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NRC'S IMPLEMENTATION OF THE FUKUSHIMA NEAR-TERM TASK FORCE RECOMMENDATIONS AND OTHER ACTIONS TO ENHANCE AND MAINTAIN NUCLEAR SAFETY

HEARING

BEFORE THE

COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS UNITED STATES SENATE

ONE HUNDRED THIRTEENTH CONGRESS

SECOND SESSION

JUNE 4, 2014

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ONE HUNDRED THIRTEENTH CONGRESS
SECOND SESSION

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NRC'S IMPLEMENTATION OF THE FUKUSHIMA NEAR-TERM TASK FORCE RECOMMENDATIONS AND OTHER ACTIONS TO ENHANCE AND MAINTAIN NUCLEAR SAFETY

WEDNESDAY, JUNE 4, 2014

U.S. SENATE,
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS,
Washington, DC.

The committee met, pursuant to notice, at 9:31 a.m. in room 406, Dirksen Senate Building, Hon. Barbara Boxer (chairman of the committee) presiding.

Present: Senators Boxer, Cardin, Whitehouse, Markey, Vitter, Inhofe, Barrasso, and Sessions.

OPENING STATEMENT OF HON. BARBARA BOXER, U.S. SENATOR FROM THE STATE OF CALIFORNIA

Senator BOXER. The committee will come to order.

Today, the EPW Committee is holding its ninth oversight hearing with the NRC since the earthquake, tsunami and nuclear meltdown in Japan.

It has been more than 3 years since the Fukushima disaster and Japan is still struggling to clean up the site. The massive underground ice wall intended to prevent radioactive water from flowing into the sea will take a year to finish and cost more than $300 million.

We must learn from the tragic events in Fukushima and take all necessary steps to ensure the safety of nuclear facilities in the United States. Today, I am going to continue to focus on whether the NRC has done that.

It is vitally important that the NRC remain committed to its mission which is "to ensure the safe use of radioactive materials for beneficial civilian purposes while protecting people and the environment."

Based on a review of the progress made since the Fukushima disaster and on whether additional steps need to be taken by NRC to ensure the safety of the people and the environment, which is your charge, I am afraid that you may have lost sight of your mission.

The Fukushima Near Term Task Force made up of NRC senior staff recommended 12 measures to upgrade safety in the wake of the Fukushima meltdowns. In August 2011, the former NRC chairman testified before our committee that the NRC should be able to act on those recommendations within 90 days and that they could be implemented within 5 years.

As of today, I think I have a chart here, the NRC has failed to require reactor operators to complete implementation of a single one of the post-Fukushima safety measures. This is scandalous. Some reactor operators are still not in compliance with the safety requirements that were in place before Fukushima. The NRC has completed its own action on only four of the 12 task force recommendations.

Your team, that you praise all the time, told you that you have to do this. This is unacceptable, this delay, and it puts the safety of the American people at risk. I am sure you know what these are but we have these for you.

I also have serious concerns about the safety of spent nuclear fuel. NRC's own study showed that the consequences of a fire at a spent nuclear fuel pool can be as serious as a severe accident at an operating reactor.

Not only does NRC allow that fuel to be stored in spent fuel pools indefinitely, NRC is considering requests from decommissioning reactor operators for exemptions from emergency response measures designed to protect nearby communities.

While the Nuclear Energy Institute, in a letter sent to me yesterday claimed that these exemptions are granted only when "special circumstances" exist at a facility, the truth is that never has the NRC denied even one waiver request. It rubber stamps them every single time a reactor shuts down.

I have introduced three bills with Senators Markey and Sanders to increase the safety of spent nuclear fuel and improve the decommissioning process. These are not theoretical concerns.

On the same day that this committee held a hearing on this topic last month, an out of control wildfire was burning a half a mile away from the San Onofre plant. Those are the people of California, millions and millions of them. This plant is asking for a waiver so they don't have to deal with any type of emergency response.

My concern that NRC's commitment to identify and remedy safety problems is also highlighted by my investigation into the installation of defective equipment at San Onofre. For example, I learned that the NRC staff was preparing to allow the restart of one of the reactors before it had received a single answer to any of the technical safety questions it asked Southern California Edison to submit, a continuing of the pattern of doing everything that we are asked to do by the industry.

This oversight investigation I am conducting is important, not only to get to the bottom of the problems at San Onofre, but to avoid disastrous problems like this in the future. That is a concern that whistleblowers at NRC feel they have no recourse but to contact Congress to report safety problems and that is what they are doing, ladies and gentlemen, because NRC's internal procedures for addressing these concerns are broken.

Remarkably, NRC is continuing to obstruct my investigation by withholding documents that the committee has a right to receive. Let me be clear. The NRC has no legal right whatsoever to refuse to provide the committee with these documents. Today, I will make available a comprehensive analysis of this conclusion.

In order for the nuclear industry to maintain the confidence of people, we have a lot of people here who are very strong supporters of the nuclear industry, I believe it is critical that you step up to the plate on safety.

NRC's recent track record does not inspire confidence and that does not bode well because at the end of the day, the American people don't want to have a reactor near them because of these problems and the industry is just not going to be there in the future. There are a lot of people on this committee who want to see the industry in the future.

I do look forward to asking you some more questions. With that, I call on Senator Vitter.

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

Senator VITTER. Thank you, Chairman Boxer, for convening today's hearing and I want to thank our NRC commissioners for your work, your dedication and for being here to testify.

Lately, various members on this committee have been very active in fundamentally attempting how the NRC manages itself and our Nation's nuclear power electricity generating facilities. In recent months, we have seen legislation, letters and statements from some of my colleagues in favor of new, costly and, in my view, usually unnecessary regulations.

Today, I want to urge our commissioners to be precise and direct with your thoughts on these initiatives. You and your staff are the experts, we are not. We depend on your expertise, so I urge you to recommit to using the best available science and facts to ensure that any new rules and regulations are necessary and appropriate for our fleet which happens to have a long track record of safety.

There exists a baseline standard that the Commission should meet when considering new regulations. I want to commend the Commission for basing their recent vote to eliminate further generic assessments to expedite the transfer of spent fuel from pools to dry storage on facts and sound science.

While some of my colleagues may disagree with the Commission and myself on this issue, it is important to note that the NRC staff, who recommended elimination of these generic assessments, had extensively studied the issue and compiled all available data to make the best possible recommendation.

As most of you are aware, this past Monday, EPA Administrator Gina McCarthy and President Obama released new regulations for carbon emissions from existing power plants as part of the President's Climate Action Plan.

While the President's efforts to kill coal fire generation are obvious and already underway, I am really concerned about another and somewhat more subversive and under cover effort which is ongoing to really cripple the nuclear industry.

When he first announced the Climate Action Plan, the President notoriously stated that he supports an all of the above approach. I think the disingenuous nature of this claim really requires only a cursory review of recent actions by the Administration, including the nuclear side.

For the nuclear sector, the work being done to undermine the Waste Confidence Rule and to kill the Yucca Mountain project is a clear example of a long term strategy to shut down most or all of our Nation's nuclear power.

Another example is the recent 316(b) rule for cooling water intake systems. Although EPA's rule this time around may not look like it will at the critical impact many in the environmental community had hoped, it will certainly be litigated and whatever deal the EPA cuts behind closed doors in that process will assuredly be worse.

I firmly believe that the nuclear factor should play a role in meeting our domestic energy needs safely and with the confidence of the American people. However, I am concerned that some Senate Democrats are using these hearings to provide cover for efforts, quite frankly, to kill nuclear generation which has only served to decrease the output in capacity of our Nation's reliable nuclear fleet.

Ironically, these shutdowns will increase greenhouse gas emissions as States struggle to find other baseload power.

Finally, I want to State my concern on the lack of communication from NRC and the Administration about the re-nomination of Commissioner Apostolakis whose term is up at the end of this month, as well as a replacement for Commissioner Magwood when he vacates his seat later this year.

Keeping these positions filled by qualified individuals must remain a priority to ensure the safety of our constituents and for our Nation's economy. I urge the Administration to act on this quickly so that the Commission can continue this important work without interruption or distractions.

Again, thanks very much for being here. Thanks for your work. I look forward to your expert testimony.

Senator BOXER. Thank you, Senator.

Senator CARDIN.

OPENING STATEMENT OF HON. BENJAMIN CARDIN, U.S. SENATOR FROM THE STATE OF MARYLAND

Senator CARDIN. Madam Chair, thank you very much for conducting this hearing. Let me thank all the Commissioners for being here. I thank you very much for your public service.

To follow up on Senator Vitter's point, I do think we can have less pollution in our air and reduce carbon. We can do it in a way that would help public health, in a way that will create more jobs, and we can do it with nuclear energy in a safe way. I think all of the above are very important.

This hearing is a timely hearing for many reasons. As the Chairman pointed out, we have a responsibility with regard to public safety to make sure the Nuclear Regulatory Commission is operating with top priorities to protect the public safety and people in our community.

It is also timely because of the Administration's announcements on their power plant rules about our commitment to reduce our carbon emissions. Nuclear energy is an important part of that. I think all of that comes together in today's hearing and I very much appreciate this opportunity.

Nuclear energy is an extremely important part of our energy supply in this Country. Twenty percent of our electricity is from nuclear power; 60 percent of our carbon free electricity is produced through nuclear energy. It is a critical part of our energy sufficiency in this Country and therefore, we need to do this in a way that is mindful of the safety of the people of our Country.

We have about 100 reactors today. Two units are at Calvert Cliffs in Maryland and obviously of major concern to me. The Nuclear Regulatory Commission is homed in my State of Maryland and we are very proud of the people who work there. It is consistently ranked as one of the best places to work which I think reflects the management at the Commission and we are very proud of that.

As we conduct this oversight hearing, let me point out a couple of trends. First, we have gone through a very difficult time of sequestration, government shutdown, pay freezes and that has had an impact on your work force. We expect the very best to be in this field.

I am concerned about the impact of the recent government policies on the budget has had on your capacity to retain the very best people so that we can carry out the mission of public safety and nuclear power in this Country.

I welcome your candid views as to where we are in regard to your ability to attract and retain the very best in order to ensure the safety of the people of this Country and to be at the forefront of nuclear technology and, as Senator Vitter said, using the best science and information to make sure we are doing what is right.

On the other side of that equation, there has been a change in your mission over the period of the last couple of decades. The number of reactors is not what we predicted them to be. That affects your overall mission and how you have adjusted to the realities of the number of reactors we have in our Country.

The handling of nuclear spent materials, waste, has changed dramatically over the last couple decades. What has been your adjustment to your mission in order to make sure you have adequate resources to carry out those missions?

I welcome this hearing so that we can carry out our responsibility of oversight to make sure you have the tools necessary to not only provide the best for our Country, we know we are the leaders in the world and what we are doing with nuclear regulation and second, whether because of the change in mission, we should be looking at a different way of making sure you have the adequate tools to carry out your responsibilities.

I look forward to your testimony and I thank you all for being here.

Senator BOXER. Thank you, Senator.

Senator SESSIONS.

OPENING STATEMENT OF HON. JEFF SESSIONS, U.S. SENATOR FROM THE STATE OF ALABAMA

Senator SESSIONS. Thank you very much, Chairman Boxer and Ranking Member Vitter.

Madam Chairman, I know you are concerned about safety and that is an important issue. You will be challenged to meet those

standards that we expect of the board but the nuclear industry, I have to say, represents a vital part of our energy mix.

It produces no carbon emissions. In a week when the President has unveiled regulations demanding a 30 percent reduction from 2005 levels of CO2 by 2030, we surely should be discussing the role that nuclear power can play in reaching those goals.

In fact, we have an excellent safety record. I do believe it should never be forgotten that despite all the dangers and lives lost in other energy sources, we have never had an individual lost or killed as a result of a nuclear power generating accident, zero, and one have been made sick, to my knowledge.

This is a tremendous safety record and a tremendous environmental record. The risks involved in the safe management of nuclear power have been reduced. This Commission has been responsible for that. You have been watching this carefully. You are professionals and you are experienced.

You have a right and a duty to hold these industries and businesses accountable but you also have a duty and a responsibility to listen to them. If they provide good information that helps you make the plant safer at less cost, you should be able to listen and respond to that.

According to the Energy Information Agency, the industry produces 20 percent of all our electricity and 60 percent of all carbon free electricity. The continued work of the NRC to follow the D.C. Circuit Court's order in Aiken County regarding the licensing of Yucca Mountain is of vital importance.

As the Court stated, "Because Congress did not enact new legislation and because Congress sets the policy, not the Commission, regarding the storage of nuclear waste, it is clear the Commission must promptly continue with the legally mandated licensing process for disposal of waste."

I hope you will continue to move forward with that. Already the United States has spent $15 billion on Yucca Mountain, according to the GAO, $15 billion, and we have not been able to utilize that effectively.

The United States has had to pay $2 billion so far, an amount that could grow to $50 billion according to the congressional Research Service, for claims from the government's failure to deal with the nuclear waste issue. This is an unbelievable series of events.

I know the Majority leader opposes this but the local people in Nevada have supported it in the area of Yucca and the Congress has voted for it. It is time to move forward. The United States needs a robust nuclear generating fleet.

I am really concerned that Kewaunee Power Station in Wisconsin, closed; Vermont Yankee, closed; Crystal River Unit 3 in Florida, closed; SONGS Units 2 and 3 in California, closed; and Oyster Creek in New Jersey, to close by 2019. We only have Vogtle in Georgia and Summer in South Carolina being developed. This is a serious concern.

Safety is a priority but clean, responsible, baseload nuclear power at a reasonable rate is so important for America.

Madam Chairman, I appreciate the hearing. I know this Commission and its staff need to be held accountable but they have

been doing a good job. We had a problem with the prior leader. He is gone now and Ms. Macfarlane is leading collegially and I think effectively. The board is effectively working together. I am proud of what they are doing and I believe we need to be asking ourselves what can we do reasonably and safely to deal with what appears to be not a growth in nuclear power but a decline. I think that would be a real tragedy for the people of the Country.

Thank you.

Senator BOXER. Thank you.

Senator WHITEHOUSE.

OPENING STATEMENT OF HON. SHELDON WHITEHOUSE, U.S. SENATOR FROM THE STATE OF RHODE ISLAND

Senator WHITEHOUSE. Thank you, Chairman. Thank you and the Ranking Member for holding this important hearing on maintaining the safety of our nuclear facilities.

A primary function of the Nuclear Regulatory Commission is to ensure that active and retired reactors are safe and secure.

Safety concerns have been raised about onsite storage of nuclear material at decommissioned and operating plants alike. The 2011 meltdown of Japan's Fukushima Daiichi Nuclear Power Plant was a stark reminder of the hazard of large scale nuclear disaster.

That episode prompted the NRC to establish a Near Term Task Force which outlined 12 safety recommendations to reduce vulnerabilities for American nuclear plants. In 2012, the NRC ordered nuclear plants to carry out the first set of recommendations which included updates to maintain cooling during external events, upgrades to reactor containment venting and better monitoring of spent fuel pools during accidents.

The ability of our existing temporary nuclear waste storage to withstand natural disasters or other emergencies is of particular importance in Rhode Island. Although we do not have any nuclear power plants within our borders, we are within the 50 mile congestion exposure pathway of Connecticut's Millstone Power Station and Massachusetts' Pilgrim Power Station.

Both facilities sit on the Atlantic Coast and face heightened risk from extreme weather events, coastal flooding and sea level rise.

Given Rhode Island's exposure, I joined several of my Senate colleagues in asking the Government Accountability Office to investigate the NRC's oversight of emergency preparedness at and near our Nation's nuclear power plants.

The latest Fukushima safety reports also remind us that the technology at the world's nuclear facilities has remained largely stagnant over the past 60 years despite the availability of a number of significant advances.

Boosting nuclear plant security will require taking advantage of innovative approaches. There is at least one advanced reactor concept, for example, that doesn't require water for cooling, so it can be built away from the shore line and the coastal elements.

Our current nuclear fleet is aging. As you have heard from my colleagues, many reactors are going offline. Last year, four nuclear reactors closed in the U.S. and Vermont Yankee Nuclear Power Station will be decommissioned by the end of this year. When the

energy produced by these reactors disappears from the grid, other sources have to fill the gap.

To achieve the greenhouse reductions outlined in the President's Climate Action Plan, we need to explore all potential options and technologies for zero carbon base load power. Investing more in advanced nuclear technologies, things like small modular reactors and traveling wave reactors, may be a way to produce more greenhouse free energy while generating less waste.

As we work to address both the safety of our existing fleet and provide reliable, base load power at a cost effective rate, we should apply the lessons of disasters like Fukushima in researching and developing advanced nuclear technologies.

As Chairman of the Subcommittee on Clean Air and Nuclear Safety, I appreciate the opportunity to hear from all of the NRC Commissioners on this critical issue and I once again thank the Chairman and the Ranking Member for holding this important hearing.

Senator BOXER. Thank you, Senator.

We are so happy to see you, Senator Inhofe. Welcome.

OPENING STATEMENT OF HON. JAMES INHOFE, U.S. SENATOR FROM THE STATE OF OKLAHOMA

Senator INHOFE. Thank you. It is nice to be here.

When I first became chairman, you will remember this well, of the Air and Nuclear Subcommittee in 1997, it is kind of interesting that we had not had an oversight hearing with the NRC in 10 years. We started having them and now we are having two in a matter of weeks about the same topic, decommissioning.

Since 1997, we have increased our oversight hearings successfully. I am not worried about that. Oversight is a good thing but the aim seems to be to put the industry out of business rather than ensure that the NRC is conducting appropriate oversight.

The NRC rightly looked into the issue of expediting spent fuel pools to dry cask following the Fukushima disaster. The staff ultimately determined that the United States' risk of radiological release from the compromise of spent fuel pools "is very low, about one time in ten million years or lower." The study predicted no early fatalities attributable to radiation exposure. That was the report of the staff and I think the majority of the Commissioners.

According to researchers at NASF, that means it is less than the likelihood the earth will be struck by a civilization threatening meteor which has a risk of occurring only once every four million years. Appropriately, the NRC concluded "expediting movement of spent fuel from the pool does not provide a substantial safety enhancement."

When you consider that mandating this would cost the industry an additional $4 billion, it is right for the Commissioners to vote in favor of the staff's position. I am disappointed, however, that the NRC is going to spend even more time and resources studying this topic. It will only serve to waste additional taxpayer dollars.

Nevertheless, I have full confidence in the ability of the NRC to handle the decommissioning process. I find concerning the majority's intent to undermine the public's confidence on this topic. Just this week, the President released his global warming regulations

for existing power plants. The costs would be enormous, $51 billion in lost economic activity per year which translates to about 224,000 jobs.

While the President's plan treats nuclear plants more favorably than others, I am not naive enough to believe that he and his environmental friends actually like the nuclear industry. As we all know, the President's model country for his green dream is Germany. Environmentalists there successfully used the disaster at Fukushima to enact a ban on nuclear power plants.

Many environmentalists and members on the other side of the aisle are similarly positioned, pursuing every regulatory impulse to enact an unbearable cumulative cost of compliance while prohibiting the final construction of Yucca Mountain, leaving room for folks like the NRDC and others to challenge the issuance of additional licensing due to the waste confidence issue.

Let's keep in mind that in Germany what happened as a result of all of this in that relatively short period of time, the cost per kilowatt hour has doubled in Germany from 18 to 36. Germany currently has three times the cost per kilowatt hour as we do in this Country. We have a lot of people we represent who are very interested in that and it should be a major consideration.

The nuclear power industry provides 20 percent of our total electricity generation here in America. If the environmental left is successful in shutting down this safe and inexpensive domestic source of energy, the American people will be the ones to suffer.

The problem is the Administration is internally inconsistent in its energy policy. As Gina McCarthy touts greater reliance on nuclear generation to offset the phase out of coal in her ESPS rule, NRC is pushing the industry down the compliance rabbit holes of new regulation. I am talking about 316(b), the flood and seismic and several others, that would actually have the effect of putting nuclear out of business.

Sometimes I just wish that FERC, EPA, NRC and the Democrats would just sit down in a room and talk with each other about how we should power this machine called America if they are successful in these endeavors.

Thank you, Madam Chairman.

