR. All right. Thank you very much.

The CHAIRMAN. Thank you, Senator Klobuchar.

And I want to thank Admiral Allen and Dr. Lubchenco very much for your patience. You've been to a number of these hearings.

It's my view that this is going to go on for a very long time. It opens up extraordinary scientific and safety, as well as energy capacity, questions. And it's, philosophically, very interesting, as well. In other words, do you take a chance, and do you have to take a chance, or can you not afford to take a chance?

In any event, you're two superb witnesses, and your service to your country is enormously appreciated, obviously, by all of us. And I thank you.

Senator HUTCHISON. And I agree totally.

Dr. LUBCHENCO. Thank you, Senator.

Senator HUTCHISON. Thank you so much for the service and the extra time, the extra mile you're going. We really appreciate it.

Dr. LUBCHENCO. Thank you very much.

The CHAIRMAN. We'll have a 30-second recess while the next panel comes in.

[Recess.]

The CHAIRMAN. We apologize to the second panel for making them wait so long, but this is obviously an enormous subject.

And I will introduce to my colleagues again Mr. Lamar McKay, who's chairman and president of BP America; and Mr. Steven Newman, president and CEO of Transocean Limited; and Dr. Deborah French-McCay, Principal Applied Science Associates, who's an independent and knowledgeable researcher. We would be happy to hear your statement.

Mr. McKay, we'll start with you.

STATEMENT OF LAMAR MCKAY, CHAIRMAN AND PRESIDENT, BP AMERICA

Mr. MCKAY. Thank you.

Chairman Rockefeller, Ranking Member Hutchison, members of the Committee, my name is Lamar McKay, and I am Chairman and President of BP America.

We have experienced a tragic set of events. Nearly 1 month ago, 11 people were lost in an accident on the *Deepwater Horizon* rig. That was a terrible loss to the families, and the affect on the Gulf Coast is tremendous. People's lives and livelihoods are being effective—affected in this, and we are aware of that.

I've seen the response firsthand. I've been on the frontline with the men and women, and I've understood what people are going through to battle this. There is a deep and steadfast resolve to do all we humanly can to stop the leak, contain the spill, and to minimize the damage suffered by the environment and the people of the Gulf Coast.

As a responsible party, under the Oil Pollution Act, we will carry out our responsibilities to mitigate the environmental and economic impacts of this incident. Our efforts are part of a Unified Command that was established within hours of the accident, and it provides a structure for our work with Departments of Homeland Security, the Departments of Interior, other Federal agencies, as well as affected state and local governments. We have pledged our commitment to work with President Obama and members of his Cabinet, and the Governors, Congressional members, state agencies, and local communities of Mississippi, Alabama, Louisiana, Florida, and Texas. We appreciate the leadership, direction, and resources they are providing.

I want to underscore that the global resources of BP are committed to this effort, and have been from the outset. Nothing is being spared. Everyone understands the enormity of what lies ahead and is working to deliver an effective response at the wellhead, on the water, and at the shoreline.

Before I describe our around-the-clock efforts in response to these events, I want to reiterate our commitment to find out what happened.

There are two key lines of inquiry. First, what caused the explosion and fire onboard Transocean's *Deepwater Horizon* rig? And, second, why did the rig's blowout preventer, the key fail-safe mechanism, fail to shut in the well and release the rig?

We are cooperating with the joint investigation by the Departments of Homeland Security and Interior, as well as investigations by Congress. In addition, BP has commissioned an internal investigation, whose results we plan to fully share, so that we can all learn from these terrible events.

In the meantime, we cannot draw any conclusions before all the facts are known. At the same time, we are fully engaged in the response to these devastating events.

Our subsea efforts, to stop the flow of oil and secure the well, are advancing on several fronts. Our immediate focus is on riser insertion tube. This involves—involved placing a tapered riser tube into the end of the existing damaged riser, which is a primary source of the leak. The gas and oil then flows, under its own pressure, up the riser tube to the Enterprise drill ship on the surface.

We have successfully tested and inserted the tube into the leaking riser. And we're now in the early stages of stabilizing that proc-

ess in order to process the oil and gas onboard the Discoverer Enterprise.

An additional subsea effort is known as a "top kill." This is a proven industry technique for capping wells that has been used worldwide, although it's never been used in 5,000 feet of water. It uses a tube to pump heavy fluids to "kill," or a mixture of multi-sized shredded fibrous materials directly into the blowout preventer to clog, the flow. This procedure is ongoing, and the attempt could take 1 to 2 weeks.

We've also developed a modified containment-dome strategy. "Containment dome," known as a "top hat," is being readied, if needed. And it's designed to mitigate the formation of gas hydrates. We've tested injecting dispersant directly at the leak site on the sea floor. It's under Environmental Protection Agency and Coast Guard approval. Sonar tests—sonar testing and aerial photographs do show encouraging results. The Unified Command, supported by the EPA and other agencies, has approved subsea application, subject to ongoing protocols.

We also began drilling the first of two relief wells, on Sunday, May 2nd. And, as of May 16th, the first well had reached approximately 9,000 feet below sea level. A second drill ship arrived onsite, and, on Sunday, began drilling a second relief well. The entire relief-well operations could take approximately 3 months.

On the open water, a fleet of more than 900 response vessels has been mobilized. In addition to using approved biodegradable dispersants at the leak point, we're also attacking the spill offshore with EPA- and Coast Guard- approved dispersants on the surface. This is applied using planes and boats.

To protect the shoreline, we're implementing what the U.S. Coast Guard has called, "the most massive shoreline protection effort ever mounted." Approximately 1.8 million feet of boom has now been deployed, with over 1 million additional feet available. Seventeen staging areas are now in place, and more than 15,000 volunteers have come forward to offer their services.

To ensure the rapid implementation of state contingency plans, we've provided $25 million each to Louisiana, Mississippi, Alabama, and Florida.

We recognize that, beyond the environmental impacts, there are also economic impacts. These impacts are on the people of the Gulf Coast, and they rely on the Gulf Coast for their livelihood. BP will pay all necessary clean-up costs, and is committed to paying all legitimate claims for other loss and damages caused by the spill.

We are expediting interim payments to individuals and small business owners, whose livelihood has been directly impacted. To date, we've paid out nearly $15 million to claimants, mostly in the form of lost-income interim payments. We intend to continue replacing this lost income for as long as the situation warrants. We are responding to claims as quickly and as responsively as possible.

Starting this week, we'll have in place an online claims filling—filing system. And our Call Center's open 24 hours-a-day, 7 days-a-week. And we also have 12 walk-in claims offices open in Louisiana, Mississippi, Alabama, and Florida, and we will open at least five more this week.

We're striving to be efficient and fair. We're taking guidance from the established regulations and other information provided by the U.S. Coast Guard, which handles and resolves these types of claims. In addition, we announced, yesterday, that we are providing $25 million to Florida, and $15 million each to Alabama, Louisiana, and Mississippi, to help their governments promote tourism over the next few months.

Tragic as this accident was, we must not lose sight of why BP and other energy companies are operating in the offshore, including the Gulf of Mexico. The Gulf provides one in four barrels of oils produced in the United States, and it's a resource our economy requires.

BP, and the entire energy industry, are under no illusions about the challenge we face. We know that we will be judged by our response to this crisis. No resources available to this company will be spared. I can assure you that we, and the entire industry, will learn from this terrible event, and we will emerge from it stronger, smarter, and safer.

Thank you for the opportunity to appear before you today. I'd be happy to answer your questions.

[The prepared statement of Mr. McKay follows:]

PREPARED STATEMENT OF LAMAR MCKAY, CHAIRMAN AND PRESIDENT, BP AMERICA [1]

Chairman Rockefeller, Ranking Member Hutchison, members of the Committee, I am Lamar McKay, Chairman and President of BP America.

We have all experienced a tragic series of events.

I want to be clear from the outset that we will not rest until the well is under control. As a responsible party under the Oil Pollution Act, we will carry out our responsibilities to mitigate the environmental and economic impacts of this incident.

We—and, indeed, the entire energy sector—are determined to understand what happened, why it happened, take the learnings from this incident, and make the changes necessary to make our company and our industry stronger and safer. We understand that the world is watching and that we and our industry colleagues will be judged by how we respond to these events.

Nearly one month ago, eleven people were lost in an explosion and fire aboard the Transocean *Deepwater Horizon* drilling rig, and 17 others were injured. My deepest sympathies go out to the families and friends who have suffered such a terrible loss and to those in Gulf Coast communities whose lives and livelihoods are being impacted.

This was a horrendous accident. We are all devastated by this. It has profoundly touched our employees, their families, our partners, customers, those in the surrounding areas and those in government with whom we are working. There has been tremendous shock that such an accident could have happened, and great sorrow for the lives lost and the injuries sustained. The safety of our employees and our contractors and the safety of the environment are always our first priorities.

Even as we absorb the human dimensions of this tragedy, I want to underscore our intense determination to do everything humanly possible to minimize the environmental and economic impacts of the resulting oil spill on the Gulf Coast. From the outset, the global resources of BP have been engaged. Nothing is being spared. We are fully committed to the response.

And from the beginning, we have never been alone. On the night of the accident, the Coast Guard helped rescue the 115 survivors from the rig. The list of casualties could easily have been longer without the professionalism and dedication of the Coast Guard.

Even before the Transocean *Deepwater Horizon* sank on the morning of April 22, a Unified Command structure was established, as provided by Federal regulations. Currently led by the National Incident Commander, Admiral Thad Allen, the Uni-

[1] The data described throughout this testimony is accurate to the best of my knowledge as of 8 a.m. Sunday, May 16, 2010, when this testimony was prepared. The information that we have continues to develop as our response to the incident continues.

fied Command provides a structure for BP's work with the Coast Guard, the Minerals Management Service and Transocean, among others.

Immediately following the explosion, in coordination with the Unified Command, BP began mobilizing oil spill response resources including skimmers, storage barges, tugs, aircraft, dispersant, and open-water and near shore boom.

Working together with Federal and state governments under the umbrella of the Unified Command, BP's team of operational and technical experts is coordinating with many agencies, organizations and companies. These include the Departments of Interior, Homeland Security, Energy, and Defense, National Oceanic and Atmospheric Administration (NOAA), U.S. Fish & Wildlife Service (USFW), National Marine Fisheries Service (NMFS), EPA, OSHA, Gulf Coast state environmental and wildlife agencies, the Marine Spill Response Corporation (an oil spill response consortium), as well as numerous state, city, parish and county agencies.

"BP has been relentless and we've been relentless in our oversight because we all understand the stakes here," said Adm. Allen on May 14. "This has never been done before. This is an anomalous, unprecedented event."

The industry as a whole has responded in full support. Among the resources that have been made available:

- Drilling and technical experts who are helping determine solutions to stopping the spill and mitigating its impact, including specialists in the areas of subsea wells, environmental science and emergency response;
- Technical advice on blowout preventers, dispersant application, well construction and containment options;
- Additional facilities to serve as staging areas for equipment and responders, more remotely operated vehicles (ROVs) for deep underwater work, barges, support vessels and additional aircraft, as well as training and working space for the Unified Command.

The Actions We're Taking

As Chairman and President of BP America, I am part of an executive team that reports directly to our Global CEO, Tony Hayward. I am BP's lead representative in the U.S. and am responsible for broad oversight and connectivity across all of our U.S.-based businesses.

BP itself has committed tremendous global resources to the effort. Including BP, industry and government resources—over 17,000 personnel are now engaged in the response. Among many other tasks, our employees are also helping to train and organize the more than 15,000 citizen volunteers who have come forward to offer their services.

Indeed, we have received a great many offers of help and assistance, and we are grateful for that. The outpouring of support from government, industry, businesses and private citizens has truly been humbling and inspiring. It is remarkable to watch people come together in crisis.

Our efforts are focused on two overarching goals:

- Stopping the flow of oil; and
- Minimizing the environmental and economic impacts from the oil spill.

Subsea Efforts to Secure the Well

Our first priority is to stop the flow of oil and secure the well. In order to do that, we are using four vessels and nine Remote Operated Vehicles (ROVs) working on several concurrent strategies:

- *Riser Insertion Tube*: Our immediate focus is on a riser insertion tube option. This involves placing a tapered riser tube into the end of the existing, damaged riser and drill pipe, the primary source of the leak, until a watertight closure is achieved. The gas and oil would then flow under their own pressure up the riser tube to the *Enterprise* drillship on the surface.
- *Containment Recovery System*: Initial efforts to place a large containment dome over the main leak point were suspended as a buildup of hydrates, essentially ice-like crystals, prevented a successful placement of the dome over the spill area. A second, smaller containment dome, measuring four feet in diameter and five feet high, called a "top hat," is being readied to lower over the main leak point, if needed. The small dome would be connected by drill pipe and riser lines to a drill ship on the surface to collect and treat the oil. It is designed to mitigate the formation of large volumes of hydrates. It is important to note that this technology has never been used at this depth and significant technical and operational challenges must be overcome.

- *Dispersant injection at the sea floor*: We have conducted a third test round of injecting dispersant directly at the leak site on the sea floor using ROVs. Dispersant acts by separating the oil into small droplets that can break down more easily through natural processes before it reaches the surface. Sonar testing and aerial photographs show encouraging results. The Unified Command, supported by the Environmental Protection Agency and other agencies, has approved additional subsea application subject to ongoing protocols.
- *Drilling relief wells*: We have begun to drill the first of two relief wells to permanently secure the well. These wells are designed to intercept the original MC252 #1 well. Once this is accomplished, a specialized heavy fluid will be injected into the well bore to stop the flow of oil and allow work to be carried out to permanently cap the existing well. On Sunday, May 2, we began drilling the first of these wells, and as of May 16, the well had reached approximately 9,000 feet below sea level. A second drillship has been mobilized to the area and will begin drilling a second relief well on May 16. This relief well operation could take approximately 3 months.
- *"Top kill"*: An additional effort is known as a "top kill." It is a proven industry technique for capping wells and has been used worldwide, though never in 5,000 feet of water. It uses a tube to inject a mixture of multi-sized shredded fibrous materials directly into the blowout preventer. The objective is for the material to travel up the BOP and clog the flow of the well at the pinch point. Once the pressure is controlled, heavy fluids and cement will be pumped down the well to kill it. We have completed the first part of this operation using an ROV to remove the BOP control pod, which was taken to the surface and refurbished with electronics. Re-installation of the control pod will allow us to control the BOP lines needed to inject from the surface. Manifold and bypass lines are in place to provide access to valves on the BOP. This procedure is ongoing and this attempt could take two or 3 weeks to accomplish.
- We have succeeded in stopping the flow from one of the three existing leak points on the damaged well. While this may not affect the overall flow rate, it should reduce the complexity of the situation to be dealt with on the seabed.

Attacking the Spill

We are attacking the spill on two fronts: in the open water and on the shoreline, through the activation of our pre-approved spill response plans.

On the Water

On the open water, more than 600 response vessels are available, including skimmers, storage barges, tugs, and other vessels. The Hoss barge, the world's largest skimming vessel, has been onsite since April 25. In addition, there are 15, 210-foot Marine Spill Response Corporation Oil Spill Response Vessels, which each have the capacity to collect, separate, and store 4,000 barrels of oil. To date, over 150,000 barrels of oil and water mix have been recovered.

Also on the open water, we are attacking the spill area with Coast Guard-approved biodegradable dispersants, which are being applied from both planes and boats. Dispersants are soap-like products which help the oil to break up and disperse in the water, which, in turn, helps speed natural degradation.

Thirty-eight aircraft, both fixed-wing and helicopters, are now supporting the response effort. Over half a million gallons of dispersant have been applied on the surface and more than a quarter of a million gallons are available. Typically, about 2,100 gallons of dispersant is needed to treat 1,000 barrels of oil.

To ensure that adequate supplies of dispersant will be available for surface and subsea application, the manufacturer has stepped up the manufacturing process, and existing supplies are being sourced from all over the world. The cooperation of industry partners has been superb and that is deeply, deeply appreciated.

Actions to Protect the Shoreline

Near the shoreline, we are implementing with great urgency oil spill response contingency plans to protect sensitive areas. According to the Coast Guard, the result is the most massive shoreline protection effort ever mounted.

To ensure rapid implementation of state contingency plans, we have made grants of $25 million to Louisiana, Mississippi, Alabama, and Florida.

To date, we have about 1.5 million feet of boom deployed in an effort to contain the spill and protect the coastal shoreline, and another one million feet are available. The Department of Defense is helping to airlift boom to wherever it is needed across the Gulf coast.

The Area Unified Command Center has been established in Robert, LA. Incident Command Centers have been or are being established at Mobile, AL; St. Petersburg, FL and Houma, LA.

Fifteen staging areas are also in place to help protect the shoreline:

- *Alabama*: Theodore, Orange Beach and Dauphin Island;
- *Florida*: Pensacola and Panama City.
- *Louisiana*: Amelia, Grand Isle, Venice, Port Fourchon, Shell Beach, Slidell, Cocodrie;
- *Mississippi*: Pascagoula, Biloxi and Pass Christian;

Highly mobile, shallow draft skimmers are also staged along the coast ready to attack the oil where it approaches the shoreline.

Wildlife clean-up stations are being mobilized, and pre-impact baseline assessment and beach clean-up will be carried out where possible. Rapid response teams are ready to deploy to any affected areas to assess the type and quantity of oiling, so the most effective cleaning strategies can be applied.

A toll-free number has been established to report oiled or injured wildlife, and the public is being urged not to attempt to help injured or oiled animals, but to report any sightings via the toll-free number.

Contingency plans for waste management to prevent secondary contamination are also being implemented.

Additional resources, both people and equipment, continue to arrive for staging throughout the Gulf states in preparation for deployment should they be needed.

Communication, Community Outreach, and Engaging Volunteers

We are also making every effort to keep the public and government officials informed of what is happening and are regularly briefing Federal, state, and local officials.

On the ground, in the states and local communities, we are working with numerous organizations such as fishing associations, local businesses, parks, wildlife and environmental organizations, educational institutions, medical and emergency establishments, local media, and the general public.

BP is leading volunteer efforts in preparation for shoreline clean-up. We have helped and will continue to help recruit and deploy volunteers, many of whom are being compensated for their efforts, to affected areas.

Volunteer activities at this time are focused on clearing the beaches of existing debris and placing protective boom along the shoreline. Our "adopt a boom" program is proving very successful in engaging local fishermen in the response. Over a thousand fishing vessels are signed up to deploy boom and assist with the response.

There are seven BP community-outreach sites engaging, training, and preparing volunteers:

- *Alabama*: Mobile;
- *Florida*: Pensacola;
- *Louisiana*: Venice and Pointe a la Hache;
- *Mississippi*: Pascagoula, Biloxi and Waveland.

A phone line has been established for potential volunteers to register their interest in assisting the response effort.

Coping with Economic Impacts

We recognize that beyond the environmental impacts there are also economic impacts on many of the people who rely on the Gulf for their livelihood. BP will pay all necessary clean up costs and is committed to paying legitimate claims for other loss and damages caused by the spill. We are already expediting interim payments to individuals and small business owners whose livelihood has been directly impacted by the spill—the men and women who are temporarily unable to work. We have already paid approximately 12 million dollars out to claimants, mostly in the form of these lost income interim payments. We intend to continue to replace this lost income for those impacted men and women for as long as the situation continues to prevent them from returning to their work.

We have been responding to these claims by individuals and small businesses that have had losses caused by injury to their property or to natural resources as quickly and efficiently as possible. We have a call center that operates 24 hours a day, 7 days a week. Starting this week, we will have an on-line claims filing system. We have nearly 700 people assigned to handle claims, with almost 350 experienced claims adjusters working in the impacted communities. We have 10 walk-in claims

offices in Louisiana, Mississippi, Alabama and Florida and we will open 7 more this week. We will continue to add people, offices and resources as required.

We are striving to be efficient and fair and look for guidance to the established regulations and other information provided by the U.S. Coast Guard, which frequently handles and resolves these types of claims.

Commitment to Investigate What Happened

BP is one of the leaseholders and the operator of this exploration well. As operator, BP hired Transocean to conduct the well drilling operations. Transocean owned and was responsible for safe operation of the *Deepwater Horizon* drilling rig and its equipment, including the blowout preventer.

The question we all want answered is "what caused this tragic accident?"

A full answer to this and other questions will have to await the outcome of multiple investigations which are underway, including a joint investigation by the Departments of Homeland Security and Interior (Marine Board) and an internal investigation that BP is conducting.

BP's investigation into the cause of this accident is being led by a senior BP executive from outside the affected business. The team has more than 40 people. The investigation is ongoing and has not yet reached conclusions about incident cause. We intend to share the results of our findings so that our industry and our regulators can benefit from the lessons learned.

Investigations take time, of course, in order to ensure that the root cause of the failure is fully understood. But let me give you an idea of the questions that BP and the entire energy industry, are asking:

- What caused the explosion and fire?
- And why did the blowout preventer fail?

Only 7 of the 126 onboard the *Deepwater Horizon* at the time of the incident were BP employees, so we have only some of the story, but we are working to piece together what happened from meticulous review of the records of rig operations that we have as well as information from those witnesses to whom we have access. We are looking at our own actions and those of our contractors, as is the Marine Board.

Conclusion

BP is under no illusions about the seriousness of the situation we face. In the last 3 weeks, the eyes of the world have been upon us. President Obama and members of his Cabinet have visited the Gulf region and made clear their expectations of BP and our industry. So have Members of Congress, as well as the general public.

We intend to do everything within our power to bring this well under control, to mitigate the environmental impact of the spill and to address economic claims in a responsible manner.

Any organization can show the world its best side when things are going well. It is in adversity that we truly see what they are made of.

We know that we will be judged by our response to this crisis. No resource available to this company will be spared. I can assure you that we and the entire industry will learn from this terrible event, and emerge from it stronger, smarter and safer.

The CHAIRMAN. Thank you, Mr. McKay.

Mr. Newman.

STATEMENT OF STEVEN NEWMAN, CHIEF EXECUTIVE OFFICER, TRANSOCEAN, LTD.

Mr. NEWMAN. Chairman Rockefeller, Ranking Member Hutchison, and other members of the Committee, I thank you for the opportunity to speak with you today.

My name is Steven Newman, and I am the Chief Executive Officer of Transocean Limited. Transocean is a leading offshore drilling contractor, with more than 18,000 employees worldwide. I am a petroleum engineer by training, and I have spent years working on and with drilling rigs.

I have worked at Transocean for more than 15 years, and I am proud of the contributions our company has made to the energy industry during that time.

Today, however, I sit before you with a heavy heart. The last few weeks have been a time of great sadness and reflection for our company and for me personally. Nothing is more important to me and to Transocean than the safety of our crewmembers. And our hearts ache for the widows, parents, and children of the 11 crewmembers, including 9 Transocean employees, who were lost in the *Deepwater Horizon* explosion. These were exceptional men, and we are committed to doing everything we can to help their families as they cope with this tragedy.

Over the last few weeks, we have also seen great acts of courage and kindness in our colleagues and in our communities. That courage and kindness was embodied by the 115 crewmembers who were rescued from the *Deepwater Horizon* and were as focused on the safety of their colleagues as they were on their own safety. It was embodied by the brave men and women of the U.S. Coast Guard who led the on- scene response and the search-and-rescue efforts, and the missing crewmembers, and the medical professionals, and friends and family who met those injured crewmembers as they came ashore. And it is embodied by our friends and colleagues, in Transocean and across the industry, who have rallied to help the families of the men who were lost.

This has been a very emotional period for all of us at Transocean, but it has also been a period of intense activity and effort. Immediately after the explosion, Transocean began working with BP, the Coast Guard, and NOAA, as part of the Unified Command, in the effort to stop the flow of hydrocarbons. Our finest engineers and operational personnel have been working with BP to identify and pursue alternatives to stop the flow as soon as possible.

Two of our drilling rigs, the Development Driller 2 and the Development Driller 3, are involved in drilling relief wells at the site. And our drill ship, the Discoverer Enterprise, is conducting crude-oil recovery operations. We will continue to support BP and the Unified Command in all of these efforts.

At the same time, we have also been working hard to get to the bottom of the question to which the members of this committee and the American people want and deserve an answer: What happened on the night of April 20th? And how can we assure the American public that it will not happen again?

Transocean has assembled an independent investigative team to determine the cause of these tragic events, a team that includes dedicated Transocean and industry experts. They will be interviewing people who have potentially helpful information and studying the operations and the equipment involved.

Because the drilling process is a collaborative process among many different companies, contractors, and subcontractors, the process of understanding what led to the April 20th explosion, and how to prevent such an accident in the future, must also be collaborative. Our team is working side by side with others, including BP and governmental agencies. And these investigative efforts will continue until we have satisfactory answers.

While it is still too early to know exactly what happened on April 20, we do have some clues about the cause of this disaster. The most significant clue is that the events occurred after the well con-

struction process was essentially finished. Drilling had completed on April 17th, and the well had been sealed with casing and cement.

For that reason, the one thing we do know is that, on the evening of April 20, there was a sudden catastrophic failure of the cement, the casing, or both. Without a failure of one of those elements, the explosion could not have occurred. It is also clear that the drill crew had very little, if any, time to react. The initial indications of trouble and the subsequent explosions were almost instantaneous.

What caused that sudden violent failure, and why weren't the blowout preventers able to squeeze, crush, or shear the drill bit? These are critical questions that must be answered in the weeks and months ahead.

Until we know exactly what happened on April 20th, we cannot determine how best to prevent such tragedies in the future. But, regardless of what the investigations uncover, ours is an industry that must put safety first. We must do so for the sake of our employees, for the sake of their families, and for the sake of people all over the world who use, rely, and enjoy the oceans and waterways for their sustenance.

Thank you again for the opportunity to speak. And I'm happy to answer your questions.

[The prepared statement of Mr. Newman follows:]

PREPARED STATEMENT OF STEVEN NEWMAN, CHIEF EXECUTIVE OFFICER, TRANSOCEAN, LTD.

Chairman Rockefeller, Ranking Member Hutchison, and other members of the Committee, I want to thank you for the opportunity to speak with you today.

My name is Steven Newman, and I am the Chief Executive Officer of Transocean, Ltd. Transocean is a leading offshore drilling contractor, with more than 18,000 employees worldwide. I am a petroleum engineer by training, I have spent considerable time working on drilling rigs, and I have worked at Transocean for more than 15 years. I am proud of the Company's historical contributions to the energy industry during that time. Today, however, I sit before you with a heavy heart.

The last few weeks have been a time of great sadness and reflection for our Company—and for me personally. Nothing is more important to me and to Transocean than the safety of our employees and crew members, and our hearts ache for the widows, parents and children of the 11 crew members—including nine Transocean employees—who died in the *Deepwater Horizon* explosion. These were exceptional men, and we are committed to doing everything we can to support their families as they struggle to cope with this tragedy.

We have also seen great courage and kindness since April 20 that has reaffirmed our faith in the human spirit. That spirit is embodied by the 115 crew members who were rescued from the *Deepwater Horizon* and were as worried about the fate of their colleagues as they were about themselves. It is embodied by the brave men and women of the U.S. Coast Guard who led search-and-rescue efforts for the injured and missing crewmembers, and the emergency workers waiting for the injured crew members when they arrived ashore. And it is embodied by the friends and colleagues who have rallied to help the families of those who were lost at sea.

While this has been a very emotional period for all of us at Transocean, it has also been a period of intense activity and effort.

Immediately after the explosion, Transocean began working with BP (in BP's role as operator/leaseholder of the well) and the "Unified Command" (which includes officials from the U.S. Coast Guard, the Department of the Interior's Minerals Management Service (MMS), and the National Oceanic and Atmospheric Administration (NOAA)) in the effort to stop the flow of hydrocarbons. Our finest operational personnel and engineers have been working with BP to identify and pursue options for stopping the flow as soon as possible. Our drilling rig, the *Development Driller III*, is involved in drilling the relief well at the site, and our drillship, the *Discoverer Enterprise*, is involved in the unique oil recovery operations in the Gulf. In addition,

a third Transocean drilling rig, the *Development Driller II*, is moving into position to drill a second relief well or otherwise assist in operations to stop the flow. We will continue to support BP and the Unified Command in all of these efforts.

We have also been working hard to get to the bottom of the question to which the Members of this Committee—and the American people—want and deserve an answer: What happened the night of April 20, and how do we assure the American public that it will not happen again?

As is often the case after a tragedy of this kind, there has been a lot of speculation about the root cause of this event. Although it is premature to reach definitive conclusions about what caused the April 20 explosion, we do have some clues about the cause of the disaster. The most significant clue is that the events occurred after the well construction process was essentially finished. Drilling had been completed on April 17, and the well had been sealed with casing and cement. For that reason, the one thing we do know is that on the evening of April 20, there was a sudden, catastrophic failure within that basically completed well. It is also clear that the drill crew had very little (if any) time to react. The initial indications of trouble and the subsequent explosions were almost instantaneous.

What caused that sudden, violent failure? And why weren't the blow-out preventers able to squeeze, crush or shear the pipe and thereby shut in the flow? These are some of the critical questions that need to be answered in the coming weeks and months.

The well construction process is a collaborative effort, involving various entities and many personnel—the well operator, government officials, the drilling contractor, the mud contractor, the casing contractor, the cement contractor and others. For the same reason, the process of understanding what led to the April 20 explosion must also be collaborative. We agree that this is not the time for finger-pointing—instead, all of us must work together to understand what happened and prevent any such accident in the future.

Ours is an industry that must put safety first. And I can assure you that Transocean has never—and will never—compromise on safety. In 2009, Transocean recorded its best ever Total Recordable Incident Rate (TRIR). And MMS, the Federal agency charged with enforcing safety on deepwater oil rigs, awarded one of its top prizes for safety to Transocean in 2009. The MMS SAFE Award recognizes "exemplary performance by Outer Continental Shelf (OCS) oil and gas operators and contractors." In the words of MMS, this award "highlights to the public that companies can conduct offshore oil and gas activities safely and in a pollution-free manner, even though such activities are complex and carry a significant element of risk." In awarding this prize to Transocean, MMS credited the Company's "outstanding drilling operations" and a "perfect performance period."

Despite a strong safety record, Transocean is not complacent about safety. We believe that any incident is one too many. Last year, our Company experienced an employee accident record that I found unacceptable. As a result, I recommended to our Board of Directors that they withhold bonuses for all executives in order to make clear that achieving stronger safety performance was a basic expectation—and fundamental to our success. That recommendation was accepted, and our Company paid no executive bonuses last year, in order to send a loud message that we evaluate our success in large part based on the safety of our operations.

Until we fully understand what happened on April 20, we cannot determine with certainty how best to prevent such tragedies in the future. But I am committed—for the sake of the men who lost their lives on April 20, for the sake of their loved ones, for the sake of all the hard-working people who work on Transocean rigs around the world, and for the sake of people in each of the affected states and worldwide who rely on our oceans and waterways for their livelihood—to work with others in the industry, with Congress and with all involved Federal agencies to make sure that such an accident never happens again.

The CHAIRMAN. Thank you very much.

And now Dr. French.

STATEMENT OF DEBORAH FRENCH-MCCAY, PH.D., DIRECTOR OF IMPACT ASSESSMENT SERVICES, APPLIED SCIENCE ASSOCIATES, INC.

Dr. FRENCH-MCCAY. Chairman Rockefeller, Ranking Member Hutchison——

The CHAIRMAN. Could you pull the mike a little——

Dr. FRENCH-MCCAY. Oh, I'm sorry.

The CHAIRMAN.—closer please?

Dr. FRECH-MCCAY. Chairman Rockefeller, Ranking Member Hutchison, and distinguished members of the Committee, I, also, thank you for this opportunity to testify before you in this critical hearing.

I am a scientist and environmental consultant with a small consulting firm in Rhode Island. And I'm a contractor to NOAA, in this case. But, I'm testifying on my own behalf and my own opinions today.

Since I received my Ph.D. in biological oceanography in 1984, I have been working on oil spill impact assessments and developing methods to evaluate them, mostly working with Federal and state governments. I've been involved with hundreds of oil spill cases, and I've written many technical reports and published papers in peer-reviewed literature, and participated in a number of committees internationally on this kind of problem.

As a scientist, I would just love to tell you all the details about oil spills and their potential impacts. I'm going to try to hit the important points. And I will certainly answer any of your questions.

First of all, what I thought I'd do is briefly talk about the fate of oil, what happens to oil when it goes in the ocean. Essentially, oil is, for the most part, lighter than water. And this one—and this spill certainly is. So, the oil moves up to the surface by its buoyancy, floats, and then it starts to weather, which means that the lighter components, the volatiles, evaporate off it and it becomes stickier and thicker, like tar. It can also emulsify into a mousse that's just like the dessert, only orange.

Eventually, the oil will weather into tar balls, and then those tar balls will be carried by the currents. And they can be carried quite a distance by the currents, as we've been talking about.

If winds are onshore, the floating oil will be blown ashore and stranded on the shoreline, which is obviously a problem, because there are a lot of sensitive resources along the shorelines, including wetlands and oyster beds and communities that have recreational interests and tourism and so on.

When dispersant is applied to oil, what it does is facilitate the mixing of that oil into the water. Now, that's a natural process, normally. Oil will break up by the action of waves, and then be mixed into the water. But, when you put a dispersant on it, it facilitates the process. Just as if you put oily dishes into a sink, the oil will kind of float to the surface of the sink, but if you add soap to that sink, it'll entrain the oil in the water, and allow you to clean your dishes. So, that's essentially what's going on with the dispersant.

Normally, the dispersant—as you've been hearing earlier, the dispersant is much less toxic than the oil itself. So, our primary concern is with the oil going in the water, rather than the dispersant, although we're also considering that problem, as well.

In addition, dispersant has been applied down at the bottom of the ocean, which is a new thing, a new procedure. So, we're also looking at that. That should be entraining the oil into the water, down in the deep water.

Oil is a mixture of thousands of chemicals. Most of them are not soluble in water. A few of them are, and those are the ones that are our concern, because they're toxic to fish and invertebrates. So, we're trying to track the soluble components in the water, what those concentrations are, exposures to organisms and fisheries and so on.

Now, what are the biological impacts of oil spills? They basically fall into two categories. You have floating oil, that may come ashore, and that will foul birds, marine mammals, sea turtles, and shoreline habitats.

Obviously, everyone knows about birds being oiled. That's a very big problem. They need their feathers, to stay warm; they also ingest the toxic material from the oil. So, they can be affected in a number of ways.

Sea turtles—all of the sea turtles in the Gulf of Mexico are listed. That is, threatened or endangered. So, they're obviously a big concern. There were also listed marine mammals that we have to look at. Along the shoreline, there are a lot of sensitive habitats.

So, those are all—as you know from all you've heard, those are big concerns.

Within the water column, we have these dissolved components that might be taken up into the fish and invertebrates and shellfish, and affect them. There's also these droplets that are in the water, and tar balls, that may foul these animals as they feed and perform life functions.

So, in general, wildlife are the biggest concern. The habitats along the shoreline, but also the fish and invertebrates in the water are of concern.

Now, on those fish and invertebrates, this is the big issue in this spill, because of the dispersant applications. We need to consider the degree to which natural turbulence and wave action has gotten the oil into the water, as well as how much of that oil is in the water, and stays in the water because of the dispersant applications.

OK. And I thought I would just briefly touch on some past spills, as lessons learned that we can bring to bear on this.

First, the *Exxon Valdez*. Everyone's familiar with this spill. That was 11 million gallons——

The CHAIRMAN. You——

Dr. FRENCH-MCCAY.—of crude oil.

The CHAIRMAN.—you'll need to bring this to a close fairly quickly.

Dr. FRENCH-MCCAY. OK.

The *Exxon Valdez* was really devastating, because there were so many birds and marine mammals in that area when that oil was spilled. So, that's the big concern there. In the offshore Gulf of Mexico, in the area where the spill is occurring, there aren't as many seabirds out there. They're more close to the shore. However, there are still turtles and mammals out there.

There was a spill in Rhode Island, the North Cape, which was a severe spill because it was entrained in the water. So, this is a case where a lot of unweathered oil was mixed in the water and killed a lot of organisms—lobsters and other kinds of organisms.

So, in this bill, as I've already mentioned, we have these concerns. It's a very complicated problem, because of the changing characteristics of the release. We have different volumes being released over time, potentially. We have dispersant being injected, or not. We have containment operations going on. So, we need to sort all that out and quantify how much is coming out over time, and what's happening to it in the water, in order to understand what the impacts are. So, that's what we're doing right now.

We're also characterizing the organisms that are out there that are being affected, both in the deepwater and in the surface waters, and then near the shoreline. So, there are lots of scientists collecting baseline data. We've found that we need much more information in the offshore than is currently available, so we're focusing a lot of effort on trying to obtain that data.

So, I'll just sum up by saying, I'm—I am working for NOAA, on the natural resource damage assessment part of this process, and focusing on that offshore impact.

And I'll be happy to answer any questions.

[The prepared statement of Dr. French-McCay follows:]

PREPARED STATEMENT OF DEBORAH FRENCH-MCCAY, PH.D., DIRECTOR OF IMPACT ASSESSMENT SERVICES, APPLIED SCIENCE ASSOCIATES, INC.

Introduction and Experience

I am a scientist and environmental consultant based in Rhode Island, where I am a principal of the small consulting firm, Applied Science Associates, Inc. (ASA, South Kingstown, RI). I received a bachelor's degree in Zoology from Rutgers University in 1974 and a Ph.D. in Biological Oceanography from the University of Rhode Island in 1984. I joined ASA in 1984, where I specialize in scientific assessments of oil and chemical releases, *i.e.,* the transport and fate of oil; exposure to and bioaccumulation of pollutants by biological organisms; and toxic and other effects on individual animals, populations and aquatic ecosystems.

Since 1984, I have worked with the Federal Government and several states in developing and applying quantitative methods for assessing oil spill impacts. I was the principal investigator in developing computer models for Federal regulations in assessing natural resource damages from spills (under CERCLA and the Oil Pollution Act, OPA). I have been involved in hundreds of natural resource damage assessment cases for oil and chemical spills, assisting Federal and state governments as a technical expert. I have published scores of technical reports and manuscripts in peer-reviewed journals, and served on national and international committees evaluating oil spill risks and impacts. I am an internationally recognized expert in assessing oil spill fate and biological effects, as well as in computer modeling, that is to say quantitative estimation of oil spill impacts using computer programs employing equations based on physical/chemical and biological processes. I will be happy to provide any technical background material you might need related to my work and experience. My Curriculum Vitae is attached to this testimony.

General Behavior and Fate of Oil

Oils and petroleum products are generally lighter (less dense) than seawater, and so oil floats to the surface unless it is dispersed into the water directly or by turbulence. Floating oil tends to form slicks when fresh, which thin out over time to sheens, as well as collect into thick aggregations at wind rows and current convergences. The oil weathers and degrades when exposed to air and sun, such that the more volatile components evaporate off and the oil becomes tarry and sticky. Some oils form mousse, in which water becomes incorporated into the oil, making it thicker and more viscous. Eventually, floating oil breaks up into weathered tar balls, which may be transported great distances by currents. If winds are on-shore, oil will come ashore and strand on beaches and in wetlands.

If oil is dispersed in the water, it is in the form of small oil droplets or tar balls. The smaller are these particles of oil, the more readily they are dispersed throughout the water column. Oil may be dispersed from the water surface by natural turbulence from breaking waves. If dispersant is applied to oil on the water surface, this dispersion process is enhanced. Dispersants are soap-like surfactant mixtures,

composed of compounds that coat the oil surface and encourage it to break into smaller particles.

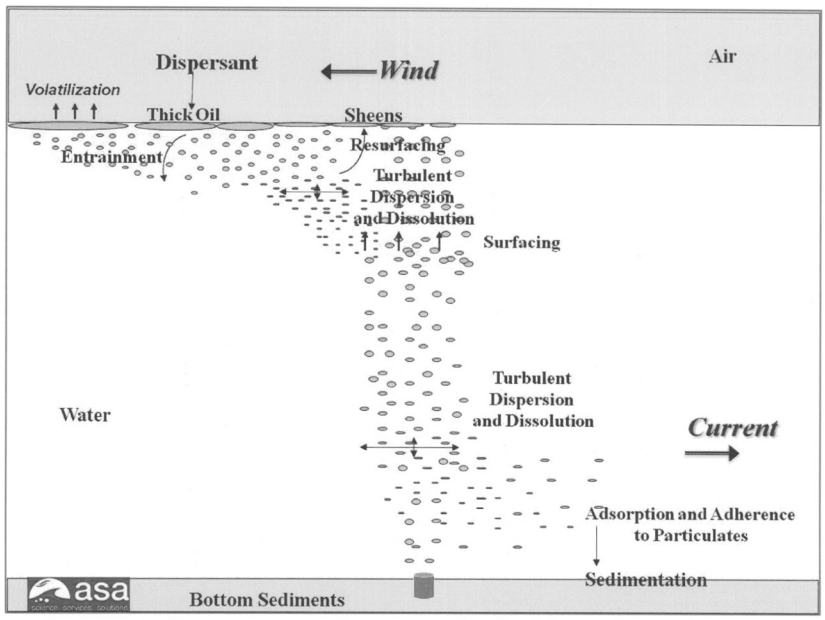
Crude oils and petroleum products are composed of thousands of chemicals. In general, the hydrocarbon compounds found in crude oil are characterized by their structure. These compounds include straight-chain hydrocarbons and aromatics; aromatics include at least one benzene ring. Understanding these different compounds and their structures is important for understanding the fate and biological effects of releases of crude oil or products derived from it.

Most of the compounds in oil are not soluble in water. However, the low molecular weight aromatic compounds (such as the one-ring compounds benzene, toluene, ethylbenzene and xylenes (BTEX); and the polynuclear aromatic hydrocarbons (PAHs)) are both volatile (so evaporate from the water surface) and soluble in water. Benzene rings are very stable, and therefore persistent in the environment, and can have toxic effects on organisms. Because the BTEX and PAHs are at least semi-soluble, they can be taken up into the tissues of aquatic organisms, where they can disrupt (or poison) cellular functions. For this reason, scientists evaluate exposure of aquatic biota to these BTEX and PAH compounds derived from spilled oil, as well as the toxic effects of such exposures.

The BTEX and PAHs also are volatile, and so the evaporate off relatively rapidly when oil is exposed to the atmosphere. In addition, the smaller non-aromatic compounds (*e.g.,* pentane, hexane, octane, etc.) evaporate rapidly. Thus, over time the oil contains less and less of both the volatile and soluble compounds, leaving a residual heavier material that can become sticky and tar-like.

Eventually oil hydrocarbons are degraded by sunlight and microbial processes (bacterial degradation), whether in the water, in bottom sediments or on shorelines. Degradation rates are generally slow, and in conditions of low oxygen, degradation can take decades because oxygen is consumed in, and so needed for, the degradation process. The largest compounds are very slow to degrade, which is why they make good road materials—they remain tarry and asphalt-like for years.

Important oil movements and processes involved in a sub-sea oil release are depicted in the cartoon figure below.



Important oil movements and processes involved in a sub-sea oil release.

Biological Impacts of Spills

The potential biological impacts of oil include:

- Surface smothering/coating exposure to floating and stranded oil, affecting

- Shoreline habitats (salt marshes, mangroves, sea grasses, oyster flats)
- Wildlife (birds, marine mammals, sea turtles)
- Aquatic organisms inhabiting the sea surface (called neuston)

- Toxicity from uptake of dissolved components (aromatics)
  - Fish
  - Shellfish and other invertebrates
  - Plankton, including fish and shellfish eggs and larvae
- Subsurface suspended oil droplets
  - Fish
  - Shellfish and other invertebrates
  - Plankton, including fish and shellfish eggs and larvae

Oil can kill marine organisms, reduce their fitness through sublethal effects, and disrupt the structure and function of marine communities and ecosystems. While such effects have been unambiguously established in laboratory studies and after well-studied spills, determining the subtler long-term effects on populations, communities and ecosystems at low doses and in the presence of other contaminants poses significant scientific challenges. Because of the high natural variability of aquatic populations, it is extremely difficult to measure the changes from before to after a spill. Thus, scientists use a variety of types of information, including past experience from other spills, field measurements, analyses of samples taken for chemistry or to count organisms, experimental tests, and biological data to estimate the impacts of a spill. We often combine such information with computer model calculations to quantify the impact.

In general, the most vulnerable species to oil spills are birds and fur-bearing marine mammals. These animals depend on their feathers or fur to maintain body heat and keep their skin relatively dry. They preen daily, and so will ingest toxic components present in oil that covers any portion of their bodies. Sea turtles, all species of which are threatened or endangered, are also highly susceptible to oil's effects.

Shoreline habitats are very vulnerable to oil exposure. Oil stranding in wetlands or other shoreline habitats can coat small animals and plants, suffocating them. The toxic components can also impact the organisms inhabiting the habitats. These habitats require years to decades to recover from lethal-levels of oil exposure.

Because fish and invertebrates are for the most part under the water surface, and much of the oil is not soluble, their exposure to oil hydrocarbons is subject to: (1) the degree to which the oil is mixed by turbulence or other means (*i.e.,* dispersed) into the water column; (2) the degree to which the dispersed oil still contains the toxic compounds (which otherwise evaporate); and (3) the rate of dissolution of soluble aromatics into the water. Oil dispersion rate is highest in storm conditions and when large amounts of dispersants are applied to the oil. Mortality is a function of duration of exposure—the longer the duration of exposure, the lower the effects concentration. Thus, a situation where oil is largely dispersed into the water while fresh is that where the highest impacts to fish and invertebrates would be expected.

Socioeconomic Impacts of Spills

There are many potential socioeconomic impacts that result from large oil spills, including fisheries losses, lost recreation use of beaches and waterways for boating-related activities, impacts on national parks and other protected areas, lost tourism-related business, commercial shipping disruptions, and so on. As a marine biologist, I am focusing on the biological impacts in my testimony; however, the potential for socioeconomic impacts needs consideration as well.

Previous Spills as Case Examples—*Exxon Valdez* Oil Spill (March 1989)

The *Exxon Valdez* oil spill involved 11 million gallons of crude oil. As is well understood, hundreds of thousands of seabirds and thousands of marine mammals (mostly sea otters) were oiled and killed by this spill. This large impact was due both to the nature of the Alaskan crude oil (a viscous persistent type) and the high densities of seabirds and marine mammals present in the affected area. The impacts to fish and invertebrates in open waters were relatively low in comparison because of the slow rate of dispersion into the water just after the release (winds were light at the time of the spill) and the large volume of Prince William Sound that facilitated dilution. However, impacts on and near shorelines to salmon reproduction and other resources were also considerable.

The socioeconomic impacts of the spill were largely related to disruptions to the fishing industry and subsistence uses of natural resources. The local indigenous peo-

ples utilize nearshore and shoreline shellfish as food sources, and hold natural resources as sacred. In addition many Alaskans and Americans in general consider Alaska to be pristine, and so were outraged by the oil's impacts.

Previous Spills as Case Examples—*North Cape* Oil Spill (January 1996)

In January 19–20, 1996, during a severe winter storm, the barge *North Cape* spilled 828,000 gallons of home heating oil (No. 2 fuel oil) into the surf zone on the south coast of Rhode Island. Most of the oil was mixed into the water column by the heavy surf, resulting in high concentrations of the toxic components (PAHs) in the shallow water near the beach. It was evident that there was significant injury to marine aquatic organisms caused by the spill, in that large numbers of lobsters, surf clams, other invertebrates, and fish washed up on the beaches.

Because of the large numbers of highly valued lobsters affected, field sampling was performed to estimate the impact. Impacts to other marine organisms were estimated using computer modeling of oil fates and toxicological effects. The model assumptions and input data were based on existing literature and site-specific information.

While about 2,400 birds were oiled in the *North Cape* spill, it was estimated that 9 million lobsters were killed, along with billions of smaller invertebrates and thousands of fish. The spill was so devastating to the local shellfish and fish populations because fresh highly-toxic oil was completely dispersed naturally into shallow water near shore by high waves.

The socioeconomic impacts of the spill were primarily related to disruptions to the fishing industry. To my knowledge, there were no claims by native Americans made against the spiller. The light oil evaporated and degraded quickly, well before the summer tourist season, so impacts on recreational uses and tourism were minimal.

Previous Spills as Case Examples—*Ixtoc* Oil Spill

The largest spill in history was the *Ixtoc* blowout which began in June 1979 in Mexican waters of the Bay of Campeche. The well was not completely brought under control until late March 1980. The spill rate was estimated to be about 30,000 bbl/day[1] for 5½ months until November, and then about 4,000 bbl/day for another 4 months. The impacts of this spill remain largely unknown. Shoreline-related impacts were observed to birds, sea turtles and invertebrates. However, the impact on fish and shellfish was not estimated. Because of the very large amounts of oil released in relatively shallow waters, it is likely that impacts to shrimp, other shellfish and fish in the Bay of Campeche and southern Gulf of Mexico were highly significant. The socioeconomic impacts of the spill are not documented, but likely included large disruptions of the local fisheries.

Potential Impacts of the *Deepwater Horizon* Oil Spill

Natural resources of the Gulf of Mexico (*e.g.,* birds, sea turtles, marine mammals, fish, shellfish, plankton; and a wide variety of habitats along the shoreline and at the sea bottom, such as salt marshes and submerged aquatic vegetation) are currently being exposed to and impacted by oil from the *Deepwater Horizon* oil spill; as well as potentially by other materials being added to the marine environment during the response that might be toxic or change biological or chemical conditions. In addition there will be impacts on water quality near beaches, shellfish (*e.g.,* oyster) beds, and fishery nursery grounds.

The open water environment, the ongoing release of oil and the ongoing response efforts all contribute to complex, constantly-changing exposure conditions for biological resources in the offshore and near-shore environments of the northeastern Gulf of Mexico. Contributing factors to the complexity of the situation include:

1. Characteristics of released oil and other materials, which change with time due to weathering and response activities; also, there may be changes in the released material at the discharge site due to changes in materials leaving the well;

2. Volume and duration of the continued release of oil, with the oil release rate varying in time;

3. Location and nature of the release (*i.e.,* while burning at the sea surface, from various pipe breaks on the sea floor);

4. Physical oceanographic conditions (currents, temperature, etc.), which vary in space and time;

[1] 1 bbl (barrel) = 42 U.S. gallons; estimates vary widely and the release may have been up to 50,000 bbl/day.

5. Weather (winds, light exposure, air temperature), affecting the oil's chemistry;

6. Response effectiveness to stop or slow the release of oil, as well as changes in the location, nature, and volume of the release;

7. Dispersant type, application methods (*i.e.,* injected versus aerial or boat), volumes, effectiveness, locations and timing;

8. Exposure scenarios for biological resources (*i.e.,* exposure duration, species, life history stages involved);

9. Location of critical habitats (live bottom, deep water corals, cold seeps; fishing grounds); and

10. Impacts of oil hydrocarbon/dispersant/contaminant mixes over time, resulting from short duration and long exposures, delayed and indirect impacts, etc.

The socioeconomic impacts of the spill will include disruption of fisheries and dependant businesses, effects on tourism and recreational uses, and potentially changes in oil industry practices.

The purpose of using dispersants on the oil is to lessen the potential impact to wildlife (birds, mammals, and sea turtles) and shoreline habitats. However, to some degree there is a tradeoff, in that the contamination in the water is increased by dispersant application. The objective is to achieve a net environmental benefit: to disperse the oil sufficiently to reduce the impact to wildlife and shorelines, but to do so in deep water where the dilution potential is high to minimize adverse effects on fisheries resources.

Natural Resource Damage Assessment Process

I am involved with the response to the *Deepwater Horizon* Oil Spill, specifically in evaluating the impact of the spill for the purposes of Natural Resource Damage Assessment (NRDA). NRDA is the process where the Federal and state government agencies who are trustees for specific resources on behalf of the public may make damage claims against the responsible party. Under Federal regulations of the Oil Pollution Act (OPA) of 1990, the polluter pays for restoration and replacement of services provided by natural resources. The damages are the cost of the restoration. The procedure involves assessment of an adverse impact, known as the injury, and then planning a restoration activity that is sufficient to replace the losses, including consideration of the time for recovery.

Injury Assessment

The goal of injury assessment is to determine the nature, degree, and extent of any injuries to natural resources and services. This information is necessary to provide a technical basis for evaluating the need for, type of, and scale of restoration actions. Under the OPA regulations, injury is defined as an observable or measurable adverse change in a natural resource or impairment of a natural resource service. Government trustees determine whether there is:

- Exposure, a pathway, and an adverse change to a natural resource or service as a result of an actual discharge; or
- An injury to a natural resource or impairment of a natural resource service as a result of response actions or a substantial threat of a discharge.

To proceed with restoration planning, trustees quantify the degree, and spatial and temporal extent of injuries. Injuries are quantified by comparing the condition of the injured natural resources or services to baseline, as necessary.

> "Baseline means the condition of the natural resources and services that would have existed had the incident not occurred. Baseline data may be estimated using historical data, reference data, control data, or data on incremental changes (*e.g.,* number of dead animals), alone or in combination, as appropriate." (OPA regulations at § 990.30).
>
> "Injury means an observable or measurable adverse change in a natural resource or impairment of a natural resource service. Injury may occur directly or indirectly to a natural resource and/or service. Injury incorporates the terms "destruction," "loss," and "loss of use" as provided in OPA." (OPA regulations at § 990.30).

The Appropriate Scale of Restoration

The basic concept underlying restoration project scaling is that restoration is to be of sufficient scale to produce resources and services of the same type and quality and/or of comparable value to those that were lost. The loss is quantified from the time of injury until the resources and services return to the level they would have

been at in the absence of the impact. Services include ecological and human uses of the resources. The approach used is that the restoration project is scaled to compensate for the direct kill, indirect effects and lost services from the time of the start of the incident into the future until recovery is complete.

For example, to scale a compensatory fish or shellfish restocking program, the equivalent number of eggs, larvae, or animals at the age they are stocked, is needed. The lost individuals will be replaced once that equivalent number of eggs/animals are stocked and the animals have gone through their normal life cycle to the age of the impacted animals they are to replace. The number killed by age class may be translated into an equivalent number at any age to be stocked using an age- or size-specific survival schedule.

If it is not feasible to replace a species with individuals of the same species, other options are available for restoration, such as habitat restoration or protection projects. Salt marsh and seagrass bed restoration projects are frequently considered options as compensation for injuries to marine resources. The challenge is to determine an appropriate scale for the project to be compensatory (*i.e.,* equivalent to the loss). The approach often used is to calculate the net (*e.g.,* fish) production gain per unit of created (or preserved) habitat. The scale of the newly-created or enhanced habitat is made such that the new production produced by created habitat is equivalent to the loss.

Protection and enhancement projects are often used for restoring wildlife. For example, seabird and sea turtle nest sites might be protected from human disturbance or predation. In addition, during the spill response, extensive efforts are made to clean and rehabilitate oiled wildlife.

Restoration should not be arbitrary in scale or punitive, but should be proportional to the loss. Biological science is able to provide quantitative information that helps make this compensatory damage assessment possible. However, sufficient field- and experimental-based data are needed to make both the injury and restoration scaling assessments.

Preassessment Phase Activities

At the present time, the trustees are gathering data with which to plan for and quantify injury. The focus is on collection of ephemeral data, *i.e.,* information that might be missed or lost if not gathered at the time of the event. The ephemeral data collections are being made in cooperation with scientists assisting the responsible party, such that as much information as possible is collected with minimal duplication of effort and maximum mutual benefit. We are organized in technical working groups to plan and execute this data collection effort. Thousands of Federal and state scientists, as well as consultants and contractors, are engaged in this effort 24/7 to ensure we get the best information possible with which to assess the spill's impacts. Clearly this monumental effort needs support from the Federal Government, such that a good scientific analysis of the spill's impacts can be made.

The CHAIRMAN. Thank you very much, Dr. French-McCay.

I'll start.

You mentioned, Mr. McKay, that there was—this is the first time anybody had ever drilled at that depth, and—didn't you?

Mr. MCKAY. It's not the first time that people have drilled at this depth. There have been about 2,300 deepwater wells drilled, just in the Gulf of Mexico.

The CHAIRMAN. At that depth?

Mr. MCKAY. No. That's greater than 1,000. There's been quite a few drilled in greater depths than 5,000 feet.

The CHAIRMAN. All right. Well, whatever. To me, the American Petroleum Institute sets the industry standards—am I right?—for the process and what—how one can proceed on drilling.

Mr. MCKAY. There are various API standards that are set for pieces of equipment——

The CHAIRMAN. I understand, but just answer my question. They do set the standards.

Mr. MCKAY. The MMS sets regulations for the drilling of wells in the Gulf of Mexico offshore. API sets certain standards for individual valves and pieces of equipment, as I understand it.

The CHAIRMAN. All right. And then, the Mines—Mineral and Mines Service—MMS

[Minerals Management Service]—accepts those standards and then their permit is issued. But, in fact, it's all fairly voluntary. Am I correct, or not?

Mr. MCKAY. There are about 25 different types of permits and applications to drill in the Gulf of Mexico. The MMS is the chief regulator for the Gulf of Mexico.

The CHAIRMAN. But, they're taking their standards from the American Petroleum Institute. Am I right?

Mr. MCKAY. I think some standards on equipment. I'm not familiar if they're taking "many" or—I think "some" standards, yes.

The CHAIRMAN. I would just like the three of you to comment on the fact that—to me, that's—doesn't make any sense at all, that that's—that's like the coal mining industry deciding what's safe and what isn't, and there's no need for MSHA, the Mine Health and Safety organization.

The —it would seem to me that the—having the industry set standards for itself on drilling at such enormous depths—and you say, even greater depths—and we happen not to be in a tropical storm season right now, but we will be shortly, and therefore the pull and tug of what goes on at that depth—that there ought to be regulations, or at least a standard, which is one other than that set by the American Petroleum Institute, which obviously is serving itself. I don't mean that maliciously, but it's just factual. It's setting the standard for the industry.

I don't think that's right. I think it should be approved by people who—you know, the American Petroleum Institute can make their ideas available, but I think that it would be—it should be approved by people who have responsibility to the public—official responsibility to the public.

And I wonder how the three of you feel about that.

Mr. MCKAY. I'll start. I do believe that—as this event is understood fully, I do believe that the—obviously, the causes of this event will be extremely important. I do think that regulation will need to be looked at, in terms of what's needed, going forward further. We will learn from this, and it will affect regulation, I do believe that.

The CHAIRMAN. Mr. Newman?

Mr. NEWMAN. Mr. Chairman, the American Petroleum Institute has published a comprehensive set of recommended practices governing all aspects of the oilfield spectrum, including recommended practices that apply, in this particular case, to blowout preventers.

The Federal Government has set regulations that apply to activity on the Outer Continental Shelf. And those regulations are reflected in the CFR, Code of Federal Regulations, and in the—that particular section of the CFR which applies to blowout preventers does reference certain components of the API-recommended practices. There are comprehensive regulations that apply to blowout preventers which do reference the API-recommended practices. So, I don't believe it's the situation where the industry is left to govern themselves. I think there is regulatory oversight. And the industry is held to compliance with those Code of Federal Regulations.

The CHAIRMAN. Well, if there are regulatory oversight, I haven't heard it expressed yet. And I think that Mr. McKay indicated that there was a large amount of American Petroleum Institute, you know, standards of the industry which is involved in this, and that it, ultimately, is voluntary.

And, plus, I'm not so much interested, right now, for the aftereffects of what happened in this particular problem, but in what led up to it. That is, the setting of the drilling, and what went wrong with the drilling, and what could have been stopped from happening if somebody other than the American Petroleum Institute had been setting the industry standard. It doesn't make sense to me.

I think most industry—that's why you have OSHA, that's why you have MSHA, that's why you have a variety of groups—not to countermand—countermine, not to shut down, not to—but to just take a very hard look at, Can this work at that level? And what has been the previous experience at that level; and if it's been deeper, that becomes even more complicated. That is my reaction to it.

Dr. French-McCay?

Dr. FRENCH-MCCAY. You know, I—I'm not someone who's an expert in this particular problem. But, as someone who consults to the government, I think it's really important, (a) for industry to provide the information, because they have a lot of expertise; but, the government needs to review that thoroughly, and oversee it, definitely.

The CHAIRMAN. And to what extent do you think they do review that?

Dr. FRENCH-MCCAY. I don't know about blowout preventers and the drilling aspects. I do know about environmental impact assessment, and I think that they do provide oversight and review, but there's—obviously, there could be——

The CHAIRMAN. But, that's ex post facto——

Dr. FRENCH-MCCAY.—things that could be done better.

The CHAIRMAN.—is it not?

Dr. FRENCH-MCCAY. Excuse me?

The CHAIRMAN. Environmental impact assessment would——

Dr. FRENCH-MCCAY. Right.

The CHAIRMAN.—would come——

Dr. FRENCH-MCCAY. That would——

The CHAIRMAN.—after——

Dr. FRENCH-MCCAY.—come in the environmental impact assessment——

The CHAIRMAN. After——

Dr. FRENCH-MCCAY.—part.

The CHAIRMAN.—an incident.

Dr. FRENCH-MCCAY. Before, there should be one. Before the permitting, there should be an environmental impact assessment done.

The CHAIRMAN. All right.

Dr. FRENCH-MCCAY. Yes.

The CHAIRMAN. All right. But, I think that, also, the setting of the well, what could go wrong, what obviously did go wrong this

time, should be subject to more than just the industry assessing its own needs.

Dr. FRENCH-MCCAY. Yes.

The CHAIRMAN. Do you think I'm overstating that?

Dr. FRENCH-MCCAY. No.

The CHAIRMAN. Senator Hutchison.

Senator HUTCHISON. Well, thank you.

I have a question for each of you, so I hope I have time, but I won't encroach on the Senator from Florida.

The next thing that you're trying to do, Mr. McKay is the relief well. How long will it take to get that up and going and providing the relief that we're all hoping it will be able to provide?

Mr. MCKAY. We have two relief wells drilling, and those—both of those wells are underway now. It could be around 3 months to get both of those wells to the point where they could permanently secure the well. We are working on, obviously, the containment and collection, that you know about. And we're also working on what's called this "top kill," within the next week or so, that we hope to be able to kill the well from its current configuration.

Senator HUTCHISON. How effective do you think this containment-tube operation is that you're now employing. Will it get more effective over a 3-month period, or is what you're capturing now it?

Mr. MCKAY. Well, we're just stabilizing the system. And before I came to the hearing this morning, I understand we're getting about 1,500 to 2,000 barrels a day. We will continue to ramp that up a bit. We don't want to draw in water, is why we're going slow with this. I think it will get more effective. We'll learn. It's possible we could come up with ideas to get it, you know, progressively more effective. And this—I do think the top kill is an option that we will, hopefully, be enacting in the next week or so, that—which will kill the well.

Senator HUTCHISON. Yes. We all hope that we have something that's even more effective than what you've tried so far.

Mr. Newman, U.S. regulators don't mandate the use of a remote-control device on the offshore rigs, where an underwater valve can be triggered to shut down the well. Well, we all know that the trigger didn't work. Was a shutoff switch in place, on the *Deepwater Horizon* oil rig? And, would the use of a remote-control device have provided an additional level of safety that we need to be looking at for the future?

Mr. NEWMAN. Senator, the requirements—the regulations stipulate that you have two manual intervention panels on the rig. And in the case of the *Deepwater Horizon,* there were actually three manual intervention panels. The regulations require one remote automatic system. And, in fact, the *Deepwater Horizon* had two. One of those systems is referred to as a "dead-man system," and the other system is referred to as an "autoshear system." And the *Deepwater Horizon* was also fitted with ROV intervention capability.

So, in addition to manual intervention on the rig, we had two automatic systems on the *Deepwater Horizon,* and one ROV intervention system. And I don't believe that the addition of an acoustic system, which is—which I believe is what you're referring to—I

don't believe that the addition of an acoustic system would have made a difference, in this case.

Senator HUTCHISON. So, you feel that the two systems are enough for backup, or is there anything more that——

Mr. NEWMAN. Well——

Senator HUTCHISON.—could have been another level of backup?

Mr. NEWMAN. I believe that, in the case of the *Deepwater Horizon,* between manual intervention, automatic response——

Senator HUTCHISON. And the——

Mr. NEWMAN.—and ROV intervention, there was the full capability to activate the BOP. I think, as a result of the incident, we will—we do need to reconsider the addition of an acoustic control system, but I do not believe an acoustic control system would have made a difference, in this particular case.

Senator HUTCHISON. Dr. French-McCay, there is a naturally occurring oil seepage into the Gulf of Mexico. There is also a naturally occurring hydrocarbon-eating microbacteria that have allowed the ecosystem to balance out. My question is, Is there any scientific way that the naturally occurring bacteria can be transferred in to help mitigate a larger seepage, obviously like this one? Is that something that should be considered?

Dr. FRENCH-MCCAY. Those sorts of things have been considered in other spills, and talked about, you know, for shoreline treatment and other kinds of degradation treatments. The problem is that it takes these bacteria a while to get going. And it's also a very big ocean. So, it's probably better to let the natural bacteria that are there, that are already adapted to hydrocarbons, grow, and they will, eventually. So, the material will degrade over time.

Do I think there's anything that could be done to accelerate that? I doubt it, because it's such a big ocean. People have tried fertilizing, in the past, in smaller areas. And even that, it's doubtful whether that's really accelerated the degradation.

Senator HUTCHISON. Thank you.

The CHAIRMAN. Thank you, Senator Hutchison.

Senator Nelson.

Senator NELSON. Thank you, Mr. Chairman.

Mr. McKay, when did BP agree to pay for the flights to monitor the spill in the Loop Current?

Mr. MCKAY. We've agreed to, effectively, under the Oilfield Pollution Act, to fulfill our full obligations as a responsible party, and that would cover those flights.

Senator NELSON. And why does NOAA—as Dr. Lubchenco has testified, why does NOAA need to wait until the oil has reached the Loop Current in order to have you reimburse NOAA?

Mr. MCKAY. I—what—the way I understood what she was saying, is she was get—that they're tracking the numbers, and we will reimburse NOAA. I don't believe we've been any impediment to pay, is my basic point.

Senator NELSON. How—you've seen—I've got to move, Mr. Chairman. His head is right in my line of vision.

How is it that BP is going to be able to afford all of this economic loss? Now, you're a well-endowed company, and I think in the last 3 months you all had something like 5 and a half billion of profit in 3 months. So, you clearly have the deep pockets. But, you can

see the potential for economic loss if the relief well that's being drilled by Transocean right now—as you just stated, Mr. Newman—doesn't get there for another 3 months, and that oil continues to gush—it's basically going to cover up the Gulf. And, of course, it's already getting into the Loop Current. It's going to be around on the East Coast and in the coral reefs and the Keys. How in the world are you going to be able to pay for the economic-loss payments?

Mr. MCKAY. Well, first and obvious, we're trying to do everything we can to stop this thing and—control the flow and then stop it. Second, we've been very clear we're going to cover all claims—all legitimate claims associated with the environmental impact as well as the economic impact. We've been as clear as we can possibly be.

Senator NELSON. Do you support my bill to raise the liability limits from 75 million to 10 billion?

Mr. MCKAY. Well, I haven't looked at the specific legislation. What we have been very clear about is, the 75 million is—we're going to exceed that. That's irrelevant. And we've said that—it's just irrelevant in this case—we've also said that we're not going to seek reimbursement from the trust fund, that we're going to stand behind our intent, and pay all legitimate claims.

Senator NELSON. Well, I want to ask Mr. Newman, Has Transocean said that you consider your limits of liability to be less than the statutory limit, now, of 75 million?

Mr. NEWMAN. Senator, there's a well-established framework that governs the relationships between the various parties. And under the framework, BP has accepted responsibility. And in response to repeated questions to that point, BP have accepted that responsibility. And I commend them for that.

Our responsibility is to support BP in controlling the source, and in drilling the relief wells, and in supporting the operations out there.

Senator NELSON. My question, however, was, Do you consider the limit of liability in statute, of 75 million to be the limit of Transocean's liability?

Mr. NEWMAN. Sir, that limit applies to—it applies to BP, in responding to the hydrocarbon spill. That limit does not apply to Transocean, with respect to the hydrocarbon spill, because Transocean has not been named as a responsible party.

Senator NELSON. You are the manufacturer of the blowout preventer that did not work?

Mr. NEWMAN. We are not the manufacturer of the blowout preventer. We own the blowout preventer.

Senator NELSON. I see. Who's the manufacturer?

Mr. NEWMAN. Manufacturer of the blowout preventer is Cameron.

Senator NELSON. Do you think they bear some liability in that the blowout preventer didn't work?

Mr. NEWMAN. Senator, I think—until we have a full airing of the facts and a comprehensive understanding of exactly what happened, I think it's premature to conclude that the BOP didn't work. It has been ineffective in stopping the flow of hydrocarbons, but there could be conditions that that blowout preventer was subjected

to that would be outside the expectation of the performance of that blowout preventer.

Senator NELSON. So, the fact that you all were the operators of the blowout preventer and the drilling of the well, you consider that liability for economic loss not to be yours, but, rather, to be BP's. Is that what I heard you testify?

Mr. NEWMAN. Yes, sir. That is according to the established framework of the relationships between the various parties.

Senator NELSON. Mr. Chairman, you're going to see lawsuits like you've never seen before between the various entities, because this economic loss is going to skyrocket higher than our space program.

The CHAIRMAN. That's 150 miles.

Senator NELSON. No, sir. We went all the way to the Moon——

The CHAIRMAN. That is true. I——

Senator NELSON.—and that's——

The CHAIRMAN.—retract my statement.

Senator NELSON.—250,000 miles. And——

The CHAIRMAN. As I said——

Senator NELSON.—that was just with humans. We've gone past the edge of our solar system, and we're out in deep, deep, deep space with our spacecraft.

The CHAIRMAN. As I said, I stand corrected.

[Laughter.]

The CHAIRMAN. Is that it? All right.

Senator Wicker.

Senator WICKER. Thank you very much.

Mr. MCKAY AND MR. Newman, when a deepwater well is being dug like this, occasionally natural gas gets into the line and causes what I've learned to be known as a "kick." Is that correct?

Mr. MCKAY. Yes, that can happen.

Senator WICKER. It's my understanding that, with this particular well, there were perhaps more of these "kicks" than usual. Is it true, and I'll ask both of you, is it true that, at one point during the several-week period before this tragedy, that, because of a certain belching up to the surface, of this gas, all work was halted on the rig?

Mr. MCKAY. I'll go first. What I know—and I may not know the entire history accurately—but, what I've been told is, there were two kicks. I don't know if both of them were gas. One may have been saltwater, but there was a kick—there was one kick that shut down what's called "hot-work" and fired equipment around the rig floor, I believe.

Senator WICKER. "Hot-work" is anything that causes a spark or might——

Mr. MCKAY. Something——

Yes.

Senator WICKER.—ignite.

Mr. MCKAY. Welding and things like that.

Senator WICKER. OK.

Is that correct, Mr. Newman?

Mr. NEWMAN. Senator, I have not yet received a full list of all of the events that took place during the drilling of the well. I have reviewed one well-control event which occurred during the second week of March. And as a result of that particular well-control

event, as Mr. McKay has indicated, we would have suspended all hot-work during that time.

Senator WICKER. OK. Should that have been a warning sign to either of your companies that this well was going to be problematic and that you needed to be more careful than unusual?

Mr. MCKAY. I think the investigation will be looking deeply into this, in terms of what happened, and what happened after that, in terms of recognition and understanding of those type of events as things unfolded.

The CHAIRMAN. I think the Senator deserves a more direct answer than that.

Mr. MCKAY. Could you repeat the question?

Senator WICKER. Can we have the question reread?

Should this have been a warning sign, to say this well should have been treated more carefully because of the incident where the entire operation had to be shut down?

Mr. MCKAY. I think—my personal opinion is that kicks happen. They do happen relatively frequently——

Senator WICKER. Is it——

Mr. MCKAY.—and should——

Senator WICKER.—frequent for one to cause a shutdown of the work?

Mr. MCKAY. "Frequent" maybe is not the right word. They happen. And it could have very well been a warning sign.

Senator WICKER. Would this be so unusual, Mr. Newman, that it should have been considered a warning sign that this well was problematic and you should have been more careful?

Mr. NEWMAN. If I could, Senator, during the drilling of a well, there are regular occurrences when the drill bit will penetrate formations that have hydrocarbons in them—maybe not in commercial quantities, but certainly some amount of hydrocarbon in them. And as the drill bit penetrates those formations, and those rock cuttings are brought to the surface along with the drilling fluid, there will be dissolved hydrocarbons in the drilling fluid and hydrocarbons in those rock chips. And at the surface, that hydrocarbon will come out of solution—it will come out of the drilling mud, it will come out of the rock cuttings.

There are sensors all over the rig that are designed and installed specifically to detect that. And when those sensors go into alarm status, to indicate a minimum level of what we in the industry call "background gas"—when those alarm sensors indicate a minimum level of background gas, all hot-work on the rig will be suspended. That's just standard operating procedure.

And so, that—that's not an unusual occurrence, to have that happen during a well. It is not necessarily an indication that this is a problematic well.

Senator WICKER. OK. Well, I finally got an answer to that question, with 17 seconds left.

Tell me about this argument that occurred between Transocean and BP about whether to send "mud" down to the bottom, as a protection against a blowout, or saltwater. Either one of you, both of you.

Mr. MCKAY. I've not had the chance to review any witness accounts. I think what we're going to have to do is put this together

in the investigations and understand what everybody saw, what everybody heard, what type of data—digital or physical—was utilized, and how the events unfolded, in reality.

Senator WICKER. Mr. McKay, this is a Congressional hearing. Are you telling me in the 4 weeks since this tragedy, you have not had conversations within BP about an argument that has been documented in the press, between your company and Transocean and others, about whether it was safer to put mud down there or saltwater? Surely you've had conversations and can tell this committee about that.

Mr. MCKAY. I have not had conversations about that. About that—that conversation I think you're referring to was on—I believe, on *60 Minutes,* Sunday night. I have not had conversations about that.

The investigation that's underway undoubtedly will look into that. And thank God 115 people got off the rig to be interviewed. Those were mostly Transocean employees. We've not talked to Transocean employees yet. So, no, I have not had that review.

Senator WICKER. Actually, I'm referring to an account dated much prior to the *60 Minutes* story. This is May 11, the *Times Picayune*.

I know we're intruding on the time.

Were you aware, Mr. Newman, of an argument that took place about whether it would be safer to put mud or saltwater down at the bottom of this rig, and saltwater won out, the less safe of the two options?

Mr. NEWMAN. I am aware of references to discussions between Transocean and BP with respect to the specific procedure to be followed.