[The prepared statement of Senator Inhofe follows:]

STATEMENT OF HON. JAMES INHOFE, U.S. SENATOR
FROM THE STATE OF OKLAHOMA

When I first became chairman of the Air and Nuclear subcommittee, it had been 10 years since we had an oversight hearing on the NRC. Now, we're having two in a matter of weeks about the same topic: decommissioning. Normally I wouldn't worry about that—oversight is a good thing—but the aim of this Committee seems to be to put the industry out of business rather than ensure that the NRC is conducting appropriate oversight. The NRC rightly looked into the issue of expediting spent fuel from pools to dry casks following the Fukushima Disaster, and the staff ultimately determined that the U.S. fleet's risk "of a radiological release" from the compromise of a spent fuel pool "[is] very low (about 1 time in 10 million years or lower) . . . [and] the study predicted no early fatalities attributable to radiation exposure."

According to researchers at NASA, that's less than the likelihood the earth will be struck by a civilization-threatening meteor, which has a risk of occurring only "once every few million years." Appropriately, the NRC staff concluded that "expediting movement of spent fuel from the pool does not provide a substantial safety enhancement." And when you consider that mandating this would cost the industry an additional $4 billion, it was right for the Commissioners to vote in favor of the

staff's position. I am disappointed, however, that the NRC is going to spend even more time and resources studying this topic. It will only serve to waste additional taxpayer dollars.

Nevertheless, I have full confidence in the ability of the NRC to handle the decommissioning process, and I find it concerning that the majority is intent to undermine the public's confidence on this topic. Just this week the President released his global warming regulations for existing power plants, and their cost is going to be enormous: $51 billion in lost economic activity per year, which translates into about 224,000 lost jobs. And while the President's plan treats nuclear plants more favorably than others, I'm not naive enough to believe that he and his environmental friends actually like the nuclear industry.

I've long said that the President's model country for his green dream is Germany, and environmentalists there successfully used the disaster at Fukushima to enact a ban on nuclear power plants. Many environmentalists and members on the other side of the aisle are similarly positioned. . . pursuing every regulatory impulse to enact an unbearable cumulative cost of compliance while prohibiting the final construction of Yucca Mountain, leaving room for folks like the Natural Resources Defense Council to challenge the issuance of additional licenses due to the Waste Confidence issue.

We should be very wary of setting our sights on becoming Germany. As they've aggressively pursued the same Green Dream as the President, the cost of electricity has more than doubled, and prices there are now 300 percent higher than they are here in the United States. The nuclear power industry provides 20 percent of our total electricity generation, and if the environmental left is successful at shutting down this safe, inexpensive, domestic source of energy, then the American people will suffer for it. The problem is that the Administration is internally inconsistent in its energy policy—as Gina McCarthy touts greater reliance on Nuclear generation to offset a phaseout of coal in her ESPS rule Monday, NRC is pushing the industry down compliance rabbit holes of new regulations, 316(b), Flood and Seismic just to name a few, that threaten to put Nuclear out of business. Sometimes I just wish that FERC, NERC, EPA, NRC, and the Democrats would sit in a room and talk to each other about how we should power this machine called America. We should not be looking for ways to regulate the industry out of business.

Senator BOXER. We are pleased to see you. I am sorry I missed you.

OPENING STATEMENT OF HON. JOHN BARRASSO, U.S. SENATOR FROM THE STATE OF WYOMING

Senator BARRASSO. Thank you very much, Madam Chairman.

I appreciate your scheduling the hearing today. Welcome to the Commissioners.

The Nuclear Regulatory Commission is vital to ensuring nuclear safety. It is important for this committee to make sure their mission is carried out effectively. Although there are some who may question policy decisions made by the Commission, I believe we have come a long way from where the Commission was just a few years ago.

The Commissioners recently made the decision to recognize that nuclear power plants need flexibility in when they can move spent fuel from wet pools to dry cask storage. I believe storing nuclear waste in wet pools is safe.

As we all know, however, storing fuel in wet pools is not a long term solution for storing nuclear waste. Eventually, this fuel must be put into the dry cask so that it can be shipped to Yucca Mountain or whatever facility is chosen to store the nuclear waste.

The Commission is currently working on the safety assessment for Yucca Mountain. Unfortunately, the Commission has not requested supplemental funds for Yucca Mountain related activities. There is a concern from those of us on the committee who believe

that Yucca Mountain is a viable option for the long term storage of nuclear waste.

I am also concerned, Madam Chairman, that the progress the NRC has made could be undone if we do not have qualified individuals in all Commissioner slots on the Commission. For example, Commissioner Apostolakis' term ends this month, yet the Administration has failed to re-nominate him for this position. I don't understand the rationale. The Commissioner is a vital member of the Commission with years of experience.

I would suggest that the President re-nominate him as soon as possible so that we can maintain a full commission that continues to protect our community by ensuring nuclear safety. This is best achieved by having experienced commissioners who work well together.

If the President had a different nominee in mind, the committee must be given the time to vet and consider that nominee before the end of a commissioner's term. The delay in making a decision on this matter shows a lack of respect for the role this committee plays in vetting nominees for the Commission.

The Nuclear Regulatory Commission is an important aspect to oversee nuclear power and must be comprised of competent individuals. The Commission can ensure that nuclear energy continues to be an important part of America's energy mix. It is safe. Baseload power runs 24 hours a day, 7 days a week. Nuclear energy also can make America energy independent.

In my home State of Wyoming, uranium is in abundance. If we continue to develop this resource, we can have a steady supply of domestic fuel stock to power American homes and businesses for many years to come.

If we are to have a true, all out, all of the above energy strategy, we must continue to build new nuclear power plants. This is essential to the future of nuclear power in America. We cannot hamper nuclear power by over regulating the plants that we have. We must strike a balance to ensure the safety of our communities while continuing to ensure the viability of nuclear power.

I thank you, Madam Chairman, and look forward to the testimony.

Senator BOXER. Senator, thank you.

I don't see any other Senators, so we will turn to the Chairman. She has 5 minutes and the other Commissioners also. Then we will ask our questions. Please proceed.

STATEMENT OF ALLISON M. MACFARLANE, CHAIRMAN, NUCLEAR REGULATORY COMMISSION

Chairman MACFARLANE. Good morning, Chairman Boxer, Ranking Member Vitter and distinguished members of the committee.

My colleagues and I appreciate the opportunity to appear before you this morning on behalf of the U.S. Nuclear Regulatory Commission.

Today, I would like to discuss the NRC's accomplishments and challenges and the efforts the agency is making to assure we are performing as effectively and efficiently as possible.

The NRC continues to make significant progress in addressing lessons learned from the Fukushima accident. The majority of the

Tier 1 activities are on track to be completed before the end of 2016 and we are addressing the Tiers 2 and 3 issues as well.

We are seeing reactors with upcoming outages making modifications to safety systems to provide additional supplies of electrical power and multiple ways to inject cooling water into the reactors and spent fuel pools. They are also installing additional portable equipment.

Two weeks ago, I had the opportunity to visit the Palo Verde Nuclear Generating Station in Arizona and one of the industry's two regional response centers. These centers contain additional portable safety radiation protection and other emergency response equipment that can be delivered to an affected plant within 24 hours.

These visits gave me the opportunity to see firsthand how the industry is complying with the NRC requirements to enhance the plant's ability to withstand a beyond design basis accident.

While maintaining our focus on the operating fleet, the NRC is also overseeing new construction at the Watts Bar Unit 2 plant, the Vogtle plant and BC Summer to ensure that plants are being constructed in accordance with their approved design and issues our inspectors identify are corrected.

With four reactors recently ceasing operation and Vermont Yankee permanently shutting down by the end of 2014, as a number of you mentioned, the NRC has sharpened its focus on the transition from operating to decommissioning plants.

It is important to emphasize that when a reactor ceases operations, the NRC's work to ensure safety and security continues. After full fuel is removed from the reactor core, the NRC continues to ensure operational safety controls, security and emergency preparedness remain appropriate to protect the public.

The NRC must review the licensee's planned decommissioning activities, schedules and cost estimates and hold public meetings near the plant before major decommissioning activities can begin.

The NRC oversees facility transition to ensure decommissioning is carried out safely. We encourage licensees to inform and engage members of the public and State and local officials throughout the decommissioning process.

The NRC believes the safety and security requirements we mandate will be most effective if they are prioritized appropriately so licensees can maintain focus on safe operations. We are carefully working to understand and manage the cumulative effects of our regulations, including timelines for new or revised requirements based on the priorities associated with each action and the availability of NRC and industry resources.

We have enhanced public participation in our rulemakings and have engaged the industry to perform case studies to develop more accurate regulatory cost and schedule estimates.

The Commission has directed the staff to continue its work to understand cumulative impacts and to assess the effectiveness of the NRC's process enhancements. The NRC faces a different future from what we anticipated just a few years ago when a significant increase in new reactor licensing and construction was projected.

We recognize the need to approach this future in an agile and efficient manner. We are working now to project the agency's ex-

pected workload and critical skill needs through 2020. While there are fewer operating plants and new large light water reactor license applications, the NRC's workload has increased in other areas.

In addition to the work areas I have just discussed, we are continuing to address the court's decisions on waste confidence in Yucca Mountain and preparing for small, modular reactor design reviews, among other things.

As we meet these challenges, I am confident in the NRC's ability to continue to develop and execute the strategies needed to achieve our safety and security mission.

Thank you for the opportunity to appear before you today. I am pleased to answer any of your questions.

[The prepared statement of Chairman Macfarlane follows:]

WRITTEN STATEMENT

BY ALLISON M. MACFARLANE, CHAIRMAN

UNITED STATES NUCLEAR REGULATORY COMMISSION

TO THE

SENATE COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS

JUNE 4, 2014

Chairman Boxer, Ranking Member Vitter, Chairman Whitehouse, Ranking Member Sessions, and Members of the Committee, my colleagues and I appreciate the opportunity to appear before you today on behalf of the U.S. Nuclear Regulatory Commission (NRC).

Today, I'd like to highlight the NRC's ongoing post-Fukushima accomplishments, provide additional detail on our decommissioning activities, and address the agency's efforts to ensure it is operating efficiently and effectively.

FUKUSHIMA

First, let me reiterate that the NRC continues to conduct inspections at each U.S. nuclear power plant and the Commission remains confident that the fleet continues to operate safely. The NRC continues making good progress in addressing lessons learned from the Fukushima Dai-ichi accident. The majority of the Tier 1 activities are on track to be completed before the end of 2016, and we continue to address Tier 2 and Tier 3 issues. The NRC continues to monitor the implementation of the required safety enhancements. We are seeing the reactors with upcoming fall outages preparing to make modifications to safety systems to provide additional supplies of electrical power and multiple ways to inject cooling water into the reactors and spent fuel pools. They are also positioning additional portable equipment that is arriving at the sites. I just returned from travel to Arizona, where I visited the Palo Verde Nuclear Generating Station in Wintersburg and toured the industry's new Regional Response

Center in Phoenix. To comply with the orders that the NRC issued to all operating nuclear power plants to be prepared to employ mitigation strategies in response to a severe accident, licensees have purchased portable equipment such as pumps and generators and placed them at locations that ensure their availability during such events. I was able to see this first-hand at Palo Verde. At the Regional Response Center, the industry has set up a facility containing additional portable safety equipment, radiation protection equipment, electrical generators, pumps, and other emergency response equipment that can be delivered to an affected reactor site within 24 hours to ensure that plants can restore and maintain plant cooling indefinitely. A second Regional Response Center in Memphis, Tennessee is expected to open later this month.

Following the Fukushima Dai-ichi accident, the NRC moved swiftly to require reactor licensees to confirm their capability to protect against the hazards within the plant's current design basis. Additionally, plants were required to assess their ability to mitigate if a beyond design basis event were to occur. Plants are making progress in complying with the NRC's Mitigating Strategies Order. Additionally, plants have now begun installing additional reliable instrumentation to monitor water levels in the spent fuel pools following a beyond-design-basis event. Overall, licensees are making significant progress in implementing our Fukushima-related requirements.

Enhanced Capabilities to Mitigate Beyond-Design-Basis Accidents

In addition to assessing the site specific hazards at each site, the NRC issued orders to licensees to ensure that sites are better prepared to respond to beyond-design-basis accidents. The NRC has required licensees, through our Mitigating Strategies Order, to provide additional capabilities to maintain or restore core cooling, containment integrity, and spent fuel pool cooling for all units at a site following an beyond design basis event. In February 2013, the licensees submitted their integrated safety plans for NRC approval and the NRC staff has

issued interim staff assessments approving the plans. Licensees are now in the process of implementing these requirements.

Nuclear power plant licensees are making plant modifications and are procuring the equipment for their sites to support full implementation by the dates established in the orders and their related integrated safety plans. Many sites are scheduled to achieve full implementation by the end of 2015, with the remaining sites to be completed by 2016. The one exception to this is that some boiling water reactors are requesting schedule extensions for those parts of the mitigating strategies affected by the NRC's revision to the order on containment venting, which I will discuss further in a moment. During and after implementation, the NRC will conduct inspections to verify that nuclear power plants have put appropriate strategies in place to mitigate beyond design-basis accidents.

This additional capability to address beyond design basis events such as large earthquakes or floods provides the most significant safety improvements that the NRC has required as a result of the lessons learned from Fukushima.

Consistent with our regulatory practices, the NRC is conducting a rulemaking that will codify the requirements already imposed in the March 2012 Order. The rule will update requirements to mitigate a prolonged station blackout condition. This rulemaking will incorporate feedback and lessons-learned from implementation of the previously imposed Order to enhance capabilities to mitigate beyond-design-basis accidents at the sites. This rulemaking remains on schedule to be completed by 2016.

Seismic and Flooding Reevaluations

The NRC directed licensees to reevaluate existing design bases for plants in the area of seismic and flooding hazards. As a result of the lessons learned from the earthquake and tsunami at Fukushima and because Earth science understanding of these hazards has advanced, the NRC required all nuclear power plants to re-evaluate their hazards. To ensure appropriate protection against natural hazards, the NRC is requiring each plant to use current

methodologies and updated regulatory guidance to reevaluate seismic and flooding hazards and then ensure an adequate plant response to those hazards. The licensees for plants east of the Rocky Mountains have completed and submitted the reevaluation of potential seismic hazards for their sites. Approximately two-thirds of these plants, or about 40 sites, have determined that their new seismic hazard estimates exceed the previously evaluated hazard, which would necessitate the need for further seismic risk analysis. The NRC has assigned each of these plants to one of three priority categories that dictate their deadlines to complete additional evaluations. The NRC will use the results of these assessments to determine whether additional site-specific safety enhancements are warranted. Approximately 20 of the 40 sites have a sufficiently low hazard increase that a detailed risk analysis may not be necessary.

Because the U.S. Geological Survey recently updated seismic hazards for the central and eastern United States, plants in those areas could incorporate this new data directly. The three plants in the Western United States cannot rely on a single seismic hazard model and therefore must conduct significant additional evaluation in order to submit their seismic hazard reassessments. For this reason, licensees whose plants are located in the Western United States have longer to conduct assessments and are scheduled to submit their seismic hazard reevaluations by March 2015.

It is important to note that these requested reevaluations of seismic hazards and the related staff assessments represent only the *hazard*, which is the amount of ground shaking, and not the plant's *capacity* to withstand that shaking. The risk posed to the public from a nuclear power plant due to a seismic event is a function of not only the ground motion, but also the plant design and construction, which has been shown to include considerable margin to survive strong earthquakes. Additional evaluations performed by licensees and the NRC staff support the findings of the Near Term Task Force, and other determinations, that continued operation of nuclear plants in the U.S. poses no undue risk to the public health and safety. The

NRC staff and industry continue to assess seismic issues and identify possible safety enhancements to address those cases in which seismic risks are determined to be higher than previously estimated.

As an interim step to implement safety enhancements, the NRC and industry have developed a revised approach to upgrade certain safety systems at the facilities for which additional analysis is required. Licensees will now use their updated seismic hazard assessments to identify and implement seismic upgrades to certain safety-significant equipment. Previously, the planned approach was to have licensees complete comprehensive plant risk analyses before determining what upgrades may be necessary. The revised approach will result in seismic-related safety enhancements being identified and implemented at the sites sooner than originally planned, with many plants completing safety enhancements by 2016. The NRC will still require most of those licensees who complete this interim step to do seismic probabilistic risk assessments to determine if any further safety enhancements are warranted.

For flooding hazard reevaluations, the NRC categorized the plants based on factors such as the complexity of the analyses required, co-location with a site considering a new reactor application, and the potential for requiring an integrated assessment of the re-evaluated hazard. Thirty-two sites have provided the results of their reevaluated flood hazard, and the remaining 30 sites are scheduled to complete and submit their reevaluations by March 2015.

Sites with reevaluated hazard results that are bounded by their current design basis do not need to take further action. The NRC requested that licensees whose flooding hazard reevaluation results are not bounded by their current design basis describe any interim actions, taken or planned, to address the reevaluated flooding hazard. Interim actions may include pre-staging protective equipment like temporary flood barriers, modifying flood procedures, provision of additional pumping capacity, and installation of permanent flooding barriers. In addition, these sites must complete an assessment of the site's flood protection and mitigation

capability within two years of submitting the hazard reevaluation results to determine whether permanent safety enhancements are necessary.

At present, the NRC is reviewing the interim actions for flooding that were proposed by individual sites and is performing on-site inspections to ensure that the interim actions are protective of public health and safety. Concurrently, the NRC is reviewing the flood hazard reevaluation results submitted by the licensees to ensure they correctly utilized current methodologies.

Emergency Preparedness Communication and Staffing

To ensure that nuclear power plant sites have adequate staffing and sufficient communication capacity in place to cope with prolonged accident conditions, particularly involving multiple units, the NRC requested that licensees reassess their emergency response capabilities. This includes examining staffing plans, conducting periodic training for staff on multi-unit accident scenarios, and ensuring that communication equipment can function during a prolonged loss of power at the site. Licensees are performing these activities and are expected to complete them by 2016. Portions of these activities related to staffing and communications have already been completed and submitted to the NRC, and the NRC staff has issued safety assessments to operating licensees. The staff will follow up with licensees to confirm that the enhancements to the sites' communication systems are completed.

The NRC is also conducting a rulemaking to integrate emergency operating procedures, severe accident management guidelines, and extensive damage mitigation guidelines. This rulemaking, will require these safety procedures to be effectively implemented in a coordinated manner during a nuclear accident. The new requirements will better equip licensees to address accidents outside of a plant's current design basis, and promote proper training to address these scenarios. The NRC will then ensure that the licensees take the actions specified in the final rule, which remains on schedule for completion by 2016.

Spent Fuel Pool Instrumentation

Although inspections of the Fukushima Dai-ichi facility determined that spent fuel pool integrity had been maintained and the spent fuel had been adequately cooled during the accident, there were questions about the water level in the spent fuel pools that diverted operator attention away from other response priorities. To ensure the capability to continuously monitor spent fuel pool water levels and conditions during an extreme event, the NRC has ordered the installation of enhanced instrumentation at all U.S. nuclear plants. This additional equipment expands upon the capabilities of currently-installed instrumentation and will indicate the full range of water level above the spent fuel assemblies. To ensure coordinated implementation of all high-priority enhancements, the NRC is requiring that licensees complete installation of this instrumentation, along with the installation of the enhanced spent fuel pool cooling capabilities required under the Mitigating Strategies Order, with full implementation at all sites by 2016. Licensees submitted their integrated safety plans to implement this requirement in February 2013. The NRC reviewed those safety plans and issued all of its interim staff evaluations by the end of 2013. The NRC will ultimately issue final safety evaluations and inspect each site to verify that the licensees have appropriately implemented this requirement.

Reliable Hardened Vents

To protect containment integrity and support continued core cooling in the 31 boiling water reactors with Mark I and II containments, similar in design to those at Fukushima Dai-ichi, the NRC issued an Order requiring installation of reliable hardened vents capable of relieving high pressure in the reactor containment. In response, in February 2013, licensees submitted their plans for implementing this requirement. These requirements were initially on the same schedule as those I just described, with full implementation expected in 2016. The Commission subsequently directed the staff to expand those requirements to ensure that the vents can be operated during severe accidents. The NRC issued new requirements for the operation of vents in June 2013, including a revised schedule requiring licensees to submit implementation plans

in June 2014, and have in place severe accident capable venting systems by June 2018. The differences between the schedules for this order and the Mitigating Strategies Order led some licensees to request, and the NRC to grant, extensions to that part of the Mitigating Strategies Order related to venting containment. There have also been requests for extensions related to the Containment Venting Order for those plants, such as Vermont Yankee, that plan to cease operation in the relatively near future. The NRC is reviewing each extension request to ensure it is consistent with the intent of our Orders for timely implementation of safety enhancements. The NRC is ensuring that licensees will have all necessary plant safety enhancements in place, except those that rely on the enhanced vents, before the end of 2016.