Senator WICKER. Can either one of you, then I'll just have to quit, and it's unfortunate that the hour's so late—can you get back to us on who, in both companies, was involved in this discussion, and their account of the safety considerations that went into the decision not to use mud, and to use saltwater instead? Can you both get back to us on the record about that?

Mr. NEWMAN. With all due respect, Senator, the—some of the Transocean people who may have been involved in that conversation are, sadly, no longer with us.

Senator WICKER. Well, then, as tragic as that was, will you interview the people present, and get back to us, on the record?

Mr. NEWMAN. That is absolutely part of our investigation, Senator.

The CHAIRMAN. Well, then why didn't you just say, "Yes, we will"?

Mr. NEWMAN. Yes. Yes.

Mr. MCKAY. Yes. And we're sharing everything from our investigation.

Senator WICKER. All right. Will there be another round, Mr. Chairman?

The CHAIRMAN. There will be.

Senator WICKER. OK.

The CHAIRMAN. Senator LeMieux.

Senator LEMIEUX. Thank you, Mr. Chairman.

Just before my colleague from Mississippi, my colleague from Florida was asking some questions to Mr. Newman about their responsibility as a responsible party for the environmental impact and the economic impact.

Mr. McKay, do you share Mr. Newman's stated view that Transocean is not responsible for the economic or environmental damages?

Mr. MCKAY. We—all I can say is that we have accepted to be a responsible party, under the Oilfield Pollution Act. We're going to fulfill every obligation as regards that. I've been clear that we're going to put fault, blame, and other issues to the side until the investigations are finished and we know what happened. So, we're fulfilling our obligations.

Senator LEMIEUX. So that I understand that clearly then, British Petroleum is taking the responsibility to be solely responsible for the economic and environmental damages.

Mr. MCKAY. I'm saying we're taking our responsibilities, under the Act, fully, which are broad responsibilities, and we are bearing those. We will put fault and blame and recovery, let's say, if there is any, off to the side until the investigations understand what happened.

Senator LEMIEUX. Are you, then, leaving open the possibility that you're going to say, back to the Federal Government, "Look, we're only responsible for 50 percent of this, because Transocean or some other party is responsible for the rest"?

Mr. MCKAY. No, I'm not saying that.

Senator LEMIEUX. You're responsible for all of it. You'll seek whatever remedies you think are appropriate against other parties.

Mr. MCKAY. We've accepted, as a responsible party, yes. So, that, sir——

Senator LEMIEUX. I got that right the way——

Mr. MCKAY. Correct.

Senator LEMIEUX.—I phrased that?

Mr. MCKAY. Yes.

Senator LEMIEUX. OK.

I've sent your boss a letter, which I think you're aware of, last week, based upon my concern that this oil is going to wash up onshore in Florida and the other Gulf States. We have heard, today, there are tar balls in the Florida Keys. Now, I'm going to ask Dr. French-McCay, in a moment, whether she shares Dr. Lubchenco's view as to why those might be there. Assuming that we're already seeing oil come ashore in Florida, and if it's going to take you another 90 days, under the worst-case scenario, to drill these relief wells, we could have oil continue to flow out at, whatever it is, 5,000 barrels a day, or more.

I want to make sure, as I've stated to you, to your company, in the letter, that we have enough funds in the hands of local governments, state governments to prevent this oil from coming onshore. Do you have a response to me today about setting up this fund to fully allow the States and local governments to mitigate and prevent this oil from coming ashore?

Mr. MCKAY. We are definitely supportive of getting the resources to where they're needed, with all the different states. I'm not prepared, today, to give you an exact answer on your specific proposal,

because we've got several proposals across the Gulf Coast. But, we are evaluating that.

Senator LEMIEUX. Will you get me a response——

Mr. MCKAY. Yes.

Senator LEMIEUX.—shortly?

Mr. MCKAY. Yes.

Senator LEMIEUX. Within the week, do you think? Is that fair?

Mr. MCKAY. Yes.

[The information referred to follows:]

EXPLORATION & PRODUCTION—BP AMERICA INC.
Houston, TX, May 25, 2010

Hon. GEORGE S. LEMIEUX,
U.S. Senate,
Washington, DC.

Tony Hayward has asked that I respond to your letter regarding the possible impact on tourism and the shoreline from the oil spill in the Gulf of Mexico.

The Gulf Coast community is home to many BP families who cherish the Gulf ecosystem. They share the same sense of urgency in addressing the economic impact of this spill, and in supporting tourism across these beautiful States.

We have received many suggestions on how to address the environmental and economic impact of the spill on these States. We are committed to paying all legitimate claims for economic loss, and will do so for as long as those losses continue. We are also determined to understand the impact of the spill, and its associated response, on the marine and shoreline environment of the Gulf of Mexico. Yesterday, we announced the formation of a broad research program to investigate the impacts of the oil, dispersed oil, and dispersant on the ecosystems of the Gulf of Mexico and coastal States. The program, a commitment by BP of $500 million over a period of 10 years, will also develop improved oil spill detection and remediation technologies.

On May 5, we provided $100 million to assist the States of Florida, Alabama, Mississippi and Louisiana with their response to the spill, with each State receiving $25m to accelerate the implementation of Area Contingency Plans. Additionally, on May 17, we made available a further $70 million to help promote tourism and commerce as part of our ongoing commitment to mitigate the economic impact of the spill. Florida's share of the $170m is $50m.

We will continue to identify and address the economic impact of this event. We have said from the outset of the *Deepwater Horizon* incident that we will not hide behind any spending cap. We've put in place a claims process and it is working. To date we've put millions of dollars in the hands of thousands of fishermen who are out of work because of this spill and we have provided funds to compensate businesses that have been impacted.

We remain absolutely committed to stopping the leak, cleaning up the spill and working to restore the Gulf Coast communities.

We look forward to your guidance and partnership in the months ahead.

DOUG SUTTLES,
Chief Operating Officer.

Senator LEMIEUX. Dr. French-McCay, we just heard Dr. Lubchenco say these tar balls that we're seeing in the Keys could be the result of oil that came from the initial explosion. This is far ahead of the projections of the oil getting into the Loop Current. We weren't expecting, for 5 days, 7 days, to get down to the Florida Keys. Then, yesterday, we see tar balls, and now we see more reports this morning. Does that sound, based upon your research, does that sound like that could be a plausible explanation for what happened?

Dr. FRENCH-MCCAY. That does sound like a plausible explanation. I think we need to find out what those tar balls are. You know, they can be fingerprinted to determine whether or not they came from this spill, or whether they might have come from seeps or—there are a lot of tar balls that are released in the ocean from,

you know, tankers cleaning their vessels and all sorts of releases. So, it's possible it came from some other source. So, until we know exactly what the source is, it's not clear. It's technically possible to get them down there, but it would have had to have been early released oil, as she said. Yes.

Senator LEMIEUX. Do you have an opinion as to whether or not these tar balls are toxic to humans?

Dr. FRENCH-MCCAY. If someone were to eat them, I suppose that could be toxic. But——

Senator LEMIEUX. No. Granted. But——

Dr. FRENCH-MCCAY.—nor——

Senator LEMIEUX.—touching them——

Dr. FRENCH-MCCAY. Yes. No. It's like road tar.

Senator LEMIEUX. Right.

Dr. FRENCH-MCCAY. The more weathered the oil is, the less toxic it is. So, the more dangerous oil is the fresher oil.

Senator LEMIEUX. The reason I bring this up, Mr. Chairman, is the point I made earlier; that there's an advisory out, now, about not going near the tar balls, and that you should have hours of training. When I was a kid, in Fort Lauderdale, we'd go to the beach and we'd get tar on our feet, because the tankers were washing out.

Dr. FRENCH-MCCAY. Right.

Senator LEMIEUX. That stopped, thankfully. We don't have that anymore. But, it wasn't like they were toxic. The reason I raise the point is that, if we're going to get volunteers involved and local communities involved to go get these tar balls off the beach, collect them, and make sure that we can have a good volunteer effort, it seems to me incongruous to say that we shouldn't have people going near them.

So, I appreciate your direct answer to that question.

Dr. FRENCH-MCCAY. Yes, that's—I have a comment on that, actually. All of the responders, including my team from my company, have to take this training. It's just part of safety training, and we can do it online. So——

Senator LEMIEUX. It's not a big burden?

Dr. FRENCH-MCCAY. No. It's not a——

Senator LEMIEUX. OK.

Dr. FRENCH-MCCAY.—big burden. It——

The CHAIRMAN. Senator——

Dr. FRENCH-MCCAY.—the idea——

The CHAIRMAN.—Klobuchar.

Dr. FRENCH-MCCAY.—is not to put volunteers in harm's way.

Senator LEMIEUX. OK.

The CHAIRMAN. Senator——

Senator LEMIEUX. Thank you, Mr. Chairman.

The CHAIRMAN. Senator Klobuchar.

Senator KLOBUCHAR. Thank you very much, Mr. Chairman.

Thank you. And that was, actually—thank you Senator LeMieux, that was interesting questions. I——

The —I want go back to you, Mr. Newman, and just talk about some of the past. I'm very focused on how we could have prevented this. I'm—my background's as a prosecutor. I always look at, when

we'd have a murder case or whatever, how could we have prevented it.

The *Wall Street Journal* has reported that Transocean had faced more frequent Federal scrutiny than comparable deepwater drilling companies. Nearly three in four investigations into safety and other problems in the last 2 years were investigations of your company, and that includes an increase in incidents above and—what would be expected after your merger with Global Santa Fe in 2007. Since 2005, the Minerals Management Service investigated four fires aboard deepwater drilling rigs, all of which were owned by Transocean.

Can you explain the nature of these incidences? And, given what's happened, that you have 138 mobile offshore drilling units, what steps have you taken to make sure another disaster like this doesn't happen? So, it's really two things.

Mr. NEWMAN. So, first, in response to your question regarding safety performance in the Gulf of Mexico——

Senator KLOBUCHAR. The nature of those four incidences with the fires on the rigs.

Mr. NEWMAN. Right. I remember, specifically, two of them, Senator. One was an engine-room fire, and the other was a fire that occurred during a refueling operation of a crane. I—I'm familiar with the circumstances of those events. They were fully investigated. We understood the root causes, and we took steps to ensure that those types of incidents did not reoccur.

So, that's a standard practice within the company when an incident of that nature occurs. We conduct a thorough investigation; we do a full root-cause analysis, so we understand what happened; and, where necessary, we take steps to ensure that such an incident doesn't happen again.

Senator KLOBUCHAR. And then, going forward, in light of what's just happened, with your 138 other operations.

Mr. NEWMAN. Yes. In the absence of that pattern having fully played out in this particular incident, we don't yet have a thorough understanding of what happened. And we don't yet have a thorough root-cause analysis. The information that we have distributed across the worldwide Transocean fleet has been simply a reinforcement of the company's existing comprehensive safety management system, maintenance practices, and——

Senator KLOBUCHAR. And, are——

Mr. NEWMAN.—emergency response.

Senator KLOBUCHAR. Are you supportive of the President's idea of appointing a panel to start looking into this?

Mr. NEWMAN. I think we're as focused as anybody in this particular event in——

Senator KLOBUCHAR. I asked——

Mr. NEWMAN.—understanding——

Senator KLOBUCHAR.—are you supportive of the President's support——

Mr. NEWMAN. I'm supportive——

Senator KLOBUCHAR.—President's——

Mr. NEWMAN.—of whatever——

Senator KLOBUCHAR.—panel——

Mr. NEWMAN.—process allows us to get to a full and comprehensive—and, if I can use the Chairman's terms, a full and transparent accounting of what happened. And if the President's Commission helps us to do that, then I'm supportive of it.

Senator KLOBUCHAR. Well, remember, I mean, it's looking at not just your conduct of your company, but also government agencies. And I just look—when you look at other disasters, whether it's Three Mile Island or 9/11, I think it has been helpful to bring in other points of view.

Mr. McKay, last week you testified, before the EPW hearing—you and I had an exchange about this *USA Today* article that reported that BP opposed the Mineral Management Agency's proposal to require drillers to perform independent safety checks, because the new rules would have been, quote, "too costly." That was in the *USA Today* article.

I'm just asking you, again, if you still think those regulations would be too costly. I know at the time, BP wrote, quote, "We believe the industry's current safety and environmental statistics demonstrate that the voluntary programs continue to be very successful."

So, one, do you still think they were too costly? And, two, do you still agree with this statement? And do you, in fact, support, now, some tougher regulations and tougher financial penalties?

Mr. MCKAY. Well, I think the real point is, we're for anything that makes this safer. We've got to figure out what happened here. And we're—will be supportive of regulation that will make this safer. Absolutely.

Senator KLOBUCHAR. I didn't—I note that the National Research Council found that, for tankers, oil spillage dropped off significantly after 1991, following passage of the Oil Pollution Act. The oil industry attributes the reduced spillage to preventative measures and increased industry concerns over escalating financial liability.

So, do you believe tougher regulations and tougher financial penalties, in this case, will produce similar results that the Oil Pollution Act did after the *Exxon Valdez* spill?

What happened there was, a disaster happened, we changed the rules, and we saw reduced incidences and reduced spillage. Do you think the same thing could happen here?

Mr. MCKAY. I think a relook at some of the regulations is going to be warranted here. I think we will learn what happened. And I think that's going to inform that. And I think the Oilfield Pollution Act does give us structure to act under. I do.

Senator KLOBUCHAR. OK. Thank you very much.

The CHAIRMAN. I'll ask the next question, Mr. McKay. Actually, I'm going to ask two.

After the *Exxon Valdez* accident—and Exxon just delayed and delayed and delayed and delayed and stretched litigation claims, and do what people on the defense do. And so, they—it just took a very long time to get those claims settled. But, that's not my question.

We—as a result of that, we passed a law, the OPA–90 law. And it assigned responsibility to the responsible party—those are in the law, those words, "responsible party"—the responsible party for an offshore facility, in the law, is the lessee or permittee of the area in which the facility is located. Now, I think that you have agreed

with that. I've not heard this agreement before. But, Mr. Newman indicated that you agreed with that. Do you?

Mr. MCKAY. I do agree with that. We've responded, in writing, formally, that we are a responsible party, under the Oilfield Pollution Act, as a lessee. Yes. And we plan on fully fulfilling those obligations.

The CHAIRMAN. And do you intend to do that to the extent—not just the waiving of the liability cap and all that kind of thing, but to the extent that the American taxpayer will not have to pay? Can you tell us that the American taxpayer will not have to pay for what has happened as a result of this accident?

Mr. MCKAY. Yes. We've been clear. Our intent is to pay all legitimate claims, cover——

The CHAIRMAN. The word "legitimate" makes me nervous.

Mr. MCKAY. It's not meant to be—it's not meant to be in anyway legalistic. It's meant to follow the Coast Guard protocols and guidelines that have been utilized under the Oilfield Pollution Act. We do intend to pay all those claims. It includes reimbursements for costs for—by the government agencies—clean-up costs, property damage, personal injury. We do plan on paying those, yes.

The CHAIRMAN. All right. So, the—I should not worry about the word "legitimate." It—that's just a technical word, you're saying?

Mr. MCKAY. It's—it means—it just means what it is: legitimate. It needs to be substantiated. It follows the guidelines within the Act.

The CHAIRMAN. All right.

Mr. MCKAY. Yes.

The CHAIRMAN. To both you and Mr. Newman, the *60 Minutes* report—in that, one of the employees on the rig told of the pressure—now, I've—this is a question that comes from very deep within my soul, because this is a fact of life in West Virginia within the coalmining industry, that there are some—we just had a disaster there. A lot of people were killed. And the CEO required production—the status of production, in all of his mines, every 2 hours, every day. It had to be on his desk.

What is the message to the coalminer? Safety is pushed aside. Inherently, people become more nervous about doing what they know they ought to do, and, in fact, what regulations require them to do. But, it's very far removed. It's underground. Ninety-nine percent of West Virginians have never been into a coal mine—underground mine. So, it's all removed. It's a secret world. And yours is the same situation.

Since the *Exxon Valdez,* nobody's really paid a great deal of attention. Now they have to, because this is a catastrophe of just extraordinary national dimensions, and we don't know where it will end.

But, one of the crewmembers felt that to get the well set quickly was important, because the project was behind, and—he said, "And drilling a bad well had already cost $25 million," so they had to start over. The message, to me, was very clear—to the crew—that time is money, and profits are more important than safety.

Do you want—either of you want to comment?

Mr. NEWMAN. Mr. Chairman, I'll be happy to answer that question. We are a customer service organization. We market our serv-

ices to our customers, we lease our rigs to our customers, and customer satisfaction is important to us. But, we will never compromise safety in pursuit of customer satisfaction.

I have taken phone calls, in the middle of the night, from customers who are upset because our people have drawn a line and will not proceed. They are—they have raised legitimate safety concerns. Those concerns have been met with resistance by our customers. And the customers have elevated that concern all the way to my level. And every time, I have stood behind our people.

The CHAIRMAN. The Committee would interested in having some examples of those phone calls. That's not invasion of privacy; it seems to me a perfectly legitimate request. In any event, I'm making that request, as chairman of this committee, that we—that you make available to this committee some of those calls, even if you have to recall them in your own mind, because I want to believe what you're saying. And I'm not going to until I see what they asked or what their gripes were, and how you didn't back away.

Mr. NEWMAN. They—understanding that they will be recollections in my own words——

The CHAIRMAN. Yes.

Mr. NEWMAN.—about the sequence of events——

The CHAIRMAN. That's——

Mr. NEWMAN. Absolutely.

The CHAIRMAN. Thank you.

Mr. McKay, Mr. Newman has stated that, at the time of the explosion—and this has been discussed, but I want it to be very clear—Transocean's crew was in the process of displacing drilling fluid with seawater—and this is the important point—at BP's direction. My question is, Is this true?—first.

Mr. MCKAY. The procedure did call for that operation, yes.

The CHAIRMAN. So, BP gave that direction.

Mr. MCKAY. That procedure was written by BP, I believe. Yes.

The CHAIRMAN. But, BP, therefore, gave that direction. It's not hard to answer that. I think your answer is yes. It's just—you have——

Mr. MCKAY. Yes.

The CHAIRMAN.—to say it.

Mr. MCKAY. The BP writes—BP does a procedure to construct the well. Transocean, as the operator, operates the rig to construct it.

The CHAIRMAN. It—is it a standard industry practice to take this step, when there have been anomalous pressure readings on the sealed wells, just hours earlier?

Mr. MCKAY. I think the entire history of that few hours between when the anomalous pressures were read, and then what happened after that, is the subject of multiple investigations. And I think it's extremely important to understand the totality—whether decisions were made, conversations were made, arguments were had, data was transferred, data was monitored. All that has to be put together to understand what happened in those hours.

The CHAIRMAN. It's interesting to me that the both of you are so careful in your language. And I think I understand that, as a human being, because you're on the defensive, and you're not sure what's going happen, and you don't know what the—all the litiga-

tion's going to be, and you're nervous. And it may be that your lawyers and lobbyists are telling you what to say, because you have to really be careful in what you say, and you don't want to say something that would create a different impression from—you understand what I'm saying.

Mr. MCKAY. Could I make a comment?

The CHAIRMAN. Yes, you can. I'm not attacking you for it——

Mr. MCKAY. I——

The CHAIRMAN.—I'm just making an observation.

Mr. MCKAY. I'm honestly saying this, because I don't know what happened. There are multiple conversations, and lots of data, in a dynamic situation that we have not been able to put—piece together yet. We're in the middle, still, of the crisis and we're starting the investigations to get to this. I literally don't know.

The CHAIRMAN. I know. I understand that, but I—I'm just telling you, that, as one Senator, it stretches, a little bit, credulity that the "waiting until all the information is in" overweighs what two very experienced people—and you've said that you're a trained engineer in all of this, Mr. Newman—that you wouldn't have your own views on the subject, which would—might be, you know, valid—verified by the investigation itself. But, you're just—you're very—you're careful, to the extent that it makes it harder, for those of us who make laws, to believe you.

Mr. MCKAY. I'm sorry that I'm frustrating you. What I cannot possibly do is speculate on what happened, because it is a very complicated situation that evidently happened there—lots of dynamic things going on, lots of data, lots of conversations. I'm sorry I'm frustrating you, but that is—I cannot speculate on that until the investigations are done. There are multiple investigations underway. I am confident, however, that it will be figured out relatively soon. I don't think this is going to drag out, in terms of what happened on the rig. And I think the investigations will get there. And I am confident of that.

The CHAIRMAN. All right. I'll accept that. And my time is out. I'll accept what you say.

And we then go to Senator Nelson.

Senator NELSON. Mr. Chairman, I have been looking, on a BlackBerry, at the new video that was released by BP today that—we put it on my website and my Facebook account, and—I'm going to hand it to you in just a minute. I want you to see this, because it is much more clear than what we've seen before. And it is gushing what you would expect—a 21-, 22-inch pipe that is gushing oil under the ocean. And I want you to see this.

The CHAIRMAN. Could you give the name of your website, please? I just think it's important for people to go to it.

Senator NELSON. OK. It's www Bill Nelson dot Senate dot gov [*www.BillNelson.Senate.gov*]. And I want you to see this as I'm asking these questions, because it dramatically—when you see something as clear as that, with the gusher coming up, and realize that that's a 21-, 22-inch pipe.

Now, I want to ask Mr. McKay—you said that this riser insertion tube is working. And you gave an estimate, before, of how much oil is being removed from that riser. Can you tell us what that is?

Mr. MCKAY. The update I got earlier this morning was somewhere between 1,500 and 2,000 barrels of oil a day.

Senator NELSON. And that's assuming that the overall is what was first estimated at 5,000 barrels per day.

Mr. MCKAY. No. That's an actual measurement at the surface, of what's coming to the surface——

Senator NELSON. I see.

Mr. MCKAY.—through that tube.

Senator NELSON. I see. So, percentagewise, it depends how much you're getting, depending on how much the actual gusher is.

Mr. MCKAY. That's correct.

Senator NELSON. OK. So, you know how much you're getting, because that's how much you're recovering at the surface.

Mr. MCKAY. That's correct.

Senator NELSON. OK. Let me ask you—you saw, on that chart, on the Loop Current——

Let me have the one at 10 days. OK. That's the one at 5 days. Give the one at 10 days. Well, that's the one at 8 days, but that'll make the point.

You saw how this is coming up by the Florida Keys, and the one at 10 days—if you'll hand me that one—yes—that, then, brings it all the way up to the southeast coast. Now, my question to you is—you've said that you're going to take care of the economic loss. You see the potential, here—85 percent of the living coral reefs of North America are right there. If that is severely damaged, or that coral reef is killed, how in the world are you going to pay for that economic loss?

Mr. MCKAY. Well, first and foremost, we're going to do everything we can to not let it get there, by shutting it off at the subsea and fighting it on the surface. And obviously the Coast Guard is—through the Unified Command structure, everything we can do to protect those areas is going to be done. Everything we can do. Nothing is being spared to protect it.

Senator NELSON. Well, that's—I must say, that is a priceless resource. I think you see the potential.

I want to ask Dr. French-McCay—you testified, earlier, that chemicals are being released from the oil that, I thought you said, in the early stages, are toxic. Would you describe that, and what is the effect on the marine environment?

Dr. FRENCH-MCCAY. You know, from fresh oil—fresh oil has a lot of lighter hydrocarbons, including these toxic components, and they dissolve quickly from the oil—in the first few days, primarily, although it can be longer. So, the key thing is how fresh the oil is by the time it gets to a particular area. So, the toxicity is going to be more around the fresher oil.

Senator NELSON. Can you explain that? What is the toxicity, and what are the components that are so toxic?

Dr. FRENCH-MCCAY. Right. OK. The benzenes, toluene, and also PAHs, naphthalenes, and phenanthrenes are the names of them. So, they're small. They're one-, two-, and three-ring benzene-type hydrocarbons. And they're semisoluble and soluble. And they're also volatile.

So, when the oil is floating, they'll evaporate off. When the oil is in the water, as droplets, they dissolve. The smaller those droplets are, the faster they dissolve into the water.

So, if you disperse it into very small droplets, you're going to have a lot of dissolution quickly into the water. So, the toxicity should be near the fresher oil, and particularly the smaller droplets, as opposed to weathered tar balls that have been out there for weeks.

Senator NELSON. Right. So, when oil is released at that depth, of 5,000 feet, and it is fresh oil, and it is together—it's not dispersed——

Dr. FRENCH-MCCAY. Right.

Senator NELSON.—and these toxic elements that you just named disperse, what do they do, and what do they harm?

Dr. FRENCH-MCCAY. They disperse out and dilute out with the water, and they're absorbed by whatever organisms are exposed. So, all the organisms that are in that deepwater would be exposed to those toxins. They get into the tissues, and they disrupt the function of the organism.

Senator NELSON. And what are some of those organisms?

Dr. FRENCH-MCCAY. Oh, all sorts of plankton, like jellyfishes, fishes that are in the deep sea, various squids; there are organisms on the bottom of the sea, too, that might be exposed. So——

Senator NELSON. And——

Dr. FRENCH-MCCAY.—a whole variety of fish and invertebrates, basically.

Senator NELSON. And what is the long-run effect of those organisms absorbing those toxins?

Dr. FRENCH-MCCAY. Typically, it's a—they have acute effects, as we call them, which are short-term mortality or lost growth or lost function. That can affect the populations, in the longer term. We are trying to determine what that—you know, the magnitude of that problem, as we speak.

One of the problems in the deep sea is, there's not a lot of data on what's down there. So, we're trying to get that data right now, in areas that haven't been affected yet, so that we have a baseline in order to make that kind of an evaluation. So, we have sampling going on right now on ships in the vicinity, more toward Florida, where it hasn't been affected yet, and so on.

Senator NELSON. Thank you very much.

The CHAIRMAN. Thank you, Senator Nelson.

Senator Wicker.

Senator WICKER. Thank you very much.

Mr. McKay, you mentioned there are multiple investigations. Do you mean that BP is conducting multiple investigations?

Mr. MCKAY. I mean that BP has one internal investigation, and then there is the joint Homeland Security and Interior investigation, the Marine Board, and there are other Congressional investigations.

Senator WICKER. I see. And your employees, to the extent that they are available, are testifying before those government investigative——

Mr. MCKAY. Yes.

Senator WICKER.—bodies.

Mr. MCKAY. I believe so.

Senator WICKER. Who is running your BP internal investigation?

Mr. MCKAY. A senior executive that heads up our safety and operational integrity unit, which is a separate unit that—and his name is Mark Bly.

Senator WICKER. OK. How long has he been assigned to this?

Mr. MCKAY. A few days after the incident.

Senator WICKER. OK. Is he issuing interim reports?

Mr. MCKAY. He—I don't—that's a good question. I don't know.

Senator WICKER. But——

Mr. MCKAY. I don't know.

Senator WICKER.—he hasn't been reporting to you, the——

Mr. MCKAY. No.

Senator WICKER.—head of BP America.

Mr. MCKAY. He has been doing an independent investigation.

Senator WICKER. OK. And you have not received interim reports.

Mr. MCKAY. No.

Senator WICKER. Now, Mr. Newman, is Transocean conducting an internal investigation?

Mr. NEWMAN. Yes, sir. As I indicated in my opening remarks, I did constitute an independent investigative team comprised of Transocean and industry experts.

Senator WICKER. And who is in charge of that for Transocean?

Mr. NEWMAN. Gentleman by the name of Bill Ambrose.

Senator WICKER. And is he issuing interim reports?

Mr. NEWMAN. Mr. Ambrose reports directly to me, and he does issue interim reports.

Senator WICKER. So, you have visited with him from time to time about what his reports are revealing so far.

Mr. NEWMAN. I have had conversations with Mr. Ambrose about the full scope of the investigation, the extent to which I want him and his team to explore the incident.

Senator WICKER. But, not the facts that he has been able to uncover so far.

Mr. NEWMAN. I have not been made aware of the facts that he has uncovered so far.

Senator WICKER. So, he has not reported to you on an interim basis about what he's learning.

Mr. NEWMAN. We are—we have not yet established a mechanism for interim reporting.

Senator WICKER. OK. Are you aware of there being an issue, with regard to this well, about a new type of concrete being used, different from what had ordinarily been used?

Mr. NEWMAN. Is that question directed to me, Senator?

Senator WICKER. Yes, sir.

Mr. NEWMAN. Yes. I'm aware that, on this well, I believe there was a process used which is referred to as "nitrified cement."

Senator WICKER. And is that new and different?

Mr. NEWMAN. I don't have much expertise in cementing, sir, so I wouldn't be able to tell you whether that's new and different, or not.

Senator WICKER. OK. Well, would you speak to the person running that investigation and get back to this committee about that?

Mr. NEWMAN. I will ask our investigation to explore that, and we can revert to the Committee.

Senator WICKER. OK. Well, I'm asking you to check on that and get back on the record.

Now, in the case of the blowout preventer, as your testimony says, the blowout preventers obviously malfunctioned, in some respect. They were supposed to squeeze, crush, or shear the pipe, and shut off the flow. What events are supposed to trigger that in a blowout preventer?

Mr. NEWMAN. What events are supposed to trigger the activation of the blowout preventer?

Senator WICKER. Yes, sir.

Mr. NEWMAN. Typically, what our people will monitor is flow. So, they will—during the process of drilling the well, while the drill bit is actually deepening the well, our people will be pumping drilling fluid into the well, and monitoring drilling fluid coming out of the well. And periodically during that process, our people will stop—stop the operation, and do what the industry calls a "flow check." And that's where everything is shut down so there's no fluid being pumped into the well, and the driller will monitor whether or not there's fluid coming out of the well.

Senator WICKER. OK. Well, I don't think I'm getting an answer to my question. The blowout preventer is supposed to kick in suddenly if something goes wrong. What causes it to do that? An explosion? A punching of a button? What causes the blowout preventer to activate and shut off the flow?

Mr. NEWMAN. There are a couple of different means of activating the BOP.

Senator WICKER. OK, good. That's what I want to know.

Mr. NEWMAN. OK. So, one way is manual intervention—manual operation. There are——

Senator WICKER. And that's somebody on the rig, punching a button.

Mr. NEWMAN. That is somebody on the rig, punching a——

Senator WICKER. OK.

Mr. NEWMAN.—button.

Senator WICKER. What's another way?

Mr. NEWMAN. Automatic response that is built into the BOP control system. And there are two of those that were part of the BOP control system on the——

Senator WICKER. What events——

Mr. NEWMAN.—*Deepwater Horizon*.

Senator WICKER.—activate the automatic response?

Mr. NEWMAN. One set of events is meant to kick in after catastrophic loss of the riser. So, that's—the riser is the pipe that connects the BOP to the rig.

Senator WICKER. OK.

Mr. NEWMAN. If the—if we lose the riser, the BOP—the control system is designed to sense that, and it will activate.

Senator WICKER. In this case, you didn't lose the riser.

Mr. NEWMAN. In this case, we did not lose the riser. The riser——

Senator WICKER. OK. What else?

Mr. NEWMAN.—riser remained connected to the rig, as long as the rig was floating. The other automatic response that is built into the Horizon BOP control system was called an "auto-shear." And that is meant to trigger when a portion of the BOP, referred to as the "lower marine riser package," the LMRP—when the LMRP disconnects from the lower package—in the event of a disconnect, that auto-shear will function.

Senator WICKER. And that should have worked in this instance?

Mr. NEWMAN. No. In this case, we did not have a disconnect between the lower marine riser package and the lower BOP.

In fact, today, the lower marine riser package is still sitting on the BOP.

Senator WICKER. So, the two instances in which the automatic trigger would take place, never happened, in this instance, based on your understanding.

Mr. NEWMAN. The two scenarios for automatic response, built into the Horizon BOP control system, neither of the criteria were satisfied.

Senator WICKER. All right.

Well, Dr. McCay, I'm really——

The CHAIRMAN. Senator——

Senator WICKER.—sorry that I——

The CHAIRMAN.—I have to say, you're about two and a half minutes over.

Senator WICKER. Are we going to take a third round?

The CHAIRMAN. Well, it's depending on——

Senator WICKER. OK.

The CHAIRMAN. I'm willing.

Senator WICKER. Well, I'm just trying to wrap up.

The CHAIRMAN. I have an additional question, so——

Senator WICKER. I have additional questions, and I'll wait for another round.

The CHAIRMAN. OK. Thank you.

Senator Klobuchar.

Senator KLOBUCHAR. Thank you very much.

Just having looked at that video, Mr. McKay, Mr. Newman, I mean, it is really startling. What I'm trying to figure out is—at first it was claimed it was—the oil was coming out at 1,000 barrels a day. Is that right? And then it went up to 5,000. And now I'm looking at this. I mean, there are some people estimating, just looking at that video, that it could be 70,000 barrels a day.

How long did—maybe I'll start with you, Mr. McKay—how long did you guys have that video? And why couldn't you make those calculations and figure out how much oil was coming out?

Mr. MCKAY. Those videos have existed since we found the leak. The estimates have been—first of all, estimating volume from a 2–D video is extremely difficult. We cannot measure that directly. And I would say that there—we believe there's quite a lot of gas in that. So, you have to take into—that account.

The way that the estimates have done—been done by the government scientists, and our own, is to understand, as best we can, what is on the surface, and then, through the—what we know about the oil, how much dispersion we think—and dissolution—we think is happening in the water column, and effectively adding

those two together is where the 5,000-barrel-a-day estimate comes from.

Everyone has said there's a range of—a large range of uncertainty there. But, that's—that is the best current estimate.

Senator KLOBUCHAR. So, you're still sticking with that.

Mr. MCKAY. I'm sticking with what Unified Command is—has determined.

Senator KLOBUCHAR. OK.

Dr. French-McCay, I—you heard Dr. Lubchenco provide her predictions as to how the oil is going to disperse. Were you here for her testimony?

Dr. FRENCH-MCCAY. Yes.

Senator KLOBUCHAR. Do you agree with her characterization? And do you have anything further you'd like to add?

Dr. FRENCH-MCCAY. In terms of the Loop Current situation? Yes, I do. I think that—first of all, the majority of the oil is up near the release site, and that area has a very complicated circulation pattern, and appears to just sort of slosh around like a bathtub up there. And then you have this Loop Current. So, any oil that, kind of, gets—comes down in streamers and gets in that Loop Current could get transported. However, the Loop Current is quite a bit south of where the release is.

So, the majority of it is really up near the release site. And the winds have been from the southeast for quite some days now, which has forced it up toward Louisiana. All of this could change if the winds are from the north and—you know, for a number of days. So, we have to monitor all of the current winds, and figure out where it's going. And that's what NOAA's doing as we speak.

Senator KLOBUCHAR. Did you hear the discussion—I know you're more focused on the wildlife piece—that I—but you must know—about hurricanes, that I had with her and the Admiral, about hurricanes and the potential effects of a hurricane, with all the oil still sitting around, even if they are successful—and we hope they are—in blocking the leak, or partially blocking the leak. What could the effect be if there was a major hurricane in—the season starts in June, peaks in late August—what could be the effect of a major hurricane, from your perspective?

Dr. FRENCH-MCCAY. If the leak is stopped by the time of the hurricane, the water would be, you know, churned up, and there would be a lot more dispersion. So, it actually would spread it out more, and dilute it down more. So, that actually would be a positive help, as opposed to negative.

If the leak is still going, then it's going be even harder to control.

Senator KLOBUCHAR. It's—the Admiral was talking about—the operations would be harder to conduct and——

Dr. FRENCH-MCCAY. Right.

Senator KLOBUCHAR.—and could even possibly be imperiled, I suppose, whatever devices are hooked up.

Dr. FRENCH-MCCAY. Yes.

Senator KLOBUCHAR. Did—was you—would you, Mr. McKay and Mr. Newman, agree with that assessment? Or——

Mr. MCKAY. Obviously, it's according to where the hurricane comes through—a hurricane comes through, and the severity. But,

operations could be interrupted if a hurricane comes through. That's true.

Senator KLOBUCHAR. OK. All right. Very good. Thank you very much.

The CHAIRMAN. Thank you, Senator Klobuchar.

I have an additional question, so this will constitute a third or fourth, or whatever, round.

And I apologize—you know, you keep people waiting, and then you hold them—but, this is—I think this is a very intense subject. This has enormous consequences as we're trying to decide what to do in an energy policy. This is a huge, huge subject.

This, Mr. Newman, is to you. And it has to do with the cement seal—integrity of the seals on a well. You stated, publicly, that, "The one thing we know with certainty is that there was a sudden catastrophic failure of the cement, the casing, or both," because, "without a disastrous failure of one of those elements, the explosion could not have occurred."

Now, I've got to tell you, once again, I'm just reaching back to what has just happened in West Virginia, with the mine disaster, and to the one before that and the one before that, which are very much—is very much a part of—you know, in West Virginia, it's as big a subject as this is. And it has to do, really, with shoddy seals, in the mining. If you indicate that there couldn't have been an explosion—could not have occurred—if there had not been a failure of the cement or the casing, or both, that indicates to me that the casing was not sufficient.

And again, coalmining is very different, but, to me, right now, it is not. That—since nobody really understands, in the outside world, the press world, the Congressional world, what casing is in an underground mine, and how it prevents explosions from going from one part of a mine to another, or oxygen deficiencies going from one part of a mine to another—the casing is all you have to rely on. In that case, it's also cement. And the seals, therefore, are what hold the cement in a very rough thing called an "underground coal mine." It's a very delicate art. But, it's absolutely—it did not work, in couple of disasters where a group of people—their spouses never saw them—will never see them ever again, because the casing didn't work.

And so, my question to you is, What is the standard oil industry practice for testing the integrity of a cement seal like the one that you evidently were talking about?

Mr. NEWMAN. I'm going to qualify my answer by reminding the Chairman that I don't have a lot of expertise in cementing.

The CHAIRMAN. Well, whatever expertise you do have, because you've said you were an engineer.

Mr. NEWMAN. Right.

The CHAIRMAN. Petroleum engineer. So that——

Mr. NEWMAN. Right.

The CHAIRMAN.—impresses me.

Mr. NEWMAN. So, I have formed a fundamental conclusion. The oil is flowing—the hydrocarbons are flowing from a reservoir that is 13,000 feet below the seabed. Between that reservoir, 13,000 feet below the seabed, and the seabed, there should be casing and cement. So, the only way for the hydrocarbons to go from that res-

ervoir, 13,000 feet below the seabed, to the seabed is to have experience a failure of the cement or the casing, or both.

There are tests to confirm the integrity of cement—a cement bond log, or a cement temperature log—I'm not familiar with the properties of those logs or the efficacy of the measurement—but, I know there are tools out there to measure it.

The CHAIRMAN. Doesn't quite answer my question. I agree that they're out there. I mean, I—you say they're out there, so I accept they're out there. The question is, What is the industry standard? What does it call for? And did you practice that?

Mr. NEWMAN. The requirement for those services would have been a BP decision. That's not something that Transocean markets. We do not provide those measurements, so I can't tell you what the industry standard is for the application of those measurements.

The CHAIRMAN. Well, then I'll ask Mr. McKay.

Mr. MCKAY. I believe the standard, by the MMS regulator, is that a positive test is exerted on the casing and cement to see if it holds. That test was done, and it held. So——

The CHAIRMAN. How is that test done?

Mr. MCKAY. You pressure—effectively, you pump the cement job, get the cement on the backside of the casing, let it set, then you pressure up on the casing to see if everything holds. And if it's not holding, it would leak off. It held, I think, 2,350—2,350 PSI, something like that.

What was supplemental to the regulations was an—what's called a negative pressure test, where you—you don't pull a vacuum, but you lower the pressure above—on the casing. I believe—I don't know this for a fact, but I believe there were two of those done. And there were anomalies associated with those negative pressure tests. And——

The CHAIRMAN. And is—were those tests performed by your company?

Mr. MCKAY. I think those—I don't know. I—this'll be in the investigation. I would imagine that there were collaborative discussions about what was going on, on the rig. The tests——

The CHAIRMAN. But——

Mr. MCKAY. The tests——

The CHAIRMAN.—if Mr. Newman——

Mr. MCKAY.—themselves were——

The CHAIRMAN.—says that the—I mean, I—in a coal mine, if a casing blows, people die. And I'm not in a—anything near an engineer, in petroleum or underwater activities, but I have to assume that was a very large factor.

Mr. MCKAY. The things that I know—there was a period of time, after this anomalous pressure test, before the well exploded. And what's going to be very important in the investigation is to understand those several hours between those two things, to understand what happened. And then there are techniques to control well flow, you know, when things are happening. And there are a lot of questions that have to be asked. We don't have that. I don't know that yet. But, that—I'm sure the investigation is going to get right to the nub of that.

The CHAIRMAN. My time is up.

Mr. McKay, I'm sure, too, that the investigation will have something to say about that. But, I would—I think it's so important that I would like to know, on reflection or further questioning, on your part, of people in your company or in Transocean, what you conclude, before the investigation is concluded.

I'm not going to sue you. I'm a Senator, trying to find out what's going on.

Mr. MCKAY. We want to find out, as well. And we can share with you the conclusions that are drawn. We've shared facts. We can share that with this committee—the facts as we know them.

The CHAIRMAN. After the investigation is over?

Mr. MCKAY. No. We can share what we've shared with ONI, in terms of facts.

The CHAIRMAN. Good. Please do that.

Mr. MCKAY. Yes. And that's what I've said, so far today.

The CHAIRMAN. Yes. I understand. Thank you.

Senator Nelson.

Senator NELSON. And, Mr. Chairman, this Senator wants to know what happened, as well, so it'll never happen again, because the consequences of this failure could be betting the store for my state, given the fact that we have more coastline than any other state, save for Alaska, and we certainly have more beach than any other state. And we have 85 percent of the coral reefs of the United States, and that includes Hawaii and some of the islands in the Pacific that are territories.

I want to go back, then, Mr. Newman, to why the blowout preventer failed—the backup mechanism. Was there a dead battery that caused that fail-safe system that is supposed to drive those pieces of metal together to cutoff the oil? Was there a dead battery?

Mr. NEWMAN. I believe you're referring to some information that came available last week. The—when we—the BOP control system has two control pods mounted on the stack. And we have retrieved one of those control pods. We had the manufacturer onsite to conduct a thorough analysis and review of the condition of that pod. The preliminary battery measurement on the pod registered 18.41 volts, against a maximum charge of 27 volts and a minimum—a manufacturer's minimum recommended charge of 18 volts. So, on the preliminary measurement of 18.41 volts, we exceeded the manufacturer's minimum recommendation, and on a subsequent measurement, a more comprehensive and direct measurement of the voltage in the battery, we registered 26 volts. So, the battery was not dead.

Senator NELSON. OK. That being the case, then, the backup system that was supposed to work, is it referred to as a "deadman safety mechanism"? In other words, it activates and a human doesn't have to do it.

Mr. NEWMAN. As I responded earlier to a question, the BOP control system on the Horizon was fitted with a dead- man system. In order for that deadman system to trigger, there have to be three criteria met. And during the course of the events following the explosion, we did not meet those three criteria. So, the system was never in a situation where it should have responded, and didn't.

Senator NELSON. And those three criteria are?

Mr. NEWMAN. Electronic communication with the rig; hydraulic communication with the rig; and electronic communication between the two pods. So, you have to satisfy those three criteria.

Senator NELSON. Well, we look forward to the conclusions of the investigation.

Mr. McKay, I'd like your opinion. State the nature of the relationship between the interactions of the oil industry, that you have observed, and the MMS, over the last dozen years. Is it a personal cozy relationship? Or is it a arm-length professional relationship, in your opinion?

Mr. MCKAY. I have not worked directly with the MMS in the last 12 years. As I understand it—if you want an opinion, my opinion is—as a regulator, they've had—our relationship has been as a regulator. That—it's—it—I would not term it "cozy." It's a regulator relationship. That is an opinion of mine.

Senator NELSON. Yes. And that's what I'm asking. And so, when you heard, about 5 or 6 years ago, about the sex parties between regulators in MMS and members of the oil industry—"pot parties"—all of that information that has been out in the public sphere, what was your opinion about the relationship?

Mr. MCKAY. I was surprised by that.

Senator NELSON. Were you shocked?

Mr. MCKAY. I'm not sure I know enough about what happened. I was surprised that things like that would happen.

Senator NELSON. Surprised that a regulator, that is supposed to be not only collecting royalties, but also charged with the safety of this kind of equipment that we're talking about, that failed, had such a cozy relationship that they're going off and having sex parties.

That doesn't sound like the function of a regulator to me, Mr. Chairman.

Thank you.

The CHAIRMAN. Thank you, Senator Nelson.

Senator Wicker.

Senator WICKER. Mr. Newman, do you know whether or not there was a manual attempt to activate the blowout preventer?

Mr. NEWMAN. I have heard reference made—anecdotal reference made to attempts to activate the BOP before the crew finally disembarked the rig.

Senator WICKER. I see.

And, Mr. McKay, do you have any knowledge of a manual attempt to activate the BOP?

Mr. MCKAY. I have—two things I would say to that—one, I have—I've heard the same thing, that the emergency switch was hit on the rig before evacuation.

Second, we have made attempts, with Transocean, to manually intervene in the blowout preventer and provide actuation, subsea, with ROVs. In fact, we—I believe, we've activated the deadman switch, with ROVs, and we've tried to pump in and actuate the various rams with remote operated vehicles. We've been doing that—the first 10 days or so, we were doing that of the crisis.

Senator WICKER. So, it may be, Mr. Chairman, there's just something down there with the blowout preventer that's preventing it from, even today, kicking in.

Well, let me go, then, to Dr. McCay.

The CHAIRMAN. I don't think he's a "Dr."

Senator WICKER. And——

The CHAIRMAN. Oh. Oh. That——

Senator WICKER. Dr.——

The CHAIRMAN.—that Dr. McCay. All right.

Senator WICKER. Yes, we've got Mr. McKay, with a "K," and Dr. McCay, with a "C."

It's unfortunate that you weren't able to talk more about the history of a number of these things that had gone on. But, do you agree with Mr. Newman, that in this instance several things had to go wrong independently in order for this tragedy to happen?

Dr. FRENCH-MCCAY. I don't feel like I have enough expertise on the blowout preventer or those kinds of things to be able to comment on that, really.

Senator WICKER. OK. Well, I appreciate that.

Let me move, then, to what you've observed in other instances of oil spills, in particular, the so-called "plume" or, as we heard from NOAA, the "mist" of particles. Have you heard of that sort of thing happening before in connection with oil spills?

Dr. FRENCH-MCCAY. Yes. The spill that I touched on briefly in my testimony, the North Cape oil spill——

Senator WICKER. And that was——

Dr. FRENCH-MCCAY.—that——

Senator WICKER.—in Rhode Island?

Dr. FRENCH-MCCAY. Yes.

Senator WICKER. OK.

Dr. FRENCH-MCCAY. And what happened there was, the oil was entrained, or mixed, into the water, with big waves. And so, there was a subsurface plume, just meaning "contamination," that spread out, away from the coast. And those were small droplets in the water, and there was measurable PAHs, which are the toxic components, in the water. And then we evaluated that spill, and documented 9 million lobsters were killed, and a number of other organisms.

Senator WICKER. So, that's an instance of the wave action causing the oil not to stay on the surface.

Dr. FRENCH-MCCAY. That's correct.

Senator WICKER. Can you think of any reason why, in this instance, that the oil would not come to the surface and cause this plume or mist of particles that NOAA testified about?

Dr. FRENCH-MCCAY. Yes. Dispersant has been injected, in tests, down near the wellhead, or near where the oil is coming out, actually in the pipe. And I'm just hearing this description, I haven't seen it myself, but basically they're injecting it into the pipe, with the objective of dispersing that oil, down in the deep water, into small droplets. So, if you get those droplets small enough, they will disperse down there and not float to the surface, because oil comes up if it's in bigger droplets, but if it's very small, it's like a mist——

Senator WICKER. I see.

Dr. FRENCH-MCCAY.—of little droplets that disperse, down in the deep water.

Senator WICKER. Well, thank you very much.

And, Mr. Chairman, let me just observe two things. I think one thing we've learned about the blowout preventer, this fail-safe, this deadman preventer of last resort, is, if the rig explodes and burns and sinks, that catastrophic event does not trigger the blowout preventer.

Is that correct, Mr. Newman?

Mr. NEWMAN. Under the current configuration, as long as the rig remained on the surface, you could have had continuing hydraulic communication with the rig; so, the deadman would not have functioned, in that case.

Senator WICKER. Well, it's amazing to me that, as explosive as an oil rig might be, that something like this could happen, and the signal not be sent.

Mr. Chairman, I have a procedural question. Normally, members are given 2 weeks to submit answers. I don't know how long we give to the witnesses to supply answers to those written questions. I would just ask the Chair to consider shortening the timeline for submission of questions, and to provide a timeline, if it's within the rules, for these witnesses to supply the requested answers, on the record.

The CHAIRMAN. I think there are two aspects to your question, Senator.

Senator WICKER. There, indeed, are.

The CHAIRMAN. One is the promptness of it, getting it as quickly as possible. And then, on the other hand, you want to make sure that it's as accurate—that they have sufficient time to give the accuracy that—which allows them to return it to you, or to us, to the Committee.

So, I would think—what—2 weeks?

What are you comfortable with? I was going to suggest 2 weeks.

Senator WICKER. OK.

The CHAIRMAN. Is that all right?

Senator Nelson has the final question.

Senator NELSON. I just want to follow—Mr. Newman, you were referring—first of all, you are a part of Transocean. Is that right?

Mr. NEWMAN. Yes, sir. I'm the Chief Executive Officer.

Senator NELSON. Yes, indeed. And Transocean is the operator of the rig and the drilling. Is that correct?

Mr. NEWMAN. We own the drilling rig. And we leased the drilling rig services to BP, under a drilling contract.

Senator NELSON. Right. But, who was on the rig, floating, that was operating it at the time of the explosion?

Mr. NEWMAN. Well, there are BP representatives out there directing the operation, with respect to the well.

Senator NELSON. Who has the responsibility for the operation?

Mr. NEWMAN. For the well?

Senator NELSON. For the operation of flipping the switch.

Mr. NEWMAN. Well, the driller. The driller is the Transocean individual who is operating the drilling machinery. And because he has an array of sensors and measurements and feedback presented to him, it would be his responsibility to recognize abnormalities with respect to the well, and make the decision about whether or not to shut the well in.

Senator NELSON. And, in this case, who is the driller?

Mr. NEWMAN. The driller on—who was on shift at the time of the event, was a gentleman named Dewey Revette.

Senator NELSON. And is he employed by——

Mr. NEWMAN. Senator, with all due respect, Dewey Rivette was killed in the incident. Dewey Rivette was an employee of Transocean.

Senator NELSON. OK. Were there any other people, that survived, that also had, as part of their duties, to flip the switch to activate the blowout preventer?

Mr. NEWMAN. It's a bit of a difficult question to answer. The—it is, first and foremost, the driller's responsibility to shut the well in. There is an individual on the rig who is the driller's supervisor, the gentleman that we refer to as a "tool-pusher." Because he's the driller's supervisor, he's sort of a backup, if you will, to—he's an individual that traditionally—a tool-pusher would come from the driller ranks, so he'd be an experienced driller, he would be able to recognize those signs and signals. The challenge is that the tool-pusher has a lot of other responsibilities besides just overseeing the driller. And so, he may or may not be on the drill floor at the time. He may or may not be near a panel at the time.

Senator NELSON. Did he survive?

Mr. NEWMAN. We lost one tool-pusher in the event, as well.

Senator NELSON. OK. So, that's two people that you lost, that you don't have any indication that the switch was flipped. Was there any other person on that drill rig that has stated that they flipped the switch?

Mr. NEWMAN. I have heard reference being made to hitting the emergency disconnect button, which is one of the buttons on the control panel, just prior to evacuation from the rig.

Senator NELSON. If they are your employees, why have you just "have heard"? Why don't you "know," by somebody telling you that they'd flipped the switch?

Mr. NEWMAN. Well, I've not had those conversations, myself, Senator. I've been focused, first and foremost, on the—on the nine families who lost Transocean employees. And I've been focused on ensuring that the company was properly organized to support BP in the response and recovery efforts.

Senator NELSON. You're the CEO. Are you responsible for the executive management of your company?

Mr. NEWMAN. Yes, sir, I am.

Senator NELSON. OK. Then the question is, Did one of your employees flip the switch?

Mr. NEWMAN. As I said, Senator, I have an account—I've been made aware of an account of an individual who indicates that, prior to evacuating the rig, they hit the emergency disconnect button. I have not talked directly to any of those people.

Senator NELSON. Why is that a difficult question to answer? I just don't understand. I mean, you're the CEO. You should know what has happened in your company. Did somebody in your company flip the switch—it's a simple inquiry—among the folks that, in fact, lived?

Mr. NEWMAN. Sitting here today, Senator, I don't know, definitively. That is—it's clearly part of the investigation process.

Senator NELSON. Mr. Chairman, I—I'm at a loss to understand why the witness cannot answer the question. And so, I would ask that you proffer the question in writing for them to respond in writing.

The CHAIRMAN. Will be done.

This concludes the hearing.

Let me just say, that I thank all three of you for spending all of this time. And I think that, when the record of these 4 hours is produced, there will be a lot of information—some new. There will also be a lack of a lot of information—all of that needed. The investigation is important.

And I—as I conclude this hearing—there will be more, I'm sure—I'm just overwhelmed by the magnitude of what went wrong, and the consequences, as yet unknown, to effect so many Americans and so much of our economy and wildlife, estuaries, and all the rest.

But, I respect you for staying the course with us. And I thank you very much.

This hearing is adjourned.

[Whereupon, at 6:28 p.m., the hearing was adjourned.]

A P P E N D I X

PREPARED STATEMENT OF HON. DANIEL K. INOUYE, U.S. SENATOR FROM HAWAII

Just one month ago, the Nation suffered a tragic accident onboard the mobile offshore drilling unit *Deepwater Horizon*. As we mourn the loss of the crew members and continue to work to contain and control the oil spill I hope that the lessons we learn will be taken very seriously. I know that BP is taking this seriously and I applaud their sincere efforts. It is imperative, however, that we understand what happened to cause this accident, and what changes are required to better prepare for future accidents should they occur.

I pray that one of the efforts will be to establish a system by which we can better anticipate, and respond to, accidents of this nature. We have similar systems in place in other sectors, and I hope that we can move toward a robust system for oil spills as well.

I am confident that both the Coast Guard and NOAA, here with us today, are doing all they can to lead the government's response efforts. As the Nation's leading scientific resource for oil spills, NOAA's efforts to coordinate the science, predict the trajectory of the spill, provide weather forecasts, and protect the Gulf of Mexico's marine mammals, sea turtles, fish and shellfish is critical.

In addition, the U.S. Coast Guard is always first on the scene—for us in Hawaii and now for the Gulf. With the Coast Guard at the helm of the Unified Command, I am confident that all organizations responding to this incident will remain in lock step until it is resolved.

Finally, I am pleased that the Oil Spill Liability Trust Fund is in place to assist with costs for removal and damages. However, as we move beyond this spill, I encourage us to consider whether other agencies with response and restoration responsibilities such as NOAA should be eligible for a direct appropriation of funding from this critical source.

RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. JOHN D. ROCKEFELLER IV TO HON. JANE LUBCHENCO

Question 1. It is my understanding that past studies dumping ballast water into the Gulf of Mexico have shown that the circulation patterns bring water into the loop current, around the keys, and up the east coast of Florida. Is it possible we'll see tar balls washing up on Miami Beach in the next month? What other areas could we see impacted?

Answer. The National Oceanic and Atmospheric Administration (NOAA) is closely monitoring the movement of oil from the *Deepwater Horizon* BP oil spill to help guide effective preparedness, response and cleanup efforts. The northern part of the Loop Current will sometimes "pinch" off from the full Loop Current, forming an isolated circular eddy. When this happens, any oil that has become entrained in the current will remain in a counter-clockwise eddy circulating around the Gulf of Mexico. It is not uncommon for such an eddy to develop, or for it to become reattached to the full Loop Current. If the eddy reconnects with the main Loop Current, it is possible that any oil that is entrained may reach the Florida Straits, and could be transported around the tip of Florida and into the Gulf Stream.

Currently, the majority of the surface oil slick still remains well north of the Loop Current, but the potential remains for more oil to move south from the spill site toward the Loop Current. The Loop Current is very dynamic. Using satellite imagery, ocean observations, and aerial observations, NOAA is closely monitoring the oil slick and the Loop Current. If a significant amount of surface oil enters the Loop Current, NOAA will be able to detect it and will work with the Unified Command to communicate this information.

Because both the Loop Current and Gulf Stream remain offshore, oil carried in either current will not necessarily result in shoreline impacts. Onshore winds or eddies would need to develop to move the oil from the Loop Current to the shore. Oil

that becomes entrained in the Loop Current would take approximately 8–12 days to reach the Florida Straits. It would take much longer for any oil to reach the Eastern Seaboard, if ever. Given the time and distance traveled, it is anticipated that any oil would disperse and weather significantly (to the form of scattered tar balls) before reaching the East Coast. Due to background concentrations of tar balls on the East Coast, it will likely be difficult to specifically detect the presence of oil related to the *Deepwater Horizon* BP oil spill without conducting laboratory analyses, especially in areas north of Florida.

Question 2. Obviously your Office of Response and Restoration has been a critically important part of the interagency response to this spill. Your ability to forecast where the spilled oil is likely to go in the coming days has been an invaluable resource to the National Unified Command. If another major oil spill were to occur in U.S. waters right now, could you provide a comparable level of response for both spills?

Answer. NOAA's Office of Response and Restoration is fully engaged in responding to the *Deepwater Horizon* oil spill. Although unlikely, if another large spill were to occur simultaneously in another location elsewhere in the United States, NOAA would have difficulty responding to its complete ability. Currently, NOAA has every Scientific Support Coordinator in the country working on the *Deepwater Horizon* BP oil spill.

RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. MARIA CANTWELL TO HON. JANE LUBCHENCO

Question 1. As part of its criminal and civil settlements with the Federal Government, Exxon paid hundreds-of-millions of dollars that went toward environmental monitoring, long-term restoration, and habitat protection after the *Exxon Valdez* oil spill. Would you say that there will likely be a need for similar long-term monitoring and protection after the *Deepwater Horizon* oil spill?

Answer. As a trustee for natural resources, NOAA acts on behalf of the public pursuant to the Oil Pollution Act (OPA)—and in conjunction with co-trustees—to: (1) assess injuries to natural resources caused by the spill; and (2) develop and implement plans to restore injured resources with damages recovered from the responsible parties or from the Oil Spill Liability Trust Fund. Monitoring is a component of restoration plans and is used by NOAA and co-trustees to document restoration effectiveness and the need for possible interim corrective action. NOAA is currently conducting intensive activities in support of the natural resource damage assessment and will continue to do so. It is too early to tell what specific environmental monitoring, long-term restoration, and habitat protection will be needed following the *Deepwater Horizon* BP oil spill.

Question 2. Will money spent on long-term scientific monitoring (including money to study the underwater oil plumes) be reimbursed to NOAA by the responsible party?

Answer. Per the Oil Pollution Act (OPA), among other costs, responsible parties are liable for removal costs. OPA defines removal costs as the costs of removing spilled oil from water and shorelines or taking other actions as may be necessary to minimize or mitigate damage to the public health or welfare, including fish, public shorelines, and beaches. Work performed and information gathered by NOAA as part of the oil spill mitigation and cleanup strategies at the request of the Federal On Scene Coordinator, such as studies of the current and forecasted position or physical characteristics of an underwater oil plume, would fall within this definition and the costs would be reimbursed from the Oil Spill Liability Trust Fund. The Coast Guard's National Pollution Funds Center would recover the removal costs from the responsible parties under OPA. Also, under OPA, a responsible party's liability includes NOAA's and co-trustees' reasonable costs of assessing natural resource damages. Consequently, trustee costs associated with identifying the nature and extent of the oil's adverse impacts to public natural resources (*e.g.,* sensitive coastal habitat, threatened and endangered species, public beaches, and fishing grounds) would be part of the Natural Resource Damage Assessment (NRDA) and reimbursable by the responsible parties. Not all long-term studies, however, satisfy the NRDA criteria. Longer term studies that are not associated with determining injuries to natural resources and/or services resulting from the spill or are not a component of a restoration plan (as discussed above) would not be reimbursable under the NRDA process.

Question 3. Will the government be able to force the responsible party to cover the costs of needed oil spill related monitoring and study five, ten, and twenty years from now?

Answer. Under the Oil Pollution Act, damages that are recoverable by a natural resource trustee include "the reasonable costs of assessing the damage." Costs associated with understanding the impacts of this spill to public natural resources (*e.g.,* sensitive coastal habitat, threatened and endangered species, public beaches, and fishing grounds) would be part of the Natural Resource Damage Assessment and are reimbursable to NOAA and other co-trustees. The period of time for which assessment activities will be conducted is not known at present. However, longer term studies that identify the nature and extent of injuries to natural resources and services caused by the spill could potentially be considered reasonable damage assessment costs for which the responsible party is liable. Alternatively, longer term monitoring and research may also be a component of a restoration plan (for which the responsible parties are liable) as discussed in the response to Question 1.

Question 4. On September 21, 2009, you sent a letter to the Director of MMS expressing concerns that MMS consistently understated the risks and impacts of oil spills in its Draft Proposed Outer Continental Shelf Oil and Gas Leasing Program. When NOAA identifies problems with MMS plans or environmental analyses, is there anything forcing MMS to listen to you, or do they have free rein to ignore NOAA? Does NOAA have any recourse if it thinks that MMS is allowing activities that aren't worth the environmental risk?

Answer. As the primary Federal ocean science and management agency that is charged with trust responsibilities over living marine resources, NOAA is involved in the Minerals Management Service's (MMS) multi-stage Outer Continental Shelf (OCS) oil and gas process. NOAA participates in a number of ways and under a variety of statutes, some of which provide NOAA a more significant role than others do in the OCS decision-making process.

Under section 18 of the Outer Continental Shelf Lands Act (OCSLA), the Secretary of the Interior is required to "invite and consider suggestions" from NOAA as he develops a 5-Year Leasing Program. Moreover, the Secretary of the Interior has a responsibility to conduct environmental studies of any area or region included in any oil and gas lease sale, and to include NOAA in this process to the maximum extent practicable. OCSLA does not require MMS to adopt NOAA's comments.

There are, however, other opportunities for NOAA to play a more central role in MMS' offshore program. NOAA's existing authorities such as the Endangered Species Act (ESA), Marine Mammal Protection Act, Magnuson-Stevens Fishery Conservation and Management Act (MSA), National Environmental Policy Act (NEPA), Coastal Zone Management Act (CZMA), and National Marine Sanctuaries Act (NMSA) apply to various stages of the OCS process. In each stage of MMS's process, NOAA has varying degrees of influence, depending on the specific statutory provision. For example, MMS is required to comply with terms and conditions stemming from a consultation (*e.g.,* under ESA), may simply be required to respond to NOAA if it chooses not to accept NOAA's recommendations (*e.g.,* Essential Fish Habitat consultations under MSA or NMSA), or may be precluded from issuing any license or permit if the Secretary of Commerce upholds a State objection (*e.g.,* under CZMA).

Finally, in the case of NOAA's comments on a draft Environmental Impact Statement under NEPA, MMS would, when preparing a final Environmental Impact Statement (FEIS), be required to assess and consider NOAA's comments, and respond by either incorporating information from the comments into the FEIS or explain why the comments do not warrant further agency response. If NOAA was not satisfied with the MMS response to its comments in a FEIS, the agencies would attempt to resolve the differences through negotiations. If the issue was significant and resolution was not possible, NOAA would have the option of referring it for resolution to the Council on Environmental Quality.

RESPONSE TO WRITTEN QUESTION SUBMITTED BY HON. JOHN F. KERRY TO HON. JANE LUBCHENCO

Question. I understand that there may be gaps in international law relating to oil spills, since existing treaties address spills from tankers but not spills from platforms or rigs like the *Deepwater Horizon.* Is that accurate? Is the Administration currently taking any actions to address these legal gaps?

Answer. The most significant gap in international law relating to oil spills is the fact that the United States is not a party to the Law of the Sea Convention. The Administration strongly supports Senate advice and consent to U.S. ratification of

the Law of the Sea Convention. With respect to the regulation of offshore drilling activities, the U.S. domestic regime is currently the subject of significant review and scrutiny by such bodies as the President's Commission on the BP Oil Spill (officially known as the "BP *Deepwater Horizon* Oil Spill and Offshore Drilling Commission").

RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. CLAIRE MCCASKILL TO HON. JANE LUBCHENCO

Question 1. The *Deepwater Horizon* Unified Command has been operating a Joint Information Center (JIC) since the first days of the spill. The JIC has and continues to receive submissions for alternative response technology, services or products. How many submissions has the JIC received? How many submissions have been responded to? What is the JIC's process for vetting these submissions, and how many submissions have been brought to the attention of JIC leadership?

Answer. The Joint Information Center is not directly involved in receiving or reviewing submissions. Alternative response technologies may be submitted to BP or to the Federal Government's Interagency Alternative Technology Assessment Program (IATAP). BP has established the Alternative Response Technology (ARTs) program to review and evaluate suggestions. It is our understanding that BP has received more than 40,000 proposals.

On 4 June 2010, the Coast Guard Research and Development Center publish a Broad Agency Announcement defining the Federal Government's Interagency Alternative Technology Assessment Program (IATAP) and process. This process is designed to provide a well-defined, documented, and systematic government-managed process to solicit, screen, and evaluate all suggested technologies in support of ongoing response activities related to the *Deepwater Horizon* spill. All submittals are evaluated by the IATAP against the same criteria, which are: (1) overall scientific and technical merit; (2) feasibility; (3) availability; and (4) rough order magnitude cost. In addition to NOAA, the participating Federal agencies include the Department of the Interior, the Environmental Protection Agency, the U.S. Department of Agriculture, the Maritime Administration, and the U.S. Coast Guard. As of 16 July 2010, the IATAP has received 3565 submissions. Of those, 28 are under a more detailed evaluation by the IATAP team subject matter experts, 77 have been forwarded to the Unified Area Command (UAC) for operational assessment, and the UAC is in the process of procuring two of those for an operational evaluation.

Question 2. It is my understanding that Louisiana officials have met with and reviewed alternative response technologies, including those proposed by Show Me Energy. How closely is the JIC working with state and local governments in reviewing alternative response technologies? What process is in place to share information and ideas with state and local governments?

Answer. The Joint Information Center is providing any suggestions that they receive for review to both the Alternative Response Technology program set up by BP and the Interagency Alternative Technology Assessment Program, which will review all submitted proposals (as discussed in the response to Question 1). As proposals are approved for field application, this information is shared with state and local governments.

Question 3. As you know, the Coast Guard has detected the presence of dozens of "tar balls" approaching the Florida coast, suggesting that the Gulf Coast oil spill has traveled throughout the Gulf Coast region. How do you plan to determine whether these tar balls are indeed a product of the *Deepwater Horizon* spill?

Answer. Tar balls reported in southern Florida have been collected and analyzed at a laboratory to determine if the tar balls are from the *Deepwater Horizon* oil spill. To date, no tar balls collected in southern Florida have originated from the *Deepwater Horizon* BP oil spill.

Question 3a. In light of the failed remediation strategies that have been tried thus far, how does the Unified Command plan to prevent this eastward expansion of the spill?

Answer. The Unified Command will continue with an aggressive response to mitigate the impacts from the *Deepwater Horizon* BP oil spill. This includes the use of skimmers, in-situ burns, and dispersants. The Unified Command will not relent in efforts to protect the livelihoods of Gulf Coast residents and mitigate the environmental impacts of this spill.

Question 4. As you know, six of the ten leading U.S. ports are located in the Gulf of Mexico region, hosting some of the largest tonnage ships in the Nation. At this time, the oil spill has yet to impact barge traffic on the Mississippi River, although the spill is approaching the river's mouth. How does your agency plan to prevent

the spill from reaching the mouth of the river, thereby maintaining the ability to continue normal levels of barge traffic along the Mississippi?

Answer. NOAA continues to work with our partner agencies to prevent oil from reaching areas such as the mouth of the Mississippi River. As part of this effort, NOAA's Office of Coast Survey has issued a caution to mariners to identify where the spill is so that they can avoid it where possible. NOAA's Office of Coast Survey has also supported surveys of anchorage areas to enable the U.S. Coast Guard to clean vessels prior to their entrance into the Mississippi River, to avoid inadvertent transfer of oil into the river. NOAA is also frequently updating its chart graphics of the region to ensure first responders have the latest actual and predicted spill locations and caution areas at hand. The goal is to help mariners and commercial shipping continue marine transportation operations in the most normal manner possible.

Question 5. As you know, the government response to Hurricanes Katrina and Rita included the contracting of services to private firms. The Government Accountability Office, in their review of contracting activities following these disasters, noted a lack of clearly communicated responsibilities across agencies and jurisdictions and insufficient numbers and inadequate deployment of personnel to provide for effective contractor oversight. What specific activities will your department be seeking to contract out or are you already relying on contractors to carry out? Please explain why each activity is appropriate for a contractor to handle. What are the preliminary cost estimates for contracted out response activities? How does your agency intend to work with other agencies to prevent the issues we experienced during the Katrina response from arising in this instance? How many personnel have been deployed to the Gulf Coast to ensure that contractor abuses are prevented and that there is adequate oversight of contractor performance?

Answer. NOAA is using contractors in several areas to support the response to the *Deepwater Horizon* BP oil spill, and preliminary cost estimates for those contracts is $11.2 million. NOAA's Office of Response and Restoration is using contractor support for activities including information management, shoreline assessment teams, data collection during monitoring surveys, and data collection for the Natural Resource Damage Assessment process. We do not have an estimate for the number of personnel specifically deployed to oversee contract performance, because many of NOAA's activities are being supported through existing program contractors with established contractual relationships. NOAA has mechanisms in place to oversee its contractors, including having Federal employees on-scene with the contractors and as Federal task leads on the contracts. Contractors are an integral part of how NOAA operates, and NOAA has a strong track record with contract oversight and does not foresee problems with its contract oversight.

RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. JOHN THUNE TO HON. JANE LUBCHENCO

Question 1. There have been some reports of tar balls washing up on the shore along the Gulf coast, but for the most part the oil has stayed offshore. Is that correct? If so, what is the primary reason the bulk of the oil has not washed ashore?

Answer. There have been widespread shoreline impacts from the BP *Deepwater Horizon* oil spill from Louisiana to the Florida panhandle. These impacts range from heavy oiling to scattered tarballs. Shoreline Cleanup Assessment Teams (SCAT) are surveying shorelines daily to assess impacts and provide specific guidance to the Unified Command on where and how to conduct cleanup activities.

There are a number of factors that have prevented the bulk of the oil from washing ashore and reduced the shoreline impacts including: aggressive removal activities at sea, such as skimming and burning; application of dispersants; natural removal processes, sometimes called weathering; and the fact that the oil was released at great water depths.. Natural removal processes, such as evaporation, photo-oxidation and biodegradation, are going on continuously. In addition, currents and winds have helped keep oil offshore, thereby resulting in longer times for these natural removal processes to act on the oil and eliminate it from the environment naturally. The release of oil from great water depths has resulted in a wide range of droplet sizes, and the very smallest droplet sizes do not rise to the surface very quickly. The smaller the droplet, the larger the relative surface area, which allows for higher than normal rates of biodegradation as the droplet rises. At these great depths, droplets are more susceptible to dissolving in the water column because of the high pressure. Smaller droplets also rise more slowly providing a longer time for natural removal processes to take place. The very smallest droplets (less than 100 microns, the size of a pin head) move and are diluted within the deep water, and therefore

we believe these droplets will degrade before they would ever become available for shoreline impact. Ongoing modeling, sampling, and analyses will continue to improve our understanding of oil removal rates from these natural and depth-associated processes.

For oil that has reached surf zones near environments dominated by fine to medium-grain sand beaches, the sand mixes with the oil forming tar mats that tend to remain offshore and below the sea surface. NOAA is closely monitoring the movement of these tar mats and residual oil from the BP *Deepwater Horizon* spill to help guide our response and cleanup efforts and to protect natural resources.

Question 2. According to press reports, computer models show the oil may have already seeped into a powerful "Loop Current," which could propel it into the Atlantic Ocean. Is this the case with the models you have seen? How reliable are these models?

Answer. NOAA continues to closely monitor the BP *Deepwater Horizon* oil spill slick's proximity to the Loop Current in the Gulf of Mexico to provide coastal states timely and useful information about the spill. The Loop Current is a surface current. The well was capped in mid-July, and because little surface oil remains, we do not believe the Loop Current will transport oil to the Atlantic Ocean.

When the BP *Deepwater Horizon* oil spill began, the Loop Current was in its classic configuration, with its northern boundary approximately 60 miles from the spill site. About a month after the accident, a counter clockwise eddy formed along its northeast boundary that served to move some of the surface slick toward the Loop Current. Most of that slick appeared to stay primarily in the counter-clockwise eddy, rather than entering the main Loop Current. There were a number of models, including NOAA's trajectory models, that showed a sheen of oil entering the main Loop Current. Subsequent areal observations detected a sheen of oil within the Loop Current, thus confirming the reliability of the models. In addition, oil sampled by a ship in the vicinity of the boundary between the Loop Current and this counter-clockwise eddy matched the BP *Deepwater Horizon* oil "fingerprint." However, there has been no surface oil sheen detected in that region since June 9, 2010. Furthermore, no oil has been found anywhere else in the Loop Current system that has been identified as oil derived from the BP *Deepwater Horizon* oil spill.

Around May 24, 2010, the northern portion of the Loop Current "pinched off," forming an eddy named "Eddy Franklin." For the following 6 weeks, Eddy Franklin and the Loop Current showed varying levels of connectivity. Currently, Eddy Franklin appears to be cleanly separated from the Loop Current, and will likely migrate to the west over the next few months. The Loop Current will slowly begin to extend again to the north over that time. Until the Loop Current fully reforms (months from now), there is no clear pathway to bring surface oil from the northern Gulf to the Florida Straits, south Florida, and beyond. NOAA will continue to monitor the Loop Current as long as floating oil remains.

Question 3. How much oil is leaking each day? If BP's siphon riser is successful, how much oil will be leaking by the end of the month?

Answer. On August 2, 2010, the National Incident Command's Flow Rate Technical Group, which is composed of U.S. Government and independent scientists, estimated that a total of 4.9 million barrels of oil was released into the ocean with an uncertainty of plus or minus 10 percent. The average oil flow rate ranged from 53,000 to 62,000 thousand barrels per day where the flow rate decreased with time due to reservoir depletion. Because 0.8 million barrels were collected or burned, the total amount of oil that polluted the ocean was approximately—4.1 million barrels.