The Commission also directed the NRC staff to undertake a rulemaking to consider additional requirements for these reactors to retain and filter radioactive material during an accident and enhance the capability to maintain containment integrity and cool core debris. The NRC staff is exploring the requirements associated with such measures. In keeping with NRC rulemaking practices, there will be multiple opportunities for public participation in this process.

Spent Fuel Pool Study and Expedited Transfer Issues

The events at Fukushima also led the NRC staff to question whether the NRC should require expedited transfer of spent fuel to dry cask storage at U.S. nuclear power plants.

In the summer of 2011, the NRC staff initiated a research project entitled, "Consequence Study of a Beyond-Design-Basis Earthquake Affecting the Spent Fuel Pool for a U.S. Mark I Boiling Water Reactor." The final report was completed and made available to the public in October 2013. The staff also undertook a generic regulatory analysis to determine if the potential safety benefits of reducing the amount of spent fuel stored in storage pools would: (i) meet the NRC's criteria for a substantial safety improvement at existing nuclear power plants; and (ii) meet criteria for a cost-justified safety improvement for future nuclear power plants. This assessment was provided to the Commission in late 2013. The Commission held a public briefing on spent fuel pool safety and consideration of expedited transfer of spent fuel to dry

casks, which gave both the NRC staff and selected stakeholders the opportunity to present their views.

The Commission approved the staff's recommendation that no further generic assessments be pursued related to possible regulatory actions to require the expedited transfer of spent fuel to dry cask storage. The Commission also directed that the staff: (1) further evaluate an alternate loading configuration of spent fuel in pools in its regulatory analysis; (2) provide the Commission with information on the treatment of limited-term operational vulnerabilities associated with the discharge of spent fuel into pools, as well as on spent fuel rack designs used in other countries; and (3) remain cognizant of ongoing efforts by the Department of Energy to develop accident tolerant fuels and engage with them as appropriate to facilitate potential future use of these technologies in U.S. commercial nuclear power plants. The Commission further directed the staff to evaluate whether spent fuel pools can be eliminated from further review in the seismic hazard reevaluation efforts described earlier.

National Academy of Sciences Study

As directed by Congress, the NRC issued a grant to the National Academy of Sciences (NAS) to provide an assessment of lessons learned from the Fukushima nuclear accident for improving the safety and security of nuclear plants in the United States. This assessment will address the following issues: (1) causes of the Fukushima nuclear accident; (2) re-evaluation of the conclusions from previous NAS studies; (3) lessons to improve plant safety and security systems and operations; and (4) lessons to improve plant safety and security regulations, including processes for identifying and applying design basis events for accidents and terrorist attacks to existing nuclear plants. The NRC staff is providing the assistance needed to support NAS's completion of the report, with the first part of the report on Fukushima lessons learned expected to be issued in the near future. The Commission has also directed the staff to report on the study's findings.

Longer-Term Actions Associated with Fukushima Lessons Learned

We have focused on the highest-priority, most safety-significant enhancements first. The agency will complete the most safety-significant enhancements on or ahead of the five-year goal.

Over the coming months and years, as we gain insights from implementation of the highest priority actions, and the decommissioning activities at the Fukushima Dai-ichi site, and as staff with critical skills are freed up from higher priority Fukushima work we will focus our efforts on the remaining lessons learned activities, the remaining recommendations from the Near Term Task Force will be dispositioned.

The NRC continues to interact with our licensees and interested members of the public as we move forward to implement these Fukushima safety enhancements. We have held more than 150 public meetings over the past three years to keep the public apprised of our activities. The NRC is mindful that we must take a careful and deliberate approach to this work to prevent these regulatory actions from distracting us or the industry from day-to-day nuclear safety priorities, and to avoid unintended safety or security consequences. As with the NRC's response to previous events, such as the September 11, 2001 terrorist attacks, we remain cognizant that a change in one system has the potential to adversely affect another system if not considered holistically.

The NRC continues to receive regular reports on the efforts to remediate the Fukushima site and makes use of this information to help identify potential lessons learned for U.S. reactors. The NRC is also maintaining an awareness of the activities of other federal and state agencies in monitoring and sharing information with the public about the low levels of radioactive materials expected to reach the western U.S. The concentrations of radioactive elements in the Pacific Ocean off the coast of Japan from Fukushima remain very low – well below the U.S. regulatory limits for drinking water.

DECOMMISSIONING

In testimony before this Committee on May 14, 2014, Mr. Michael F. Weber, NRC Deputy Executive Director for Materials, Waste, Research, State, Tribal, and Compliance Programs, described in detail the NRC's decommissioning regulations and the requirement that decommissioning be completed within 60 years. Under the current decommissioning regulations, first implemented in 1997, seven power reactors have safely completed decommissioning and their operating licenses were terminated for unrestricted use of the sites. The available decommissioning funds were adequate to complete those complex projects. With four reactors recently shut down and an additional shutdown planned by the end of 2014, the NRC has sharpened its focus on the transition process for plants moving from operating to decommissioning. The Commission plans to hold a meeting on the subject next month.

It is important to emphasize that when a reactor shuts down, the NRC ensures that safety and security continue. Once the licensee notifies the NRC that it has permanently ceased operations and has removed fuel from the reactor, it is no longer authorized to operate. Risks to the public are reduced, but not eliminated, when the reactor permanently shuts down and is defueled. After defueling, our primary safety focus is on the spent fuel pool. The NRC ensures that operational safety controls, security, and emergency preparedness remain sufficient to protect the public health and safety.

The licensee is required to submit a Post-Shutdown Decommissioning Activities Report (PSDAR) within two years of the notification that it has permanently ceased operations and has removed fuel from the reactor. During the intervening period, the licensee is not permitted to perform any major decommissioning activities. The NRC continues its oversight of the licensee during this interim period, typically maintaining a resident inspector on site during the initial phase of decommissioning until he or she is no longer needed on a daily basis. After the resident inspector leaves, NRC inspections continue, using inspection staff from the Regional Offices and Headquarters. Throughout this period, the licensee must still comply with the terms

of its operating license and NRC statutes and regulations. When the PSDAR is submitted, the NRC carefully reviews the report to determine whether it complies with all regulatory requirements and conducts a public meeting in the vicinity of the plant. The NRC reviews the licensee's description of the planned decommissioning activities together with a site-specific decommissioning cost estimate and projected costs of managing irradiated fuel. Ninety days after the PSDAR is submitted, the licensee can begin significant decommissioning activities and draw on decommissioning trust funds to fund those activities.

The NRC oversees facility transition to ensure the decommissioning is carried out safely, while keeping the public informed of the process. We likewise encourage our licensees to inform and engage members of the public and state and local elected officials with an interest in their decommissioning sites. Some licensees are choosing to form community advisory boards to inform and engage members of the public and state and local elected officials with an interest in the sites being decommissioned.

NEW CONSTRUCTION

Construction at the new reactor units at Plant Vogtle in Georgia and V.C. Summer in South Carolina continues to progress under NRC oversight. A major milestone was recently reached at both Summer Unit 2 and Vogtle Unit 3 when the auxiliary building module, each weighing more than 1,100 tons, which will house various plant components, including the used fuel storage area, were placed into the nuclear island at both sites. Additionally, major sections of the containment vessels at Summer Unit 2 and Vogtle Unit 3 are scheduled to be set in place in the coming weeks. The NRC staff continues to provide close oversight of module fabrication and other construction activities at the sites to ensure that all identified quality issues are corrected and that the plants are being constructed in accordance with the approved design. Overall, the NRC is satisfied with the safety of construction work being conducted at the two sites.

The NRC also continues to provide construction oversight at Watts Bar Unit 2. The NRC staff's review of the Tennessee Valley Authority's (TVA) Operating License Application for Watts Bar Nuclear Plant Unit 2, while mostly complete, is still in progress. The NRC staff continues to document its findings in supplements to the safety evaluation report, and construction inspection reports to ensure that TVA has met the applicable regulatory requirements. Currently, the staff is working toward issuing a decision on an operating license in early 2015.

The agency has certified four new reactor designs: ABWR, System 80+, AP 600 and AP 1000. In early May, the agency issued a supplement to the proposed rule to certify the Economic Simplified Boiling Water Reactor (ESBWR) design. The NRC is currently reviewing two Combined License Applications referencing this design. The NRC also continues to review design certification, combined license, and early site permit applications. We also anticipate the submission of the first design certification applications for small modular reactors in the coming years.

PROPOSED RULE TO ESTABLISH THE FY 2014 OPERATING REACTOR ANNUAL FEES

The Omnibus Budget Reconciliation Act of 1990 (OBRA 90) requires the NRC to collect approximately 90% of its budget authority *in the year appropriated* through fees from its licensees. Annual fees (10 CFR Part 171) are billed to the classes of NRC licensees to collect the NRC's recoverable budget authority not collected from fees for services (10 CFR Part 170). The changing financial environment for the NRC Reactor Safety Program resulted in a low annual fee in FY 2013 ($4.159 million) and a high proposed annual fee in FY 2014 ($5.104 million).

On April 14, 2014, the NRC published its FY 2014 Proposed Fee Rule in the *Federal Register* for public comment. The Proposed Rule calls for an increase of $945,000 per reactor compared to the FY 2013 annual fee. The NRC has received significant comments on the

proposed rule and is working to address them for the final FY 2014 Fee Rule. The FY 2014 Operating Reactor Annual Fees increased from the FY 2013 amount for three principal reasons.

First, the agency entered FY 2014 with a government shutdown and funding uncertainty, prepared for a potential sequester, which would have significantly reduced anticipated NRC available resources, similar to the FY 2013 sequester-level funding. Fortunately, however, the sequester was not imposed and resources were appropriated to the NRC at essentially the requested level. Receiving this additional funding late in the year resulted in the NRC Reactor Safety Program realizing a recoverable budget increase of $64.6 million, which equates to a proposed increase of approximately $650,000 in annual fees per operating reactor from the FY 2013 level. These additional funds are not expected to be expended and billed in FY 2014 through fees-for-service work (10 CFR Part 170) and therefore must, by law, be recovered through annual fees *in the year appropriated.*

Second, in FY 2013, there was a one-time, prior-period collection resulting in an increase of $20.9 million in collections of fees for services (10 CFR170). This additional collection caused a reduction in the FY 2013 annual fees, which will not recur during FY 2014. The lack of this one-time increase in fees-for-services collections caused approximately 21% of the increase in the FY 2014 Proposed Annual Fees per reactor above the FY 2013 level.

Finally, in FY 2014, there are 100 operating reactors being billed annual fees, a decrease of two reactors from FY 2013 due to the permanent shutdown of San Onofre Nuclear Generating Station Units 2 and 3. This reduced reactor population from which to collect fees caused approximately 11% of the increase in the FY 2014 Proposed Annual Fees per reactor. An additional 3% of the increase is attributable to the margin for uncertainty.

ENSURING EFFICIENT USE OF RESOURCES

The NRC faces a different future from what we expected just a few years ago when substantial new reactor construction was projected, and no licensees had recently announced

intentions to permanently cease operations. Anticipating a significant increase in demand for licensing services following the Energy Policy Act of 2005, and based on information provided by the industry, the NRC responded with an aggressive effort to build staff capability and the infrastructure to support a projected workload increase in new reactor licensing. While the workload for new licensing has not materialized as anticipated, decommissioning requires resources. As the number of operating plants has decreased slightly, the need for NRC engagement has grown in other unanticipated areas. Implementing Fukushima lessons learned to further protect against an accident, addressing the court decision vacating the Waste Confidence Rulemaking, developing the Safety Evaluation Report for the Yucca Mountain repository to comply with another court decision, and decommissioning of nuclear power reactors are examples of recently changing and high-priority demands to which the agency has had to respond. We have therefore been adjusting NRC staffing in the nearer term to respond to these changing priorities

We have addressed these challenges by directing available resources to the highest-priority safety and security mission work. As the NRC moves toward a new environment, we are reviewing our human capital requirements. Additionally, the NRC has adjusted its human capital strategies to ensure that the agency is focused on maintaining personnel with essential critical skills as well as fine-tuning the skills of our employees to meet current and future mission needs. We also are continuing to ensure that knowledge critical to the agency's mission is preserved.

We have an obligation to protect the public, respond to Congress and the courts, license and regulate the use of nuclear materials, and to do so in the most effective and efficient manner. Efficiency is one of the agency's long-standing principles of good regulation, along with openness, independence, clarity, and reliability. In light of the reality that our agency is on the cusp of a different future than we expected just a few years ago, it is appropriate that for the longer term, we examine the projected work and the size and organizational structure of our

workforce. Accordingly, the Executive Director for Operations has initiated a fresh and realistic look at each of the business lines and where the agency will be in five years. The Commission will be working with the NRC staff to adjust, refine, and redirect programs, plans, budgets, and human capital strategies as appropriate.

The staff has been assembling a "best estimate scenario" of the NRC in 2019 that, among other things, will include a thorough understanding of where we will be in the new large light water reactor application and review process, a realistic view of which advanced reactors will have applications under review or be in construction, a best estimate of the size of the operating fleet, a vision for our other key program areas, and an assessment of our various corporate support functions. This information can facilitate the development and execution of the strategies necessary to achieve our mission, while we continue to monitor the internal and external environments, and work to enhance our agility and organizational capacity. We understand the need to be proactive about our future, addressing challenges as they arise, and maintaining a focus on the mission.

Finally, and very importantly, we have been actively streamlining the agency's support functions and overhead costs. Over the past five years, for example, we have taken steps to reduce overhead by centralizing the delivery of corporate support services. Because of these efforts our FY 2015 budget request reflects a reduction of $7 million in overhead from FY 2014 alone. Overall, our efforts to control agency costs since FY 2011 have resulted in a net reduction of 215 FTE in support personnel, which equates to a 14% decrease. Additionally, we are in the process of consolidating our personnel from satellite buildings into a contiguous three-building campus. This effort has enabled some efficiencies and we continue to adjust the placement of functions in our ongoing effort to achieve out-year savings.

UNDERSTANDING THE CUMULATIVE EFFECTS OF REGULATION

The Atomic Energy Act requires the NRC to protect public health and safety and promote the common defense and security, and the requirements the NRC imposes are intended to meet this mandate. We recognize that important safety and security enhancements will be most effective if necessary, regulatory measures are prioritized appropriately so that licensees can maintain focus on the most safety-significant issues and activities. The NRC has had enhancements to the rulemaking process in place since 2011 to better address the cumulative effects of agency decision-making.

In particular, we are interacting closely with various groups, including industry, government, and members of the public, to ensure that we understand and manage the impacts on licensees of regulatory initiatives and activities that are being implemented concurrently. We are reviewing implementation timelines for new or revised regulations, the priority associated with each action, and the availability of critical skills to complete implementation.

The NRC has also engaged the operating reactor industry to perform "case studies" reviewing regulatory cost and schedule estimates. In addition, we are working with other parts of the regulated community and with our Agreement State regulatory partners to assess and control cumulative effects. The NRC has received feedback from industry indicating that estimating costs is difficult and that the industry is challenged to provide feedback on NRC's costs estimates during the development of a proposed regulatory requirement that is still in formulation. Nevertheless, industry acknowledges that it needs to provide better cost estimates to NRC at the appropriate points in the regulatory process.

Consistent with Commission direction, the NRC staff is also currently exploring a new, modernized regulatory approach that would permit licensees to propose plant-specific adjustments to priorities and schedules based on risk significance.

A LOOK AHEAD

While we have accomplished a great deal, many challenges lie ahead for the NRC. In the coming months, in addition to maintaining focus on ensuring continued safe operations, the Commission's activities will include the following:

- Implementing safety-significant lessons learned from the Fukushima accident in accordance with established agency processes and procedures;
- Continuing work on the Yucca Mountain licensing process in an efficient and effective manner;
- Completing the agency's Waste Confidence activities;
- Overseeing decommissioning activities at SONGS, Kewaunee and Crystal River 3;
- Continuing to conduct oversight of construction activities at the new Plant Vogtle, V.C. Summer, and Watts Bar 2 reactors;
- Overseeing the implementation of radioactive source security enhancements, including ensuring that Agreement States have implemented compatible regulations and updating our own procedures and guidance documents;
- Enhancing cyber security for nuclear power plants, fuel cycle facilities, research and test reactors, and materials licensees; and
- Strengthening our close cooperation with international partners.

Chairman Boxer, Ranking Member Vitter, Chairman Whitehouse, Ranking Member Sessions, thank you for the opportunity to appear before you today; I would be pleased to answer your questions.

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

September 4, 2014

The Honorable Barbara Boxer
Chairman, Committee on Environment and
Public Works
United States Senate
Washington, DC 20515

Dear Madam Chairman:

The U.S. Nuclear Regulatory Commission appeared before the Committee on Environment and Public Works on June 4, 2014, at a hearing entitled "*Oversight Hearing: NRC's Implementation of the Fukushima Near-Term Task Force Recommendations and other Actions to Enhance and Maintain Nuclear Safety.*" From that hearing, you forwarded questions to Chairman Macfarlane on behalf of the Commission, and questions specifically for Chairman Macfarlane for the hearing record. The responses to those questions are enclosed. If I can be of further assistance, please do not hesitate to contact me.

Sincerely,

Eugene Dacus, Acting Director
Office of Congressional Affairs

Enclosure:
As stated

cc: The Honorable David Vitter

The Honorable Barbara Boxer

QUESTION 1. Chairman Macfarlane, the NRC is still withholding two categories of documents related to the San Onofre investigation from the Committee. I requested that Morton Rosenberg, who worked for 35 years as a specialist in constitutional law and congressional investigative prerogatives at the Congressional Research Service, analyze the Commission's written reasons for continuing to withhold these documents from the Committee.

Mr. Rosenberg's analysis says that your letters to me demonstrate a "profound misunderstanding" of Congress's investigatory power, that they mis-state court decisions, they ignore "overwhelmingly contrary case law" that supports the Committee's right to receive the materials, and they show a "lack of awareness of over 90 years of congressional investigations" in which agencies have had to give Congress what it asked for.

Please provide me with a) all responsive documents that have been withheld from the Committee and b) all responsive documents that have been produced or obtained by the NRC since the NRC completed its document collection in response to my letter of November 21, 2013 (most of which were delivered to the Committee on January 28, 2014).

ANSWER.

The Commission stands by its prior analyses, which comport with the practices of other federal agencies and the legal position adopted by the Department of Justice. We further note that the Commission has previously provided the Committee the technical and investigatory documents and adjudicatory decisions that pertain to public health and safety concerns regarding the SONGS steam generators, the plant shutdown, and staff consideration of the Confirmatory Action Letter.

The NRC is committed to cooperating with the Committee in the conduct of its important legislative and oversight responsibilities and the Commission has responded to your requests in this spirit. We continue to welcome the opportunity to discuss these matters with you further.

The Honorable Barbara Boxer

QUESTION 2. Please confirm the following:

a. The NRC has never refused a request of a decommissioning reactor licensee to be exempted from off-site emergency preparedness requirements.

b. Southern California Edison, in its request to NRC for exemptions from a wide range of NRC emergency response and security requirements at the San Onofre Nuclear Generating Station, said that its "proposed exemption will allow SCE to discontinue offsite emergency planning activities and reduce the scope of onsite emergency planning. Examples of requirements subject to the proposed exemption that are related to discontinuing offsite emergency planning activities include, but are not limited to, requirements for offsite agency emergency plans, emergency planning zones and ingestion pathway zones, the emergency operations facility, evacuation time estimates, offsite notification timeliness, offsite dose projections, and protective action recommendations. Examples of requirements subject to the proposed exemption that are related to reducing the scope of onsite emergency planning activities include, but are not limited to, requirements for the emergency response data system, onsite facilities (operations support center and technical support center), and hostile action based exercises."

ANSWER.

a) The NRC staff has not approved all exemption requests as originally submitted. Some licensees have modified or withdrawn their exemption requests in accordance with determinations made during the staff's review.

The NRC staff reviews requests for exemptions for decommissioning plants using the same process and standards it uses to review requests for exemptions submitted by licensees of operating plants. The NRC review of exemption applications considers whether the exemption is authorized by law, whether the exemption would present an undue risk to the public health and safety, whether the exemption is consistent with common defense and security, and whether special circumstances, as defined in the NRC's regulations, exist. If the NRC staff determines that a proposed exemption request does not satisfy these requirements, the NRC staff typically provides the licensee an opportunity to supplement its application with additional information. If it becomes apparent through interactions with the NRC staff that the exemption will not be granted, the licensee often chooses to withdraw the exemption request, rather than having NRC issue a denial.