The well was successfully capped on July 15, 2010. On August 5, the well was cemented and currently (mid-August) there is no oil leaking into the Gulf of Mexico from the Macondo 252 #1 well. A relief well remains on track to complete the procedures to kill and finally seal the well within the next few weeks.

Question 4. What is the best case scenario in terms of environmental and economic damage caused by this oil spill? What is the worst case scenario?

Answer. It is still too early to know the full scope of the damage assessment associated with the BP *Deepwater Horizon* oil spill, and therefore it is not possible to comment on the best and worst case scenarios at this time. NOAA and co-trustees are collecting data in the Gulf of Mexico and across the five Gulf states (Texas, Louisiana, Alabama, Mississippi, and Florida). NOAA and co-trustees are concerned about potential short and long-term impacts to fish, shellfish, marine mammals, sea turtles, birds, and other sensitive resources, including impacts to their habitats, such as wetlands, beaches, bottom sediments, and the water column. The data collected will be used to determine what natural resources have been injured and what human uses have been lost due to the spill, pursuant to the natural resource dam-

age assessment and restoration process established by the Oil Pollution Act and Federal implementing regulations.

The effects of the BP *Deepwater Horizon* oil spill on natural resources are dependent on multiple factors including oil composition, oil quantity, dispersal techniques, and contact with organisms. Offshore oil can impact approximately the upper several meters of the water column, mixed layer deep water, and the sea floor. When the oil moves onshore, the shoreline, nearshore waters, and coastal habitats may be impacted.

The extent of damage to the Gulf ecosystem's commercial and recreational fishing and related industries (restaurants, processors, tourism, etc.) is dependent on how long and how much oil is dispersed into the Gulf.

Question 5. In terms of the government response, what have we learned the past few days to be better prepared to respond to a deepwater oil spill such as the one we are experiencing now in the Gulf?

Answer. Science is essential for effective decision-making to minimize the economic impacts and mitigate the effects of oil spills on coastal and marine resources and associated communities. The BP *Deepwater Horizon* oil spill has underscored the need for prioritizing research on the environmental impacts of dispersants, 3-dimensional modeling, fate and transport of oil at deep depths, medium and long term forecasting of oil fates, techniques for communicating risk to the public, long-term impacts of oil on shorelines, and improved clean-up and restoration methods. A better understanding of how deep oil behaves and disperses within the water column would help support future response efforts. NOAA would be pleased to work with the Committee on ideas to increase response capacity and capabilities, improve response tools and technologies, and focus on oil spill-related research.

The BP *Deepwater Horizon* oil spill has also increased awareness and reinforced the need for NOAA to be prepared to respond quickly to environmental disaster impacts that affect fisheries and protected resources, such as dolphins and sea turtles.

Question 6. Has either of your agencies received any Freedom of Information requests with regards to this incident? If so, can you provide a summary of those requests?

Answer. As of August 16, 2010, NOAA has received 35 FOIA requests relating to the April 20, 2010, BP *Deepwater Horizon* oil spill. The requests were submitted by a variety of public interest groups, including the news media, private citizens, state government, researchers, and ocean advocacy non-profit organizations that focus on water/beach quality, fisheries and fish habitat, and marine sanctuaries.

The following is a summary of the various types of information requested:

1. *News Media Requests*: 15 requests were received seeking:

- Computerized records relating to the DH incident and oil spills in 2008;
- Correspondence among Coast Guard, BP, PLC and NOAA;
- Test results of water samples collected by NOAA in the Gulf region;
- Records regarding the DH incident between NOAA personnel, academic and administrative staff;
- Records of consultations in 2008–10 between NOAA and Minerals Management Service regarding offshore drilling in the Gulf;
- Records regarding the testing of fish, shellfish and sea life in the Gulf of Mexico;
- Correspondence between NOAA and Members of Congress pertaining to the DH incident.
- The sensory assessors being trained/assigned to evaluate seafood sampling;
- Correspondence since April 20, 2010 about the use of dispersants for the BP oil spill;
- Communications related to the production and disclosure of the report *BP Deepwater Horizon Oil Budget: What Happened to the Oil*;
- Correspondence pertaining to NOAA's response to three BP FOIA requests, submitted by another news media outlet, and
- All correspondence pertaining to NOAA's response to three more BP FOIA requests, submitted by another news media outlet;
- A copy of all documents on the results of a field test conducted by NOAA earlier this year on commercial sorbent boom that determined that it absorbed more oil and less water than hair boom.

2. *Public Interest and Non-Governmental Organizations*: 13 requests were received seeking:

- Information on potential ecological impacts associated with deepwater drilling spills in the Gulf and information on past oil spills in this region;
- All communications with Minerals Management Service on marine mammals and oil and gas drilling on the outer continental shelf in relation to Shell Oil;
- Requests for records relating to live video feed of the oil spill provided by BP;
- Records on what EPA and/or environmental organizations were urging relating to the burning of oil.
- Sample data of Louisiana crude from the *Deepwater Horizon* well and procedures, policies, and plans relating to monitoring fish and seafood contamination;
- Correspondence relating to necropsies conducted on sea turtles found in the Gulf of Mexico between April 1, 2009 and the time the FOIA is processed including Gulf sea turtles conducted by Dr. Brian Stacy;
- Communications regarding turtles being killed during controlled oil burns in the Gulf of Mexico following the BP oil disaster;
- Communications that mention 23 endangered and threatened species of concern in the Gulf region following the BP *Deepwater Horizon* oil spill;
- Details of all meetings within NOAA and between NOAA and BP regarding underwater or subsurface oil plumes;
- Internal correspondence regarding NOAA/Partner missions: NOAA Ship Gordon Mission 1; and NOAA ship Thomas Jefferson Mission 2;
- Documents generated by an official or NOAA employee regarding the Gulf Incident Budget Tool Report dated August 1, 2010;
- Meetings between NOAA and the University of Florida regarding underwater subsurface oil plumes for the period of April 20, 2010 to present, and

3. *Law Firms*: 1 request was received from a law firm seeking:

- Records relating to health issues, focusing on oil and other exposures by spill responders and the public.

4. *Private Citizens*: 6 requests were received seeking:

- Information on oil rig incidents dating from 1952–3;
- Information of the Deepwater oil spill and oil spills of similar size in the U.S.;
- Raw video feed from the underwater response at the Deepwater rig;
- All data collected by NOAA, including research reports, on the Deepwater spill;
- Request for an Executive Summary published on June 3, 2010.
- A copy of the FOIA log for all Deepwater FOIA requests that discusses the consequences for marine and wildlife habitats or expansion predictions.

5. *States*: 1 request was received seeking:

- Information on potential ecological impacts relating to deepwater drilling in the Gulf of Mexico.

RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. DAVID VITTER TO HON. JANE LUBCHENCO

Question 1. Why hasn't a fisheries failure been declared under Magnuson-Stevens, and when will it be?

Answer. On May 24, 2010, the Secretary of Commerce declared a fishery resource disaster caused by the BP *Deepwater Horizon* oil spill resulting in commercial fishery failures off Louisiana, Mississippi, and Alabama. On June 2, 2010, the Secretary extended the May 24, 2010, declaration to include Florida.

Question 2. Why hasn't the President set up a fisheries loan program as mandated by section 2713(f) of the Oil Pollution Act, and when will he?

Answer. Section 2713(f) of the Oil Pollution Act (OPA) provides the President the authority to establish a loan program under the Oil Spill Liability Trust Fund (OSLTF) to provide financial assistance to fisherman and aquaculture producers affected by oil spills. Transfer of this authority has not been made to the Department of Commerce or NOAA. The OSLTF is managed by the Department of Homeland

Security, the United States Coast Guard, and the National Pollution Funds Center (NPFC). Please refer this question to the NPFC who can provide information on this topic.

Federal loan assistance is available though the U.S. Small Business Administration (SBA). SBA has established an emergency loan program with low interest rates to businesses affected by the spill. The SBA loan program is at 4 percent interest (relatively low) and up to 30 year maturity (longer than authorized under the OPA loan program).

Question 3. When will the Federal Government approve some version of the emergency dredging/barrier island plan presented by Louisiana more than a week ago? Can you work with the Army Corps to get this plan approved immediately?

Answer. It is the responsibility of the U.S. Army Corps of Engineers to issue the emergency permit allowing the construction of the proposed sand berms. NOAA, as well as other Federal agencies, provided an environmental review of, and comments on, the permit application submitted by the State of Louisiana. On May 27, 2010, the U.S. Army Corps of Engineers authorized the permit for a six berm "pilot" and the State of Louisiana signed the permit for the six berms on June 3, 2010.

Question 4. When will the Coast Guard, NOAA, BP, and other agency partners have a more precise estimate of oil flow from the well in light of the piping being successfully attached?

Answer. On August 2, 2010, the National Incident Command's Flow Rate Technical Group, which is composed of U.S. Government and independent scientists, estimated that a total of 4.9 million barrels of oil was released into the ocean with an uncertainty of plus or minus 10 percent. The average oil flow rate ranged from 53,000 to 62,000 thousand barrels per day where the flow rate decreased with time due to reservoir depletion. Because 0.8 million barrels were collected or burned, the total amount of oil that polluted the ocean was approximately 4.1 million barrels.

The well was successfully capped on July 15, 2010. On August 5, the well was cemented and currently (mid-August), there is no oil leaking into the Gulf of Mexico from the Macondo 252 #1 well. A relief well remains on track to complete the procedures to kill and finally seal the well within the next few weeks.

RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. ROGER F. WICKER TO HON. JANE LUBCHENCO

Question 1. What NOAA assets are being used in this response?

Answer. Over the past several months, NOAA has provided scientific and technical support to the BP *Deepwater Horizon* oil spill response, both on-scene and through our headquarters and regional offices. NOAA ships are monitoring the conditions at the wellhead using its specialized acoustic systems. NOAA's support includes daily trajectories of the spilled oil, weather data to support short- and long-range forecasts, and hourly localized "spot" forecasts to determine the use of weather dependent mitigation techniques such as oil burns and chemical dispersion applications. NOAA develops custom navigation products and updated charts to help keep mariners out of oil areas. NOAA uses satellite imagery and real-time observational data on the tides and currents to predict and verify oil spill location and movement. To ensure the safety of fishermen and consumer seafood safety, NOAA has closed oil-impacted areas to commercial fishing. NOAA scientists are in the spill area taking water and seafood samples to determine which areas are safe for commercial fishing. NOAA will reopen these areas only if it is assured that fish products within the closed area meet the Food and Drug Administration (FDA) standards for public health and wholesomeness. To that end, NOAA, in conjunction with FDA, has agreed upon a reopening protocol based on both chemical and sensory analysis of seafood within the closed area; NOAA continues to work with the FDA and the States to modify this protocol as necessary. NOAA's marine animal health experts are providing expertise and assistance with stranded sea turtles and marine mammals. NOAA is flying multi-spectral scanning missions over the spill to determine oil density and thickness, and has dedicated ship and aircraft assets to determine the influence of the Gulf of Mexico Loop Current on transporting the oil outside of the Gulf of Mexico. The influence of the Loop Current and the presence of submerged oil plumes are areas of ongoing research that NOAA and its Federal and academic partners are investigating.

Question 2. What resources does NOAA have to rescue and rehabilitate animals that could be stranded? Are these resources sufficient for your response?

Answer. Through the Unified Command, NOAA is working with the existing stranding response network in the Gulf of Mexico and has established primary reha-

bilitation care facilities; four for sea turtles and three for marine mammals including dolphins and manatees.

NOAA has established secondary facilities for extended care outside the oil spill event area. NOAA has also set up contracts with stranding organizations across the Nation to assist with stranding response in the Gulf of Mexico. Additionally, NOAA is establishing a contract with the Association for Zoos and Aquariums to assist with veterinary care and husbandry capacity.

With the completion of the new contracts, NOAA will greatly increase the stranding response and rehabilitation capacity in the Gulf of Mexico. This increased capacity is critical and should be sufficient to support NOAA's response.

Question 3. As the potential for marine mammal injury and stranding grows due to the oil spill, will Gulf-based rehabilitation facilities be fully considered in aiding their recovery?

Answer. Yes, NOAA will continue to work with the pre-existing stranding network and partners to increase emergency care and rehabilitation capacity in the Gulf of Mexico.

Question 4. The continued release of oil into the Gulf of Mexico has resulted in a Federal fishery closure that began May 2, 2010, which has since expanded to encompass 20 percent of the Gulf of Mexico being closed to recreational and commercial fishing. Will NMFS estimate the economic loss incurred by this closure? When will these estimates be available?

Answer. NOAA continues to monitor the presence of oil in the Gulf of Mexico and adjust the areas closed to fishing accordingly. NOAA has re-opened a total of more than 31,000 square miles of Federal waters in the Gulf of Mexico after conducting sensory and chemical analysis of fish in these areas. On July 22, NOAA re-opened 26, 388 square miles of water to commercial and recreational fishing and another 5,144 square miles on August 10, 2010. The current fishery closed area in the Gulf of Mexico totals 52,395 square miles or approximately 22 percent of the Gulf of Mexico Exclusive Economic Zone (EEZ), this is down from 84,101 square miles and approximately 37 percent of the Federal waters of the Gulf EEZ which was the size of the closed area at its peak on July 12, 2010. NOAA is confident that commercial and recreational fishing activities can safely occur in the areas that were re-opened or never closed and that the fish harvested from the area are safe to consume.

The presence of oil and resulting fishery closures have affected recreational fishermen, the charter and party boat industry and its associated shore-side businesses, and the commercial fishing industry, including fishermen, dealers, processors, and others. Because the extent of impacts still is being monitored, we are unable to provide estimates of the effects of the oil spill on recreational and commercial fishing at this time.

Commercial fishery data collected by the states and NOAA can be used to monitor the effects of the oil spill on commercial fishing activities by examining historical landings and dockside revenues by month and state in the closed areas. Making an assessment of short-term economic losses at this time would only be an approximation, because the boundaries of the closed area continue to change and any closed area boundaries would not exactly match the boundaries of the statistical reporting areas used to record where fishing activity takes place. Some fishermen may mitigate the effects of the closures by shifting their fishing effort to other areas that are still open. This effect will be assessed as data for 2010 become available for analysis.

The NOAA Marine Recreational Information Program (MRIP) collects information about recreational fishing effort and catches. Beginning on June 1, 2010, the MRIP increased its sampling intensity of the charter industry to provide more timely and localized tracking of changes in charter boat fishing effort in the Gulf of Mexico that may be related to the oil spill. Better tracking has been made possible by substantially increasing the number of captain interviews conducted by the weekly For-Hire Surveys in each state and by producing fishing effort statistics at weekly rather than bimonthly intervals.

As part of the Natural Resources Damage Assessment process, NOAA's Office of Response and Restoration is evaluating the value of lost public use associated with the BP *Deepwater Horizon* oil spill, including recreational activities such as fishing, beach visitation, and other public uses, pursuant to the natural resource damage assessment and restoration process established by the Oil Pollution Act and Federal implementing regulations. As such, NOAA will develop an estimate of economic losses associated with the fisheries closures due to the BP *Deepwater Horizon* oil spill. At this time, we do not have an estimate for when these analyses will be completed.

The BP *Deepwater Horizon* oil spill also has the potential to have lasting effects on recreational and commercial fishing. The presence of oil may increase natural mortality of fish and shellfish, reduce spawning potential and reproduction, and reduce the carrying capacity of their habitats. Each of these potential outcomes affects the fishery resources upon which recreational and commercial fisheries, their infrastructure, and communities depend. Additional research is required to assess the long-term effects of oil on the marine ecosystem, fishery biomass, and allowable harvests over time as fishery resources recover.

Question 5. Will the reduced fishing effort in the Gulf caused by Federal fishery closures be taken into account when setting any of the following year's total allowable catch?

Answer. The Gulf of Mexico Fishery Management Council specifies the total allowable catch (TAC) of fish stocks based on scientific assessments and the fishing level recommendations of its Scientific and Statistical Committee. The TAC specifies the allowable level of removals on an annual basis and is generally specified over a multi-year timeframe. Fishery regulations do not provide for the carrying forward of unused quota to the following year's TAC.

NOAA does take into account changes in fishing effort when considering specification of the TAC and the time-frame within which the TAC will be harvested. Fishing effort data are considered in scientific assessments that generally are conducted every 3–5 years for major species and less frequently for other species. Prior to scheduled stock assessments, the Council and NOAA consider new scientific information as it becomes available and, if appropriate, based upon the best scientific information and statutory and regulatory authorities, may consider adjustments to management measures.

Commercial fishermen report fishing effort estimates on logbooks, and NOAA collects effort information on recreational fisheries through surveys and dockside sampling. In response to the oil spill, NOAA has worked collaboratively with the Gulf States Marine Fisheries Commission and the state fishery agencies of Louisiana, Mississippi, Alabama, and Florida to improve the precision and timeliness of recreational data collection to help us better understand the potential impacts of the Federal closure on recreational fishing effort. Specifically, NOAA increased the number of charter captain interviews conducted by the weekly For-Hire Survey in each state and we are working together to collect, enter, and process those data more rapidly, in order to provide fishing effort statistics at weekly, rather than bi-monthly, intervals. Additionally, we have added questions to the surveys to obtain information on fishing trip cancellations directly related to the oil spill. This information will be used to help determine whether fishermen are harvesting species, such as red snapper and greater amberjack, as quickly as projected or whether extended seasons may be warranted.

Question 6. If the subsurface plume, which you described as a mist is confirmed to be oil, are there potentially other subsurface oil plumes present in the Gulf?

Answer. There are natural oil seeps in the Gulf of Mexico that could potentially lead to areas of dispersed oil. NOAA is continuing a comprehensive analysis to define the presence of oil below the surface from the BP *Deepwater Horizon* oil spill. NOAA is conducting analyses to determine if any oil detected below the surface is the same "fingerprint" as the *Deepwater Horizon* source.

Question 6a. How would impacts of subsurface oil plumes on Gulf fisheries differ from impacts of surface oil?

Answer. In Federal waters, species that use the surface would be most impacted by the early stages of the oil spill. When oil weathers to tar, it can become denser than water and potentially sink to where the bottom-oriented fish community may be impacted. In general, the 42 reef fish species managed by NOAA in the Gulf of Mexico are often found in bottom areas with high relief, such as coral reefs, artificial reefs, and rocky hardbottom surfaces. If the oil slick reaches the bottom or nearshore/inshore areas, a majority of the reef fish species could be affected. Some reef fish spawn in spring, and their eggs and larvae are usually planktonic; carried by currents rather than through their own control. These larvae would not be able to avoid or escape the oil if currents brought them together. Sargassum mats are nursery habitat for some species, including gray triggerfish and amberjacks. Oil that intersects Sargassum mats could affect these species. In state waters, all coastal species could be affected if the oil spill reaches nearshore waters. In addition, shrimp larvae usually spend the early months of their life in inshore waters before migrating toward the ocean. Brown shrimp postlarvae migrate from February to April, and white shrimp begin their migration from May through November.

Additionally, during the spring and summer months, several Gulf shark species use coastal habitats as nursery areas. When oil reaches any of the coastal areas

where these species occur, they could also be affected. In addition, the oil slick and the chemicals and methods used to clean up the oil may have an effect on other non-commercial and non-recreational marine species including whales, dolphins, and sea turtles.

Question 7. Will subsurface plumes be tracked similarly to ongoing efforts to track surface oil?

Answer. Since the beginning of May, NOAA has been conducting and coordinating sampling of the sub-surface region around the well-head and beyond to characterize the presence of subsurface oil. The sub-surface search involves the use of sonar, UV instruments called fluorometers, which can detect the presence of oil and other biological compounds, and collection of water samples from discrete depths using a series of bottles that can be closed around a discrete water sample.

NOAA's independent analysis of water samples provided from the May 22–28 research mission of the University of South Florida's R/V *Weatherbird II* confirmed the presence of low concentrations of sub-surface oil from the *Deepwater Horizon* spill 40 nautical miles northeast of the wellhead. Additionally, hydrocarbons were found in samples 45 nautical miles northeast of the wellhead-at the surface, at 50 meters, and at 400 meters-however, the concentrations were too low to confirm the source. NOAA's analysis of the presence of subsurface oil determined that the concentration of oil is in the range of less than 0.5 parts per million, and polycyclic aromatic hydrocarbons (PAH) levels in range of parts per trillion. In all samples, PAH levels were below eco-toxicological benchmarks for marine waters.

The NOAA Ship *Thomas Jefferson* conducted an eight-day research mission to investigate the presence and distribution of subsurface oil from the BP *Deepwater Horizon* oil spill. The mission collected water samples for chemical analysis to help find potential pockets of subsurface oil clouds. Chemical analysis of the water samples is underway to determine if oil is present in the water, in what concentrations, and to identify the source of any oil that is found.

On June 23, 2010, NOAA, the U.S. Environmental Protection Agency and the White House Office of Science and Technology Policy released a summary report about the subsea monitoring in the vicinity of the *Deepwater Horizon* wellhead conducted from the *R/V Brooks McCall* from May 8–25, 2010. The report confirms the existence of a previously discovered cloud of diffuse oil at depths of 3,300 to 4,600 feet near the wellhead. Preliminary findings indicate that total petroleum hydrocarbon concentrations at these depths are in concentrations of about 1–2 parts per million (ppm). Between that depth and the surface mix layer, which is defined as 450 feet below the surface, concentrations fell to levels that were not readily discernable from background levels. The test's detection limit is about 0.8 ppm. Analyses also show that this cloud is most concentrated near the source of the leak and decreases with distance from the wellhead. Beyond six miles from the wellhead, concentrations of this cloud drop to levels that are not detectable. The full report from the *Brooks McCall* mission is available on *http://www.noaa.gov/sciencemissions/bpoilspill.html*.

Additional missions are being developed to continue as part of a comprehensive analysis to define the presence of oil below the surface.

Question 8. Has NOAA suggested changes to existing law related to fishery disasters relief? If so, please provide any recommended changes to the current fisheries disaster relief process.

Answer. NOAA has not proposed any statutory changes to the current disaster provisions in the Magnuson-Stevens Fishery Conservation and Management Act or the Interjurisdictional Fisheries Act.

Question 9. You described out-of-date maps used to determine most threatened habitats. When were these maps in Mississippi and Louisiana last updated?

Answer. Environmental Sensitivity Index (ESI) maps provide information that helps reduce the environmental, economic, and social impacts from oil and hazardous substance spills. Spill responders use NOAA's ESI maps as tools to identify priority areas to protect from spreading oil, develop cleanup strategies to minimize impacts to the environment and coastal communities, and reduce overall cleanup costs. Mississippi's ESI maps were last updated in 2010, and Louisiana's ESI maps were last updated in 2003.

Question 9a. Did NOAA make any efforts to update these maps post-Katrina?

Answer. NOAA updated Mississippi's ESI maps in 2010. NOAA has not been able to update Louisiana's ESI maps since Hurricane Katrina. The development of ESI maps has most often been accomplished by using a variety of funding sources, both Federal and state. The President's FY 2011 Request includes $19.5 million for the Office of Response and Restoration, which will allow NOAA to update one ESI atlas (pending final appropriations). NOAA's goal is to update ESI maps, on average,

every 10 years. At present, 21 of 50 ESI Atlases are greater than 10 years old (including the Great Lakes).

Question 9b. Would a large hurricane, such as Hurricane Katrina, necessitate review of these types of maps?

Answer. Hurricanes can cause significant changes to shorelines and habitats. While NOAA's goal is to update ESI maps, on average, every 10 years, events such as hurricanes can necessitate more frequent updates. It is important that spill responders have accurate ESI maps to support decision-making during a response.

Question 9c. What would be required to update these maps and how long would such an effort take?

Answer. The estimated cost to update the ESI Atlases that are 10 or more years old is approximately $11.0 million. The cost to update Louisiana's ESI's is approximately $600,000.

Question 10. What regulatory or statutory hurdles have you encountered in the ongoing response?

Answer. The existing regulatory and statutory framework has worked well over the years. It is difficult to create a regulatory regime that applies equally well despite the size, location, and other unique characteristics of each oil spill. At this time, NOAA remains completely engaged in the ongoing response and has not undertaken an in-depth evaluation of every challenge that has presented itself. We are tracking such occurrences and will conduct a more detailed analysis in the future.

RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. JOHN D. ROCKEFELLER IV TO ADMIRAL THAD ALLEN

Question 1. You have likened the National Incident Command's efforts to respond to this oil spill to our being at war. We're essentially working around the clock to stop an enemy invader from reaching our coasts and plundering our resources.

You're really the combatant commander here—what is our best line of attack or defense against this oil spill, and are there lessons learned already about how we keep this from happening again?

Answer. Unprecedented in its scope, complexity, and indeterminate nature, the spill has required an extraordinary unified response across all levels of government, industry and the communities of five Gulf Coast states, the entire United States and the international community. An Incident Command System was quickly established to coordinate this massive operation. The response community galvanized their efforts under a common framework provided by the National Contingency Plan. This framework, developed over the last four decades, enables the Coast Guard and our Federal Government partners to respond to these catastrophes in a way that leverages the strengths of private industry under the leadership of a Federal On-Scene Coordinator.

From the start, objectives have remained constant and clear: stop the leak, fight the spill offshore, protect environmentally sensitive areas, and mitigate the effects on the environment, the economy, and the local communities. The spill has highlighted the need for building resiliency into our Nation's critical infrastructure so we are better prepared to respond to system failures and prevent spills of national significance from occurring in the future.

Question 2. Every 3 years, the Coast Guard sponsors a Spill of National Significance (SONS) drill to sharpen the Nation's ability to respond to major oil spill events. By coincidence, the most recent one to occur was March of this year, off the coast of New England. Do you believe the response to the Gulf Coast spill has been aided at all by the fact that the SONS drill just occurred 2 months ago?

Answer. Yes, the Spill of National Significance (SONS) 2010 exercise objectives and sub-objectives directly correlate with the Gulf of Mexico Oil Spill response actions at the national, regional, and local levels.

The following notable achievements realized during the SONS 2010 exercise relate to the oil spill in the Gulf of Mexico:

1. The rapid stand up and efficient functioning of the Unified Area Command and Unified Commands,
2. The first National Incident Commander (NIC) training seminar which fostered important national level discussions and helped raise awareness of senior leadership concerns, and
3. Employed SONS response management policy that describes the roles and responsibilities of the NIC and NIC assist team.

The current response has built upon the achievements listed above and has further matured the Nation's understanding of the roles and responsibilities at all levels of the response operation, local Incident Commands, regional Area Command, and NIC.

Question 3. Do you see any potential value in increasing the frequency of this exercise to better prepare us for future Spills of National Significance?

Answer. No. Due to the extraordinary coordination and scope of a full scale SONS exercise, it would be difficult to effectively sponsor a SONS full scale exercise more often than triennially. Similarly, the frequency of the exercise allows sufficient opportunity to craft and disseminate lessons learned, and allow for incorporation into operational plans where appropriate.

Question 4. It seems to me that knowing how much oil is coming out of this well is pretty important. I mean, how can you prepare a response to a problem when you don't even know the parameters of that problem? What role has the CG played in estimating the flow rate of the leak? As the National Incident Commander, don't you need to know how much oil is flowing out of those pipes in order to gauge the response effort?

Answer. The National Incident Commander (NIC) established a Flow Rate Technical Group (FRTG) led by the United States Geological Survey (USGS) and comprised of members of Bureau of Ocean Energy Management, Regulations and Enforcement; National Oceanic and Atmospheric Administration (NOAA); Department of Energy (DOE); the Environmental Protection Agency (EPA); and the U.S. Coast Guard (USCG).

The FRTG has developed a Preliminary Assessment Report that estimates the flow rate. As additional methods to secure the source of the spill are initiated, the FRTG will evaluate any potential temporary increase or decrease in flow rate that results from such tactics and will provide any additional assessments as they become available.

Question 5. On April 29, 9 days after the explosion, Secretary Napolitano declared this incident to be a Spill of National Significance (SONS), enabling the appointment of you as the National Incident Commander to coordinate response resources at the national level. Why did it take 9 days for the SONS to be declared? Would an earlier SONS declaration have changed the response effort in any way?

Answer. On Saturday, April 24, BP found the first two leaks in the riser from the sunken *Deepwater Horizon* rig and alerted the Federal Government. The first three equipment staging locations were quickly established along the Gulf Coast. Additional personnel and vessels were deployed to the area through the Federal On-Scene Coordinator's Unified Command. Controlled burns of oil on the surface at the incident site began on Wednesday, April 28. These controlled burns were successful in removing oil from the surface at that time and containing the discharge. Later that day, BP discovered a third discharge point on the sea floor.

On Thursday, April 29, the *Deepwater Horizon* discharge event was designated a Spill of National Significance (SONS) pursuant to 40 CFR 300.323. The practical effect of a SONS designation is the triggering of authority to designate a National Incident Commander (NIC) who is responsible under 40 CFR 300.323 for communicating with affected parties and the public, and coordinating Federal, state, local, and international resources at the national level.

The *Deepwater Horizon* SONS declaration built upon the operational and policy coordination already established from the beginning of the response. The SONS declaration did not affect the authority of the Coast Guard or any other Federal agency to direct assets to the site of the incident or the authority of the FOSC.

Question 6. Organotin-based anti-fouling coatings such as tributyltin (TBT) are highly toxic to the marine environment and may pose unreasonable risks to the aquatic life. In 2001, the International Convention on the Control of Harmful Anti-Fouling Systems was adopted by the International Maritime Organization (IMO) and entered into force internationally in 2008 to prohibit the new application of harmful coatings containing organotins. This Convention also imposed an international requirement that organotins be removed from hulls or that an over-coat be applied to the ship's hull to prevent leaching. H.R. 3618, the Clean Hull Act of 2009 will bring U.S. laws into compliance with this Convention. What impact will this legislation have on U.S. ship owners and operators, the marine paint and coatings industry, shipyards, recreational boaters, and the average fishing vessel owner? As the Commandant of the Coast Guard, do you support it?

Answer. The Coast Guard defers to the Environmental Protection Agency (EPA), the agency charged with the administration of current law (*i.e.,* the Organotin Antifouling Paint Control Act of 1988 (33 U.S.C. 2401)), with regard to the impact of H.R. 3618 on industry—specifically, on the marine paint and coatings industry.

That said, the Coast Guard anticipates that the impact of the legislation on those segments of the economy it regulates (*e.g.,* vessels and vessel owners/operators) will be minimal. Under existing law, vessels must demonstrate compliance by certification (or alternative documentation); similarly, under H.R. 3618, vessels must demonstrate compliance and obtain certain certificates (or the appropriate equivalent) from the Secretary of the department in which the Coast Guard is operating. Compliance under the H.R. 3618 regime may be demonstrated via paint receipts or contractor invoices provided by the shipyard or vessel operator. Currently, class societies are issuing statements of fact attesting to compliance with the International Convention on the Control of Harmful Anti-fouling Systems, 2001 (the Convention).

Question 7. The use of organotin anti-fouling systems was prohibited on small vessels and the sale, purchase and application of anti-fouling paint containing organotins was banned in the U.S. under the Organotin Anti-fouling Paint Control Act of 1988. However, the United States currently does not have the authority to prohibit foreign vessels from using organotin-based anti-fouling coatings from entering our waters. The Clean Hull Act would expand the application of existing prohibitions to all ships, regardless of size. How will the Coast Guard ensure that all vessels entering U.S. waters are in compliance with the Clean Hull Act?

Answer. With regard to flag state inspections (U.S. vessels), verification will be carried out during routine vessel inspections. For inspected vessels, the Coast Guard will verify compliance during annual inspections and issue International Antifouling System Certificates, as appropriate, during a ship's drydock exam.

With regard to port state control examinations of foreign vessels, the Coast Guard may examine such vessels, subject to port state control, during regular port state control examinations. These exams would include that vessels hold valid International Antifouling System Certificates.

Question 8. The Clean Hull Act of 2009 would mandate vessels of at least 400 gross tons engaged in international voyages to carry an International Antifouling System Certificate. Smaller vessels would need a declaration that the antifouling system on the vessel complies with the International Convention. Is the Coast Guard properly staffed to be able to enforce this certificate or declaration requirement?

Answer. With regard to flag state inspections (U.S. vessels), the Coast Guard would likely delegate/authorize classification societies to issue the International Antifouling System Certificate. Even so, the program management, tracking, and verification of certificates or declarations will impose some additional burden on existing Coast Guard resources. Additional analysis will be needed to determine whether additional personnel would be needed to implement this requirement.

Port state control examinations of foreign vessels, compliance verifications also will impose some additional burden on existing resources. Additional analysis will be needed to determine whether additional personnel would be needed to implement this requirement.

Question 9. There are many anti-fouling alternatives to organotin-based anti-fouling systems, such as copper, that are far less toxic to the marine environment. Do you think these alternatives are equally effective?

Answer. The Coast Guard defers to the Environmental Protection Agency as to the effectiveness and toxicity of alternative to organotin-based anti-fouling systems.

RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. CLAIRE MCCASKILL TO ADMIRAL THAD ALLEN

Question 1. The *Deepwater Horizon* Unified Command has been operating a Joint Information Center (JIC) since the first days of the spill. The JIC has and continues to receive submissions for alternative response technology, services or products. How many submissions has the JIC received? How many submissions have been responded to? What is the JIC's process for vetting these submissions, and how many submissions have been brought to the attention of JIC leadership?

Answer. On June 4, 2010, a formal Interagency Alternative Technology Assessment Program (IATAP) process began with the issuance of a Broad Agency Announcement (BAA) on the Federal Business Opportunities (FedBizOpps) website soliciting requests for oil spill response technology. The BAA calls for the submission of white papers describing proposed technology solutions with applicability in five distinct problem areas:

- Oil sensing improvements to response and detection;
- Oil wellhead control and submerged oil response;

- Traditional oil spill response technologies;
- Alternative oil spill response technologies; and
- Oil spill damage assessment and restoration.

This BAA is open to all sources and is available from the front page of FedBizOpps. Through this process, the Coast Guard recognizes the potential for novel, highly innovative solutions from small businesses, individuals and non-traditional sources. Submissions may include those from single or team entities such as academia, private sector organizations, government laboratories and federally funded research and development centers. The government also encourages non-profit organizations, educational/academic institutions, small businesses, small disadvantaged businesses, historically black colleges and universities/minority institutions, women-owned businesses, service-disabled veteran-owned small businesses and historically underutilized business zone enterprises to submit concepts for consideration and/or to join others in a submission.

The BAA white paper submissions are screened based upon overall scientific and technical merit, feasibility, the availability of proposed solution and submitted cost information.

The IATAP workgroup, as managed by the Coast Guard's Research and Development Program, and in consultation with other interagency partners, is screening and sorting submissions based on technical feasibility, efficacy and deployability. The initial screening of the BAA responses will result in a determination that either the concept:

- Has a discernible benefit to the spill response effort;
- Needs more detailed investigation or evaluation and will be forwarded to the appropriate government agency overseeing that portion of the *Deepwater Horizon* response (EPA, MMS, NOAA, USCG, etc.); or
- Does not have immediate applicability to support this event.

All submissions will be provided with a response and tracking number identifying the initial screening determination. All submissions are managed in the order they are received regardless of origin to ensure fairness in evaluation.

If the initial screening determines that the concept has applicability and potential immediate benefit to the spill response effort, the technical portion of the proposal and the IATAP recommendation is forwarded to the *Deepwater Horizon* response FOSC for further action under its authority, in consultation with the responsible parties and/or other Federal agencies. If the initial screening determines that a more detailed investigation or evaluation is required it will be forwarded to the appropriate government agency overseeing that portion of the *Deepwater Horizon* Response (EPA, MMS, NOAA, or USCG), and that agency is responsible for further action.

As of August 1, 2010, we have received 3,797 submissions from the BAA and 3,502 have completed the initial screening process. The IATAP provides a transparent, robust, repeatable process for evaluating technology solutions in this and future responses.

Question 2. It is my understanding that Louisiana officials have met with and reviewed alternative response technologies, including those proposed by Show Me Energy. How closely is the JIC working with state and local governments in reviewing alternative response technologies?

Answer. Promising technologies that are deemed promising or feasible are presented to the Unified Area Command for consideration. State and local representatives are part of the Unified Area Command.

On June 4, 2010, to facilitate more timely evaluation of ideas, the Coast Guard issued a Broad Agency Announcement (BAA) to establish an Interagency Alternative Technology Assessment Program (IATAP) under the provisions of the Federal Acquisition Regulation, Subparts 6.102(d)(2) and 35.016, to provide for the submission of White Papers (written description of the idea) in support of the *Deepwater Horizon* Response. The IATAP was designed to establish a well defined, documented, systematic, and fair government-managed process to solicit, screen, and evaluate vendor/other government agencies/academia-suggested technologies in support of ongoing response activities.

All submitted White Papers meeting the requirements of the BAA will be reviewed and evaluated as they are received. Each White Paper will undergo an initial screening. The initial screening will result in a determination that either: (1) the White Paper has a potential for immediate benefit to the spill response effort; (2) the White Paper submission needs more detailed investigation or evaluation and will be forwarded to the appropriate Government Agency overseeing that portion of

the *Deepwater Horizon* Response (EPA, MMS, NOAA, or USCG); or (3) the White Paper submission does not support this incident. A Contracting Officer will provide a response to all properly submitted papers.