As a recent example, on August 27, 2013, Southern California Edison (SCE) withdrew its request for an exemption to defer performing the biennial NRC evaluated exercise of its onsite and offsite emergency plans for the San Onofre Nuclear Generating Station (SONGS) Units 2 and 3, as required by 10 CFR Part 50, Appendix E, Sections IV.F.2.b and c. As indicated in SCE's letter, the request was withdrawn "[b]ased on discussions with the NRC staff and after consulting with the offsite agencies." SCE requested the exemption on August 8, 2013, shortly

after submitting certifications that it had permanently shut down and defueled SONGS Units 2 and 3.

b) The NRC confirms that the statements quoted in your question are from Southern California Edison's Emergency Planning Exemption Request, dated March 31, 2014. This item is still under NRC staff review.

The Honorable Barbara Boxer

QUESTION 3. **Please confirm that on May 14, 2014 in response to a wildfire that was burning at Camp Pendleton:**

a) **Southern California Edison posted personnel at the south boundary of the San Onofre nuclear generating station?**
b) **Southern California Edison evacuated 13 employees from the part of the site that is near the south boundary?**
c) **Southern California Edison wet down vegetation at that part of the site that is near the south boundary as a precautionary measure to prevent the fire from spreading into the reactor site?**
d) **Southern California Edison dispatched some San Onofre personnel to Camp Pendleton to assist with the fire-fighting efforts?**

ANSWER.

On May 14, 2014, an NRC region-based inspector was at the San Onofre Nuclear Generating Station and he observed the fire. The inspector monitored the station response.

a) Southern California Edison (SCE) assembled the plant fire brigade and posted the fire brigade personnel in the South Yard area, which is along the south boundary of the plant next to San Onofre State Beach.

b) Yes, SCE conducted a precautionary evacuation of personnel who normally work in the South Yard area. The employees evacuated from that area were not essential for maintaining the safe operations of the plant.

c) SCE did wet down vegetation along the south edge of the South Yard area during the event. The vegetation that was wetted was located on San Onofre State Beach property. They stopped this activity about mid-afternoon, after the fire turned and began burning to the south, away from the plant.

d) Yes, one pumper truck and its associated crew from the San Onofre site assisted the Camp Pendleton fire department in firefighting efforts.

The Honorable Barbara Boxer

QUESTION 4. Please confirm the following statements:

a. On February 21, 2013, NRC staff circulated a "Technical Evaluation Report," a type of document that would typically be used as the technical basis in support of regulatory decisions. The document related to the proposed restart of the San Onofre Nuclear Generating Station Unit 2.

b. The February 21, 2013 document was circulated before any of the NRC Requests for Additional Information were received from Southern California Edison (these were sent by NRC on December 26 2012, March 15 2013 and March 18 2013. Southern California Edison answered questions 1-32 on March 1, 2013 and questions 33-72 on April 24, 2013.)

c. The document said that the NRC staff had concluded that safety issues related to re-starting the reactor at 70% power had been adequately addressed by the licensee. "Specifically, it stated that "the staff's review of the licensee's approach in complying with the applicable TS requirements via the licensee's performed OAs, together with compensatory and corrective actions implemented by the licensee, concluded that the TS requirements for the equipment 'OPERABILITY,' as defined above, as well as the LCO CONDITIONS and Surveillance Requirements specified above, have adequately been addressed

by the licensee for its planned extended operations at 70% power."

d. The document explicitly left as an open question the regulatory basis that NRC would use for the restart, listing license amendment, order or confirmatory action letter as among the options that could be utilized, but it said that the licensee had already demonstrated that the reactor could be safely restarted.

ANSWER.

a) On February 21, 2013, the NRC staff internally circulated several early draft inputs for a Technical Evaluation Report (TER) related to the proposed restart of the San Onofre Nuclear Generating Station (SONGS) Unit 2. As you noted, TERs can be used by the agency to document the technical basis for a regulatory decision. The NRC technical review staff requested draft TER inputs throughout the process of reviewing Southern California Edison's (SCE) October 3, 2012, return to service plan to assess the status of its review.

b) This statement is only partially correct. The February 21, 2013, draft input to the TER was circulated internally after NRC had received responses from SCE on 28 of the 32 requests for additional information (RAIs) provided in NRC's letter dated December 26, 2012. SCE submitted the 28 RAI responses to NRC in multiple letters dated between January 8, 2013, and February 7, 2013. SCE submitted responses to the remaining four RAIs to NRC on February 25, 2013. The preliminary findings and conclusions in the February 21, 2013, document you referenced were based on a review of SCE's October 3, 2012, response to NRC's March 27, 2012, Confirmatory Action Letter (CAL), which included its Unit 2 Return to Service Report, and the RAI responses received between January 8, 2013, and February 7,

2013. The draft input was requested of the technical review staff, in part, to prepare for a public meeting on February 27, 2013, between NRC and SCE to discuss and clarify additional draft RAIs issued to SCE between February 1 and 21, 2013. The document contained several open areas, and identified additional information that was needed to complete the review of SCE's operational assessments for SONGS Unit 2. As such, the report did not reflect a final agency position.

The NRC issued additional RAIs (33-72) to SCE on March 15 and 18, 2013. SCE responded to the additional RAIs, and supplemented several of its responses to RAIs 1-32, in multiple letters between March 14, 2013, and April 16, 2013.

c) The draft input was focused only on whether SCE's operational assessments were conducted consistent with the San Onofre Nuclear Generating Station (SONGS) Unit 2 technical specifications, which was one of many technical review areas that were under review and were to be documented in the TER. However, the TER contained many open items and did not provide any type of final decision on a proposed restart of Unit 2.

d) Yes, the draft input left open the regulatory basis that NRC would use for the restart because there were many open items under review and no decision regarding restart had been made. The TER did not provide, and the staff never made, a final decision on restart of Unit 2.

The Honorable Barbara Boxer

QUESTION 5. **Please confirm that on March 27, 2012, NRC sent Southern California Edison a Confirmatory Action Letter that stated that "this Confirmatory Action Letter (CAL) confirms that SONGS Unit 2 will not enter Mode 2, and SONGS Unit 3 will not enter Mode 4 (as defined in the technical specifications), until the NRC has completed its review of your actions listed below. The permission to resume power operations will be formally communicated to you in written correspondence."**

ANSWER.

The NRC confirms that on March 27, 2012, the agency sent Southern California Edison a Confirmatory Action Letter that stated, in part, "This Confirmatory Action Letter (CAL) confirms that SONGS Unit 2 will not enter Mode 2, and SONGS Unit 3 will not enter Mode 4 (as defined in the technical specifications), until the NRC has completed its review of your actions listed below. The permission to resume power operations will be formally communicated to you in written correspondence."

The Honorable Barbara Boxer

QUESTION 6. **Please confirm that on October 3, 2012, Southern California Edison responded to the March 27, 2012 CAL, stating that once Unit 2 was restarted, "operation of Unit 2 will be administratively limited to 70% power" and that "on this basis, SCE concludes that Unit 2 will operate safely."**

ANSWER.

The NRC confirms that on October 3, 2012, Southern California Edison submitted a letter to the NRC to report their actions related to the March 27, 2012, NRC Confirmatory Action Letter that stated in part, ". . . operation of Unit 2 will be administratively limited to 70% power" and "[o]n this basis, SCE concludes that Unit 2 will operate safely."

The Honorable Barbara Boxer

QUESTION 7. **Please confirm that on April 10, 2013, NRC informed Southern California Edison that its license amendment request, which involved a re-start of San Onofre Nuclear Generating Station Unit 2 at 70% power, "involves no significant hazards consideration" and that "this means that operation of the facility in accordance with the proposed amendment would not (1) involve a significant increase in the probability or consequences of an accident previously evaluated; or (2) create the possibility of a new or different kind of accident from any accident previously evaluated; or (3) involve a significant reduction in a margin of safety."**

ANSWER.

On April 10, 2013, the NRC sent a letter to Southern California Edison (SCE) to inform SCE that a *Federal Register* notice regarding its April 5, 2013, license amendment request (LAR) was forwarded to the Office of the Federal Register for publication. A copy of the *Federal Register* notice was included with the letter, and provided the NRC staff's proposed determination that SCE's April 5, 2013, LAR involves no significant hazards consideration.

SCE's April 5, 2013, LAR, as supplemented on April 9, 2013, requested a temporary change to its steam generator management program and license condition for maximum power but did not request restart of Unit 2. As required by 10 CFR 50.91, the LAR contained SCE's analysis about the issue of no significant hazards consideration. As outlined in 10 CFR 50.92, an

amendment involves no significant hazards consideration if operation of the facility in accordance with the proposed amendment would not: (1) involve a significant increase in the probability or consequences of an accident previously evaluated; or (2) create the possibility of a new or different kind of accident from any accident previously evaluated; or (3) involve a significant reduction in a margin of safety.

The *Federal Register* notice, published on April 16, 2013, did the following: 1) described the proposed change; 2) provided instructions for interested persons to provide comments and to request a hearing; 3) provided the licensee's analysis about the issue of no significant hazards consideration using the standards in 10 CFR 50.92; 4) stated that the NRC is considering issuance of the amendment; 5) stated that the NRC staff has reviewed the licensee's analysis of significant hazards; and 6) provided the NRC staff's proposed determination that the license amendment request involves no significant hazards consideration.

The no significant hazards consideration determination is not a substantive safety finding and does not prejudge the NRC's final public health and safety decision to issue or deny the amendment. The no significant hazards consideration standards in 10 C.F.R. 50.92 serves as a screening device for deciding whether to hold a hearing before, rather than after, an amendment is issued.

The Honorable Barbara Boxer

QUESTION 8. **Please confirm that NRC stated that the CAL provided the basis for allowing Unit 2 to restart, saying on its webpage that "If approved, issuance of the license amendment would not authorize restart of SONGS Unit 2. The NRC will not permit SONGS Unit 2 to restart until SCE has met the terms of the CAL, the NRC has completed its thorough review of these actions, and the NRC has concluded that the licensee can operate the plant without undue risk to public health and safety and in compliance with NRC regulations."**

ANSWER.

The NRC confirms that the completion of the items discussed in the CAL was one of the necessary actions prior to the restart of Unit 2, and that we said, on our webpage, that "If approved, issuance of the license amendment would not authorize restart of SONGS Unit 2. The NRC will not permit SONGS Unit 2 to restart until SCE has met the terms of the CAL, the NRC has completed its thorough review of these actions, and the NRC has concluded that the licensee can operate the plant without undue risk to public health and safety and in compliance with NRC regulations."

The Honorable Barbara Boxer

QUESTION 9: In late May, the Commission released its votes that unanimously accepted its staff's recommendations not to require decommissioning reactors to be subjected to NRC's force-on-force exercises, which are designed to validate the facilities' security capability. The basis for this vote was that security at decommissioning reactors can be ensured through annual security inspections.

According to your inspection manual, decommissioning reactors with spent fuel still in the spent fuel pool receive 12-24 hours' worth of security inspections each year. But operating reactors receive well more than 100 hours' worth of security inspections.

NUREG 1738 concluded that "SFP [spent fuel pool] fires could have health effects comparable to those of a severe reactor accident....Large seismic events that fail the SFP are the dominant contributor [to causing an SFP fire]."

If the NRC believes that the consequences of an accident at a spent fuel pool could be equivalent to those of an accident at an operating reactor, why did the Commission assert in its votes that the validation of security measures in place at the spent fuel pool could be met via security inspections when the time spent on those inspections for decommissioning reactors is nowhere near

equivalent to the time spent on security inspections for operating reactors?

ANSWER.

NRC's current decommissioning power reactor inspection program was tailored to reflect an inspection protocol for decommissioning reactors with fuel that had aged for many years. After the events of September 11, 2001, the NRC recognized the need to revise the security requirements and inspection programs for new reactors, operating power reactors, and decommissioning reactors. The security inspection activities conducted by the NRC at each of these facilities differ based on the structures, systems, and components that require protection due to the facility's operating status and risk profile. Thus, there are differences within the security inspection programs for new reactors, operating reactors, and decommissioning reactors.

Currently, the NRC staff is revising the security inspection program for decommissioning reactors. This revision is almost complete and will address issues associated with recent and future decommissioning of nuclear power reactors. Upon completion, the revised security inspection program information will be incorporated into an updated procedure, to reflect the changes to the security inspection activities for decommissioning nuclear power reactors.

The revised security inspection program for decommissioning nuclear power reactors will involve a total of 95 hours of security inspections per site, each year. These inspections are designed to ensure that licensees are effectively implementing their physical protection programs consistent with applicable requirements.

Within the scope of this overall physical protection program evaluation, the staff will observe and assess licensee-conducted force-on-force exercises.

The Honorable Barbara Boxer

QUESTION 10: As a follow up to the questions I asked during the hearing regarding the Commission meetings and travel, please describe your current practice related to your public calendar, including the nature of the information included in it and the schedule for updating that information. In addition, please indicate whether:

a. You will provide advance public notice of your meetings with outside stakeholders on your calendar in a manner similar to the Consumer Product Safety Commission, with the understanding that on occasion the times, attendees and agendas of the meetings might change and require revision.

b. You will provide advance public notice of your staff's meetings with outside stakeholders on your calendar in a manner similar to the Consumer Product Safety Commission, with the understanding that on occasion the times, attendees and agendas of meetings might change and require revision.

c. You will keep your public calendar up to date instead of following the practice many Commissioners appear to follow of updating them retrospectively every 1-2 months.

d. You will include meetings between your staff and outside stakeholders on your public calendar.

e. The meetings listed on your public calendar will include a description of the meeting agenda.

f. The meetings listed on your public calendar will include a list of attendees.

g. The meetings listed on your public calendar will include meetings that take place domestically and internationally.

ANSWER. Each Commissioner currently provides on his or her page on the NRC's website, at a minimum, a list of meetings and events with external organizations and entities, including speaking engagements. These sites are updated on a regular basis, approximately every 2-4 weeks. The amount of information each Commissioner provides publicly concerning meetings takes into consideration the sensitivity of the issues discussed, such as under an "open door" policy visit from a member of the NRC staff, protecting the privacy of any individuals with whom Commissioners meet, personal security, and other concerns. Advance notice of Commission meetings is available on the NRC's website, in accordance with the Government in the Sunshine Act, and is continually updated. These meetings are also webcast.

Because Commissioners' individual calendars change on a frequent, if not daily, basis, and in consideration of security concerns involved in providing advance notice of foreign or domestic travel, Commissioners generally do not provide advance notice of their meetings and trips. The Commissioners do, however, in keeping with the Commission's prohibition on *ex parte* communications, notify parties in pending adjudicatory proceedings that contested issues will not be discussed before visiting facilities involved in such proceedings.

The Honorable Barbara Boxer

QUESTION 11. NUREG 1738, "Technical Study of Spent Fuel Pool Accident Risk at Decommissioning Nuclear Power Plants," was published in February 2001. On March 26 2014, your staff told EPW staff that newer NRC studies are "generally consistent with the older generic studies such as NUREG-1738" and that "the staff continues to support the 2001 technical assessments on the three points as noted below." At the Committee's May 14, 2014 hearing, in response to my question as to whether the NRC still stood by the findings in the report, Mike Weber (NRC's Deputy Executive Director for Operations) stated "We stand by the findings in NUREG-1738, which is the document you are referring to." Please indicate whether you stand by each of the following findings contained in NUREG-1738, and if you do not, please indicate why not:

a) "SFP fires could have health effects comparable to those of a severe reactor accident.... Large seismic events that fail the SFP are the dominant contributor [to causing an SFP fire]."

b) "Further, the analysis indicates that timely evacuation, implemented through either pre-planned or ad hoc measures, can significantly reduce the number of early fatalities due to a zirconium fire."

c) "[T]he long-term consequences of an SFP fire may be significant. These long-term consequences (and risk) decrease very

slowly because cesium-137 has a half-life of approximately 30 years."

d) "Because the possibility of a zirconium fire leading to a large fission product release cannot be ruled out even many years after final shutdown, the safeguards provisions at decommissioning plants should undergo further review."

e) "[T]he consequences from a zirconium fire could be serious."

f) "Insurance, security, and emergency planning requirement revisions need to be considered in light of other policy considerations, because a criterion of "sufficient cooling to preclude a fire" cannot be satisfied on a generic basis."

g) Figure 2.1, which shows that even after a reactor had been shut down for 1 year, it would take only about 3 hours for PWR reactor fuel to heat to 900 degrees Celsius and only about 7 hours for BWR reactor fuel to heat to 900 degrees Celsius, even when the spent fuel pool accident does not prevent the assemblies from being air cooled.

h) Figure 2.2, which shows that for PWR reactor fuel that is subject to a spent fuel pool accident that does not allow for air cooling to occur (the so-called adiabatic case in which the pool would only partially drain and thus preclude air circulation), it would take only 6 hours for the fuel to heat up even one year after the reactor shuts down.

ANSWER.

a) The Commission stands by the finding that the offsite health impacts of a spent fuel pool zirconium fire as evaluated in NUREG-1738 can be comparable to those from a severe accident at an operating reactor as evaluated in NUREG-1150, "Severe Accident Risks: An Assessment for Five U.S. Nuclear Power Plants." More recent studies, such as NUREG-1935, "State-of-the-Art Reactor Consequence Analyses" (SOARCA) Report, and SECY-13-0112, "Consequence Study of a Beyond-Design-Basis Earthquake Affecting the Spent Fuel Pool for a U.S. Mark I Boiling Water Reactor," have concluded that, for the types of accidents examined at both reactors and spent fuel pools, probability-weighted health impacts (i.e., calculated risk) would be low and well within the Commission's safety goals. In the unlikely event of an accident at either a reactor or spent fuel pool, the probability-weighted offsite economic impacts could be comparable. This is because while the economic impacts of a spent fuel pool fire could be very large, a spent fuel pool accident is expected to be less likely than a reactor accident. During the development of SECY-13-0112, the NRC staff did not find any new information to challenge the view expressed in NUREG-1738 and earlier studies that large seismic events are the largest contributor to the likelihood of having a large radiological release from the spent fuel pool.

b) The Commission stands by the finding that an early evacuation (which is defined in NUREG-1738 as an evacuation that is initiated and completed before the spent fuel pool release), is effective at reducing the number of early fatalities, because early fatalities arise from very high acute radiation exposures. Large acute radiation exposures can be significantly reduced, if not eliminated altogether, by an evacuation that is completed before the spent fuel pool release begins. As stated in this study, the effect of timely evacuation is the same whether it is implemented through pre-planned evacuation or whether it is implemented through effective ad-hoc measures. NUREG-1738 states, "The overall low risk in conjunction with differences in

dominant sequences relative to operating reactors, results in a small change in risk at a decommissioning plant if offsite planning is relaxed." The NRC staff continues to believe that, in the unlikely event of a severe beyond design-basis accident resulting in a loss of sufficient water and natural air cooling within the pool, there is sufficient time for offsite agencies to take protective measures under a comprehensive emergency management (all-hazards) plan to protect the health and safety of the public.

c) The Commission stands by the finding, as stated in NUREG-1738, that as long as a zirconium fire is possible, the long-term consequences of a spent fuel pool fire may be significant. NUREG-1738 illustrates the change in health consequences from a zirconium fire as a function of time since shutdown, and demonstrates that latent fatality risks and long-term collective population doses, which are more sensitive to the inventory of the longer-lived cesium-134 (half-life of two years) and cesium-137 (half-life of 30 years), drop slowly.

However, the NRC also considers calculated risk in its consideration, which is the probability of a release multiplied by the radiological consequences of a release (i.e., probability-weighted). This consideration is illustrated by the finding in NUREG-1738 that "The risk at decommissioning plants is low and well within the Commission's safety goals. The risk is low because of the very low likelihood of a zirconium fire even though the consequences from a zirconium fire could be serious." Although the staff cannot completely rule out large radiological releases from a spent fuel pool, the staff's analysis shows that the probability of a release from a spent fuel pool at a plant in decommissioning decreases with the passage of time due to the drop in decay heat from the spent fuel stored in the pool, and the fact that there would be no further additions to the inventory of fresh spent fuel because the plant is no longer operating. .

d) The Commission stands by the finding in NUREG-1738, which was appropriate, and notes that further staff review of safeguards provisions at decommissioning plants has occurred since that document was issued. The NRC has taken a number of additional actions that support this finding.