Should a White Paper show reasonable and timely application to the response efforts, the work group will forward it to the Federal On-Scene Coordinator (FOSC) for the *Deepwater Horizon* response, for further consideration by the appropriate members of Unified Command.

Question 3. What process is in place to share information and ideas with state and local governments?

Answer. The National Contingency Plan (NCP) sets forth the framework and organizational structure for the Federal response to an oil spill. In accordance with the NCP, the Unified Command coordinates and directs response efforts through an integrated and flexible structure that emphasizes cooperation and coordination in local, state, and Federal responses to complex multi-jurisdictional, multiagency incidents. The Federal On-Scene Coordinator (FOSC) serves within the Unified Command, which includes representatives from the Responsible Parties, Federal, State and local governments. Information sharing takes place through the Unified Command.

As the response to the *Deepwater Horizon* response evolved the National Incident Command has improved coordination with state and local entities through a number of liaison functions.

Coast Guard Liaisons are placed throughout Florida, Alabama, Mississippi, and Louisiana. Within the states, liaisons are located with Governors Offices, County Emergency Operations Centers, Parish Presidents and Deputy Incident Commanders. In addition, Community Outreach Teams are working throughout impacted communities and reporting local concerns to Deputy Incident Commanders.

All liaisons provide a critical means of communication with the public, and state and local officials. Feedback from the communities' directly informs the objectives, strategies and tactics of the response to the *Deepwater Horizon*.

Question 4. As you know, the Coast Guard has detected the presence of dozens of "tar balls" approaching the Florida coast, suggesting that the Gulf Coast oil spill has traveled throughout the Gulf Coast region. How do you plan to determine whether these tar balls are indeed a product of the *Deepwater Horizon* spill?

Answer. Oil has a finger print. When a tar ball is found, it is sent for lab analysis to see if there is crude oil in the tar ball, which typically takes 24 hours. If analysis reveals there is crude in the tar balls, they are analyzed to see if it is related to the MC252 spill; this typically takes up to 3 days. Of the tar balls analyzed, some have been determined as originating from the *Deepwater Horizon* while others have been from other sources.

Question 5. In light of the failed remediation strategies that have been tried thus far, how does the Unified Command plan to prevent this eastward expansion of the spill?

Answer. The Unified Area Command's primary strategies are to skim the oil, perform in-situ burning and dispersing at the leading edge of the main mass of the oil in order to contain the spill. These techniques are used in various combinations dependent upon the existing on-scene weather conditions each day.

Question 6. As you know, six of the ten leading U.S. ports are located in the Gulf of Mexico region, hosting some of the largest tonnage ships in the Nation. At this time, the oil spill has yet to impact barge traffic on the Mississippi River, although the spill is approaching the river's mouth. How does your agency plan to prevent the spill from reaching the mouth of the river, thereby maintaining the ability to continue normal levels of barge traffic along the Mississippi?

Answer. The U.S. Coast Guard will continue ongoing protection strategies using booming, skimming, in-situ burning (where possible) near the mouth of the Mississippi River to contain the leading edge of the oil spill. Additionally, a vessel decontamination station will be set up near the mouth of the river, to clean tugs and barges after they transit through any part of the oil.

Question 7. As you know, the government response to Hurricanes Katrina and Rita included the contracting of services to private firms. The Government Accountability Office, in their review of contracting activities following these disasters, noted a lack of clearly communicated responsibilities across agencies and jurisdictions and insufficient numbers and inadequate deployment of personnel to provide for effective contractor oversight. What specific activities will your department be seeking to contract out or are you already relying on contractors to carry out? Please explain why each activity is appropriate for a contractor to handle.

Answer. The Unified Command is fully in charge of the totality of the response. The Unified Command is providing resources and oversight using trained staff, con-

tractors, subject matter experts and others from around the world with the required skill sets appropriate for the work to be carried out and managed effectively.

Example of contractor activities include the use of nationally recognized response management firms. The firms are responsible for all onshore cleanup activities through an established network of subcontractor specialists for cleaning, removal and disposal. Many of these subcontract firms are recognized by the Coast Guard as Oil Spill Removal Organizations (OSROs). The response management firms have expertise in all aspects of spill response and management and can provide sustainable management positions including accountability, subcontractor performance management, quality control, cost and schedule reporting to a Unified Command designated Contract Accountable Manager.

Question 8. What are the preliminary cost estimates for contracted out response activities?

Answer. As of June 1, 2010, the removal costs funded from the Oil Spill Liability Trust Fund for contractors was $7,301,271.

Question 9. How does your agency intend to work with other agencies to prevent the issues we experienced during the Katrina response from arising in this instance?

Answer. The National Incident Commander established the Interagency Solutions Working Group (IASG) to provide actionable "whole of government" recommendations for consideration. The IASG is comprised of subject matter experts from the National Response Team and other Federal agencies who research and coordinate across all affected agencies to address a broad spectrum of issues, including effective contractor oversight.

Question 10. How many personnel have been deployed to the Gulf Coast to ensure that contractor abuses are prevented and that there is adequate oversight of contractor performance?

Answer. The Coast Guard has deployed 146 Federal on Scene Coordinator Representatives (FOSCRs) to the gulf region to direct/monitor operations. All FOSCRs are empowered with contractor oversight authority in their assigned area. There are also 40 members who will graduate on June 6, 2010, from FOSCR training, and will be prepared for assignment.

RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. JOHN THUNE TO ADMIRAL THAD ALLEN

Question 1. Yesterday, Secretary Napolitano said that we are at the middle of the timeline in the case of stopping the leak. We've been at this for almost a month, and she said that we'll likely be trying to stop the leak for several weeks. How would you characterize our current position along the timeline of stopping the leak? How would you characterize our current position along the timeline of recovering the oil and stemming any additional environmental damage from the leak?

Answer. On July 15, the application of the capping stack was successful in stopping the flow of oil into the environment. The Unified Area Command will closely monitor to ensure well bore integrity. The Unified Area Command's objectives remain constant and clear:

> Stop the leak, fight the spill offshore, protect environmentally sensitive areas, and mitigate the effects on the environment, the economy, and the local communities.

Question 2. I understand that hundreds of thousands of feet of protective boom have been placed along the shoreline in the Gulf. How long will the boom last? In other words how quickly will we have to replace the boom that has already been put in place along the coastline?

Answer. The lifespan of boom depends on many factors including: the material used to make the boom; the wind and sea conditions; the amount of debris in the water; and the amount of sunlight exposure. Also, there are three basic kinds of protective boom being used—ocean boom (offshore) and near shore boom that are exposed to rougher sea conditions and inland boom that generally holds up better. However, crews are checking the boom regularly and reporting damaged boom to Incident Command Posts (ICPs) to ensure prompt replacement of boom.

Question 3. How much fire-resistant boom was prepositioned in the gulf to respond to an oil spill of this magnitude? Assuming cooperative weather conditions, was there enough prepositioned fire boom to burn off the presumed 5,000 barrels of oil leaking into the Gulf each day?

Answer. According to the Response Resources Inventory before the spill, there were 500 feet of fire boom located in Texas, 500 feet in Mississippi and 500 feet in Florida.

Chemical dispersants, mechanical recovery and in situ burning are all components of an effective response to surface oil pollution. Mechanical recovery is the preferred method for on water oil spill response because it removes the oil from the environment, but is not always effective due to environmental conditions. The use of dispersants to mitigate offshore oil spills has also become a proven and accepted technology and under certain conditions, more effective than mechanical response. Therefore the Coast Guard does not rely solely on in-situ burn to remove spilled oil. Instead the Coast Guard uses all of the tools described above in oil spill removal.

Question 4. Should MMS be required to share oil spill response plans with the Coast Guard? Has the Coast Guard ever been approached by MMS to review the oil spill response plan in the Gulf?

Answer. The Coast Guard supports enhanced integration of Federal response regimes. The Coast Guard recommends that, if such plans are to be shared, the Bureau of Ocean Energy Management, Regulation and Enforcement (BOEMRE) distribute them to all the impacted agencies—such as the Coast Guard as the lead Federal agency for marine environmental response for waters on the U.S. Outer Continental Shelf (OCS). Although there is no statutory requirement to share the Area Contingency Plan for Gulf areas, the Coast Guard may request, through BOEMRE, a review of oil spill response plans. Through a Memorandum of Agreement with the BOEMRE [OCS–03—Oil Discharge Planning, Preparedness, and Response—Effective 23 May 2007], USCG currently has the opportunity to review OSRPs and provide suggested revisions on oil spill response equipment, response strategies, or other components of the plan. USCG is preparing a Navigation and Vessel Inspection Circular that instructs field office personnel to actively engage with BOEMRE regional staff in the review of OSRPs and to ensure consistency with Area Contingency Plans.

Question 5. BP has publicly stated that it will cover all legitimate claims of economic damage associated with the oil spill. What is the historical standard for determining what a "legitimate claim" is for economic damages associated with an oil spill?

Answer. The Coast Guard cannot comment on what BP considers a "legitimate" claim. Claims that may be paid from the Oil Spill Liability Trust Fund (OSLTF) are those described in the Oil Pollution Act, see 33 U.S.C. 2702(b) and the implementing regulations for claims against the OSLTF at 33 Part CFR 136. When the OSLTF pays such qualifying claims it seeks recovery from liable responsible parties.

Question 6. There have been some complaints that BP and the Federal agencies overseeing the cleanup have been slow to adopt new and innovative technologies that could either help stop the leak or help with the cleanup efforts. What is the process for approving new third-party technologies in the cleanup effort? What are BP and the Federal Government doing to speed up this process?

Answer. In an effort to ensure that the best available methods are used in the Administration's ongoing response to the Gulf oil spill, the National Incident Commander (NIC) established an Interagency Alternative Technology Assessment Program (IATAP) working group to collect and review oil spill response solutions from scientists and vendors. The Coast Guard's Research and Development Center, in collaboration with interagency partners, issued a Broad Agency Announcement (BAA) on *www.FedBizOpps.gov* (Announcement HSCG32–10–R–R00019). This announcement called for the submission of white papers addressing: oil sensing improvements to response and detection; oil wellhead control and submerged oil response; traditional oil spill response technologies; alternative oil spill response technologies; and oil spill damage assessment and restoration. The IATAP and the Coast Guard's Research and Development Center screen submissions based on technical feasibility, potential effectiveness and deployment capability. The IATAP is a separate forum, and independent of BP's review process. Therefore, if persons wish to have their idea evaluated by the Federal Government, they should submit it using the process articulated in the Broad Agency Announcement.

As of June 27, 2010, eighteen (18) IATAP BAA submissions (of 2,708 total received) have been forwarded, or are in the process of being forwarded, to the Unified Area Command (UAC) for consideration and operational evaluation. The processing time for these ideas averaged 12 days from receipt to forwarding, but the last four forwarded to the UAC averaged 9 days total.

In addition, individuals may also submit ideas directly to BP (*horizonsupport@oegllc.com*) for consideration. This site evaluates ideas and pro-

posals for alternative technology as well as vendor offers of response services, products, and equipment.

Question 7. In terms of the government response, what have we learned the past few days to be better prepared to respond to a deepwater oil spill such as the one we are experiencing now in the Gulf?

Answer. Lessons learned in this oil spill response will be informed by the results of on-going Federal review efforts. These reviews will examine many facets of the response including the implementation and effectiveness of the response to this spill within the confines of the National Contingency Plan (NCP), Regional Contingency Plans (RCPs), Area Contingency Plans (ACPs), Regional Response Plan or Oil Spill Response Plan (OSRP), and Vessel Response Plans (VRPs).

Question 8. Has either of your agencies received any Freedom of Information requests with regards to this incident? If so, can you provide a summary of those requests?

Answer. We have received 42 Freedom of Information Act requests. The following is a summary of those requests.

FOIA Control Number	Description	Requestor
20102030	All MISLE data from creation to present regarding vessels	Chemical Emergency Preparedness Agency
20102031	Inspection report from Jan 2005 to April 2010 regarding vessels	The Wall Street Journal
20102053	All documents related to the investigation of the oil spill in the gulf of Mexico on 20 April 10	Justin Elliott
20102057	All documents related to the oil spill in the gulf of Mexico on 20 April 10	CNN Washington
20102088	All documents related to oil spills from March 15 to May 2	ProPublica
20102089	Copies of personnel lists during *Deepwater Horizon* Oil Spill	ProPublica
20102094	All documents related to Transocean LTD	Blackthorn Investment Group LLC
20102106	Any visuals showing leaks of oil on *Deepwater Horizon* Oil Spill	ABC News
20102149	All documents related to the oil spill in the gulf of Mexico on 20 April 10	National Mariners Association
20102160	All documents related to the oil spill in the gulf of Mexico on 20 April 10	The Wall Street Journal
20102188	All communications and/or Correspondence between the Coast Guard and BP relating to any visuals showing leaks of oil on *Deepwater Horizon* Oil Spill	Associated Press
20102189	All subpoenaed documents by the Coast Guard/MMS joint investigators related to the *Deepwater Horizon* Oil Spill	Preis & Roy
20102220	All documents related to inspections performed on *Deepwater Horizon*	Elliott Management Corporation
20102223	All documents related to the oil spill in the gulf of Mexico on 20 April 10	The Associated Press
20102237	Any visuals showing leaks of oil on *Deepwater Horizon* Oil Spill	CBS Evening News
20102238	All documents related to inspections performed on *Deepwater Horizon*	Center for Public Integrity
20102261	Any visuals showing leaks of oil on *Deepwater Horizon* Oil Spill	CREW
20102288	Copies of letters for Transocean employees	Larry McMahan
20102303	Any and all documents related to *Deepwater Horizon* Oil Spill	Competitive Enterprise Institute
20102308	All correspondence between the Coast Guard and specified universities	The Associated Press
20102309	Results for all water tests taken after the *Deepwater Horizon* Oil Spill	The New York Times
20102355	E-mails to and from ADM Allen from 4/20–5/30 related to the *Deepwater Horizon* Oil Spill	WVUE–TV (Fox 8)
20102361	Victim Statements/distress calls/picture/videos correspondence *Deepwater Horizon* Oil Spill	CNN
20102388	Transcripts of all proceeding conducted o/a 11 May 10 related to the *Deepwater Horizon* Oil Spill	Arnold & Itkin LLP
20102389	Numbers of Coast Guard aircrafts in the air during the initial *Deepwater Horizon* explosion	Building Solutions
20102395	Audio recordings from NRC o/a 20 April 10 related to the *Deepwater Horizon* Oil Spill	Associated Press
20102431	All information relating to the ecological impact of the *Deepwater Horizon* Oil Spill	DOJ of Louisiana
20102432	All correspondence related to the *Deepwater Horizon* Oil Spill	Martzell & Bickford

FOIA Control Number	Description	Requestor
20102477	All correspondence related to the *Deepwater Horizon* Oil Spill	Chimicles & Tikellis LLP
20102478	Incident report on *Deepwater Horizon* o/a 20 April 2010	Johnny Wong
20102479	All documents related to the "SONS" exercise programs	Associated Press
20102480	All documents related to the "SONS" exercise programs	CREW
20102488	Daily incident action plans for the specified days related to the *Deepwater Horizon* Oil Spill	James Mason
20102489	Daily incident action plans for 20 April 2010 related to the *Deepwater Horizon* Oil Spill	USA Today
20102490	Any interviews in conjunction to MMS related to the *Deepwater Horizon* Oil Spill	CNN
20102491	Coast Guard's legal standpoint on BPs violations of Coast Guard regulations on the *Deepwater Horizon*	Stern Bramson
20102492	Provide a list of all government agencies that offered help to BP	Yobie Benjamin
20102503	Letter to Coast Guard military personnel regarding BP	The Associated Press
20102505	Latest version of the recovered Oil, waste plan related to the *Deepwater Horizon* Oil Spill	New York Times
20102506	Copy of National Contingency Plan	Center for Constitutional Rights
20102550	Sampling data from air and water quality in LA related to the *Deepwater Horizon* oil spill	Natural Resources Defense Council
20102551	All documents pertaining to air quality readings in LA related to the *Deepwater Horizon* oil spill	F Gerald Maples

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RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. DAVID VITTER TO ADMIRAL THAD ALLEN

Question 1. Why hasn't the President set up a fisheries loan program as mandated by section 2713(f) of the Oil Pollution Act, and when will he?

Answer. There are no funds available for a loan program for interim assistance to claimants. Any use of the Oil Spill Liability Trust Fund (OSLTF) for a fisheries loan program would require an appropriation. Even if funds were appropriated the loan eligibility provisions require that the claimant must have incurred a damage and have a pending claim that has not been paid. In the Coast Guard's experience once a damage is established, payment of any claim is forthcoming and there should be no need for a loan. Thus the loan provision does not provide for effective assistance. Further there is no provision for recovery of loan costs from those responsible for the pollution. Thus loan costs, including losses from loans not repaid, might be a cost only to the OSLTF. Such a loan program could interfere with current claim adjudication and compensation.

Question 2. When will the Federal Government approve some version of the emergency dredging/barrier island plan presented by Louisiana more than a week ago? Can you work with the Army Corps to get this plan approved immediately?

Answer. On June 4, 2010, the Federal On Scene Coordinator determined that the Approved Barrier Island Project was an appropriate removal action. The BOEMRE executed a lease to the State of Louisiana on July 16, 2010, for use of up to 10 million cubic yards of OCS sand from the St. Bernard Shoals area for the sand berm to protect the Chandeleur Islands and Breton National Wildlife Refuge from oil from the *Deepwater Horizon* oil spill.

Question 3. When will the Coast Guard, NOAA, BP, and other agency partners have a more precise estimate of oil flow from the well in light of the piping being successfully attached?

Answer. As of August 2, 2010, U.S. Government and independent scientists estimated the most likely flow rate of oil as between 53,000 and 62,000 barrels per day where the flow rate decreased with time due to reservoir depletion.

This revised estimate was based on updated information and scientific assessments from the Flow Rate Technical Group. The Flow Rate Technical Group was assembled at the direction of the National Incident Commander and chaired by U.S. Geological Survey Director, Dr. Marcia McNutt.

RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. ROGER F. WICKER TO ADMIRAL THAD ALLEN

Question 1. Since the explosion on April 20th, what specifically do you wish the Federal Government could have done quicker or differently than has been performed up to this point?

Answer. The Coast Guard and our inter-agency partners have conducted oil spill response drills for years. However, the Coast Guard and our inter-agency partners had not anticipated an oil spill that could not be controlled and cleaned up in a shorter period.

As we have seen, a spill of this magnitude is within the realm of possibility. As a result, the whole of government will review the lessons learned from this operation to think about equipment standards, technology, and our preparedness to respond in the future.

Question 2. Does the Unified Command have access to the total amount of boom necessary to protect Gulf Coast beaches and marshland? Please explain the process used to determine boom placement in this response.

Answer. Sufficient boom is available to protect sensitive areas set forth in Area Contingency plans, however due to the magnitude of the *Deepwater Horizon* oil spill, the Unified Area Command is acquiring double the amount of boom required by the Area Contingency Plans in the affected states.

Area Contingency Plans guide the placement of boom. These plans are developed and approved in advance of an oil spill by the Area Committee whose membership includes Federal, State, organizations and industry. Area Contingency Plans identify environmentally sensitive areas and booming strategies for the region. The Federal On-Scene Coordinator consults the area contingency plans and the conditions of the spill to assess, place and monitor boom.

Question 3. Are there other types of booms or protective barriers available through other Federal entities that could limit oil reaching our beaches and marshland? If so, are these assets being utilized? If they are not currently being utilized, please list these assets and explain why they are not being considered for assistance in the response?

Answer. Boom remains a critical response resource. The Unified Area Command is aggressively procuring boom throughout the Nation and accepting international government offers of boom for deployment in this response.

Question 4. Should the Coast Guard have greater responsibilities related to review of response plans required by Outer Continental Shelf Facilities?

Answer. The Coast Guard supports enhanced integration of Federal response regimes—specifically, the involvement of all impacted agencies, including the National Oceanic and Atmospheric Administration as the Federal steward of marine resources, the Coast Guard as the lead Federal agency for marine environmental response for waters on the U.S. Outer Continental Shelf, and the Department of Health and Human Services as the lead Federal agency for public health. The Coast Guard also recommends that, if the Service is to be further involved in the review and approval of such plans, the totality of mission and resource impacts be taken into account.

Question 5. What regulatory or statutory hurdles have you encountered in the ongoing response?

Answer. On May 12, the Administration submitted a legislative package that included both funding and authorizing language intended to facilitate response that would be expedient, deliver speedy assistance to people affected by this spill, and strengthen and update the oil spill response system. Many of the provisions included in this package were included in H.R. 4899 (Public Law 111–212), which was enacted in late July. However, H.R. 4899 excluded Administration-proposed provisions. The Administration's proposed legislation is available at *http://www.whitehouse.gov/the-press-office/fact-sheet-deepwater-horizon-oil-spill-legislative-package*.

RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. JOHN D. ROCKEFELLER IV TO LAMAR MCKAY

Question 1. How much money did BP plan to spend on the well the *Deepwater Horizon* was hired to drill, and how much had it actually cost up to April 20, 2010?

Answer. BP originally planned to spend up to $140 million (gross cost) on the Macondo well. The *Marianas* rig began drilling the well on October 1, 2009. Hurricane Ida damaged the *Marianas* on November 8, 2009, and the rig was sent to shore for repair. The *Deepwater Horizon* rig started drilling on January 31, 2010. The projected cost of the well increased to up to $166 million. As of April 19, 2010, the estimated gross spending on the well was approximately $151 million.

Question 2. The *London Times* reported that your global CEO, Tony Hayward, reiterated a promise that BP "will honour all legitimate claims for business interruption," and that when asked for examples of illegitimate claims he replied "I could

give you lots of examples. This is America—come on. We're going to have lots of illegitimate claims. We all know that." Obviously the world is not a perfect place, but is that really how BP is approaching the claims process for the people and businesses on the Gulf Coast who may be decimated by this disaster? What guarantees can you give us that the American people won't be footing the bill for your malfeasance?

Answer. BP Exploration & Production Inc. has been designated as a "responsible party" under the Oil Pollution Act (OPA). BP will honor all its obligations under OPA. At the direction of the United States Coast Guard, BP has established a claims process through which individuals, businesses, and government entities may file claims. The claims process has been widely advertised through Coast Guard-approved channels. Claimants may initiate claims by: (1) calling a toll-free, 24-hour claims line, (2) completing an online form, or (3) visiting one of BP's 33 in-person claims centers in Louisiana, Mississippi, Alabama, and Florida. BP's claims team consists of approximately 1,000 individuals, including more than 650 claims adjusters. To date, BP has paid more than $96 million in claims. In the interest of expediting payments to those whose income has been interrupted by the oil spill, BP has made two rounds of interim payments to date.

As announced by the White House earlier this week, Ken Feinberg will serve as the Administrator of an Independent Claims Facility for individual and business claims. BP also will establish a $20 billion fund for purposes of paying, among other things, legitimate claims under OPA.

In regard to the economic damages cap of $75 million contained in OPA, BP has already paid more than $96 million in claims. BP will not seek reimbursement from the U.S. Government or the Oil Spill Liability Trust Fund for any of these payments.

Question 3. Can you tell us what barriers, such as cement, casing, and drilling fluid, were in place in the wellbore at the time the explosion occurred, who put them in place, and who supervised that work?

Answer. The functioning of barriers, including the blowout preventer (BOP), and specifically why it did not function as expected on the *Deepwater Horizon*, is the subject of multiple investigations, including BP's ongoing, non-privileged investigation.

Question 4. You have stated publicly that there were anomalous pressure readings taken on the well just hours before the explosion. Mr. Newman has stated that at the time of the explosion the well had been sealed with cement. How long had the well been sealed when the explosion occurred? Over what period of time were these higher pressure readings recorded? Are actions that were taken, including when and how they were done, consistent with standard industry practice?

Answer. BP's ongoing, non-privileged investigation into the activities and events of the April 20 incident is continuing. Based on information presently available, there were pressure readings on the MC 252 #1 well prior to the April 20 incident that, on post-incident review, appear anomalous. BP's current understanding of these pressure readings is outlined in a presentation developed by the team conducting the investigation described above that includes a timeline of events covering certain activities during the last 12 hours of operations. *See* attached presentation document bearing Bates labels BP–HZN–SCS000001—BP–HZN–SCS000048. As noted in that presentation, not all information it contains has been verified, and the preliminary perspectives it reflects are subject to review in light of additional information or analysis. BP's investigation as to the potential connection, if any, between these pressure readings and factors that may have contributed to the April 20 incident is continuing.

Question 5. Mr. Newman has stated that at the time of the explosion, Transocean's crew was in the process of displacing drilling fluid with sea water at BP's direction. Is this true? Is it standard industry practice to take this step when there have been anomalous pressure readings on the sealed well just hours earlier?

Answer. Because investigations into the *Deepwater Horizon* incident are ongoing, it would be premature to speculate regarding specific decisions. In addition, certain third parties may have in their possession information that is relevant to this request but to which BP does not have access. That said, and in addition to the investigation team presentation described above that may be pertinent to your request, BP is attaching a copy of the Temporary Abandonment Permit approved by MMS on April 16, 2010 for the temporary abandonment of the Macondo MC 252 #1 well bore. This Permit, and a related document, sets out the procedure approved by MMS for the temporary abandonment of the well (BP–HZN–SCS000050—BP–HZN–SCS000053; BP–HZN–SCS000049).

Question 6. I understand that any drilling operation requires a balance between doing things quickly and doing thing safely. Yet, you all seem to have disregarded this completely, opting for expediency and profit over safety and procedure. You had the drillers bump up the rate of penetration at the first well, cracking it and forcing it to be abandoned. This should have served as a warning to slow down. But that is not what happened. You kept drilling. When drilling resumed, the rig's chief electronics technician, Mike Williams, says there was damage done to one of the rig's most vital pieces of safety equipment, the annular. When the drilling crew finds chunks of rubber from the annular barrier, a critical piece of the blowout preventer, floating around in the drilling fluid, what is the standard industry procedure to deal with that? And is this what you did? Why was absolutely nothing done about it?

Answer. Your question assumes a number of facts about what happened during drilling of the Macondo 252 well. BP is not in a position to comment on the accuracy of those allegations at this point because investigations into the causes of the April 20 incident—including the non-privileged investigation BP commissioned—are ongoing. In any event, Transocean is responsible for maintaining the Blowout Preventer (BOP), including repairs to the BOP. Accordingly, Transocean may be able to provide information on issues related to rubber in the drilling fluid, their response, and their views on any industry practice in this specific factual situation, of which we do not have the full details.

RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. MARIA CANTWELL TO LAMAR MCKAY

Question 1. In the Energy and Natural Resources Committee hearing, you told me that BP will pay all legitimate claims. If your company pays out more than its liability limits under the law in damage claims, can you definitely commit that you will not seek reimbursement from the Oil Spill Liability Trust Fund? If and when BP does pay out more than its liability limits for damage claims, will BP be seeking any reimbursement from the Oil Spill Liability Trust Fund?

Answer. In regard to the economic damages cap of $75 million contained in OPA, BP has already paid more than $96 million in claims. BP will not seek reimbursement from the U.S. Government or the Oil Spill Liability Trust Fund for any of these payments.

Question 2. The Atlantis rig began production on October 6, 2007. Do you dispute this fact?

Answer. No.

Question 3. As of the report issued on May 12, 2009, by Mike Sawyer, a Registered Professional Engineer, the following report completion statuses were noted:

- Only 303 of 2,108 of the subsea Piping and Instrument Diagrams (P&IDs) in the Drill Center 1 (DC–1) database held the status of "issued for design" or "issued for construction" and only one held the status of "as-built".
- Over 95 percent of the Welding Procedure Specifications and Procedure Qualification Records were listed as "issued for construction" or "issued for design".
- Safety shutdown logic drawings were listed as "requiring update".

Do you dispute that this was the status as of May 12, 2009 when Mr. Sawyer issued his report?

Answer. Our data does not support Mr. Sawyer's conclusions. We believe Mr. Sawyer's conclusions are based on incomplete and inaccurate data.

More specifically, we believe that Mr. Sawyer's report is based on his review of a limited information set, compiled for a different purpose, which is not sufficient to support any of the conclusions in Mr. Sawyer's report. To the best of our knowledge and understanding, Mr. Sawyer has not reviewed the documents he purports to characterize in his report; he has not reviewed any of the documents that BP has provided or otherwise made available to the Bureau of Ocean Energy Management, Regulation, and Enforcement (BOEMRE); and he does not have a basis to know what documents BP had available for use by operating personnel before or after production began in October 2007 or before or after his report was prepared in May 2009.

Question 4. Do you agree that the status of these drawings is a violation of 30 CFR 250?

Answer. BP believes that it has the drawings necessary for proper operation of the Atlantis facilities and is in compliance with applicable regulations. BOEMRE is conducting an investigation into allegations of regulatory noncompliance concerning

engineering documentation pertaining to the Atlantis development (the Green Canyon Block 743 Unit). BP is cooperating fully with that investigation.

Question 5. What is the current status of your P&IDs?

Answer. We have current P&IDs for the Atlantis facilities that are available to our operating personnel.

Question 6. What actual numbers (versus total number) and percentages are designated "issued for design," "issued for construction," and "as-built"?

Answer. Atlantis operations personnel have access to P&IDs that reflect the current design of the subsea architecture that is operational. For each current P&ID, there may be multiple prior versions that are maintained in our records, thereby increasing the total number of P&IDs as well as the number of P&IDs designated with a particular status. There are also future phases of subsea architecture for Atlantis that are still in the process of being designed and constructed and are not yet operational. We do not generally track percentages of the status of P&ID drawings because those numbers do not provide meaningful data; as noted, drawings may have multiple prior versions or reflect future design and construction work.

Question 7. Do any of the P&IDs not carry any status?

Answer. We are not aware of P&IDs that are without a status.

Question 8. What is the current status of your Welding Procedure Specifications and your Procedure Qualification Records? Again, please provide actual numbers (versus total number) and percentages for each listing status, including any without a listing status.

Answer. Welding Procedure Specifications and Procedure Qualification Records are written procedures and records rather than drawings, so the description of "as-built" is inapplicable. It is BP's practice that its production platforms only utilize Welding Procedure Specifications that have received the appropriate approvals.

Question 9. What is the current status of your Safety shutdown logic drawings? Again, please provide actual numbers (versus total number) and percentages for each listing status, including any without a listing status.

Answer. We have current safety shutdown logic drawings for the Atlantis facilities that are available to our operating personnel and provide them with information for the safe operation of the platform. For the same reasons as stated above with regard to P&IDs, a comparison of the number of documents having a particular status against the total number of documents is not meaningful.

Question 10. Are there other BP-owned or—operated rigs in the U.S. Outer Continental Shelf that do not have all P&IDs approved as an "as-built" status?

Answer. It is BP's policy that all its production platforms be operated in compliance with the applicable BOEMRE regulations. The operating personnel on all BP production platforms have access to current P&IDs that provide them with useful and accurate information for the safe operation of the platform.

Question 11. Are there other BP-owned or—operated rigs in the U.S. Outer Continental Shelf that do not have all Welding Procedure Specifications approved as an "as-built" status?

Answer. Welding Procedure Specifications are written procedures rather than drawings, so the description of "as-built" is inapplicable. It is BP's practice that its production platforms only utilize Welding Procedure Specifications that have received the appropriate approvals.

Question 12. Are there other BP-owned or—operated rigs in the U.S. Outer Continental Shelf that do not have all Procedure Qualification Records approved as an "as-built" status?

Answer. Procedure Qualification Records are records rather than drawings, so the description of "as-built" is inapplicable. It is BP's practice that its production platforms only utilize Procedure Qualification Records that have received the appropriate approvals.

Question 13. Are there other BP-owned or—operated rigs in the U.S. Outer Continental Shelf that do not have all Safety Shutdown Logic Drawings approved as an "as-built" status?

Answer. It is BP's policy that all its production platforms be operated in compliance with the applicable BOEMRE regulations. The operating personnel on all BP production platforms have access to up-to-date current Safety Shutdown Logic Drawings that provide them with useful and accurate information for the safe operation of the platform.

Question 14. If the questioned drawings are not up-to-date, please provide reasoning as to why they are not, what the drilling status is of the rig, and, if that

rig is still drilling, why BP continues to allow a violation of safety and encourages endangerment to the environment and the coast.

Answer. As stated above, we believe the questioned drawings are up-to-date. BOEMRE is conducting an investigation into allegations of regulatory noncompliance concerning engineering documentation pertaining to the Atlantis development (the Green Canyon Block 743 Unit). BP is cooperating fully with that investigation.

RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. CLAIRE MCCASKILL TO LAMAR MCKAY

Question 1. The *Deepwater Horizon* Unified Command has been operating a Joint Information Center (JIC) since the first days of the spill The JIC has and continues to receive submissions for alternative response technology, services or products. How many submissions has the JIC received? How many submissions have been responded to? What is the JIC's process for vetting these submissions, and how many submissions have been brought to the attention of JIC leadership?

Answer. Since the start of the MC 252 spill, BP has received thousands of suggestions from the public describing potential ways to stop the flow of oil and gas or to contain the spill on and off the Gulf coast shoreline. Since the beginning of June, the number of suggestions coming in has increased, with BP's Houston Call Center now receiving, on average, 5,000 suggestions a day. These suggestions have come in from across the world. The suggestions have come in from a variety of people, ranging from members of the general public to oil industry professionals. The suggestions also have come in from those speaking many different languages, ranging from Arabic to Russian. Anyone with an idea for BP's team is encouraged to submit it using the Alternative Response Technology (ART) online form located at *http://www.horizonedocs.com/artform.php*.

This form is a valuable tool in helping the team to see quickly the potential of the idea because it collects a list of the materials, equipment, and skills required for the idea to work. After the caller completes and submits the form, 60 technical and operational personnel review its technical feasibility and classify it in one of three categories:

- Not possible or feasible under these conditions;
- Already considered or planned for; or
- Feasible.

As of June 14, 2010, BP has received over 90,000 ideas from telephone calls and e-mail. Of this number, over 19,000 ideas have been reviewed by the technical team. Currently, over 280 ideas have been advanced to a higher-level review in order to determine which ones fill an operational need and may require testing in the field. We currently have 10–15 ideas in active field testing, including:

- An idea submitted by Clean Beach Technologies for a solution that is designed to mechanically separate oil from sand. A sample taken from an oiled beach in Louisiana was lab-tested to verify this solution's efficacy. It appears that use of this solution may be feasible, so it is being prepared for field testing.
- Another idea, presented by Ocean Therapy Solutions, relates to centrifuge equipment technology that can effectively separate oil from water within an oil spill scenario. This idea is also undergoing field tests.
- BP is currently looking for potentially viable technologies to combat the oil saturated in the sargassum, or seaweed, along the Gulf Coast and is evaluating information related to such methods.

Question 2. It is my understanding that Louisiana officials have met with and reviewed alternative response technologies, including those proposed by Show Me Energy. How closely is the JIC working with state and local governments in reviewing alternative response technologies? What process is in place to share information and ideas with state and local governments?

Answer. Those ideas received from state and local governments are processed through the ART system, with a BP representative acting as a point of contact to share the status of ideas received. To ensure that each idea received is reviewed in a timely manner, BP now has expanded its internal team and has linked up with a new working group. The working group has been set up by the U.S. Coast Guard. The Interagency Alternative Technology Assessment Program (IATAP) workgroup was announced in Washington on June 4 and includes representatives from the Minerals Management Service (MMS), the National Oceanic and Atmospheric Administration (NOAA), the Environmental Protection Agency (EPA), the United

States Army Corps of Engineers (USACE), the United States Department of Agriculture (USDA), and the Maritime Administration (MARAD).

Question 3. As you know, the Coast Guard has detected the presence of dozens of "tar balls" approaching the Florida coast, suggesting that the Gulf Coast oil spill has traveled throughout the Gulf Coast region. How do you plan to determine whether these tar balls are indeed a product of the *Deepwater Horizon* spill?

Answer. On May 17–18, 2010, the Coast Guard Sector Key West received notifications from the National Response Center of tar balls on the Florida shoreline. The Coast Guard took samples to its Marine Safety Laboratory in New London, Connecticut and determined that none of the collected samples was from the *Deepwater Horizon* oil spill. BP continues to work with the Coast Guard and other Federal and state agencies to determine whether samples from reported tar balls are from that spill. If tar balls are reported, the Unified Command, comprised of representatives from Federal and state agencies, deploys a Shoreline Cleanup Assessment Team ("SCAT") to the area. SCAT members talk to the person who reported the tar ball and try to obtain a description, quantity, location, and time when it was seen. In addition, SCAT members scan the coastline daily for signs of oil or tar balls.

Question 4. In light of the failed remediation strategies that have been tried this far, how does the Unified Command plan to prevent this eastward expansion of the spill?

Answer. The response strategies to date have had significant success in mitigating the spread of the spill. In terms of plans going forward, the Unified Command has released a Sentry plan (as of June 6) to provide real-time ocean monitoring off the Florida Keys and Dry Tortugas. Vessels will be deployed to conduct maritime patrols to provide early identification of any weathered oil products such as light sheen, which will naturally dissipate, or mousse mats and tar balls that could potentially threaten the Florida Keys and east coast of Florida. Additional vessels and aircraft patrols may be implemented as necessary to provide early warning detection of any weathered oil products.

RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. MARK WARNER TO LAMAR MCKAY

Question 1. It would appear that the Gulf oil spill also involved regulatory failures. What sort of regulatory improvements are needed to encourage industry to make appropriate investments in safety and disaster prevention?

Answer. At the request of the Department of Interior, BP participated in the task forces that provided input to the Secretary concerning changes necessary to better ensure the safety and integrity of offshore development. Additionally, based on learnings we have gleaned from the incident thus far, we have offered the Secretary the following suggestions for consideration:

- Recall all BOPs and recertify that they operate to OEM specifications and can satisfy the well design intent;
- Implement an Enhanced Testing Regime that better simulates emergency operations;
- Evaluate redesigning BOPs with a focus on redundancy and reliability;
- Enhance Industry SubSea Response/Intervention Capability.

Additionally, BP has recently announced a 10 year research grant of $500 million to examine topics including:

- Where are the oil, the dispersed oil, and the dispersant going under the action of ocean currents?
- How do oil, the dispersed oil and the dispersant behave on the seabed, in the water column, on the surface, and on the shoreline?
- What are the impacts of the oil, the dispersed oil, and the dispersant on the biota of the seabed, the water column, the surface, and the shoreline?
- How do accidental releases of oil compare to natural seepage from the seabed?
- What is the impact of dispersant on the oil? Does it help or hinder biodegradation?
- How will the oil, the dispersed oil, and the dispersant interact with tropical storms, and will this interaction impact the seabed, the water column and the shoreline?
- What can be done to improve technology:

- To detect oil, dispersed oil, and dispersant on the seabed, in the water column, and on the surface?
- For remediating the impact of oil accidently released to the ocean?

BP already has ongoing marine research programs in the Gulf of Mexico. Building on these, BP will appoint an independent advisory panel to develop a long-term research program. Where appropriate, the program may be coordinated with the ongoing natural resources damages assessment. The program will engage some of the best marine biologists and oceanographers in the world. More immediately, a baseline of information for the long-term research program is needed, and a first grant to Louisiana State University has been made to initiate this work.

Question 2. BP has had a technology response hotline since the beginning of the spill. Can you provide the Committee with suggestions received in response to the hotline? Which ideas were employed, and which were rejected and why?

Answer. Please see the responses to Senator McCaskill's first two questions above.

Question 3. Is there a role that the U.S. Government could play in stopping the oil leak, particularly bringing to bear military technology that BP may not have? If so, what did BP ask the Federal Government to do? If not, why not?

Answer. BP is working very closely with the U.S. Government, which plays an important role in and adds significant value to the response efforts. The U.S. Coast Guard and the Minerals Management Service have been involved from the beginning. Together with the Environmental Protection Agency and other agencies, they make up the Unified Command, which directs the clean-up and remediation efforts. BP has also been aided substantially by scientists and experts from a variety of other Federal agencies, such as the Department of Interior, Department of Energy, National Oceanic and Atmospheric Administration, and the Department of Defense, who have provided critical assistance with, for example, the development of the top-kill procedure, the diagnostic work on the blowout preventer, and the selection, deployment, and analysis of dispersants. The Federal Government's role has been vital in all the remedial efforts, and its assistance is greatly appreciated.

Question 4. In previous testimony you have described how challenging it is to operate at these depths, stating it is "like open-heart surgery at 5,000 feet." If that is the case, what was your company's "Plan B" if the Blowout preventer failed? Shouldn't you have a pre-coordinated response plan, with equipment available on short notice, for this possibility?

Answer. The BOP has been recognized for many years across the drilling industry as a critical—indeed the ultimate—piece of safety equipment on a drilling rig. It is specifically designed with multiple redundancies to prevent a blowout in a well control event. When the BOP on the *Deepwater Horizon* failed, attempts were made to activate it manually, including through the use of Remotely Operated Vehicles (ROVs). The presentation reflecting preliminary perspectives of the BP investigation team into the events of April 20 discusses the various mechanisms employed in attempting to activate the BOP. See BP–HZN–SCS000035—BP–HZN–SCS000037 (previously produced to Committee on June 19, 2010).

BP's Regional Oil Spill Response Plan (OSRP) for the Gulf of Mexico, which was approved by the Minerals Management Service, addresses available equipment and personnel for containment, recovery, and removal of oil from a spill. The OSRP has been the foundation from which the Coast Guard, other government agencies, and BP have implemented the response across the Gulf on the surface, in the subsea environment, and at the shoreline.

Question 5. Either in terms of gross dollars, or in terms of a percentage of revenues, how much have you invested in R&D for advanced exploration and production technologies and techniques each year and over the 10-year period?

Answer. In 2009, BP spent approximately $587 million on research and development. The company does not separately account for various types of research and development spending, but after some additional research, BP estimates that approximately 40 percent of the $587 million spent in 2009 funded research related to advanced exploration and production technologies and techniques. Those funds support several programs focused on safety and reliable offshore operations and drilling. Please find below the gross amounts spent annually on research and development during the last 10 years.

Year	Research & Development Expenditures
2009	$587 million
2008	$595 million
2007	$566 million
2006	$395 million

Year	Research & Development Expenditures
2005	$502 million
2004	$439 million
2003	$349 million
2002	$373 million
2001	$385 million
2000	$434 million

Question 6. What level of investment do you think industry should be required to make in safety and prevention technologies and practices so that we can be fully prepared to deal with worst-case scenarios in the challenging environment of deepwater drilling?

Answer. In 2009, BP spent approximately $20.3 billion on capital investments. Although BP does not break out spending for "safety and prevention technologies" *per se,* safety and prevention activities have been and continue to be embedded in many of our operational projects, which represent a significant portion of our capital and operating spending. BP is not in a position to offer a numerical value for the level of investment the rest of the industry should be required to make in safety and prevention technologies.

Question 7. Has BP looked at spill prevention fail safe technologies in use by other nations?

If so, did BP employ any of these technologies? If not, why not? Does BP have plans to employ this technology at other rigs?

Answer. BP believes that the BOP is the ultimate spill prevention fail safe technology used by every oil and gas exploration company operating anywhere in the world. BP continually searches for and develops, by itself, and in conjunction with its partners and contractors, technologies to make our operations safer and more reliable. As a multinational company working with other multinational companies, we have access to expertise from around the globe.

Question 8. Has BP consulted with oil spill containment experts in other nations, and have they provided ideas for stopping the gusher of oil? If so, what were they? If not, why not?

Answer. As part of our efforts to contain the source of oil, we have consulted with international companies that have provided experts in areas such as Floating Production Storage and Offloading (FPSO). These companies have also helped us obtain free standing risers from other countries. Other nations have provided equipment, such as several flexible hose lengths. In addition, numerous countries have sent vessels, including the EverGreen burner shipped from France, the Loch Rannoch from the United Kingdom, the Toisa Pisces from Mexico, the Seillan from Brazil, and large offshore skimming vessels from Scandinavian countries.

RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. ROGER F. WICKER TO LAMAR MCKAY

Question 1. Has BP initiated new inspections of the other blowout preventers you are using in the Gulf of Mexico?

Answer. BP currently has three deep water drilling rigs Operating in the Gulf of Mexico. These rigs—Transocean's *Enterprise, Development Driller (DD) II* and *DD III* rigs—are dedicated to the current *Deepwater Horizon* incident response. Only the *DD II* and *DD III* rigs, however, are operational drilling rigs requiring a functional blowout preventer (BOP) stack. The *Enterprise*, which was until recently collecting hydrocarbons flowing from the Mississippi Canyon 252 (MC 252) well, is not involved in operations requiring a BOP stack.

Before drilling operations resume in the Gulf of Mexico, BP is taking steps to ensure that the drilling contractors operating rigs under contract to BP, who own the BOPs and have responsibility for maintaining, inspecting and testing the BOPs, confirm the functionality of the key safety equipment, including the BOPs, used on their rigs in the Gulf of Mexico. On April 29, 2010, BP required the Gulf of Mexico Strategic Performance Unit (GoM SPU) to confirm that the drilling contractors perform additional inspections and tests of the BOPs. After BP made this request, the Minerals Management Service (MMS) and U.S. Coast Guard issued a joint National Safety Alert on April 30, 2010, requiring that all oil rig operators and drilling contractors "inspect their drilling equipment and review their procedures to ensure the safety of personnel and protection of the environment." In response to this Alert, BP required that the drilling contractors operating rigs under contract to BP in the Gulf of Mexico, such as Transocean, ensure compliance with these requirements. BP sent letters to the drilling contractors equipped with subsea BOPs, requesting that

they confirm the information sought by the Alert. These letters also requested that the drilling contractors confirm that the BOPs and associated equipment on these rigs have been inspected; that the BOPs are routinely inspected; that the BOPs are tested and maintained to industry standards and in compliance with applicable regulations; and that any modifications made to the BOPs were made in compliance with manufacturer and regulatory requirements, and pursuant to a formal management of change process. BP also separately required that the appropriate senior staff supervising drilling operations in the Gulf of Mexico confirm this information with the drilling contractors. BP requested, among other things, that these individuals confirm with the drilling contractors that the BOP system schematics are up to date and accurate; which emergency systems are in place on each subsea BOP stack; that stump test procedures ensure that all functions, including emergency systems, are working as designed; that all safety critical equipment maintenance is up to date; and the shearing capability of all shear rams in BOPs.

Question 2. What steps have you undertaken to ensure multiple failures of the blowout preventers do not occur in the future?

Answer. Since the incident, BP has requested that, for operating rigs under contract to BP, the drilling contractors, who own the blowout preventers (BOPs) and have responsibility for maintaining, inspecting and testing the BOPs, perform additional testing and inspection of the BOPs and confirm that their BOPs are functioning. Additionally, as discussed above, BP has sent letters to the drilling contractors equipped with subsea BOPs, requesting that they confirm compliance with the Alert issued by MMS and the United States Coast Guard on April 30.

Question 3. How many volunteers do you expect to enlist in this effort?

Answer. Volunteers have been an integral part of the cleanup efforts thus far. As of July 28, 2010, approximately 32,000 volunteers have participated in the cleanup efforts. It is difficult to estimate how many volunteers the Unified Area Command (UAC), of which BP is a member, expects to enlist in the effort, partly given the uncertainty of what may be required as part of the cleanup efforts and how long they may last, but the UAC does continue to solicit the aid of volunteers. *See http://www.deepwaterhorizonresponse.com/go/page/2931/46359/*. At this time, BP plans to continue working with the UAC to use volunteers through die completion of the cleanup efforts and appreciates the extraordinary assistance provided so far.

Question 4. Is BP or the Unified Command responsible for directing cleanup efforts of these volunteers?

Answer. BP collaborates with the UAC to direct the cleanup efforts of volunteers.

Question 5. Do you plan to continue the use of volunteers through the completion of the cleanup effort?

Answer. Please see answer to Question 3.

Question 6. Is BP relaying all suggestions and product or service offerings, including those BP chooses not to pursue, to the Unified Command?

Answer. BP partners with Federal, state, and local officials to evaluate the numerous suggestions that have been submitted. The Unified Command is involved in this process. *See http://www.deepwaterhorizonresponse.com/go/doc/2931/546759/*

BP appreciates the many suggestions and proposals that have been offered in connection with the spill response. Since the start of the spill, we have received over 100,000 calls, e-mails, and website submissions from the public describing potential ways to stop the flow of oil and gas or to contain the spill. For the month of June, BP's Houston Call Center received, on average, over 2,700 suggestions a day. The suggestions have come from a variety of people, ranging from members of the general public to oil industry professionals to academics and scientists, and from around the world.

Anyone with an idea for the response team is encouraged to submit it using the Alternative Response Technology (ART) online form located at *http://www.horizonedocs.com.* The information captured by the form—including a list of the materials, equipment and skills required to implement the suggestion—helps the team discern the idea's potential. After the caller completes and submits the form, a team of over 50 technical and operational personnel, including personnel from the U.S. Coast Guard, reviews the technical feasibility of the suggestion and classifies it in one of three categories:

- Not possible or feasible under these conditions;
- Already considered or planned; or
- Feasible.

As of July 20, 2010, BP has received approximately 120,000 ideas from telephone calls, e-mails, and website submissions. All of these ideas have been reviewed at

least once by the technical team. Currently, over 400 ideas have been advanced to a higher-level review in order to determine which ones fill an operational need and may require testing in the field. BP currently has over 40 ideas tested or planned for field testing, including:

- An idea submitted by Clean Beach Technologies designed to mechanically separate oil from sand. This idea has been field tested and is now approved for use as appropriate in the response. Other similar sand cleaning processes are scheduled for field testing shortly.
- Another idea, presented by Ocean Therapy Solutions, relates to centrifuge equipment technology that effectively separates oil from water within an oil spill scenario. This idea was field tested, and BP has leased over 30 centrifuges to be deployed in the skimming activity.
- A novel Heavy Oil Skimming System invented by a Florida resident participating in the Vessels of Opportunity skimming program. This device is efficient at collecting heavier oil particles floating just below the water's surface, and is being manufactured for widespread use at local shipyards along the Gulf Coast.

Ideas received from many state and local government entities are also processed through the ART system, with a BP representative acting as a point of contact to communicate the status of any suggestions to the state and local authorities who submitted them. To ensure that each idea received is reviewed in a timely manner, BP has expanded its internal team and is now complemented by a newly established Federal Interagency Alternative Technology Assessment Program (IATAP) workgroup, led by the U.S. Coast Guard. The IATAP was announced on June 4 and includes participation by the Bureau of Ocean Energy Management, Regulation, and Enforcement, the National Oceanic and Atmospheric Administration, the Environmental Protection Agency, the United States Army Corps of Engineers, the United States Department of Agriculture, and the Maritime Administration.

Question 7. What efforts has BP employed on the Mississippi Coast to respond to tar balls and other oil deposits?

Answer. BP continues to work with the U.S. Coast Guard and other Federal and state agencies to respond to tar balls and other oil deposits. If tar balls are reported, the Unified Command, comprised of representatives from Federal and state agencies, deploys a Shoreline Cleanup Assessment Team ("SCAT") to the area. SCAT members talk to the person who reported the tar ball and try to obtain a description, quantity, location, and time when it was seen. In addition, SCAT members scan the coastline daily for signs of oil or tar balls.

Question 7a. What have you done to ensure public dissemination of this information?

Answer. BP as well as Federal and state agencies involved with the *Deepwater Horizon* Oil Spill Response in Mississippi continue to work together to disseminate information. Communication about tar balls and oil deposits washing ashore began long before the first sighting of tar balls reached Mississippi shores in early June.

To date, BP and the other agencies have participated in town hall meetings and public fora, spoken to civic groups, and appeared on local television talk shows to discuss the spill and its aftermath. The meetings and fora include:

- U.S. Department of Commerce Minority Business Development Agency Town Hall Meeting/Information Exchange
- Mississippi Gulf Coast American Advertising Federation
- Gulf Coast Business Council General Membership Meeting
- Jackson County Chamber of Commerce
- Gulf Coast Non-Profit Leadership
- Recovery Summit
- NAACP Biloxi Chapter
- Mississippi Gulf Coast Chamber of Commerce
- Pascagoula Rotary Club
- Oil Spill Resources and Claims Fair
- City of Pascagoula Town Hall
- Mississippi Hospitality & Restaurant Association
- Claims Fair with Ken Feinberg
- Hancock County Employee Picnic
- Gulf Coast Emergency Management

BP has focused on outreach to children by distributing notepad and pen sets that say, among other things, "If you see oiled debris call 1–866–448–5816." Beach safety post cards also have been distributed.

Displays that read "WATCH OUT! If you spot oiled debris DON'T TOUCH!" also are being used at area libraries.

Lastly, information about tar balls is available on the *Deepwater Horizon* website and the Mississippi Emergency Management Agency website.

Question 7b. Do you believe our constituents on the Gulf Coast are informed as to what to do if they encounter oil or tar balls?

Answer. Efforts have been made to inform the public about oil or tar balls as outlined above. Signs are posted along Mississippi beaches warning beachgoers not to touch tar balls and instead to "report the sightings."

Question 7c. Have you run TV or radio ads to alert locals of the precautions?

Answer. BP has undertaken numerous steps to make sure Americans residing, working, and volunteering on the Gulf Coast have up-to-date information about what to do if they encounter oil, tar balls, or some other environmental issue stemming from the April 20 incident or resulting oil spill. BP has established a toll-free hotline available 24 hours a day, 7 days a week, for the reporting of any community or environmental impacts. In addition, BP's Gulf of Mexico Response web page contains detailed response information and documentation, including links to up-to-date information on offshore containment, subsea. response and shoreline protection efforts, community initiatives, and information on whom to contact regarding a number of response-related issues. It also provides local response web pages dedicated to relief efforts in Mississippi and other states affected by the incident. The "Public Information Resources" page contains toll-free numbers for the public to gain access to information on community outreach efforts, wildlife, volunteers and more. In addition, the UAC has sanctioned and updates regularly a website dedicated to the *Deepwater Horizon* Response that provides the public with information on response-related issues, including area contingency plans for the Gulf states, relevant news releases, health and safety information, and information relating to the claims process, among many other issues of concern to the public.

Question 8. Who determines when to transition from the use of "mud" during drilling to the use of saltwater?

Answer. Because investigations into the *Deepwater Horizon* incident are ongoing, it would be premature to speculate regarding specific decisions. In addition, certain third parties may have in their possession information that may be relevant to this request but to which BP does not have access.

That said, BPA has produced the following documents to the Committee that are pertinent to your request: (1) a copy of the draft presentation that outlines the preliminary perspectives of the investigation team commissioned by BP to investigate the incident, BP–HZN–SCS000001–48; and (2) a copy of the Temporary Abandonment Permit approved by MMS on April 16, 2010 for the temporary abandonment of the Macondo MC 252 #1 well bore, which sets out the procedure approved by MMS for the temporary abandonment of the well, BP–HZN–SCS000050–53. Precisely who made which decisions will be examined as part of the investigation BP has commissioned, the results of which it plans to share when the investigation is completed.

Question 9. Who determined the type of cement used to cap the well?

Answer. Because investigations into the *Deepwater Horizon* incident are ongoing it would be premature to speculate regarding specific decisions. In addition, certain third parties may have in their possession information that is relevant to this request but to which BP does not have access. As the contractor responsible for cementing the MC 252 well, Halliburton may be able to provide information about the type of cement used on the well.

Question 9a. Is the cement used different from that used in the majority of wells in deepwater?

Answer. As the contractor responsible for cementing the MC 252 well, Halliburton may be able to provide information about the type of cement used on the well and how it compares to the types of cement used in other deepwater wells.

Question 9b. If this is a new or unique type of cement, what testing is performed on new cement blends prior to commercial use?

Answer. As the contractor responsible for cementing the MC 252 well, Halliburton may be able to provide information about the type of cement used and whether testing was performed on new cement blends prior to commercial use.

Question 10. Have you made any requests for assets or assistance from your Federal partners in the Unified Command that have not been provided or approved during your ongoing response efforts?

Answer. BP has collaborated closely with the UAC, which directs the clean-up and remediation efforts. With input from BP, the National Incident Commander and his staff ultimately decide how the response efforts should proceed. BP often provides input into this process and makes recommendations or requests involving the UAC. At times, the UAC has determined a course of action different from the recommendation or request suggested by BP.

Question 11. Are you aware of other instances when a blowout preventer failed to close after the well had been capped?

Answer. Assuming this question asks about instances where the BOP does not function as intended, BP is conducting an internal investigation that, among other things, is seeking to understand why the BOP on the *Deepwater Horizon* did not function as intended, and it will share the results of its investigation once it is complete.

Question 12. Once a hardening substance is placed in the well during a capping procedure, can it be expected that any blowout would lodge debris in the blowout preventer and thus prevent the blowout preventer from functioning properly?

Answer. The blowout preventer (BOP), and specifically why it did not function as expected on the *Deepwater Horizon*, is one of the subjects of multiple investigations, including BP's ongoing, non-privileged investigation. BP will share the results of its investigation once it is complete. In addition, as the contractor responsible for cementing the MC 252 well, Halliburton may be able to provide information pertaining to the cement. Further, Cameron, as the manufacturer of the *Deepwater Horizon* BOP, and Transocean, as the owner and operator of the *Deepwater Horizon*, may also be able to provide information as to whether the BOP would function if debris were in the BOP stack.

Question 13. Was acoustic testing performed after capping of the well, and if not, who made the decision to skip this step?

Answer. Cement bond log testing, which involves the use of acoustic signals to test the quality of a cement job, is not required for temporary abandonment of a well except as provided by 30 C.F.R. § 250.428. Pursuant to § 250.428, if there is an indication of an inadequate cement job (such as lost returns, cement channeling, or a failure of equipment), then a lessee must take further steps to analyze the cement job, including running a cement bond log test, pressure testing the casing shoe, running a temperature survey, or using a combination of those three techniques. Because investigations into the *Deepwater Horizon* incident are ongoing, however, it would be premature to speculate regarding specific decisions. As mentioned above, BP is conducting an internal investigation of the April 20 incident and will share those results once the investigation is complete.

RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. JOHN D. ROCKEFELLER IV TO STEVEN NEWMAN

Question 1. The Chief Electronics Technician on *Deepwater Horizon,* Mike Williams, has stated that BP had the drilling crew bump up the rate of penetration at the first well, cracking it and forcing it to be abandoned. This should have served as a warning to slow down. But that is not what happened. When drilling resumed, Williams says there was damage done to a vital component in the BOP, the annular. When the drilling crew finds chunks of rubber from the annular back up in the drilling fluid, what is the standard industry procedure to deal with that and was that done in this case and if not, why not?

Answer. We understand from the May 16, 2010 *60 Minutes* segment in which Transocean Chief Electronics Technician Michael Williams appeared that a man monitoring drilling fluid saw pieces of rubber in the drilling fluid returns approximately 4 weeks before the accident. While the Company has not located any record of this reported observation, having some rubber returns to the shakers in the drilling mud is normal.

There are several sources of rubber down hole; annular rubber would be the most common source. Given the size of the annular, the manufacturer advises that normal wear and tear as a result of periodic use is expected, and a handful of small chunks of rubber would be immaterial. The annular is roughly three feet in diameter, about 18 inches tall, and weighs about 2,000 pounds. It is designed to close around drill pipe, and drill pipe regularly moves through closed annulars, which can displace pieces of the annular rubber. The rubber used in annular blowout pre-

venters is known to be a consumable item, and rubber loss is not considered problematic if the annular blowout preventer continues to hold rated pressure. Cameron brochures, available on Cameron's website highlight these facts. For example, one such brochure explains that "[t]he elastomeric packing elements used in CAMERON Type D/DL annular blowout preventers are considered to be consumable items and will eventually wear-out as a result of repeated closures and pressure test. Every closure and pressure test while in-service will use up some of the packing element life. The packing element subassembly should not be rejected for continued service based on cosmetic appearance. Failure of a pressure test or drift test are the only justifiable reasons for rejection." *See* In-Service Condition of CAMERON D/DL Annular BOP Packing Element Subassemblies, available at *http://www.c-a-.com/cam/search/showdocw.cfm?DOCUMENT_ID=8360*.

Most important, BOP tests on April 10, 2010 and April 17, 2010, confirmed that the annular was operating properly after any such incident.

Question 2. What were the last pressure readings Transocean took on the well prior to the explosion, when were they taken, and how did they compare to prior pressure readings?

Answer. Transocean does not have access to the pressure readings at the BOP, which were lost with the rig and our data acquisition system. However, BP conducted a negative pressure test shortly before the incident and determined the results to be good. The BOP had also recently passed a number of tests. The blind shear rams of the BOP passed pressure tests taken by Transocean in conjunction with Halliburton at 250 psi low and 2,500 psi high on April 20, 2010. (*See* TRN–USCG—MMS–00011644* through TRN–USCG—MMS00011648). The annular and pipe ram systems were pressure tested twice on April 10, 2010. During the first series of tests, on 6⅝ inch drill pipe, the lower annular system passed tests to 250 psi low and 3,500 psi high; the upper annular system passed tests to 250 psi low and 5,000 psi high; and the pipe rams passed tests to 250 psi low and 6,500 psi high. During the second series of tests, on 5½ inch drill pipe, the lower and upper annular ram systems passed tests to 250 psi low and 3,500 psi high and the pipe ram systems passed tests to 250 psi low and 6,500 psi high. (*See* TRN–USCG—MMS00011600 through TRN–USCG—MMS–00011604).

Question 3. Were the components in the blowout preventer stack rated for that kind of pressure?

Answer. The BOP is rated for the following pressures:

> The 18¾ inch BOP rams and fail-safe hydraulic valves are rated by their manufacturer, Cameron, to 15,000 psi working pressure.
>
> The 18¾ inch upper annular system is rated to 10,000 psi working pressure, and the 18¾ inch lower annular stripping element installed is rated to 5,000 psi working pressure. (*See* TRN–HCEC–00007822 through TRN–HCEC–00008055.)

Question 4. What were the pressure ratings for the components in the blowout preventer stack?

Answer. See above.

Question 5. You have stated that at the time of the explosion, Transocean's crew was in the process of displacing drilling fluid with sea water at BP's direction. Is this true?

Answer. Yes, the Transocean crew, at the direction of BP, was in the process of displacing drilling mud and replacing it with sea water at the time of the explosion.

Question 6. Is it standard industry practice to take this step when there have been anomalous pressure readings on the sealed well just hours earlier?

Answer. The *Deepwater Horizon* explosion occurred after the well construction process was essentially finished. Drilling had been completed on April 17, and the well had been sealed with cement by the cementing contractor. BP did not plan to use the well for production at this time; rather BP planned to reopen the well at a later date when, and if, it chose to put the well into production. At the time of the explosion and fire, the Transocean crew, at the direction of BP, was in the process of displacing drilling mud and replacing it with sea water. The drilling mud was thus no longer being used as a means of reservoir pressure containment. The cement and the casing were the barriers controlling pressure from the reservoir.

Displacing drilling mud with sea water is a normal and, in fact, required step in the abandonment process. (*See* 30 CFR 250.442(e)). Standard industry practice is to not displace drilling mud with sea water until confident that the cement and casing

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* All documents referred to are retained in Committee files.

are sufficient to control pressure from the reservoir. An anomalous pressure reading prior to the displacement of drilling mud with sea water could weigh in favor of delaying the displacement of drilling mud until after further, satisfactory pressure testing. The April 20, 2010 drilling report reflects that the casing and seal assembly were tested between 1 am and 3 am that morning at 4,000 psi for 30 seconds, and 10,000 psi for 10 seconds. Pressure was then bled off to 6,500 psi and held for 5 minutes. (*See* TRN–USCG—MMS–00011644 through TRN–USCG—MMS–00011648). Nothing abnormal was found during this test.

Transocean's investigation will examine the events leading up to the explosion, including, but not limited to, any such allegedly abnormal pressure tests. Transocean will report the findings of the investigation when it is complete and provide the Committee with documents relating to the accident and any findings related thereto.

RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. MARIA CANTWELL TO STEVEN NEWMAN

Question 1. What percentage of Transocean's undersea drilling systems (such as blowout preventers and risers) currently operating in the U.S. exclusive economic zone have been classed or certified by the American Bureau of Shipping or another internationally-recognized classification society?

Answer. One hundred percent of Transocean's undersea drilling systems were classed or certified by either the American Bureau of Shipping or DNV when built.

Question 2. I'm aware that classification of subsea drilling systems is currently voluntary, but what is keeping you from getting ABS classification for 100 percent of your subsea drilling systems (including blowout preventers and risers)?

Answer. Each of Transocean's undersea drilling systems is certified by either the American Bureau of Shipping or DNV when built. Transocean inspects its undersea drilling systems according to a 5-year overhaul cycle and on an as-needed basis. Transocean performs such inspections in conjunction with the original equipment manufacturer (OEM) and Transocean-approved vendors for designed equipment, and does not believe that a third-party inspection or ABS classification would add value or offer any safety or operational benefit above and beyond the inspections that are performed.

Question 3. Is there a cost issue here, or is it some other concern?

Answer. Cost is not an issue. Transocean conducts inspections on the schedule for each component and on an as-needed basis in conjunction with the original equipment manufacturer and does not believe that a third-party inspection or ABS classification would add value or offer any benefit above and beyond the inspections already performed.

Question 4. Recent press accounts indicate that there may have been numerous known failures in the blowout preventer for the *Deepwater Horizon* rig. Did Transocean employees know of any failed, damaged, or partially functioning components of the blowout preventer prior to the rig explosion? If so, please list the components, their reported problems, the date those problems were known or recognized, and whether each problem was reported to either BP or the Federal Government.

Answer. Prior to the rig explosion, Transocean employees did not know of any failed, damaged, or partially functioning components of the blowout preventer that could have compromised well control. Transocean employees were aware of a leak on the open side of the solenoid valves of the lower test ram, but this equipment has no well control function. In addition, the leak only occurred when the valve was in the "open" function and not when the valve was in the "block" function.

Additionally, the BOP had recently passed a number of tests. The blind shear rams of the BOP passed pressure tests taken by Halliburton to 250 psi low and 2,500 psi high on April 20, 2010. (*See* TRN–USCG—MMS–00011644 through TRN–USCG—MMS00011648). The annular and pipe ram systems were pressure tested twice on April 10, 2010. During the first series of tests, on 6 5/8 inch drill pipe, the lower annular system passed tests to 250 psi low and 3,500 psi high; the upper annular system passed tests to 250 psi low and 5,000 psi high; and the pipe rams passed tests to 250 psi low and 6,500 psi high. During the second series of tests, on 5½ inch drill pipe, the lower and upper annular ram systems passed tests to 250 psi low and 3,500 psi high and the pipe ram systems passed tests to 250 psi low and 6,500 psi high. (*See* TRN–USCG—MMS00011600 through TRN–USCG—MMS–00011604).

Transocean's investigation will examine the events leading up to the explosion, including, but not limited to, any failed, damaged, or partially functioning components of the blowout preventer. Transocean will report the findings of the investigation when it is complete and provide the Committee with documents relating to the accident and any findings related thereto.

Question 5. Can you confirm whether, as reported on *60 Minutes*, there were rubber chunks from the blowout preventer seals coming up to the rig in the drilling fluid?

Answer. We understand from the May 16, 2010 *60 Minutes* segment in which Transocean Chief Electronics Technician Michael Williams appeared that a man monitoring drilling fluid saw pieces of rubber in the drilling fluid returns approximately 4 weeks before the accident. While the Company has not located any record of this reported observation, having some rubber returns to the shakers in the drilling mud is normal.

On April 6, 2010, the rig experienced a well control situation that required the closure of the lower annular. Subsequently, approximately 1300 feet of drill pipe was moved upward through the lower stripping annular. It is believed that the rubber could have come from this normal operation for which the annular is designed.

There are several sources of rubber down hole; annular rubber would be the most common source. Given the size of the annular, the manufacturer advises that wear and tear as a result of periodic use is expected, and a handful of small chunks of rubber would be immaterial. The annular is roughly 3 feet in diameter, about 18 inches tall, and weights about 2,000 pounds. It is designed to close around drill pipe, and drill pipe regularly moves through closed annular, which can displace pieces of the annular rubber. The rubber used in annular blowout preventers is known to be a consumable item, and rubber loss is not considered problematic if the annular blowout preventer continues to hold rated pressure. Cameron brochures, available on Cameron's website highlight these facts. For example, one such brochure explains that "[t]he elastomeric packing elements used in CAMERON Type D/DL annular blowout preventers are considered to be consumable items and will eventually wear-out as a result of repeated closures and pressure test. Every closure and pressure test while in-service will use up some of the packing element life. The packing element subassembly should not be rejected for continued service based on cosmetic appearance. Failure of a pressure test or drift test are the only justifiable reasons for rejection." *See* In-Service Condition of CAMERON D/DL Annular BOP Packing Element Subassemblies, available at *http://www.c-a-.com/cam/search/showdocw.cfrn?DOCUMENT_ID=8360*.

Most important, the above-referenced BOP tests on April 10, 2010 and April 17, 2010, confirmed that the annular was operating properly after any such incident.

Question 6. When a blowout preventer experiences a failed or partially malfunctioning component, who s typically responsible for deciding whether to halt drilling to repair the blowout preventer?

Answer. If a blowout preventer experiences a failed or partially malfunctioning component, the operator and the driller likely would make a collaborative decision with respect to whether to halt drilling. The remaining redundancies of the blowout preventer would likely be a key factor in any such decision. While the decision to suspend drilling operations would be collaborative, BP maintains ultimate responsibility for determining when to resume drilling operations. However, if Transocean feels it is not safe to continue work, we will not do so.

Question 7. For any failed, damaged, or partially functioning components of the blowout preventer in the *Deepwater Horizon* incident that were known prior to the catastrophic explosion, please detail any steps that were taken to fix each of those problems. If no such steps were taken, or if a decision was made to not stop drilling to repair a problem, please explain why.

Answer. Prior to the rig explosion, Transocean employees did not know of any failed, damaged, or partially functioning components of the blowout preventer that could have compromised well control. Additionally, the BOP had recently passed a number of tests. The blind shear rams of the BOP passed pressure tests taken by Halliburton to 250 psi low and 2,500 psi high on April 20, 2010. (*See* TRN–USCG—MMS–00011644 through TRN–USCG—MMS–00011648). The annular and pipe ram systems were pressure tested twice on April 10, 2010. During the first series of tests, on 6⅝ inch drill pipe, the lower annular system passed tests to 250 psi low and 3,500 psi high; the upper annular system passed tests to 250 psi low and 5,000 psi high; and the pipe rams passed tests to 250 psi low and 6,500 psi high. During the second series of tests, on 5½ inch drill pipe, the lower and upper annular ram systems passed tests to 250 psi low and 3,500 psi high and the pipe ram systems

passed tests to 250 psi low and 6,500 psi high. (*See* TRN–USCG—MMS–00011600 through TRN–USCG—MMS–00011604).

Transocean's investigation will examine the events leading up to the explosion, including, but not limited to, any failed, damaged, or partially functioning components of the blowout preventer. Transocean will report the findings of the investigation when it is complete and provide the Committee with documents relating to the accident and any findings related thereto.

Question 8. For the blowout preventer involved in the *Deepwater Horizon* incident, please detail its full service-life history of all component failures, malfunctions, and failed tests.

Answer. While a comprehensive yet concise narrative regarding the service-life and maintenance history of the *Deepwater Horizon's* blowout preventer system is not possible, Transocean has produced documents detailing its testing history, as well as documents detailing all preventative maintenance and repairs related to the blow out preventer from the time it was acquired from Cameron (2000) and put in operation on the *Deepwater Horizon* (2001) through when it was used on the Macondo well (February 8, 2010 through April 20, 2010). (*See* TRN–HCJ–00064695 through TRN–HCJ–00076944 (BOP testing results); TRN–HCEC–00040041—TRN–HCEC–00040217, TRN–HCEC–00040249—TRN–HCEC00054353 (2001–2010 repair and preventative maintenance history for the *Deepwater Horizon's* well control equipment); TRN–HCJ–00093709—TRN–HCJ–00120896 (20012010 BOP maintenance schedule and records)).

Question 9. In a 2003 paper presented by Transocean employee Earl Shanks at the Offshore Technology Conference, he wrote that "because of the pressure on getting the equipment back to work, root cause analysis of the [blowout preventer] failures is generally not performed." This seems to indicate that when blowout preventer failures happen, your industry is more concerned with profits than investigating the reasons behind the safety failure. Isn't industry's failure to investigate the root causes of blowout preventer failures a long-term safety risk? How can we expect blowout preventers to become more reliable if the industry fails to take basic steps like conducting root cause analyses when blowout preventer failures happen?

Answer. It is true that an industry-wide failure to investigate the root causes of blowout preventer failures could pose a long-term safety risk. However, Transocean is and has always been committed to investigating the root causes of any such failure. Transocean has implemented and adheres to a robust subsea maintenance philosophy. (*See* TRN–HCEC00011553 through TRN–HCEC–00011563). Transocean also routinely conducts subsea reliability courses to train and share lessons learned among all of its subsea engineers and uses a feedback system in its maintenance program to capture improvement opportunities and apply them across the fleet through a bulletin and alert process.

Earl Shanks's 2003 paper was in fact an effort to drive toward building reliability standards into equipment specifications at the time of design and purchase as well as the testing requirements to ensure that a BOP stack can be counted on to safely and reliably perform. This paper and the study upon which it is based reflects Transocean's commitment to improving the reliability and safety of subsea equipment. Similarly, Transocean has assembled an investigative team to determine what caused the *Deepwater Horizon* explosion, a team that includes dedicated Transocean and other industry experts. That investigation is ongoing. Transocean will report the findings of the investigation when it is complete.

RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. CLAIRE MCCASKILL TO STEVEN NEWMAN

Question 1. The *Deepwater Horizon* Unified Command has been operating a Joint Information Center (JIC) since the first days of the spill. The JIC has and continues to receive submissions for alternative response technology, services or products. How many submissions has the JIC received? How many submissions have been responded to? What is the JIC's process for vetting these submissions, and how many submissions have been brought to the attention of JIC leadership?

Question 2. It is my understanding that Louisiana officials have met with and reviewed alternative response technologies, including those proposed by Show Me Energy. How closely is the JIC working with state and local governments in reviewing alternative response technologies? What process is in place to share information and ideas with state and local governments?