On June 4, 2001, the NRC staff submitted a policy paper "Policy Issues Related to Safeguards, Insurance and Emergency Preparedness Regulations at Decommissioning Nuclear Power Plants Storing Fuel in Spent Fuel Pools," SECY-01-100, to the Commission for consideration. The paper provided the Commission with the staff's assessment of the policy implications of the NUREG-1738 study related to decommissioning exemptions for insurance, emergency preparedness (EP), and safeguards. The paper also recommended the NRC implement Commission policy direction in response to the paper in a future decommissioning rulemaking. However, in light of the terrorist events of September 11, 2001, the staff subsequently recommended withdrawal of the paper, and the Commission returned the paper to the staff without a decision on the policy issues presented in the paper. In 2002, the integrated decommissioning rulemaking effort was deferred to address higher priority activities.

In light of the recent announcements of several nuclear power plants shutting down, the NRC staff is reviewing the priority of a future rulemaking related to insurance, EP, safeguards and security for decommissioning plants. Such a rulemaking would most likely consider the findings in NUREG-1738 and other more recent spent fuel studies (e.g., SECY-13-0112), as well as any applicable policy issues identified in SECY-01-0100 or identified separately. In addition, since the current security requirements in 10 CFR 73.55 "Power Reactor Security" were not

implemented until May of 2010, insight in the security area will be greatly influenced by the ongoing decommissioning licensing actions. The Commission recently directed the staff to report to the Commission by January, 2015, its views on the need for an integrated rulemaking for decommissioning, based on lessons learned from the most recent operating closures.

The NRC staff is using these insights, as well as additional information gained through subsequent studies and Commission policy decisions, to inform its current review of site-specific license amendment and exemption requests from the recently shut down power reactors on a case-by-case basis.

e) This statement is correct. Over several decades of research, the NRC staff has consistently found that spent fuel pool fires are very high-consequence, very low probability events.

f) The Commission stands by the finding in NUREG-1738, which was appropriate, and notes that further staff review of safeguards provisions at decommissioning plants has occurred since that document was issued. The NRC has taken a number of additional actions related to this finding.

On June 4, 2001, the NRC staff submitted a policy paper "Policy Issues Related to Safeguards, Insurance and Emergency Preparedness Regulations at Decommissioning Nuclear Power Plants Storing Fuel in Spent Fuel Pools," SECY-01-100, to the Commission for consideration. The paper provided the Commission with the staff's assessment of the policy implications of the

NUREG-1738 study related to decommissioning exemptions for insurance, EP, and safeguards. The paper also recommended the NRC implement Commission policy direction in response to the paper in a future decommissioning rulemaking (see the response to part (d) for more details).

Although SECY-01-0100 did not result in a rulemaking regarding insurance, EP, and safeguards requirements for decommissioning plants, it provides the staff's assessment of the findings of NUREG-1738 at that time. The NRC staff is using this assessment, as well as additional information gained through subsequent studies and Commission policy decisions, to inform its review of site-specific license amendment and exemption requests from the recently shut down power reactors on a case-by-case basis. On January 10, 2014, the staff issued for public comment a draft Interim Staff Guidance document, "Draft Interim Staff Guidance on Emergency Planning Exemption Requests for Decommissioning Nuclear Power Plants," NSIR/DPR-ISG-02. The guidance will assist NRC staff in processing requests for exemption from EP requirements for nuclear power reactors that are undergoing decommissioning. It considers historical experience and precedent with previously issued exemptions and a number of related studies, including NUREG-1738, SECY-01-0100, and SECY-13-0112. The NRC staff is also considering insights from NUREG-1738 and SECY-01-0100 in conjunction with Commission policy decisions made in response to SECY-93-127, "Financial Protection Required of Licensees of Large Nuclear Power Plants During Decommissioning," and SECY-04-0176, "Exemption Requests to Reduce Liability Insurance Coverage for Decommissioning Reactors after Transfer of All Spent Fuel From a Spent Fuel Pool to Dry Cask Storage," in its review of financial protection and insurance exemption requests from decommissioning licensees. In response to SECY-93-127, the Commission approved reductions in the amount of financial protection and insurance required of decommissioning reactor licensees. In response

to SECY-04-0176, the Commission approved the denial of exemption requests from decommissioning reactor licensees that requested additional reductions of insurance requirements after transfer of all spent fuel from the spent fuel pool to a dry cask storage. If granted, the exemption requests would have lowered the level of liability insurance required below the minimum levels previously established by the Commission.

g) The Commission stands by the analysis in NUREG-1738, which is correct given the hypothetical assumptions upon which the analysis is based. Because of its intended purpose (e.g., exemption requests from NRC requirements for offsite emergency preparedness for decommissioning reactors), the staff purposely introduced conservative assumptions into the analysis. These conservatisms include simplified treatment of the thermal-hydraulic response (e.g., cooling of fuel and temperature change) and the use of assumed and often bounding configurations that do not allow for thermal radiation between high powered bundles and low power bundles (as stated in NUREG-1738) and also from the spent fuel assemblies to the spent fuel pool wall liner. In a more realistic calculation, as demonstrated in the recent Spent Fuel Pool Study (SECY-13-0112), thermal radiation heat transfer (in addition to air cooling) can play a significant role. For example, it could take more than 10 hours for the fuel to heat up to 900°C even one month after being moved from the reactor to the pool if the assemblies most recently removed from the reactor (i.e., the hottest) are distributed among older, cooler, fuel assemblies. In addition, NUREG-1738 makes simplifying assumptions regarding the pool failure leakage rate that results in instantaneous draindown of the pool. In the Spent Fuel Pool Study, even for a moderate leak scenario, it took more than two hours for the water level to reach the top of the fuel. In summary, the analyses performed in NUREG-1738 were based on intentionally conservative assumptions, and resulted in conservative consequences, which was an appropriate regulatory approach for the issue under consideration. More recent and realistic

analyses show that the consequences of these accident scenarios are not as severe as assumed in NUREG-1738 and that they take place over a much longer period of time.

h) The Commission stands by the analysis in NUREG-1738, which is correct given the hypothetical assumptions upon which the analysis is based. However, as stated above, there are conservatisms associated with the analysis in that document. In an adiabatic calculation, both the oxidation energy and radiation heat transfer are not taken into account. While the oxidation energy tends to increase the fuel temperature, thermal radiation would limit the fuel heatup. However, for partial draindown cases, the blocked airflow can limit the more energetic air (as opposed to steam) oxidation reaction, while thermal radiation only depends on the temperature and would play an important role in limiting the fuel heatup rate. The Spent Fuel Pool Study (SECY-13-0112), which – unlike NUREG-1738-- addressed these effects and showed that for small leak scenarios with blocked air flow at 107 days after shutdown for a specific site, it would take more than 10 hours to increase the fuel temperature to 650°C. For an adiabatic calculation, the actual time for the hottest fuel assemblies to reach 900°C requires a plant specific calculation.

The Honorable Barbara Boxer

QUESTION 12. **The NRC practice of granting decommissioning reactor licensee requests for exemptions from off-site emergency preparedness requirements is predicated on calculations of the time after reactor shut-down at which the spent nuclear fuel would take ten hours or more following an accident to spontaneously ignite, as well as assumptions that it could take up to 10 hours to repair key spent fuel pool safety equipment following a spent fuel pool accident. The NRC has concluded that a large seismic event would be the most likely cause of an accident that breaches and drains a spent fuel pool. On what specific basis (and using what specific analysis) has the NRC concluded that it would be possible, within ten hours after the initiating event, to a) repair all key safety equipment, b) repair what could be a large breach in the spent fuel pool, and c) ensure that the capability to continually refill the spent fuel pool with fresh water as it drains in the midst of a broader response to or consequences of a severe seismic event (or other natural hazard) or on-going terrorist attack?**

ANSWER.

For a hypothetical spent fuel pool accident scenario analysis, the 10-hour period is used as a conservative minimum time available to implement mitigation actions or initiate protective measures, if needed. The NRC staff has determined that an accident caused by a severe event

that results in the water draining from the pool (whether a full or partial draindown) is too unlikely to have been considered in the initial plant design criteria (a beyond-design-basis accident). Such a severe event would likely allow more than 10 hours for mitigation or protective measures because of the robust construction of the spent fuel pool and other features of the pool design that are intended to prevent a rapid loss of water. Furthermore, particularly for older fuel, air cooling and other heat removal mechanisms following loss of cooling water may be sufficient to significantly extend the fuel heat-up time or keep the fuel cool indefinitely. Although the staff cannot completely rule out large radiological releases from a spent fuel pool, the staff believes that the probability of a release from a spent fuel pool at a plant in decommissioning decreases with the passage of time, due to the drop in decay heat from the spent fuel stored in the pool. In addition, because the plant is no longer operating there would be no further additions to the inventory of fresh spent fuel.

More recent analyses have been performed with site-specific information to determine whether a release from a spent fuel pool could occur at the site studied, considering that site's practice regarding the physical arrangement of the fuel in the spent fuel pool. In particular, the study transmitted to the Commission with SECY-13-0112, "Consequence Study of a Beyond-Design-Basis Earthquake Affecting the Spent Fuel Pool for a U.S. Mark I Boiling Water Reactor," provided consequence estimates of a hypothetical spent fuel pool accident initiated by a low-likelihood seismic event at a reference plant based on the Peach Bottom BWR Mark I spent fuel pool. The study demonstrated that a release is not expected to occur at the plant studied for at least 72 hours following a large, beyond design-basis seismic event that occurs more than 60 days after shutdown. The NRC has determined that it is, therefore, likely that there would be more than 10 hours to mitigate the potential consequences of a severe accident at a spent fuel pool that results in water loss.

For evaluating exemption requests from NRC requirements for offsite emergency preparedness for decommissioning reactors, the staff purposely introduced conservative assumptions into the analysis. Specifically, the analysis and 10-hour criterion for mitigating the potential consequences of a beyond design-basis accident at a spent fuel pool does not credit the natural air cooling and water cooling in the spent fuel pool after the event, as a modeling simplification. Rather, the analysis assumes that the fuel immediately begins to heat-up without any natural removal of its energy.

These conservatisms include simplified treatment of the thermal-hydraulic response and the use of assumed and often bounding configurations that do not allow for thermal radiation between high power bundles and low power bundles (as stated in NUREG-1738) and also from the spent fuel assemblies to the spent fuel pool wall liner. In a more realistic calculation, as demonstrated in the recent Spent Fuel Pool Study (SECY-13-0112), thermal radiation heat transfer (in addition to air cooling) can play a significant role. For example, it could take more than 10 hours for the fuel to heat up to 900°C even one month after being moved from the reactor to the pool if the assemblies most recently removed from the reactor are distributed among older, cooler fuel assemblies. The NRC staff uses this simplified approach to determine the time estimate, as part of its regulatory decision whether to grant the exemption, and to determine when a granted exemption would become effective (i.e., after the fuel has been cooled for a certain period of time, typically 12-24 months after shutdown). The NRC staff reviews the analyses provided by the licensee to verify that a minimum of 10 hours is still available to restore cooling or implement offsite protective measures, once it is assumed that all cooling is lost, and before the fuel heats up to a temperature where rapid oxidation of the fuel cladding could occur, commonly referred to as a zirconium fire. The capabilities specified in 10 CFR 50.54(hh)(2), put in place after the September 11, 2001, terrorist attacks, are one means

by which licensees may provide the capability to mitigate the potential consequences of a severe accident at a spent fuel pool. Regulatory standards under 10 CFR 50.54(hh)(2) provide that, in addition to normal plant structures, systems, and components to maintain water levels and cooling to spent fuel, redundant and independently powered equipment needed to perform these functions are located onsite. Decommissioning licensees requesting exemptions from emergency preparedness requirements may choose to retain these, or commit to another strategy that provides similar assurance.

The 10-hour time frame is not intended to be the time it would take to repair all key safety systems or to repair a large breach in the spent fuel pool. Rather, considering the very low probability of beyond-design-basis events affecting the spent fuel pool, in the staff's professional judgment, 10 hours provides a reasonable time period to implement these pre-planned mitigation measures to provide makeup or spray to the spent fuel pool before the onset of zirconium cladding ignition, or, if necessary, to initiate offsite protective measures. The repair of required safety systems or repair of a large breach in the spent fuel pool would be assessed and performed by additional staffing and resources responding to the site as part of the licensee's on-site emergency plan to ensure long-term cooling of the spent fuel.

The Honorable Barbara Boxer

QUESTION 13. Section 50.59 of NRC regulations[5] and NEI's Guidelines for their Implementation[6] (which the NRC endorsed) prescribes the manner in which licensees are to demonstrate that a license amendment for a proposed modification is not required to be obtained. Specifically, there are nine screening conditions that must be met:

Section 50.59(c)(2)

"A licensee shall obtain a license amendment pursuant to §50.90 prior to implementing a proposed change, test, or experiment if the change, test, or experiment would:

(i) Result in more than a minimal increase in the frequency of occurrence of an accident previously evaluated in the final safety analysis report (as updated);

(ii) Result in more than a minimal increase in the likelihood of occurrence of a malfunction of a structure, system, or component (SSC) important to safety previously evaluated in the final safety analysis report (as updated);

(iii) Result in more than a minimal increase in the consequences of an accident previously evaluated in the final safety analysis report (as updated);

(iv) Result in more than a minimal increase in the consequences of a malfunction of an SSC important to safety previously evaluated in the final safety analysis report (as updated);

(v) Create a possibility for an accident of a different type than any previously evaluated in the final safety analysis report (as updated);

(vi) Create a possibility for a malfunction of an SSC important to safety with a different result than any previously evaluated in the final safety analysis report (as updated);

(vii) Result in a design basis limit for a fission product barrier as described in the FSAR (as updated) being exceeded or altered; or

(viii) Result in a departure from a method of evaluation described in the FSAR (as updated) used in establishing the design bases or in the safety analyses."

a) For each of the criteria above, did NRC determine whether Southern California Edison adequately undertook and documented all of the necessary screening and, as applicable, evaluations under 50.59(c)(2) regulations? If not, please fully describe all instances in which the requirements were not met.

b) For each of the criteria above, did NRC verify, prior to the installation of the flawed steam generators, that such screening and evaluations had been undertaken and documented adequately? If not, please fully describe all instances in which the requirements were not met.

[5] **http ://www.nrc.gov/reading-rmldoc-collections/cfr/part050/part050-0059.html**

[6] **http://www.xmuenergy.info: 1234/ML0037/ML003771157.pdf**

ANSWER.

a) The NRC reviewed SCE's 10 CFR 50.59 Screening and Evaluation for Replacement Steam Generators for the Unit 2 and Unit 3 replacement steam generators, described in the updated final safety analysis report (FSAR) for the original steam generators to verify that the evaluation was performed in accordance with licensee procedures and the provisions of 10 CFR 50.59, "Changes, Tests, and Experiments." NRC compared SCE's 50.59 Screening and Evaluation for Units 2 and 3 to the guidance in NEI 96-07, to determine the adequacy of the 10 CFR 50.59 evaluations.

The NRC found the licensee's written 10 CFR 50.59 evaluation inadequate in that it did not provide a correct basis to support the licensee's determination that a license amendment was not required for a change in structural analysis software from ANSYS to ABAQUS. Specifically, the SONGS Unit 2 and 3 original steam generators stress analyses for reactor coolant system structural integrity used the ANSYS computer program, whereas the replacement steam generators analyses used the ABAQUS computer program. The provision in 10 CFR 50.59(d)(1) requires that the licensee maintain records of changes in the facility that "include a written evaluation which provides the bases for the determination that the change, test, or experiment does not require a license amendment...." Contrary to the above, SCE violated 50.59(d)(1) in that the written evaluation did not state that ABAQUS had been approved by

NRC for the intended application, and as such, did not provide a correct basis for the determination that the change from ANSYS to ABAQUS did not require a license amendment prior to implementing the change. Although the record of SCE's 50.59 written evaluation was inadequate, the NRC reviewed additional information and determined that the change from ANSYS to ABAQUS did not require the licensee to obtain a license amendment prior to implementing the change. In other words, it was a record-keeping issue, not an issue related to a failure to perform an analysis.

b) The steam generators at Units 2 and 3 were replaced during scheduled refueling outages. During those outages, the NRC inspected selected portions of the modifications associated with the Unit 2 and 3 replacement steam generators to determine if the changes were done in accordance with 10 CFR 50.59. No violations of 10 CFR 50.59 were identified.

Specifically, the Unit 2 steam generators were installed during a refueling outage that began in September 2009 and ended in April 2010. On April 13, 2010, Unit 2 returned to power operations.

On December 31, 2009, NRC engineering inspectors completed a steam generator replacement inspection in accordance with NRC inspection procedures that included a review of selected portions of modifications associated with the replacement steam generators to determine if the changes were done in accordance with 10 CFR 50.59. No violation of 10 CFR 50.59 was identified during this inspection.

The Unit 3 steam generators were installed during a refueling outage that began in October 2010 and ended in February 2011. On February 18, 2011, Unit 3 returned to power operations.

On March 30, 2011, NRC engineering inspectors completed a steam generator replacement inspection in accordance with NRC inspection procedures. This inspection included a review of selected portions of modifications associated with the replacement steam generators to determine if the changes were done in accordance with 10 CFR 50.59. No violation of 10 CFR 50.59 was identified during this inspection.

The Honorable Barbara Boxer

QUESTION 14. **According to the NRC-approved guidance for implementation of 50.59's screening requirements for a proposed change, "if the effect of such a change is such that existing safety analyses would no longer be bounding and therefore UFSAR safety analyses must be re-run to demonstrate that all required safety functions and design requirements are met, the change is considered to be adverse and must be screened in." In such cases, a 50.59 evaluation would then need to be performed. Please list each instance in which Southern California Edison performed such a re-analysis in order to demonstrate that all required safety functions and design requirements were met for the flawed steam generators. In each such case, i) was the required 50.59 evaluation subsequently performed, adequately documented and submitted to NRC prior to the installation of the steam generators and ii) if not, when did NRC first become aware that the required evaluation had not been completed and/or submitted?**

ANSWER.

The following is a list of re-analyses performed by Southern California Edison:

Main Steam Line Break (MSLB) Blowdown Analysis;

Loss of Coolant Accident (LOCA) Analysis;

LOCA plus A Design Basis Earthquake (DBE) Analysis;

MSLB plus DBE Analysis;

Structural and Thermal Analyses Of Reactor Coolant Loop Components;

Seismic Analysis of the Reactor Internals;

Stress and Dynamic Analyses of Reactor Coolant System (RCS) Components;

Analysis of Large Break LOCA Effects;

Analysis of Small Break LOCA Effects Analysis;

Analysis of Post-LOCA Long Term Cooling;

Loss Of Feedwater Flow Analyses;

Containment Pressure Analyses;

LOCA Blowdown Phase Analysis;

LOCA Core Reflood And Post-Reflood Phase Analyses;

LOCA Long-Term Phase Mass-Energy Release;

MSLB Mass-Energy Analysis; and

Reactor Protection System and Engineered Safety Feature Actuation System Setpoint Calculations.

A 10 CFR 50.59 evaluation is the documented evaluation against the eight criteria in 10 CFR 50.59(c)(2) to determine if a proposed change, test or experiment requires prior NRC approval via license amendment under 10 CFR 50.90.

In cases where the licensee determined through its evaluation that no amendment under 10 CFR 50.90 was required, and in cases where the licensee concluded that pre-approval was required, there is no requirement for the licensee to submit its 50.59 evaluation to the NRC. The Commission requires the licensees to submit summaries of 50.59 evaluations as stated in 10 CFR 50.59(d)(2), but the complete evaluations are not required to be submitted to the NRC. The records must meet 10 CFR 50.59(d)(1), and 50.59 (d)(3) and be available for inspection under 10 CFR 50.70(a). The Commission's inspections, which are performed on a sampling basis, did not identify any incorrect 50.59 evaluation, but did identify a failure to maintain sufficient records.

The Honorable Barbara Boxer

QUESTION 15. **Please list each instance in which Southern California Edison departed from the method of evaluation described in the FSAR used to establish the design basis or safety basis. For each such instance, please indicate a) whether the change in method of evaluation was known by NRC to have occurred prior to the installation of the flawed steam generators, b) if not, at what point it did become known to NRC and c) whether Southern California Edison subjected the matter that was the topic of the departure from the method of evaluation to the other screening criteria in 50.59(c)(2) as it should have done.**

ANSWER.

The NRC inspections did not identify any instances in which Southern California Edison departed from the method of evaluation described in the FSAR used to establish the design basis or safety basis with respect to the replacement steam generators.

The Honorable Barbara Boxer

QUESTION 16. According to documents submitted to the NRC[7], "the RG 1.121 tube wall thinning evaluation for the RSGs changed the methods of evaluation from those described in UFSAR 5.4.2.3.1.3. Instead of using the CEFLASH computer program for MSLB mass-energy release analysis, the peak forces acting on the RSG tubes were calculated manually using the maximum possible differential pressure across the tube wall." 50.59 regulations require the licensee to maintain "records of changes in the facility, of changes in procedures, and of tests and experiments make pursuant to paragraph (c) of this section. These records must include a written evaluation which provides the bases for the determination that the changes, test or experiment does not require a license amendment pursuant to paragraph (c)(2) of this section." a) Did the substitution of manual calculations for the CE-FLASH program constitute a change in method of evaluation that should have been subject to the record-keeping requirements of 50.59? If so, did Southern California Edison a) prepare and b) submit such documentation to the NRC prior to the installation of the flawed steam generators? If not, when did NRC first become aware that no such documentation had been prepared as required?

[7]http://pbadupws.nrc.gov/docs/ML1305/ML13050A189.pdf

ANSWER.

a) Yes, the substitution of manual calculations for the CE-FLASH program constituted a change in a method of evaluation that is subject to the record-keeping requirements of 10 CFR 50.59(d). SCE prepared the required 50.59 written evaluation for Unit 2 on July 31, 2009, before the unit was operated on April 13, 2010. SCE prepared the required 50.59 written evaluation for Unit 3 on July 31, 2009, before the unit was operated on February 18, 2011.

b) No. SCE submitted a 50.59 summary report to the NRC by letter dated June 8, 2011, which was after the installation of the steam generators, but within the 24-month interval required by 10 CFR 50.59(d)(2).

The Honorable Barbara Boxer

QUESTION 17. According to documentation[8] submitted to NRC, "the stress analyses for the RSGs utilized the ABAQUS computer program, whereas UFSAR Sections 3.9.1.2.2.1.11 and 3.9.1.2.2.2.3 describe these analyses for the OSGs as utilizing the ANSYS computer program." 50.59 regulations require the licensee to maintain "records of changes in the facility, of changes in procedures, and of tests and experiments made pursuant to paragraph (c) of this section. These records must include a written evaluation which provides the bases for the determination that the changes, test or experiment does not require a license amendment pursuant to paragraph (c)(2) of this section." Did the substitution of ABAQUS for the ANSYS program constitute a change in method of evaluation that should have been subject to the record-keeping requirements of 50.59? If so, did Southern California Edison a) prepare and b) submit such documentation to NRC prior to the installation of the flawed steam generators? If not, then when did NRC first become aware that no such documentation had been prepared as required?

[8]http://pbadupws.nrc.gov/docs/ML1305/ML13050A189.pdf

ANSWER.

a) Yes, the substitution of ABAQUS for the ANSYS program constituted a change in a method of evaluation that is subject to the record-keeping requirements of 10 CFR 50.59(d).

b) Yes, SCE prepared the required 10 CFR 50.59 written evaluation for Unit 2 on July 31, 2009, before the unit was operated on April 13, 2010. SCE prepared the required 10 CFR 50.59 written evaluation for Unit 3 on July 31, 2009, before the unit was operated on February 18, 2011.

As stated in the answer to Question 13, the NRC's inspection identified that SCE's 10 CFR 50.59 written evaluations were not adequate in that they did not provide a correct basis for SCE's determination that a change in structural analysis software from ANSYS to ABAQUS did not require a license amendment. The inadequate 50.59 written evaluation constituted a violation of 10 CFR 50.59(d)(1), which requires that the licensee maintain records of changes in the facility that "include a written evaluation which provides the bases for the determination that the change, test, or experiment does not require a license amendment." Although SCE's 50.59 written evaluation was inadequate, the NRC determined that the change from ANSYS to ABAQUS did not require SCE to obtain a license amendment prior to implementing the change.

c) No. SCE submitted a 50.59 summary report to the NRC by letter dated June 8, 2011, which was after the installation of the steam generators, but within the 24-month interval required by 10 CFR 50.59(d)(2).

The Honorable Barbara Boxer

QUESTION 18. According to documentation[9] submitted to NRC, "in addition, instead of using a two-step process with the STRUDL and ANSYS computer programs to calculate displacement histories and tube stresses, respectively, the tube stresses were determined from blowdown forces using only the ANSYS computer program." 50.59 regulations require the licensee to maintain "records of changes in the facility, of changes in procedures, and of tests and experiments made pursuant to paragraph (c) of this section. These records must include a written evaluation which provides the bases for the determination that the changes, test or experiment does not require a license amendment pursuant to paragraph (c)(2) of this section." Did the substitution of ANSYS for the ANSYS and STRUDL combination of programs constitute a change in method of evaluation that should have been subject to the record-keeping requirements of 50.59? If so, did Southern California Edison a) prepare and b) submit such documentation to NRC prior to the installation of the flawed steam generators? If not, then when did NRC first become aware that no such documentation had been prepared as required?

[9]http://pbadupws.nrc.gov/docs/ML1305/ML13050A189.pdf

ANSWER.

Yes, the substitution of ANSYS for the ANSYS and STRUDL combination of programs constituted a change in method of evaluation that was subject to the record-keeping requirements of 10 CFR 50.59. This change to use ANSYS instead of STRUDL and ANSYS was inspected as part of NRC's Augmented Inspection. The inspectors' review of this issue determined that SCE's 50.59 evaluation of this issue was acceptable and the change did not require a license amendment. No violation of 10 CFR 50.59 was identified.

a) Yes, SCE prepared the required 10 CFR 50.59 written evaluation for Unit 2 on July 31, 2009, before the unit was operated on April 13, 2010. SCE prepared the required 10 CFR 50.59 written evaluation for Unit 3 on July 31, 2009, before the unit was operated on February 18, 2011.

b) No. SCE submitted a 50.59 summary report to the NRC by letter dated June 8, 2011, which was after the installation of the steam generators, but within the 24-month interval required by 10 CFR 50.59(d)(2).

The Honorable Barbara Boxer

QUESTION 19. **Was the seismic analysis performed by Southern California Edison related to the new steam generator design performed using the methods described in the final safety analysis report? If so, were any changes from the original design related to seismic matters evaluated using the other screening criteria in 50.59(c)(2) to ensure that they did not trigger the need for a license amendment (and if so, what was the result)? If not, would a failure to have done so been a violation of these regulations?**

ANSWER.

Yes. Southern California Edison's 50.59 screening evaluated changes from the original design related to seismic matters. SCE's 50.59 screening determined that changes in the method of evaluation for the replacement steam generators required a 50.59 evaluation to assess whether the change constituted a departure from the method of evaluation under criterion viii of 10 CFR 50.59(c)(2). SCE's screening determined that a 50.59 evaluation of criteria i through vii of 10 CFR 50.59(c)(2) was not required because the results of analyses (e.g., seismic analyses) showed that structural integrity was maintained and that changes were not adverse.

The inspectors did not identify any failure to use the screening criteria correctly. While any violation is fact-dependent, failure to follow the Commission's regulations would likely have been a violation.

The Honorable Barbara Boxer

QUESTION 20. **Please confirm that the Energy Reorganization Act of 1974 assigned to what is now the Department of Energy the responsibility for the development and production of nuclear weapons, promotion of nuclear power, and other energy-related work, and assigned to the NRC the regulatory work, which does not include regulation of defense nuclear facilities. If so, would that preclude NRC Commissioners from espousing official views on whether particular bills or policies would lead to more or fewer nuclear reactors or higher or lower electricity prices?**

ANSWER.

Your general description of function assignments to the NRC and to what later became the Department of Energy (DOE) under the Energy Reorganization Act of 1974 is consistent with that Act. The Act separated the former Atomic Energy Commission's industry-promotional functions (among other things) from its regulatory functions, with the former now assigned to DOE and the latter to the NRC. As a result it would not be part of an NRC Commissioner's job to promote particular bills or policies that would lead to more or fewer nuclear reactors or higher or lower electricity prices.

Nonetheless, the NRC needs to be cognizant of potential nuclear industry developments, because such developments can substantially affect the agency's future workload. Commissioners also come to the agency from a variety of backgrounds and, in the course of their official duties, encounter information and analyses related to the state and future of the industry. Therefore, it is possible a Commissioner might have insights into the likely effects of a

particular bill or policy on the nuclear industry or electricity prices. The Energy Reorganization Act of 1974 does not appear to prohibit or otherwise preclude Commissioners from personally attempting to assess, based on the Commissioner's own knowledge or experience, the effects that a particular bill or policy would have on such matters.

The Honorable Tom Carper

QUESTION 1. **Based on a graph in your written statement, the NRC's overhead staffing levels and salary and benefits have been declining since FY2011. What are the staffing, salary and benefits trends for core mission activities for the same period?**

ANSWER:

The following table shows the staffing, salary and benefit trends for core mission activities since FY 2011:

Budget	Full-Time Equivalents (FTEs)	Salaries & Benefits Enacted Budget (in thousands)
FY 2011	2,317	$349,373
FY 2012	2,315	$350,229
FY 2013	2,334	$358,254
FY 2014	2,296	$367,296
FY 2015*	2,404	$391,819

*The FY 2015 FTE represents the President's Budget (PB). FTE reductions that are reflected in FY 2014 are not reflected in the FY 2015 PB. The NRC is continuing to assess appropriate staffing levels, and it is unlikely there will be FTE growth to support current programs.

The Honorable Cory Booker

QUESTION 1. **On page 3 of your written testimony, you state that "some boiling water reactors are requesting schedule extensions for those parts of the mitigating strategies affected by the NRC's revision to the order on containment venting".**

a. **How many of these boiling water reactors have requested extensions?**

b. **Has either Oyster Creek or Hope Creek in New Jersey requested an extension?**

ANSWER:

a) Eleven boiling water reactors have requested extensions. They are Hope Creek, Susquehanna 1&2; Quad Cities 1&2, Peach Bottom 3, Limerick 1&2, LaSalle 1&2, and Columbia.

b) Hope Creek has requested and been granted an extension. Oyster Creek has requested an extension to the Hardened Vents Order, but not to the Mitigation Strategies Order.

The Honorable David Vitter

QUESTION 1. **What progress has been made in implementing the Near Term Task Force recommendations?**

a) Have power plants taken any actions to mitigate the effects of severe earthquakes and flooding?

b) List the actions the NRC has already taken to address the NTTF recommendations, including any actions that are underway but not yet completed. I'd also ask them to list the actions licensees have already taken to mitigate the effects and actions that are currently underway. This seems to cover similar ground to question 5.

ANSWER.

a) The NRC issued a Request for Information (RFI) to all nuclear power plant licensees on March 12, 2012, requesting that all licensees undertake detailed inspections ("walkdowns") to verify the adequacy of each plant's seismic and flooding protective features. This RFI was issued pursuant to 10 CFR 50.54(f). During these licensee walkdowns, a number of items were identified and placed in licensee Corrective Action Programs to ensure that all seismic and flooding protective features at the sites remain capable of performing their intended functions.

Additionally, the March 12, 2012, RFI included a request that these licensees reevaluate their flooding and seismic hazards using the most recent methods and guidance. If a licensee determines that the reevaluated flood hazard is greater than that currently assumed in the design basis of a plant, the licensee is responsible for performing a more in-depth integrated assessment to determine the impact of this increased hazard on the facility. While the

integrated assessment is being completed, the licensee is also responsible for implementing interim actions to compensate for the increased flooding hazard. With respect to the seismic hazard reevaluations, the NRC's initial review of an industry screening analysis and the interim evaluations provided confidence that none of the plants showed a preliminary change in risk that would cause concern. Consequently, interim actions were not necessary to ensure the systems can function.

b) The NRC has taken a number of actions to address the NTTF recommendations. These actions include the issuance of four orders covering Recommendation 4.2 (Order EA-12-049, "Mitigating Strategies"), Recommendation 5.1 (Order EA-12-050 "Reliable Hardened Vents," which was subsequently superseded by Order EA-13-109, "Severe Accident-Capable Hardened Vents" in June 2013), and Recommendation 7.1 (Order EA-12-051, "Spent Fuel Pool Instrumentation"). The NRC also issued the March 12, 2012 RFI discussed above to address Recommendation 2.1 (seismic and flooding hazard reevaluations), Recommendation 2.3 (seismic and flooding walkdowns), and Recommendation 9.3 (emergency preparedness).

The NRC is currently evaluating nuclear power plant licensee progress toward compliance with the four aforementioned orders. With respect to the mitigating strategies and spent fuel pool instrumentation orders, the NRC has reviewed all licensee integrated plans detailing how licensees will comply with the orders and has issued interim staff evaluations for all plants. The NRC is currently conducting on-site audits at all plants to evaluate open items identified during the review of the integrated plans for each of these orders. Licensees have already begun procuring and installing the mitigating strategies equipment that will address the issues outlined in the Mitigating Strategies Order. Safety evaluations documenting the NRC staff view of whether licensees are in compliance with the order are scheduled to be issued for the first plants beginning this fall. The NRC is currently reviewing the integrated plans submitted by

licensees in June 2014 in response to the Severe Accident Capable Hardened Vents Order. The NRC plans to begin issuing interim staff evaluations by the end of the year.
The NRC has completed its review of all nuclear power plant licensee walkdown reports submitted in response to Recommendation 2.3 and has issued staff assessments documenting completion of this effort. The NRC is continuing to review flooding hazard reevaluations for many plants in addition to reviewing the seismic hazard reevaluations submitted by nuclear power plant licensees in the Central and Eastern United States. As indicated in response to part a) above, issues related to existing flooding and seismic protection features identified during the flooding and seismic walkdowns have been entered into licensee Corrective Action Programs for resolution. Licensees have also implemented interim actions where initial flood hazard reevaluations have shown a greater hazard exists than previously identified for a site and for which a plant may have been designed.

With respect to the emergency preparedness recommendations addressed in the aforementioned RFI, the NRC has issued staff assessments indicating that licensees have sufficiently addressed Phase 1 of the staffing portion of this recommendation regarding assurance that licensees have adequate staffing to respond to a multiunit event. Additionally, the NRC has issued staff assessments indicating that licensees have sufficiently addressed the communications portion of this recommendation regarding assurance that licensees have the capability to power communications equipment during a prolonged station blackout.

In addition to the licensing activities described above, the NRC has also undertaken rulemaking efforts to address some of the recommendations. These include a consolidated rule to codify the requirements associated with the mitigation strategies order and the integration of onsite emergency response processes, procedures, training, and exercises. Additionally, the NRC

has begun developing a draft rule for filtering strategies with drywell filtration and severe accident management of BWR Mark I and II containments.

The Honorable David Vitter

QUESTION 2. **Are the current NRC regulations for emergency preparedness for nuclear power plants designed for plants that are decommissioning?**

a. If not, how does the NRC determine what emergency preparedness requirements are appropriate to the risk presented by the facility?

b. How does the NRC exemption process work and why are exemptions allowed?

c. Will the NRC ensure that adequate safety requirements are in place for SONGS during decommissioning?

d. Does NRC have the ability to impose condition as part of any exemption request that it might approve?

ANSWER.

There are no explicit regulatory provisions distinguishing Emergency Preparedness (EP) requirements for a nuclear power reactor that has been shut down from those for an operating power reactor. The EP requirements of 10 CFR 50.47, "Emergency Plans," and Appendix E, "Emergency Planning and Preparedness for Production and Utilization Facilities," to 10 CFR Part 50 continue to apply to a nuclear power reactor after permanent cessation of operations and removal of fuel from the reactor vessel. Consequently, to modify their emergency plans to reflect the reduced risk to public health and safety from power reactors that have been permanently shut down, power reactor licensees transitioning to a decommissioning status seek exemptions from certain EP regulatory requirements before amending their emergency plans.

We additionally note that the NRC has developed draft interim staff guidance (ISG) entitled, "Emergency Planning Exemption Requests for Decommissioning Nuclear Power Plants," to address licensee exemption requests from certain NRC emergency planning (EP) requirements. The draft ISG provides a technical discussion and an overview of existing guidance for reviewing emergency planning exemption requests, as discussed above. The staff is planning to publish a final ISG by the end of calendar year 2014, following incorporation of public comments, as appropriate, and experience gained from its review of current exemption requests.

a) When a licensee submits a request for an exemption from EP requirements for a nuclear power plant, the NRC staff reviews the request and its associated justifications. The justifications include technical analyses of the type and risk of accidents that could occur at the plant. These analyses are used to provide the NRC reasonable assurance that in granting the requested exemption: (1) an offsite radiological release would not exceed the U.S. Environmental Protection Agency protective action guides at the site boundary (as applicable to design basis accidents such as fuel handling or radioactive waste processing accidents); and (2) in the unlikely event of a severe beyond design-basis accident resulting in a loss of air cooling, sufficient time would exist to initiate appropriate mitigating actions, and if needed, implement offsite protective actions using a comprehensive emergency management plan to protect the health and safety of the public. If the impacts were determined not to require offsite protective actions, then the licensee would not need to maintain compliance with certain offsite EP requirements. For the onsite risks at the plant, the NRC would require that the licensee continue to comply with the appropriate EP requirements.

b) The practice of considering exemptions is a well-established part of the NRC's regulatory process that allows licensees to address site-specific situations or implement alternative approaches for circumstances not necessarily contemplated in the regulations for operating reactors. The exemption process is not unique to decommissioning licensees or to the specific EP technical area, but is an important tool that allows the agency to provide appropriate regulatory relief, permitting licensees to make appropriate modifications to their programs commensurate with the site-specific risks that are present for a permanently shutdown reactor during decommissioning. The NRC makes decisions on exemption requests on a site-specific, case-by-case basis, following an established process that includes the NRC staff's assessment of a detailed technical safety analysis submitted by the licensee.

The NRC may grant exemptions from various regulatory requirements in response to a request from a licensee, applicant, or interested stakeholder. For the Commission to consider granting an exemption, the request must provide information that demonstrates that specific criteria in the regulations, specifically those in 10 CFR 50.12, "Specific exemptions," will be met. The NRC staff's review of requests for exemptions pursuant to 10 CFR 50.12 considers whether the exemptions are authorized by law, will not present an undue risk to the public health and safety, and are consistent with the common defense and security, and whether any special circumstances, as defined in the regulation, exist.

The special circumstances listed in 10 CFR 50.12 reflect some of the reasons that exemptions may be necessary. Special circumstances are present whenever application of the regulation conflicts with other rules or regulations, application of the

regulation in the particular circumstance would not serve the underlying purpose of the rule, compliance with the regulation would result in undue hardship, the exemption would result in benefit to the health and safety of the public, the exemption would provide temporary relief from the applicable regulation and the licensee has made good faith efforts to comply, or there is present a material circumstance not considered when the regulation was adopted for which it would be in the public interest to grant the exemption.

The NRC will grant an exemption only if it concludes that all the required criteria are met. If granted, the exemption, which contains the staff's safety analysis and conclusions, is published in the *Federal Register*.

c) Yes, the NRC will continue to maintain appropriate safety requirements, and provide appropriate oversight for the San Onofre Nuclear Generating Station, Units 2 and 3 (SONGS) as well as other permanently shut down nuclear power reactors through all phases of the decommissioning process. The licensees are required to comply with the existing conditions and technical specifications of their licenses until and unless those requirements are changed via a license amendment. The licensee for SONGS has requested license amendments and requested exemptions from certain regulations, accompanied by a technical justification to change the requirements based on the facility's permanently shutdown and defueled condition. The NRC staff applies the same rigor in its regulatory and technical evaluation of amendment and exemption requests regardless of whether a facility is in operation or in a permanently shutdown and defueled condition. The NRC will only approve a license amendment or grant an

exemption for SONGS if the staff concludes its issuance will continue to provide reasonable assurance of adequate protection of the public health and safety. NRC's oversight and inspection activities will continue at all decommissioning sites.

d) Yes, the NRC staff may grant an exemption based on a requirement that the licensee satisfy certain conditions. In this case, the conditions would be fully described and evaluated, and incorporated into the license when the exemption is granted.

The Honorable David Vitter

QUESTION 3. **Did the wildfire near SONGS threaten the plant?**

a) Is there a relationship between fires such as the wildfire around SONGS and spent fuel pool fires?

ANSWER.