Question 3. As you know, the Coast Guard has detected the presence of dozens of "tar balls" approaching the Florida coast, suggesting that the Gulf Coast oil spill

has traveled throughout the Gulf Coast region. How do you plan to determine whether these tar balls are indeed a product of the *Deepwater Horizon* spill? In light of the failed remediation strategies that have been tried thus far, how does the Unified Command plan to prevent this eastward expansion of the spill?

Answer. The Unified Command structure set up shortly after the incident includes the JIC. As the named responsible party, BP leads the response with the USCG. About 400 people are working daily in Robert, Louisiana, made up of BP, USCG, NOAA, MMS, and many other Federal and state government officials. Transocean has three persons there to provide support including current information regarding the Transocean relief-well drilling, crude oil recovery and other activities in support of BP. Transocean does not have direct knowledge in response to the questions above, but knows generally that BP are processing many calls through the hotline, and Transocean has referred many ideas we have received to BP. Transocean directs requests for information from local, state or Federal Government elected officials to Jay Harper with the Government Affairs department within the External Affairs section of the *Deepwater Horizon* response. Jay's contact information is as follows:

Jay Harper, U.S. Department of Homeland Security
Office of Legislative Affairs
Wash DC phone: 202–384–5336
Robert LA phone: 985–543–3379
E-mail: *Jerald.Harper@dhs.gov*

RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. MARK WARNER TO STEVEN NEWMAN

Question 1. In previous testimony you have described how challenging it is to operate at these depths, stating it is "like open-heart surgery at 5,000 feet" If that is the case, what was your company's "Plan B" if the Blowout preventer failed? Shouldn't you have a pre-coordinated response plan, with equipment available on short notice, for this possibility?

Answer. Respectfully, the statement quoted above was not made by a Transocean employee or spokesperson, but instead by the Chairman and President of BP America. That said, Transocean's well control plans and procedures (*see* TRN–HCJ–00005402 through TRN–HCJ–00005797) comply with Federal law, and extensive training related to well control operations follows the Well Control Accreditation Program (WellCAP), which has been developed by the International Association of Drilling Contractors and adopted by the Offshore Operators Committee to comply with Subpart 0 training regulations issued by the United States Minerals Management Service.

Question 2. Either in terms of gross dollars, or in terms of a percentage of revenues, how much have you invested in R&D for advanced exploration and production technologies and techniques each year and over the 10-year period?

Answer. It is difficult to provide a precise answer to this question as Transocean's R&D expenditures are not grouped into an "advanced exploration and production technologies and techniques" category. However, Transocean believes that a conservative estimate is that it invests tens of millions of dollars each year in R&D in the areas of new rig design, equipment upgrades, drilling techniques, and safety improvements.

Question 3. What level of investment do you think industry should be required to make in safety and prevention technologies and practices so that we can be fully prepared to deal with worst-case scenarios in the challenging environment of deepwater drilling?

Answer. Transocean has assembled an investigative team to determine what caused the *Deepwater Horizon* explosion, a team that includes dedicated Transocean and other industry experts. That investigation is ongoing. Until we know exactly what happened on April 20, 2010 and the real sequence of events, it is difficult to speculate about what additional investments in safety and prevention technologies and practices should be made.

Question 4. It would appear that the Gulf oil spill also involved regulatory failures. What sort of regulatory improvements are needed to encourage industry to make appropriate investments in safety and disaster prevention?

Answer. Transocean has assembled an investigative team to determine what caused the *Deepwater Horizon* explosion, a team that includes dedicated Transocean and other industry experts. That investigation is ongoing. Until we know exactly what happened on April 20, 2010 and the real sequence of events, it is difficult to

speculate about what additional investments in safety and prevention technologies and practices should be made or what regulatory improvements should be implemented to encourage any such investments.

The remaining questions were directed to BP.

RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. ROGER F. WICKER TO STEVEN NEWMAN

Question 1. Has Transocean initiated inspection of other blowout preventers you are using in the Gulf of Mexico?

Answer. On June 8, 2010, the MMS issued Notice to Notice to Lessees and Operators (NTL) No. 2010–N05, "Increased Safety Measures for Energy Development on the OCS." The MMS Notice to Lessees and Operators contains specific recommendations to Operators for steps to enhance safety in Outer Continental Shelf drilling operations. Among other things, the MMS Notice to Lessees and Operators requires operators to conduct a third-party inspection of all subsea and surface BOP equipment used in floating drilling operations before beginning a new drilling operation or resuming an operation suspended under the moratorium.

Under this Notice from MMS, well operators, such as BP, should be initiating third-party recertification inspections of BOP equipment as appropriate under the Notice to Lessees and Operators. Transocean is cooperating with the operators for which it works to coordinate the timing of any BOP recertification inspections for BOPs on vessels that are or will be operating in the Gulf of Mexico. Timing of the recertification inspections appears complicated by the limited resources available to perform the third-party inspections and the high number of recertification inspections sought.

As further information, only two of Transocean's vessels are currently working for Operators in the Gulf of Mexico: the *Deepwater Nautilus* and the *Discoverer Americas.* The Operator utilizing the Americas was ordered to temporarily abandon its current well. The MMS granted the Operator for the Nautilus permission to complete the current well.

The following summarizes the recertification status and timeline, to the extent known to Transocean, for BOPs on vessels currently or recently operating in the Gulf of Mexico. References to standard, preventative, and/or corrective BOP maintenance encompass Transocean's routine maintenance activities.

- *GSF Development Driller I (DDI):*

  The *DDI* was taken out of service to conduct a planned Special Periodical Survey (SPS) on May 13, 2010. During the planned service period, other maintenance projects were carried out, including BOP preventative and corrective maintenance. At the Operator's request, an independent third party, ModuSpec, oversaw the BOP maintenance. The rig completed the service period on June 23, 2010 and is currently on stand-by. The Operator has indicated that it will be using ModuSpec as an independent third party to conduct recertification of this BOP.

- *GSF C.R. Luigs:*

  The *C.R. Luigs* was taken out of service to conduct a planned SPS on June 6, 2010. During this planned period, other maintenance projects will be carried out, including BOP preventative and corrective maintenance as per Transocean practices. The Operator has indicated that it will use ModuSpec as an independent third party to conduct the recertification of the BOP.

- *Discoverer Spirit:*

  The *Spirit* has been on standby since June 1, 2010. At the Operator request, ModuSpec observed the preventative and corrective maintenance on the BOP. The *Spirit* rig is scheduled to commence a seventy-day SPS period during which BOP maintenance will be carried out as per Transocean practices.

- *Deepwater Nautilus:*

  The Nautilus is presently completing a well, and the Operator's completion date is uncertain. The Operator has indicated that the BOP will be recertified after completion of the current well.

- *Discoverer Americas:*

  The *Americas* is expected to complete the current well in the next several days or within a week. The current expectation is that the Operator will mobilize the rig to Egypt upon completion of the current well.

- *Discoverer Deep Seas:*

  The *Deep Seas* was put on standby on May 31, 2010, following the moratorium. While on standby, routine BOP maintenance has been performed per Transocean practices.

- *Transocean Amirante:*

  Since June 11, 2010, the *Amirante* has been on standby following the moratorium. The Operator has indicated that it plans to utilize West Engineering for recertification of the BOP.

- *Transocean Marianas:*

  The *Marianas* has been on standby at the Signal shipyard since June 20, 2010. Standard maintenance was performed on the *Marianas* while on standby per Transocean practices; no date for BOP recertification has been established.

- *Deepwater Pathfinder:*

  The *Pathfinder* commenced a scheduled SPS in the shipyard on May 23, 2010, which is expected to be completed by August 22, 2010. The BOP will be recertified during this period.

Recertification is not required for vessels assisting in the response effort. The following summarizes the BOP inspections performed for Transocean vessels currently in the Gulf and supporting the response effort:

- *GSF Development Driller II:*

  West Engineering was onboard from May 16, 2010 through June 12, 2010 to witness the BOP scope of work and the running of the BOP. Two MMS inspectors were onboard from May 18, 2010 through May 30, 2010, and these inspectors witnessed the BOP maintenance work, stump testing, EDS and ROV function testing, and auto-shear and deadman testing at the surface. Two MMS inspectors were onboard from June 3, 2010 through June 10, 2010 to witness the BOP running, subsea pressure test, and deadman test with the BOP at depth.

- *Development Driller III:*

  West Engineering was onboard from April 27, 2010 through May 15, 2010 to witness the BOP scope of work prior to the running of the BOP. Two MMS inspectors were onboard May 9, 2010 through May 12, 2010, and May 15, 2010 through May 18, 2010, who witnessed the BOP stump testing, ROV intervention panel testing, EDS testing at the surface, auto-shear testing at the surface, subsea deadman testing at the surface and at depth, and subsea BOP pressure testing upon landing out.

- *Discoverer Enterprise:*

  West Engineering was onboard from April 28, 2010 through May 12, 2010 to witness the BOP scope of work prior to running LMRP for top hat containment. Two MMS inspectors were onboard on May 6, 2010 and May 7, 2010 to witness the BOP stump test, ROV intervention panel function testing, and EDS and deadman testing at the surface.

- *Discoverer Clear Leader:*

  The work of the *Clear Leader* as part of the response effort is containment work that does not require use of a BOP. However, on April 29, 2010, the MMS reviewed and checked various aspects of the BOP and its functions.

- *Discoverer Inspiration:*

  The work of the *Inspiration* as part of the response effort is containment work that does not require use of a BOP. On April 28, 2010, the MMS reviewed and checked various aspects of the BOP and its functions. On May 24, 2010, the MMS witnessed the function test of the BOP and discussed past repairs and current status.

Question 2. Who determined the type of cement used to cap the well?

a. Is the cement used different from that used in the majority of wells in deepwater?

b. If this is a new or unique type of cement, what testing is performed on new cement blends prior to commercial use?

Answer. For this question, Transocean understands "cap" to refer to the cementing of the final string of casing. The well operator, BP, and the cementing contractor, Halliburton, are responsible for selecting the type of cement to be used and

the quantity. As a drilling contractor, Transocean is not involved in this decision or plan. In the case of the *Deepwater Horizon,* nitrogen foam cement was used to cement the casing. In Transocean's June 8, 2010 Interim Internal Investigative Report prepared for the House Committee on Energy & Commerce, Subcommittee on Oversight and Investigations, Transocean raised questions about the use of nitrogen foam cement at this depth, with the notation that Transocean does not have expertise in cementing and is not a cementing contractor. Transocean's interim report is available at *http://energycommerce.house.gov/documents/20100614/Transocean.DWH.Internal investigation.Update.Interim.ReportJune.8.2010.pdf,* and also is being produced on disk.

Question 3. What steps have you undertaken to ensure multiple failures of the blowout preventers do not occur in the future?

Answer. At this time, Transocean cannot confirm that there were failures of the blowout preventer. Transocean has assembled an investigative team that includes dedicated Transocean and industry experts. That investigation is underway. Until the blowout preventer has been recovered and additional information obtained as a result of the investigation, we cannot conclude that the blowout preventer failed to operate as designed and/or whether the blowout preventer was subjected to conditions beyond its design capabilities.

All Transocean blowout preventers meet or exceed regulatory standards for safe practices. Once a BOP configuration exceeds regulatory standards for safe practices, Transocean leaves redundancy considerations to the well Operator, in this case, BP. There are multiple BOP configurations that allow a drilling rig to operate safely, each with different advantages.

Question 4. Are you aware of other instances when a blowout preventer failed to close after the well had been capped?

Answer. No. For this question, Transocean understands "cap" to refer to the point at which the production string of casing had been cemented. Once a well has been sealed by cementing and casing and the appropriate mechanical barriers or cement plugs have been set, a blowout preventer should not be needed. The Macondo well, which the *Deepwater Horizon* was drilling, had been cemented and one plug had been set. Transocean has not had any other experience with a cased and cemented well blowing out such that the blowout preventer is unable to stop the flow of reservoir fluids and does not know of any similar events.

Question 5. Once a hardening substance is placed in the well during a capping procedure, can it be expected that any blowout would lodge debris in the blowout preventer and thus prevent the blowout preventer from functioning properly?

Answer. Possibly. In answering this inquiry, Transocean interprets the phrase "capping procedure" to refer to the cementing of the well. Once a well has been cemented and cased, it is a closed system and there should be no hydrocarbon movement between the reservoir and the well. Therefore, Transocean believes that for hydrocarbons to have entered the well, the cementing and/or casing and/or the seal assembly must have failed. If the casing and/or cementing fail, then it is possible to have debris in the blowout preventer such that the blowout preventer cannot function to stop flow.

Question 6. Was acoustic testing performed after capping of the well, and if not, who made the decision to skip this step?

Answer. Not to Transocean's knowledge. In responding to the inquiry, Transocean construes the term "capping" to refer to cementing. The decision to perform a cement bond log rests with the operator and cement contractor—in the case of the *Deepwater Horizon,* BP and Halliburton, respectively. As the drilling contractor, Transocean does not have a role in that decision or activity. To Transocean's knowledge, no cement bond log was performed on the Macondo well.

As far as Transocean has been able to determine, a cement bond log was called for in the BP well plan. A cement bond log uses variations in amplitude of an acoustic signal traveling down the casing wall between a transmitter and receiver to determine the quality of cement bond on the exterior casing wall. Schlumberger technical personnel were on board the *Deepwater Horizon* prior to the April 20 incident preparing for and waiting to perform a cement bond log, and Schlumberger had moved physical equipment to the *Deepwater Horizon* to perform the test. Based on records available to Transocean, those Schlumberger personnel left the *Deepwater Horizon* on the morning of April 20, before performing a cement bond log.

RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. JOHN D. ROCKEFELLER IV TO DEBORAH FRENCH-MCCAY, PH.D.

Question 1. I'm told the dispersants being used, both on the surface and subsea, have been pre-approved by the EPA and are biodegradable. However, I've read that this volume of dispersants dumped into the Gulf is unprecedented—that we really have no idea what impacts it might have on open ocean ecosystems or coastal areas. In your research, have you learned anything about the potential impacts of this dispersant on fish, birds or salt marsh areas?

Answer. The effects of dispersants on oil and the potential impacts of their use have been studied by many researchers, including myself; thus, there is considerable understanding of the potential impacts related to their use. I myself have performed many analyses of the implications of dispersant use, as compared to other spill response alternatives. However, the volume of dispersants used to date in the Gulf is unprecedented. I and other researchers have not studied oil spills of this magnitude (spill volume) with the scale of dispersant use being applied. Thus, the magnitude of impacts may be different than previously studied.

I will summarize briefly here what we do know about the impacts of dispersant use on marine biota and habitats. For a more detailed summary, I invite you to refer to the following National Academy of Science reviews, both of which have concise executive summaries:

National Research Council (NRC), 1989. Review of the State-of-Knowledge Regarding Dispersant Usage in Open-Ocean Spill Responses, NRC Marine Board, National Academy Press, Washington, D.C., 306p.

National Research Council (NRC), 2005. Oil Spill Dispersants—Efficacy and Effects. National Academy Press, Washington, D.C., 377p.

The dispersants pre-approved for use in U.S. waters have been formulated and tested to be much less toxic to marine organisms than the compounds in oil that cause most toxic effects, the PAHs. The concentrations lethal to organisms are approximately in the hundreds of parts per million range for dispersants, whereas lethal concentrations for the soluble and semi-soluble PAHs are in the parts per billion range. Dispersants increase the toxicity of oil to organisms in the water by facilitating the natural processes whereby oil is entrained (mixed) into the water by waves and turbulence. Furthermore, when dispersants are effectively applied, the oil so entrained is broken into smaller droplets than would occur naturally, speeding the dissolution of the toxic components into the water. It is thought that the breaking of oil into smaller droplets also facilitates degradation of the oil, which in either case occurs naturally.

Thus, the potential impacts of the dispersed oil on marine organisms are related to the amount of oil dispersed, the amount of the toxic components left in the oil when the oil is dispersed, and the dilution potential of the receiving water body. In the open ocean, such as the Gulf of Mexico, dilution potential is relatively high; whereas near shore and especially in salt marsh areas, dilution is much slower. For this reason, dispersant applications are focused offshore.

It should be noted that dispersants are used to treat oil in order to achieve a *net environmental benefit*. The fact that oil has been released cannot be changed, and the oil is and will continue to impact marine organisms, birds and other wildlife, and habitats. The decisions made during the response are tradeoffs; use of dispersants at this scale does increase the impact on marine organisms, but also reduces impacts on wildlife and habitats near shore. If the oil is allowed to remain floating and potentially come ashore, until it can be feasibly cleaned up by some means, many birds, sea turtles, marine mammals, and shoreline habitats (*e.g.,* salt marshes) will be exposed to the oil. However, with dispersants effectively applied, the amount of oil fouling wildlife and shorelines is reduced. In the current situation in the Gulf of Mexico, many of the birds and early life history stages of fish and shellfish are concentrated in wetlands and other shoreline or near-shore habitats. Thus, the impacts to these organisms are reduced by dispersant use, with the tradeoff of an increase (but hopefully lesser) impact on the offshore marine organisms.

I and many others engaged with the Federal and state governments, are focused on the evaluation of the impacts of the oil, and of dispersant use, on marine organisms caused by this spill and the response. However, there are many challenges that need to be overcome. One of the greatest difficulties is that we have little quantitative information on the species and biological communities that occupy the deeper waters of the Gulf of Mexico. In order to evaluate an impact, we need to understand how many animals and how much habitat is exposed, what the effects are on these biota, what their normal rates of survival, growth and reproduction would be absent the spill, and how these rates are affected by the dispersed oil and dis-

solved hydrocarbons. We are presently engaged in doing the needed basic science to help answer these questions. Along with the basic scientific studies, we are also engaged in documenting evidence of the impacts. Thus, the effort required for these studies is unprecedented, and will take considerable resources and time to accomplish before we can provide definitive answers to the public.

Question 2. The Gulf of Mexico also has problems with "dead zones" or areas with low oxygen. Is there anything in the dispersants being used that might create more dead zones in the area?

Answer. Both the dispersants and the oil will degrade over time and the bacteria that degrade these compounds do so utilizing oxygen. The degradation rates will need to be measured or estimated, and combined with estimates of natural degradation and other oxygen-consuming processes to determine how the deepwater dissolved oxygen levels have and will change. Measurements of dissolved oxygen are being taken by many researchers studying the spill. Thus, it is not clear yet whether the degradation rates of dispersants and oil are high enough to cause the areas of low oxygen to increase in size.

Question 3. We are injecting hundreds of thousands of gallons of dispersants into the source of this spill. This may keep the oil from getting to the surface or hitting the coastline, but it also has been forming a giant underwater plume of oil which is 10 miles long, 3 miles wide and 300 feet thick. How can BP clean-up this massive undersea plume? Is it the case that once the oil gets dispersed to the deep sea, all the money and technology in the world cannot clean it, and only Mother Nature and time will do the job?

Answer. Please note that while we do know there is oil in the deepwater, the shape and dimensions of that plume are not known at this time. We do know that the deepwater plume is constantly changing in shape, direction, and dimensions over time as the currents vary in time and space. We have been and will continue to sample in the deepwater to obtain more information so we can determine the nature and extent of that plume.

There is no available technology at present to clean up oil dispersed into the deep water of the ocean. The oil will degrade over time via the action of natural bacteria. Since there are natural seeps of oil and gas in the Gulf of Mexico in nearby areas, there are bacteria present that are able to break down the petroleum hydrocarbons in the oil. The hydrocarbon decay rates vary by the compound in the oil. While people have suggested seeding those bacteria or stimulating them in some manner, even if it were feasible to perform such activities, these approaches are unlikely to be effective in speeding the rate of decay given the large volumes of water affected and the fact that these bacteria need to adapt to the situation in the environment before their numbers can increase substantially.

However, it should be noted that the objective of using dispersants in the deep sea is to disperse the oil widely into the ocean, not to clean it up by some kind of removal process. This strategy is used because it is not feasible to clean up all, or even a majority of, the oil floating on the water surface. Thus, a *net environmental benefit* choice has been made to minimize overall impact to birds, mammals, sea turtles and shoreline/near-shore habitats by dispersing much of the oil at sea. It should also be noted that, under the Oil Pollution Act of 1990, the U.S. public is entitled to compensation for the impacts caused by the spill and response activities, and that compensation should be in the form of restoration of the environment (as a whole). Thus, it is important to evaluate the impacts, such that appropriate compensation (in the form of restoration) may be paid to the public by the responsible party.

Question 4. The Gulf is clearly an area that has had its share of exposure to oil, with large natural seeps and quite a few spills over the last 50 years. Can the plants and wildlife survive a spill of this magnitude?

Answer. Individual plants and animals have and will be killed by the oil's effects in areas where lethal thresholds are exceeded. Other individuals will be affected by reduced growth or life functions in the longer term. However, eventually and given enough time free from other impacting stressors, most populations and communities of plants and animals should recover. The question is how long recovery will take. Some of the species in deepwater benthic communities in the area affected by the spill have individuals hundreds of years old. On the other hand, microscopic plankton populations tend to recover, once the toxicity is gone, in weeks. The key issues to address are: (1) if there are species or communities of organisms impacted that cannot recover; (2) the magnitude and extent of impacts; (3) the time required for and degree of recovery expected and observed; and (4) the degree to which the ecosystem balance and functions have been altered, both in the short and long term. Because there are gaps in our understanding of the functioning of the affected ecosystems, scientists are presently engaged both in performing basic research and doc-

umenting the impacts of the spill. Until these studies are accomplished and discussed in scientific forums, we will not be able to completely answer the question: what are the impacts of the spill?

Question 5. Have they developed resiliency, or is this the straw that broke the camel's back?

Answer. While many, or maybe even most, species have likely developed resiliency, there may be some species or communities that cannot recover from a large adverse impact. As noted above, because there are gaps in our understanding of species and the functioning of the affected ecosystems, studies will be needed to answer this and related questions.

Question 6. Can you tell us what environmental impacts we are seeing right now from this incident?

Answer. To date, scientists and spill responders have documented mortalities of wildlife, fish and invertebrates from direct oil exposure, as well as oiling of salt marsh and other coastal habitats. We are engaged in a large and scientifically complicated effort to document impacts observed and estimate those impacts not directly observed. We will also need to evaluate the implications of our findings, in order to assess both the short and long-term impacts of the spill.

Question 7. What do you expect to see in the next month? In the next year?

Answer. I expect we will see additional evidence of impacts caused by the spill, including additional mortalities, reduced life functions of organisms and communities, reduced production of food for the food web and reductions in seafood harvest. Some of the impacts could continue for years. For example, some salt marshes that are heavily impacted will likely erode and not recover; and other marshes will take years to recover. There may be reductions in future fish and shellfish populations because of losses of eggs and larvae killed as the result of the spill.

RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. MARIA CANTWELL TO DEBORAH FRENCH-MCCAY, PH.D.

Question 1. Having seen that residual effects of the *Exxon Valdez* oil spill are still very apparent in areas of Prince William Sound, now some 20+ years later, what kind of time-frame do you believe we will need for monitoring to fully understand the effects of the oil now in the Gulf of Mexico?

Answer. Given the magnitude of this spill, and the time required for recovery for many of the affected organisms and communities (years, decades and possibly even centuries), monitoring will be required for at least a decade for most species and ecosystems, and longer for the very long-lived species and communities or where contamination persists, if scientists are to be able to evaluate the long-term impact.

Question 2. With oil being at many different depths within the water column, what sort of monitoring will be needed to fully monitor the effects?

Answer. Monitoring is going to require multiple sampling efforts in space and time using instrumentation deployed from oceanographic ships, autonomous vehicles, and moorings. This will need to be complemented by remote sensing and modeling techniques in order to integrate the information and interpolate between direct measurements and observations. Surface ships can most easily sample the upper water column; sampling deeper waters requires specialized instruments and protective housings. Remotely operated vehicles (ROVs) are effective samplers that can carry video monitors and specialized cameras; and ROVs can be deployed from surface vessels. Each instrument measures one piece of the puzzle in a particular zone of the water column, so it will take a variety of approaches to fully characterize the distribution of oil in the deep sea environment. Because it will not be feasible to sample every location affected over months to years when oil will be present or impacts will be felt, quantitative computer modeling approaches, founded in basic science, will be needed to fully evaluate the effects of the spill. Such modeling will require:

- Estimation of the currents in all layers of the ocean and over months of time;
- Evaluation of the weathering and fate of the oil, including calculation of dissolution of soluble compounds, sedimentation of oil to the seabed, evaporation at the water surface, formation of mousse and tar balls, and degradation of components;
- Evaluation of exposure of water column and bottom-dwelling organisms to dispersed oil and to dissolved components;
- Estimation of the toxic and other effects, both short- and long-term, of these exposures on individual organisms, populations and ecosystems;

- Evaluation of the potential for and rate of recovery of the affected organisms and ecosystems; and
- Consideration of the potential for mitigation of these effects.

Question 3. You say that some of these toxic compounds are water-soluble and can be absorbed into the tissues of organisms, such as the commercial shellfish and finfish species. If humans were to ingest these compounds, by eating these fish, wouldn't they potentially harm humans?

Answer. Yes, those compounds are potentially harmful to humans if ingested in sufficient quantities. Some of the compounds are documented carcinogens. For this reason, monitoring of seafood safety is a big part of the response effort.

Question 4. Some of these molecules do not readily degrade. Does that mean we may have human health issues as well, even after the oil itself dissipates from the water?

Answer. Over time with dilution, both through water transport and growth of seafood animals, the human health risks from seafood contamination should return to the normal background level present in our modern world. All the world's seas contain some typically-low level of contamination. The risks related to hydrocarbons remaining in the environment are considered much lower than those related to metals and persistent organic pollutants such as PCBs, dioxins and DDT.

Question 5. What kind of time-frame would we need for these aromatic molecules to break down?

Answer. The degradation rate of the soluble aromatic compounds in warm surface waters, such as in the surface waters of the Gulf of Mexico, is about 1 percent per day, or 25 percent per month. However, data documenting degradation rates in the deep ocean are lacking. I would expect the degradation rate in the deepwater to be considerably slower due to the colder temperatures and low oxygen conditions there. Larger non-soluble compounds in oil are much slower to degrade, by a factor 10 or more.

RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. ROGER F. WICKER TO DEBORAH FRENCH- MCCAY, PH.D.

Question 1. With your experience of past oil spills in the U.S., has our ability to restore ecosystems and recover following an oil disaster been successful?

Answer. Direct restoration of oil-impacted ecosystems has primarily involved: (1) cleanup of any oil that may be removed (mechanically or by burning) without causing more harm to the ecosystem than the oil itself; (2) replanting of vegetation in such habitats as saltmarshes and mangroves; and (3) monitoring natural recovery. Habitat restoration has been performed with varying success, with saltmarshes being the habitat most successfully restored. Even so, the functionality of replanted saltmarshes is typically of lower ecological value than that of a natural healthy habitat. Restoration of seagrass has proved difficult and the results short-lived, as the grass requires good water quality, protection from grazing animals (waterfowl), and the right environmental conditions to thrive. In any case, it takes years for a restored habitat to recover to full function, even with intervention.

In some cases, specific impacted resources have been targeted for restocking, nest protection, or other activities designed to enhance survival or productivity of the targeted biological population. For example, for the North Cape oil spill in Rhode Island in 1996, female lobsters that otherwise would have been harvested were placed back in the water (after compensation the fisherman for the lost catch) and marked so they would not be taken if caught again. That extra protection allowed the female lobsters more time to produce young in their lifetime, enhancing recruitment to the population. Restocking can also involve shellfish seeding programs using hatchery-raised individuals. However, these restocking activities have been limited to near-shore species and anadromous fish such as salmon, where life histories and growth needs are sufficiently understood. Restocking has not been attempted on offshore species.

Because of the infeasibility of completely cleaning up the oil and preventing all harm to the environment, in order to make the public "whole" in compensation for the impacts of an oil spill, a Natural Resource Damage Assessment process is undertaken by the government trustees. Under the Oil Pollution Act of 1990, the U.S. public is entitled to compensation by the responsible party for the impacts caused by the spill and response activities, and that compensation should be in the form of restoration of the environment scaled to the magnitude of the injury caused. The restoration is typically in-kind or enhancement of similar resources to those injured, rather than on the impacted resources directly, because of the feasibility con-

straints. This so-called compensatory restoration includes consideration of the magnitude of the injury, the time and degree of recovery, and the time lag before compensation is realized. The latter is addressed by the responsible party paying interest for the resources the public cannot use or enjoy in the interim.

Thus, in the *Deepwater Horizon* case, Federal and state trustees are engaged in a NRDA process (see NOAA's BP *Deepwater Horizon* damage assessment site for more information: *http://www.darrp.noaa.gov/southeast/deepwater_horizon*), with the objective being: (1) evaluation and quantification of injuries caused by the spill, (2) an evaluation of restoration options, and (3) a quantification of the scale of restoration required for compensation, including consideration of the timing of that compensation (*i.e.,* including interest). For offshore species and ecosystems, there are a number of ideas being considered for compensatory restoration. Many species (*e.g.,* shrimp, red snapper, red drum) use saltmarshes and estuaries as nurseries where juveniles can feed and grow with some protection. Thus, coastal habitat enhancements can provide compensation for the so-called "estuarine-dependant" species. Another idea, which would benefit offshore species, is to reduce pollutant loads to the Gulf of Mexico originating from the Mississippi drainage system. Low oxygen levels off the coast of Louisiana and Texas are caused by organic matter loads and nutrient runoff (which stimulates an overgrowth of algae that sinks, decomposes, and consumes oxygen). Reducing these loads could improve water quality in deepwater areas where low oxygen levels have affected ecosystem health.

Question 2. As oil production and import has steadily increased in the U.S. while oil catastrophes such as that in the Gulf have remained relatively rare, what lessons can we take from this incident that will help in protecting natural resources should a similar incident occur in the future?

Answer. The state of readiness for responding to a spill offshore, particularly of this magnitude, was obviously a major issue in this case. This was true of resources to respond and clean up the oil, as well as for monitoring the environmental impacts. The leaking well and affected areas offshore were a 24-hour journey or more from port for most research vessels, such that considerable time was required to transit out and back, as well as supply the vessels. The biggest challenge to the government's sampling program to document impacts to water column and seabed organisms was the lack of readily-available vessels capable of performing oceanographic research. The vessels required needed to be seaworthy offshore, have specialized equipment capable of sampling to >5,000ft in the water, and have experienced crew able to perform that work. Oceanographic vessels are normally scheduled months to years in advance; and in the first 3 months after the well began leaking, there was little if any ship time available. Thus, while the government's NRDA technical working group was seriously limited by resources, academics who had already scheduled cruises prior to the spill (and a few funded by the National Science Foundation after the spill) were able to get into the spill area to sample more readily than the government scientists. (This, along with time constraints and cautions against speculation put on government scientists, explains the press releases and claims of academics as being first to document various events.) BP hired offshore-service industry vessels, outfitted them for oceanographic research, and (eventually) made them available to government scientists. The mobilization took weeks to months to accomplish due to the technical complexity and the competition for resources (*i.e.,* both equipment and technicians to perform the work). Thus, NRDA sampling was compromised in the first 3 months and some needed sampling was delayed until late August and September. If the responsible party had been uncooperative, this process would have taken far longer, or not have been possible for lack of readily-available funding.

Thus, in order to be prepared to respond and sample to document impacts of large offshore spills, vessels and equipment must be ready and on standby in case the need arises. Also, while industry performing the oil exploration, production and transport of oil should fund such readiness, this funding should be required up-front so that resources are available to government scientists during the emergency phase. Otherwise, these scientists must submit proposals, negotiate and get sign-off by the responsible party before work can begin, a process that invites stalling such that important evidence is lost.

It also took some time to organize the sampling approaches for the NRDA, both because of the unprecedented nature of the spill and the low level of support for the NRDA program in recent years. Due to shortage of funds in NRDA preparedness, many government staff and consultants involved in the response phase were inexperienced, requiring considerable direction during the emergency phase. During the period after OPA90 passed (the 1990s), there was more opportunity for training at workshops and drills; much of these having been cut in the past 5 years. The increased readiness need not be accomplished by an expansion of government posi-

tions; rather having contractors in place, and holding regular workshops and drills to maintain readiness, would be cost-effective and meet the needs of response to a major spill.

Oil spill research has also not been well funded in recent years. As of 20 April 2010, much of our understanding of oil spills was based on research performed 20–30 years ago, and much of that was performed outside the U.S. The U.S. puts much less funding into oil spill research than countries such as Norway and France. The *Deepwater Horizon* oil spill has changed things tremendously, and more research funds are becoming available. However, the focus will be (appropriately) on this spill. There remains a large gap in our knowledge regarding spill response and potential impacts in the arctic (including in ice) and temperate-zone regions now scheduled for oil and gas exploitation.

Some of the major areas where research is needed include:

- Characterization of deepwater habitats and communities: While it is known that deepwater coral reefs and chemosynthetic communities exist in the Gulf of Mexico (and elsewhere), the vast majority have never been visited or mapped. Thus, when dispersants were injected at the well, it was unknown what communities might be exposed downstream. We are presently performing the basic research to determine what might have been affected by the dispersed oil.
- Densities and life history characteristics (*i.e.,* natural mortality, growth and reproductive rates) of deepwater fish and invertebrates that would be exposed to dispersed oil in deepwater environments—information is sparse at best in all areas of the world's oceans, including the northeastern Gulf of Mexico.
- Long-term effects of oil exposure on biological communities and ecosystems.

Finally, in a capitalistic system it is the job of private industry to make profits. If protection of the environment also helps them make profits, by improving their image or performing more efficiently, they will be motivated to do so. However, when the likelihood of an environmental disaster is perceived as small, with the probability of consequences considered less costly in the long run than the costs of readiness, industry will not take it upon themselves to maintain the readiness needed to avert environmental consequences suffered by the public at large. It is the job of the government to assure appropriate readiness, but without being burdensome to the point that American businesses cannot compete in the world market. Also, cost benefit analyses need to consider all potential alternatives for providing energy needs, such as the consequences related to spills of imported oil, as opposed to domestic development. Otherwise regulations may unwittingly increase environmental risk to natural resources considered as a whole.

Question 3. Based on the current scenario of oil leaking 5,000 ft below the ocean surface approximately 50 miles offshore, what marine organisms are likely to be impacted most significantly?

Answer. The organisms most significantly affected by the *Deepwater Horizon* oil spill will be fish and invertebrates in the offshore area of the northeastern Gulf of Mexico. Not only would they have been affected by oil entering the water column and rising through 5,000 feet of water, but the use of dispersants increased the likelihood of effects on water column biota in all depth levels.

The dispersants used to treat the spill have been shown to be much less toxic to marine organisms than the compounds in oil that cause most toxic effects, the PAHs. The concentrations lethal to organisms are approximately in the hundreds of parts per million range for dispersants, whereas lethal concentrations for the soluble and semi-soluble PAHs are in the parts per billion range. Dispersants increase the toxicity of oil to organisms in the water by facilitating the natural processes whereby oil is entrained (mixed) into the water by waves and turbulence. Furthermore, when dispersants are effectively applied, the oil so entrained is broken into smaller droplets than would occur naturally, speeding the dissolution of the toxic components into the water. It is thought that the breaking of oil into smaller droplets also facilitates degradation of the oil, which in either case occurs naturally.

It should be noted that dispersants are used to treat oil in order to achieve a *net environmental benefit*. The fact that oil has been released cannot be changed, and the oil is and will continue to impact marine organisms, birds and other wildlife, and habitats. The decisions made during the response are tradeoffs; use of dispersants at this scale does increase the impact on marine organisms, but also reduces impacts on wildlife and habitats near shore. If the oil were allowed to remain floating and potentially come ashore, until it could be feasibly cleaned up by some means, many more birds, sea turtles, marine mammals, and shoreline habitats (*e.g.,* salt marshes) would have been exposed to the oil. However, as it was with dispersants effectively applied, the amount of oil fouling wildlife and shorelines was

much reduced. In the current situation in the Gulf of Mexico, many of the birds and early life history stages of fish and shellfish are concentrated in wetlands and other shoreline or near-shore habitats. Thus, the impacts to these organisms were reduced by dispersant use, with the tradeoff of an increase impact on the offshore marine organisms.

However, there may be reductions in future fish and shellfish populations because of direct kills, or losses of eggs and larvae, as the result of the spill. The groups most vulnerable are the species that:

- have eggs and larvae that occupying the surface layer of the ocean (*e.g.,* tunas, billfish, lobster, crabs, shrimp);
- feed in the upper waters at some part of their daily or life cycle;
- occupy deep waters of the offshore Gulf of Mexico in the areas near the well; and
- form seabed communities near the well and to the southwest that occupy slopes between 1,000m (3,300ft) and 1,500m (5,000ft) of depth, as these were likely exposed to the subsurface dispersed oil.

I and many others engaged with the Federal and state governments, are focused on the evaluation of the impacts of the oil, and of dispersant use, on marine organisms caused by this spill and the response. However, there are many challenges that need to be overcome. One of the greatest difficulties is that we have little quantitative information on the species and biological communities that occupy the deeper waters of the Gulf of Mexico. In order to evaluate an impact, we need to understand how many animals and how much habitat is exposed, what the effects are on these biota, what their normal rates of survival, growth and reproduction would be absent the spill, and how these rates are affected by the dispersed oil and dissolved hydrocarbons. We are presently engaged in doing the needed basic science to help answer these questions. Along with the basic scientific studies, we are also engaged in documenting evidence of the impacts. Thus, the effort required for these studies is unprecedented, and will take considerable resources and time to accomplish before we can provide definitive answers to the public.

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