The wildfire near SONGS that occurred on May 14, 2014, did not threaten the plant. During the event, an NRC inspector responded to the control room at the plant and communicated status information to NRC staff members in the Region IV office (Arlington, TX). The wildfire approached within approximately one-half mile of the south side of the owner-controlled area before being extinguished by the combined efforts of SONGS fire department personnel, the Camp Pendleton fire department, and several helicopters that dumped seawater on the blaze. Because of smoke from the fire, several employees who were not essential for maintaining the safe operations of the plant were evacuated from the south yard area of the plant as a precautionary measure. The SONGS fire brigade wetted vegetation along the south boundary of the owner-controlled area as a precaution.

a) The wildfire that occurred on May 14, 2014, posed no danger to the spent fuel pools at SONGS. The spent fuel assemblies are contained in a water-filled pool inside the Fuel Handling Building. This building and the spent fuel pool structure within it are robust structures that are protected from the effects of wildfires by restricting combustible material between the plant perimeter and the building. The building is protected from the effects of internally generated fires by fire detection and suppression equipment. SONGS also has

fire response plans to ensure that fires, such as a wildfire, will not adversely impact the spent fuel pools.

The sequences that could lead to a spent fuel pool fire are improbable and involve a sustained loss of heat removal capability (e.g., an event that results in draining the pool), the inability to replenish water inventory, and inadequate air flow for cooling.

The Honorable David Vitter

QUESTION 4. **What is the NRC doing to address the allegations of retaliation for using the non-concurrence process?**

a) How can EPW ensure that the NRC has the tools it needs?

ANSWER.

The NRC takes concerns of retaliation for using the Non-Concurrence Process (NCP) seriously. When an employee alleges that they have been retaliated against for using the NCP, they are informed of various avenues available to them to pursue their retaliation allegation, including the NRC's Office of the Inspector General, grievance procedures, whistleblower complaints with the Department of Labor under the Energy Reorganization Act, or complaints to the Office of Special Counsel. When the NRC became aware of potential retaliation concerns through an anonymous, targeted survey sent to employees who have used the NCP, a follow-up email was sent to these employees reminding them that we do not tolerate retaliation for using the NCP and informing them of avenues available to pursue allegations of retaliation.

a) The NRC both understands that fear of retaliation has the potential to inhibit employees from raising concerns and using the Non-Concurrence Process (NCP) and has the tools it needs to address employee concerns about the potential for retaliation. As addressed in the Planned Actions section of the agency's 2014 Non-Concurrence Process Assessment (available in the NRC's Agencywide Documents Access and Management System (ADAMS) at Accession No. ML14056A294), the agency has taken and plans to take multiple actions to address concerns of potential retaliation for using the NCP.

The finalized NCP Management Directive includes comprehensive guidance on concerns of reprisal, including that the agency does not tolerate retaliation; that retaliation could be grounds for disciplinary action; that adverse personnel actions or negative performance appraisals involving non-concurring employees are not to be used in retaliation for involvement or participation in the NCP; and that managers must take appropriate action in response to allegations of reprisal against non-concurring employees and other participants in the NCP, as well as chilling effect concerns related to the NCP.

The guidance also includes a list of avenues to pursue allegations of retaliation, including reports to the NRC's Office of the Inspector General, grievance procedures, whistleblower complaints with the Department of Labor under the Energy Reorganization Act, or complaints to the Office of Special Counsel. The agency is also considering additional training for staff and managers, and will determine whether further effort is needed regarding an anti-harassment policy and procedure for retaliation for raising differing views. The agency will continue to promote success stories and will host panel discussions to share experiences to help ensure the staff's use of the NCP leads to better informed decisions. The NRC believes that the planned actions provide sufficient tools to create effective, lasting improvements to the NCP that will foster continued employee engagement and support safe and effective regulatory decision-making for the agency.

The Honorable David Vitter

QUESTION 5. **In the recent hearing one of the main issues brought to the attention of the committee was the NRC's progress on implementation of Fukushima recommendations.**

a) **Please detail the progress that the commission has made on each recommendation in detail.**

b) **Also, please note any implementation of these recommendations taken voluntarily by the nuclear industry.**

ANSWER.

a) The NRC has taken a number of actions to address the Near Term Task Force (NTTF) recommendations. These actions include the issuance of four orders covering Recommendation 4.2 (Order EA-12-049, "Mitigating Strategies"), Recommendation 5.1 (Order EA-12-050 "Reliable Hardened Vents," which was subsequently superseded by Order EA-13-109, "Severe Accident-Capable Hardened Vents" in June 2013), and Recommendation 7.1 (Order EA-12-051, "Spent Fuel Pool Instrumentation"). In addition, on March 12, 2012, the NRC issued a Request for Information (RFI) in order to address Recommendation 2.1 (seismic and flooding hazard reevaluations), Recommendation 2.3 (seismic and flooding walkdowns), and Recommendation 9.3 (emergency preparedness).

The NRC is currently evaluating nuclear power plant licensee progress toward compliance with these orders. With respect to the Mitigating Strategies and Spent Fuel Pool Instrumentation Orders, the NRC has reviewed all licensee integrated plans detailing how licensees will comply with the orders and has issued interim staff evaluations for all plants. The NRC is currently

conducting on-site audits at all plants to evaluate open items identified during the review of the integrated plans for each of these orders. Licensees have already begun procuring and installing the mitigating strategies equipment that will address the issues outlined in the mitigating strategies order. Safety evaluations documenting the NRC staff view of whether licensees are in compliance with the order are scheduled to be issued for the first plants beginning this fall. The NRC is currently reviewing the integrated plans submitted by licensees in June 2014 in response to the Severe Accident Capable Hardened Vents Order. The NRC plans to begin issuing interim staff evaluations by the end of the year.

The NRC has completed its review of all nuclear power plant licensee walkdown reports relative to Recommendation 2.3 and has issued staff assessments documenting completion of this effort. The NRC is continuing to review flooding hazard reevaluations for many plants in addition to reviewing the seismic hazard reevaluations submitted by nuclear power plant licensees in the Central and Eastern United States. Issues related to existing flooding and seismic protection features identified during the flooding and seismic walkdowns have been entered into licensee Corrective Action Programs for resolution. Licensees have also implemented interim actions where initial flood hazard reevaluations have shown a greater hazard exists than that previously identified for a site and for which a plant may have been designed.

With respect to the emergency preparedness recommendations addressed in the aforementioned RFI, the NRC has issued staff assessments indicating that licensees have sufficiently addressed Phase 1 of the staffing portion of this recommendation regarding assurance that licensees have adequate staffing to respond to a multiunit event. Additionally, the NRC has issued staff assessments indicating that licensees have sufficiently addressed the

communications portion of this recommendation regarding assurance that licensees have the capability to power communications equipment during a prolonged station blackout.

In addition to the licensing activities described above, the NRC has also undertaken rulemaking efforts to address some of the recommendations. These include a consolidated rule to codify the requirements associated with the mitigation strategies order, the Spent Fuel Pool Level Instrumentation Order, and the integration of onsite emergency response processes, procedures, training, and exercises. Additionally, the NRC has undertaken an effort to develop a rule for filtering strategies with drywell filtration and severe accident management of BWR Mark I and II containments.

Tier 2 activities are those activities that, at the time of prioritization, could not be initiated in the near term due to resource or critical- skill- set-limitations.

Part of Recommendation 9.3, Emergency Preparedness, was evaluated by the NRC staff as a Tier 2 activity. Initially, a portion of this recommendation would have involved issuance of an order licensees to undertake the following activities until rulemaking is complete: 1) add guidance to the emergency plan that documents how to perform a multi-unit dose assessment (including releases from spent fuel pools) using the licensee's site-specific dose assessment software and approach; 2) conduct periodic training and exercises for multi-unit and prolonged station blackout (SBO) scenarios, and 3) ensure that emergency preparedness (EP) equipment and facilities are sufficient for dealing with multiunit and prolonged SBO scenarios. The NRC staff re-evaluated options to resolve Tier 2 recommendations and assessed the objectives of Tier 2 items and determined that the activities that industry has committed to undertake within

Order EA-12-049 (Mitigating Strategies) would resolve two of the three recommendations, regarding periodic training and equipment and facility sufficiency. The NRC has incorporated these Recommendation 9.3 items into the rulemaking associated with NTTF Recommendations 4, 7.1, and 8 and plans to make these Recommendation 9.3 Tier 2 items generically applicable though this rulemaking.

Regarding the third recommendation, multiunit dose assessment, the staff requested additional details regarding the number of sites that currently have multi-unit dose assessment capability and when specifically all licensees will have the capability to conduct multiunit dose assessment. In April 2014, the staff completed its review of the licensees' multiunit dose assessment capabilities. The staff reviewed the licensees' responses and noted that licensees have multiunit or multi-source dose capabilities or will have these capabilities by December 31, 2014. The staff will verify the implementation of these dose assessment capabilities through the inspection program. Given the above approach, the staff does not believe the issuance of an order is warranted for the multi-unit dose assessment capability. Multi-unit dose assessment would be made generically applicable through subsequent rulemaking for NTTF Recommendations 9.1 and 9.2 items under Tier 3.

The NRC staff is also planning to address re-evaluating other natural external hazards. This reevaluation requires the same resources, such as NRC and nuclear industry subject matter experts, that are being used for seismic and flooding hazards, which are considered the highest priority external events. The NRC will begin work on this issue once sufficient resources are available.

The Task Force also recommended that the NRC staff require licensees to provide reliable spent fuel makeup capabilities (NTTF Recommendations 7.2 – 7.5). These recommendations were to be implemented via three orders and an associated rulemaking to codify the orders. These recommendations, however, ultimately were integrated into the Mitigating Strategies Order. The associated rulemaking is now part of the consolidated rule to codify the requirements associated with the Mitigation Strategies Order, and the integration of onsite emergency response processes, procedures, training, and exercises.

No significant action has been taken on most of the Tier 3 activities because they are either dependent on the outcome of other recommendations, awaiting input from studies, or require the same resources that are currently being used to implement Tier 1 activities (for example, an assessment of external hazards other than seismic or flooding hazards, uses the same expertise as the seismic and flooding reevaluations).

Regarding the Tier 3 activity on the expedited transfer of spent fuel to dry cask storage, the NRC staff concluded that such a regulatory requirement would provide only a minor or limited safety benefit and the costs would not be warranted. Therefore, the staff recommended that no further generic assessments be pursued related to possible regulatory actions to require the expedited transfer of spent fuel to dry cask storage. The Commission's recent vote on this issue approved this recommendation, but directed the staff to take some additional actions such as informing licensees about the potential benefits of alternate spent fuel loading patterns and evaluating whether seismic re-evaluations of spent fuel pools are still needed as part of activities related to Recommendation 2.1.

The Task Force's Recommendation 1 consisted of an overarching recommendation to establish an improved regulatory framework for adequate protection that balances defense-in-depth and risk considerations. In August 2011, the Commission directed the Staff to pursue Recommendation 1 independent of any activities associated with the review of the other Task Force recommendations. The NRC staff therefore sought separate approval of its proposal for addressing Recommendation 1 in SECY-13-0132, in December 2013. The staff recommended that the NRC: 1) establish a design-basis extension category of events and requirements and associated internal NRC guidance, policies, and procedures; 2) establish Commission expectations for defense-in-depth through the development of a policy statement; and 3) clarify the role of voluntary industry initiatives in the NRC regulatory process. The Commission largely disapproved the staff recommendations. The Commission directed that the objectives of the first two activities be re-evaluated in the context of the staff's ongoing work on a long-term Risk Management Regulatory Framework, and, particularly, a proposed policy statement. Work on the Risk Management Regulatory Framework and interrelated activities will continue outside the scope of the NRC's post-Fukushima actions. For the third activity, the Commission approved the staff's proposal to evaluate the current status of implementation on the most risk- or safety-significant initiatives, and verify that such voluntary initiatives are adequately implemented.

As directed by the Commission, the NRC staff revised the order issued to licensees for reactors with BWR Mark I and Mark II containments to require that improved venting capabilities be provided during severe accident conditions (See Tier 1 activity related to Recommendation 5.1). In addition, the Commission directed the NRC staff to use the rulemaking process to assess possible regulatory requirements for filtration strategies and other severe accident management functions for reactors with this type of containment design. The NRC staff has had numerous public meetings with the nuclear industry and other stakeholders to share analysis results and

to discuss the cost/benefit assessments being prepared for various potential regulatory actions. A draft regulatory basis document will be issued for public comment early in 2015.

b) Some actions that the industry has taken to date may be considered voluntary because they were taken before the NRC issued final applicable regulatory requirements. For example, the Recommendation 8 rulemaking activities related to improving onsite emergency capabilities, including the integration of Severe Accident Management Guidelines, are not yet incorporated into NRC regulations. However, the NRC is aware that the industry has taken some actions to revise its generic Severe Accident Management Guidelines to address lessons learned from the Fukushima Daiichi accident. The NRC is also aware that the Institute for Nuclear Power Operations (INPO) independently prepared a lessons learned report (including an important timeline for the accident), issued significant operating experience reports, and has performed assessments of the changes made by the operators of nuclear power plants to address the INPO reports and recommendations. While many of these are related to ongoing or planned regulatory activities, these actions were not required by the NRC and can be viewed as voluntary.

The Honorable David Vitter

QUESTION 6. **I want to complement those of you who agreed with the recommendations of NRC staff and of your Advisory Committee on Reactor Safeguards (ACRS) the post- Fukushima Tier 3 recommendation on whether a safety case exist for expedited transfer of spent fuel to dry casks be closed and that no further generic assessments be pursued on this matter. I am concerned about the amount of time it took the Commission to reach its decision on a matter that the staff and ACRS placed so clearly before you. The staff made its recommendation on Nov. 12 of last year. The ACRS provided its written comments to you on Dec 18. You issued a decision on May 23, 2014. I addressed the undue amount of time the Commission was taking in reaching decisions in my legislation. This episode reinforces the conclusion that legislative action is needed to help you produce work on a more timely basis.**

a. Will you each agree to report on what steps you are taking to cut down on such undue delays?

ANSWER.

The NRC staff provided two staff papers to the Commission that examined the potential risks and consequences of a spent fuel pool fire and a generic regulatory analysis that examined the

safety benefit of expediting the transfer of spent fuel into dry storage casks. They were the "Staff Evaluation and Recommendation for Japan Lessons-Learned Tier 3 Issue on Expedited Transfer of Spent Fuel," dated November 12, 2013), and the "Consequence Study of a Beyond-Design-Basis Earthquake Affecting the Spent Fuel Pool for a U.S. Mark 1 Boiling-Water Reactor," dated October 9, 2013, more commonly known as the Spent Fuel Pool Study.

The NRC staff concluded that expedited transfer of spent fuel to dry cask storage would provide a minor or limited safety benefit. Therefore, the staff recommended to the Commission that no further generic assessments be pursued related to possible regulatory actions to require the expedited transfer of spent fuel to dry cask storage. The Commission approved this recommendation, "Staff Evaluation and Recommendation for Japan Lessons-Learned Tier 3 issue on Expedited Transfer of Spent Fuel", dated May 23, 2014. The Commission also asked the staff to provide further information such as the potential benefits of alternate spent fuel loading patterns and seismic re-evaluations of spent fuel pools. The Commission decision on expedited transfer of spent fuel to dry cask storage closed out one of the Japan Lessons Learned activities that were identified in response to the Fukushima event.

Commissioners are obligated to make informed decisions regarding matters of safety and security. In the instance you reference, additional information was required from the NRC staff to help two Commissioners with their respective analyses. They received briefings from the NRC staff and engaged in additional study prior to establishing their policy positions, and crafting their votes. These briefings and the additional time needed to evaluate the NRC staff's analysis of the issue, and the completion of a thorough discussion of their policy position, as

reflected in their votes, were the bases for the time committed to meeting their responsibilities as Commissioners.

The NRC has used its established policies and procedures to ensure that it can prioritize and act on those items with the greatest impact on public health and safety. The Commission and NRC staff has paid particular attention to making sure that the Fukushima-related activities have not adversely affected the safe operation of nuclear power plants. The Commission works together in a collegial manner to ensure issues are addressed in a timely manner while all Commissioners are afforded the time necessary to make informed decisions.

The Honorable David Vitter

QUESTION 7. **We have seen an inordinate amount of time and resources spent on a Tier Three item that demonstrably demonstrated that expedited transfer had very limited safety benefit. Isn't it time to focus on completing the implementation of the Tier One actions and begin to return to a normal order of business?**

ANSWER.

After the Fukushima accident, a task force of senior NRC staff reviewed the circumstances of the event to determine what lessons could be learned. In July 2011, the task force provided a report with recommendations to enhance U.S. reactor safety, and these became the foundation of the NRC's post-Fukushima activities. The Commission then approved a three-tiered prioritization of the recommendations. The NRC is actively working on implementing the Near Term Task Force recommendations prioritized as Tier 1 and expects to complete a majority of the Tier 1 activities by the end of 2016.

The Honorable David Vitter

QUESTION 8. **Since the NRC has addressed the most safety-significant Tier 1 post-Fukushima items, when will post-Fukushima costs cease to drive increases in the NRC's budget?**

ANSWER.

The NRC continues to implement the Near Term Task Force recommendations classified as Tier 1. While a great deal of progress has been made on these post-Fukushima activities, there is still additional work that needs to be completed with respect to implementing the most safety-significant Tier 1 recommendations. Much of this work focuses on ensuring compliance with the four orders issued in response to the Tier 1 recommendations (which includes one order that was superseded) and reviewing information submitted in response to NRC Requests for Information regarding seismic and flooding hazards and emergency preparedness. The NRC is also focused on a number of Tier 1 rulemaking activities. The NRC expects to make substantial progress on implementing all of the aforementioned Tier 1 activities by the end of 2016.

The Honorable David Vitter

QUESTION 9. **Your FY '15 budget justification indicated that productivity has precipitously declined. In 2004, you used 1,776 hours as a measure of productivity. For FY '15, that figure has slipped to 1.375 hours. That's remarkable out of an employee work year of 2080 hours. Tell us the specifics of when you each first became aware of this inordinate decrease and what expectations and specific measures you have communicated to the staff to effect corrections in this course?**

ANSWER:

The FY 2004 Fee Rule used an estimate of 1,776 hours per direct FTE to calculate the program hourly rates, based on the Office of Management and Budget (OMB) Circular A-76, "Performance of Commercial Activities." In the 2005 Fee Rule, NRC revised the estimate of direct hours per FTE to more accurately reflect the NRC's costs of providing fee-billable services (as set forth in 10 CFR Part 170). The NRC determined that certain indirect costs (such as administrative tasks, training and other activities that a direct FTE may perform) in support of their mission direct work, but would more accurately be categorized as overhead was included in the 1,776 hours, overestimating the total. Beginning in the FY 2005 Fee Rule, NRC based the calculation of hourly rates on guidance from OMB Circular A-25, "User Charges" which emphasizes that agency fees should reflect the full cost of providing services to identifiable beneficiaries. NRC believes that by using an estimate of direct hours per direct FTE that reflects only direct staff time we can achieve more accurate full costing. This revision, first made in FY 2005, lowered the estimate of direct hours per direct FTE to 1,446, a decrease of 330 hours. The current projection of 1,375 hours per direct FTE is due to annual fluctuations in indirect activities, and annual leave projections.

The Honorable David Vitter

QUESTION 10: **Has OMB, in any way, instructed you, either directly or indirectly, to withhold information regarding resource estimates for completing the NRC's statutorily mandated review of the Yucca Mountain license application and issue a final decision?**

ANSWER.

In response to direction from Congress, the Commission recently directed the staff to estimate the resources needed to complete the licensing process for the Yucca Mountain repository construction authorization, including the adjudicatory hearing. OMB Circular A-11 section 22, "Communications with the Congress and the Public and Clearance Requirements," governs the confidentiality of budget deliberations and congressional communications. In accordance with Circular A-11 requirements, resource estimates, even when they are not part of a budget proposal, are subject to OMB clearance prior to transmittal to congressional committees, individual Members of the Congress, or their staff, or the media. The NRC shared the staff's plan and estimate with OMB, and OMB did not instruct the Commission to withhold the estimate from Congress. The NRC's response to the House Appropriations Committee is forthcoming.

The Honorable David Vitter

QUESTION 11. **Some contend that the "NRC's recent track record does not inspire confidence and does not bode well because at the end of the day, the American people don't want to have a reactor near them because of these problems and the industry is just not going to be there in the future." Has the NRC's annual assessment of trends in the industry's safety performance uncovered any negative trends that warrant regulatory action?**

ANSWER.

The agency uses a number of methods to assess industry safety performance, such as the Reactor Oversight Process, the Industry Trends Program, the Accident Sequence Precursor program, and the monitoring of operating experience. Licensee performance weaknesses that are identified at individual plants or licensees are addressed via the licensee's corrective action program and these programs are reviewed under the Reactor Oversight Process. The agency evaluates inspection results and operating experience for generic applicability and uses generic communications to communicate their impacts to licensees. Since the inception of the Industry Trends Program in 2000, which monitors various numeric indicators of safety performance, there have been eight "prediction limits" that were either met or exceeded. Prediction limits are used to provide a consistent method for identifying potential short-term emergent issues before they manifest themselves as long-term trends. To date, no statistically significant adverse trend has been identified.

The Honorable David Vitter

QUESTION 12. **Please provide copies of any votes where NRC staff advised that a proposed action would not be cost beneficial or necessary for safety, but you chose to support the action anyway.**

ANSWER.

In COMSECY-13-0030, "Staff Evaluation and Recommendation for Japan Lessons-Learned Tier 3 Issue on Expedited Transfer of Spent Fuel" (November 12, 2013), the NRC staff concluded that expedited transfer of spent fuel to dry cask storage would provide a minor or limited safety benefit. Therefore, the staff recommended to the Commission that no further generic assessments be pursued related to possible regulatory actions to require the expedited transfer of spent fuel to dry cask storage.

As I explained in my vote, in my view, the staff had not adequately explored the issue of spent fuel management in the pool and, as a result, I did not have adequate information on which to base a view on the need to require approaches that may lead to some form of expedited transfer of spent fuel from pools to dry casks. Consequently, I did not approve the staff recommendation to eliminate further generic assessment of expedited transfer of spent fuel as it relates to broader spent fuel management alternatives that should be explored. I did, however, approve the staff discontinuing the generic expedited transfer assessment defined in the current three-phased program plan, as it is not clear that it is realistically possible to rapidly defuel several thousand fuel assemblies from U.S. plants across the nation within 5 years. I advocated that broader spent fuel management approaches that promote defense-in-depth against accidents and events that could generate very large releases, particularly with regard to

the vulnerabilities that exist in spent fuel pools during the first few months after fuel discharge, should be evaluated instead. A copy of my vote on COMSECY-13-0030 is attached, as requested.

The Honorable David Vitter

QUESTION 13. **The Nuclear Regulatory Commission "is consistently ranked as one of the best places to work." And yet, at the same time, some contend that whistleblowers in your agency cannot express their concerns. This seems a contradiction—that your agency provides an exceptional work environment that would, at the same time, stymie the thoughts and concerns of its workers. What processes are available for those who wish to express their concerns?**

ANSWER.

The free and open exchange of views or ideas, conducted in a non-threatening environment, provides the ideal forum within the NRC for effective and efficient decision making. Indeed, a free and open exchange among staff and management improves and supports the agency's safety and security mission. Because of the importance of such a free exchange, the NRC maintains directives and processes to promote an open, collaborative work environment and a positive safety culture. The NRC has taken steps to measure the extent to which the availability of these options creates the climate and culture that meet our openness and collaboration goals. Additionally, even though the last NRC Safety Culture and Climate Survey results indicated that 80 percent of employees who responded stated that they believed the NRC has a culture that is conducive to raising concerns, we continue to strive for improvement in this area. Employees are expected to routinely engage in informal discussions on issues of concern with their coworkers and supervisors. In addition to informal discussions, which are expected to be sufficient to resolve most issues, individuals have access to various processes for expressing concerns

and having their differing views heard by decision-makers, including the Open Door Policy, the Non-Concurrence Process, and the Differing Professional Opinions Program.

The Honorable David Vitter

QUESTION 14. **In the hearing it was repeatedly mentioned that the NRC has yet to deny such an exemption from safety. Have past exemptions resulted in a significant breach of safety?**

ANSWER.

Past regulatory exemptions approved for permanently shutdown reactors have not resulted in an increased risk to the public health and safety. Exemptions from certain regulations that were approved for permanently shutdown reactors were based on permanent changes to configurations of the plant (such as permanent removal of the fuel from the reactor). Most of the NRC's operating reactor safety regulations do not address plants in a permanently shutdown status, and certain events or postulated safety significant situations at operating reactors are not applicable to permanently shutdown reactors. Therefore, the NRC typically issues exemptions from regulations that no longer apply to the licensee requesting the exemption. It should be noted that safety regulations applicable to permanently shutdown reactors remain in effect, and the NRC continues to maintain effective oversight to ensure compliance with these safety regulations.

The Honorable David Vitter

QUESTION 15. **What is the NRC process for reviewing and making decisions on Permanently Defueled Emergency Plan (PDEP) submittals? Please provide the staff and Commissioner processes, as well as accurate and realistic timeframes under which the PDEP is reviewed, considered and available to the public, and voted on. Please also provide a copy of the initial guidance that spells out that process.**

ANSWER.

The NRC staff uses the same process for reviewing and making decisions on permanently defueled emergency plans as the staff uses for reviewing and making decisions on an operating facility's emergency plans. Licensees may make changes to the emergency plan without NRC approval only if the change does not reduce the effectiveness of the emergency plan, and the emergency plan, as changed, continues to meet the requirements in Appendix E to 10 CFR Part 50 and the planning standards of 10 CFR 50.47(b). If the licensee determines that the change involves a reduction in plan effectiveness, the licensee must submit the proposed emergency plan change for prior NRC approval as a license amendment request under 10 CFR 50.90.

The NRC review process is initiated when a licensee submits a license amendment request to the NRC Document Control Desk. An acceptance review is performed by NRC staff, to: (1) determine if documentation submitted is sufficient to support the staff's technical review; (2) coordinate necessary interfaces with various NRC offices; and (3) establish a schedule for the technical review of the request.

As soon as practicable, following completion of the acceptance review, the NRC will publish a notice in the *Federal Register*. The *Federal Register* notice will describe the proposed change, describe the procedure for providing comments on the proposed change, announce the opportunity to request a hearing, and provide instructions for requesting a hearing. As part of the review of the license amendment request, the NRC staff verifies that the licensee has informed the appropriate State officials of the proposed change.

During the review process, requests for additional information may be issued to the licensee for the purpose of enabling the staff to obtain all relevant information needed to make a regulatory decision on a license amendment request that is well-informed, technically correct, and legally defensible. When the NRC completes its technical review of the proposed change, in the form of a written safety evaluation report, it publishes a notice in the *Federal Register* indicating the approval or denial of the request.

The NRC has a general goal of completing action on a license amendment request within one year; however, staff action on a license amendment request may be expedited to reduce time to approximately 6-9 months based on the request's safety significance, complexity, and assigned priority.

If the licensee determines that the plan as changed would not meet the requirements in Appendix E to 10 CFR Part 50 and the planning standards of 10 CFR 50.47(b), the licensee may submit an exemption request, rather than a license amendment request, prior to

implementing any changes to its plan. The NRC's processes for reviewing exemption requests are discussed in the response to your Question #2.

PDEP changes submitted for prior NRC approval, including those that implement exemptions already approved by the Commission, are approved by the Director of the Office of Nuclear Reactor Regulation and do not require separate Commission approval.

The Honorable David Vitter

QUESTION 16. **Under an approved PDEP *[Permanently Defueled Emergency Plan]*, does the licensee retain responsibility for onsite emergency response and communication with offsite organizations?**

ANSWER.

Yes. At all times, the licensee is primarily responsible for safety of the licensed activities, including on-site emergency response and all aspects of coordination and communication with offsite organizations (including, but not limited to, the relevant law enforcement and emergency management organizations). Following approval of the PDEP, the requirement in 10 CFR 50.54(q) to maintain an onsite emergency plan that meets the planning standards of 10 CFR 50.47(b) and the requirements of Appendix E to 10 CFR Part 50 (unless exempted by the Commission), remains in effect. The onsite emergency plan will outline on-shift and augmented organization staffing capable of responding to emergency events appropriate for a reactor that has permanently ceased operation and transferred fuel from the reactor vessel to a spent fuel pool or dry cask storage. The onsite emergency plan will also require the notification of designated offsite government authorities upon the declaration of an emergency event and provide for the coordination of offsite response organizations (e.g., firefighting, medical transportation) onsite.

The Honorable David Vitter

QUESTION 17. **Will the NRC commence a rulemaking on decommissioning in order to bring certainty and timeliness to the current process of requesting waivers and exemptions from operating plant requirements?**

ANSWER.

The NRC staff added to its Common Prioritization of Rulemaking a line item for a rulemaking on power reactor decommissioning transition. The Common Prioritization of Rulemaking is a budgeting tool that the NRC uses to assign resources to rulemaking activities, in light of the NRC's priorities and resource limitations. Separately, the NRC staff is in the process of determining the appropriate timeframe for the decommissioning transition rulemaking. Even if this rulemaking were initiated immediately and implemented following the NRC rulemaking process of developing a regulatory basis, issuing a proposed rule; requesting, receiving, and addressing public comments on the proposed rule; and issuing a final rule; any improvements it may provide would have little impact on the four plants that are currently transitioning to decommissioning. It would be available primarily for plants that may be considering permanently shutting down in the future. This consideration will be a factor in the NRC's determination of how to schedule such a rulemaking effort. The Commission recently directed the staff to report to the Commission by January, 2015, its views on the need for an integrated rulemaking for decommissioning, based on lessons learned from the most recent operating closures.

The Honorable Jim Inhofe

QUESTION 1. **The NRC has spent an inordinate amount of time studying the safety of spent fuel in spent fuel pools and whether there is a safety justification for expediting their transfer to dry storage casks.**

a) For how long, and with how many studies has the NRC been looking into this issue?

b) How many full time employees and how much of the agency's financial resources have been targeted at studying this issue?

ANSWER.

a) The NRC has a long history of studying spent fuel pool safety. Most recently, in response to the March 2011 event at Fukushima, Japan, the NRC staff provided two staff papers to the Commission that dealt with or were associated with the topic of expedited fuel movement into dry storage casks. They were: "Staff Evaluation and Recommendation for Japan Lessons-Learned Tier 3 Issue on Expedited Transfer of Spent Fuel," dated November 12, 2013, and "Consequence Study of a Beyond-Design-Basis Earthquake Affecting the Spent Fuel Pool for a U.S. Mark I Boiling-Water Reactor," dated October 9, 2013, more commonly known as the Spent Fuel Pool Study. The November 2013 paper provides some history of the NRC's past work in examining spent fuel pool safety.

b) The approximate cost associated with the development of the two policy papers mentioned above is $1,789,000. This value is inclusive of the estimated 10.7 full-time equivalents (FTE) expended on this activity.

The Honorable James Inhofe

QUESTION 2. **In a recent speech, you indicated that resident inspectors would remain on-site indefinitely at some sites where the reactor or reactors have permanently shutdown. This would seem to be at odds with the practice followed during the previous period in the 1980s and 1990s, when a number of reactors permanently shut-down and safely entered decommissioning activities.**

a) **Is this a new Commission policy?**

b) **When did you consult with your colleagues on your statement?**

c) **What level of risk justifies investing resources appropriate for operating reactors at these sites?**

d) **How can you justify the continuing fee costs for this staffing that will fall upon ratepayers who no longer receive electricity from these sites?**

e) **How can you justify the continuing fee costs for this staffing that will fall upon ratepayers who no longer receive electricity from these sites?**

ANSWER.

a) While it is possible that resident inspectors may need to be retained on-site for significant periods after reactors have permanently shutdown, the NRC's policy specifically contemplates resident inspectors no longer being permanently assigned to a shutdown

reactor after 6 to 12 months under most circumstances. The amount of time that the NRC retains a resident inspector at each site being decommissioned is dependent on the activities being conducted on the site and the performance of the licensee. The NRC may vary the required oversight to account for the changes in activities that occur at different times during the decommissioning process. These considerations are discussed in Inspection Manual Chapter 2561, "Decommissioning Power Reactor Inspection Program," dated April 14, 2003. It states:

> At a single unit power reactor facility that has just shutdown, one of the two resident inspectors should be detailed from the site shortly after the establishment of safe reactor shutdown. The remaining inspector should then stay at the site for a pre-determined period. If the licensee: (1) plans to enter active decontamination and dismantlement or if licensee operational performance dictates, the remaining resident inspector could stay at the site for up to a year; (2) plans to enter into long-term storage (SAFSTOR), the length of service of the remaining inspector would be based, in part, on the licensee's decommissioning schedule and the NRC's assessment of licensee performance, and not exceed 6 months; and (3) had a significant operational event or accident, the assignment of NRC staff to the site would be based solely on

NRC management discretion, not encumbered by the guidance in this section.

Although the decision to keep a resident inspector at a decommissioning site depends on the particular circumstances of the licensee and their decommissioning plans, licensees' decommissioning plans have generally resulted in the NRC only keeping a resident inspector on the site for 6 to 12 months.

b) Consistent with our Internal Commission Procedures, I circulated the speech in draft form to my Commission colleagues on May 16, 2014 for their review and comment. I received comments from each Commissioner before finalizing the speech, and delivered the speech on May 21, 2014.

c) Two full time resident inspectors are assigned to an operating single unit power reactor facility. As discussed, one of the resident inspectors will be reassigned shortly after shutdown which promptly reduces the investment of resources. The second resident would likely remain on site for 6 to 12 months depending on whether the licensee plans to enter active decontamination and dismantlement or plans to enter long-term storage (SAFSTOR).

d) As discussed, the NRC's long-standing policy is to remove and reassign resident inspectors from permanently shutdown sites relatively quickly depending on the particular circumstances of the

licensee's decommissioning activities and performance. Under the most common circumstances, one of the two on-site resident inspectors will be detailed to another assignment shortly after shutdown. The second resident inspector would likely remain for 6 to 12 months depending on circumstances. Based on the licensee's proposed actions after shutdown, it is possible that the resident inspector might remain on the site for longer than 12months. Decisions to extend the resident inspector beyond 12months will normally be made by senior NRC officials at Headquarters and the Region based on a particular site's unique circumstances.

The Honorable James Inhofe

QUESTION 3. **Last April, you received a serious proposal from the industry that suggested a re-prioritization of your rulemakings in progress including some that could be withdrawn, some that could be deferred, some needing modification, some that could benefit from a higher priority.**

a. Indicating a desire to work with you on that proposal, and given the direct impact that such a high number of rulemakings has on annual fees as well as trying to ensure that everyone of these would not have equal priority - a concept that is not a sound management practice - how many of these suggestions have you adopted?

b. How many have been withdrawn or deferred?

c. When will we begin to see a more transparent and orderly process of addressing these suggestions?

ANSWER.

The referenced letter, submitted to the NRC by the Nuclear Energy Institute (NEI) in April 2013 made recommendations to defer, accelerate, or eliminate 24 ongoing regulatory actions. The NRC acknowledged receipt of the letter during a May 2013 public meeting on the cumulative effects of regulation (CER). However, while the letter recommended certain actions, the letter did not provide any basis for the recommendations or any discussion of what process was used to develop the recommendations. To date, the NRC has not implemented the NEI suggestions but is continuing to implement CER activities.

Independent of NEI's April 2013 letter, by February 2013 the NRC had already begun addressing risk-informed prioritization of current and emerging nuclear power plant issues in an integrated manner and on a plant-specific basis. The NRC staff has been interacting with the public, including industry, in a series of public meetings to further develop a process for such risk-informed prioritization. As part of this NRC initiative, on October 1, 2013, NEI submitted to the NRC a draft process for prioritizing regulatory actions on a plant-specific level. Portions of the NEI proposal are being considered by the NRC with respect to insights into the NRC's regulatory processes and rulemaking for future actions. The NRC continues to observe and participate in the industry's draft prioritization process, including observation of generic tabletop exercises, observation of plant-specific tabletop exercises, and participation in demonstration pilots. The NRC staff plans to advise the Commission of its recommendations regarding the prioritization process in March 2015.

The Honorable James Inhofe

QUESTION 4. **Given the extremely low risk of any event even occurring and lesser risk of any offsite consequences, what justification or policy statement do you have for preventing the staff from issuing exemptions for no longer needed requirements at sites where the reactors are permanently shut down and fuel removed from the vessel, including emergency response exemptions by inserting the Commission into such decisions?**

ANSWER.

Many of the regulations applicable to an operating nuclear power plant continue to apply after a plant is permanently shutdown and defueled. The licensee of a permanently shutdown and defueled reactor may request exemptions from those regulations that are no longer appropriate for the facility, given the facility's reduced risk to public health and safety. In its exemption request, the licensee must provide technical analysis justifying the request.

The NRC staff evaluates the technical merits of the request and has the authority to grant an exemption from the regulations in most technical areas for both operating and permanently shutdown nuclear power reactors.

Consistent with its delegation of authority for licensing and regulatory actions the Commission previously determined that the authority to approve changes to a licensee's emergency plan that constitute a reduction in effectiveness, but comply with applicable regulatory requirements, should be with the Director of the Office of Nuclear Reactor Regulation to provide the

necessary oversight for appropriate coordination with key interested parties and ensure that policy issues are identified and communicated to the Commission. Because a higher level of oversight is appropriate for any reduction in the effectiveness of an emergency plan that requires an exemption from the emergency preparedness requirements in 10 CFR 50.47(b) or Appendix E to 10 CFR Part 50, the Commission retains the authority to approve such changes. The Commission has not established a policy concerning whether a different level of oversight is appropriate for the approval of emergency plan changes made following the permanent shutdown and defueling of a nuclear power reactor. However, the Commission will consider any new policy issues resulting from the recent shutdown of nuclear power reactors, and determine whether there is a need to make any policy changes.

The Honorable Jim Inhofe

QUESTION 5. **Your FY '16 budget request is currently under preparation. How can we have confidence in you to bring forward a more responsible request next year?**

ANSWER.

The NRC decreased resources in FY 2014 to reflect changing realities and decreasing workloads. This reduction was not reflected in the agency's FY 2015 President's Budget. The NRC is continuing to assess appropriate resource levels for FY 2015, FY 2016, and beyond.

The NRC's FY 2016 budget formulation process is informed by a Planning, Budgeting, and Performance Management (PBPM) framework to meet the requirements of the Government Performance and Results Modernization Act of 2010. The PBPM process enables the NRC to link budgeted resources with program performance. Through the PBPM process and by establishing performance goals, the NRC can identify the work that needs to be done and the resources to conduct that work. The PBPM's continuous performance monitoring and review process helps ensure that the agency is achieving its goals and activities in an efficient and effective manner.

The Honorable Jeff Sessions

QUESTION 1. **Do you believe that the US nuclear fleet is operating more safely today than it was 5 years ago? 20 years ago? 30 years ago?**

ANSWER.

The NRC does not define levels of safety above the standard of safety required by our regulations. The NRC continually examines and refines its regulations and reactor oversight program to address newly identified issues, research, and operating experience. The NRC has published the *Results of the Industry Trends Program for Operating Power Reactors* since the inception of the Industry Trends Program (ITP); the first ITP paper was issued for fiscal year 2001 and evaluated input starting in 1988. In the years since, the reports show a consistently improving trend in long-term indicators dating back to 1988. These long-term indicators are used for assessing whether there are any statistically significant adverse industry trends. To date no statistically significant adverse trend has been identified.

That said, the NRC and the industry have instituted innumerable improvements to safety over the last 30 years as operating experience and best practices within the industry have been disseminated, absorbed, and responses implemented in the operating fleet.

The Honorable Jeff Sessions

QUESTION 2. **The NRC staff is currently working on the Safety Evaluation Report (SER) for the Yucca Mountain License Application with Volumes 2-5 estimated to be published later this calendar year. What steps has the NRC taken to ensure that this report is completed on time?**

ANSWER.

The NRC has assembled a team of highly-qualified staff to work on the remaining Safety Evaluation Report (SER) volumes for the U.S. Department of Energy's construction authorization application for the Yucca Mountain geologic repository. In response to the Commission's November 18, 2013, Memorandum and Order and Staff Requirements Memorandum, the NRC staff developed a high-level project plan that outlines the process, path forward, and schedule to issue the remaining SER volumes. Staff is tracking progress toward completion of the SER. The majority of chapter milestones have been completed on time or ahead of due dates; any chapter that does not meet the projected schedule receives further management attention. To date, no unforeseen technical or process issues have arisen that would affect the completion date.

The Honorable Jeff Sessions

QUESTION 3. **In your January 30, 2014, testimony before the Senate Committee on Environment and Public Works, you indicated that the new plant license for Watts Bar 2 in Tennessee would be issued in December 2014. Today, however, you indicated that the license would not be able to be issued until 2015. Can you explain the delay?**

ANSWER.

In January 2014, the Tennessee Valley Authority (TVA) stated in a public meeting that its goal to start commercial operation of Watts Bar Nuclear Plant Unit 2 by December 2015, could be met if an operating license were issued between December 2014, and June 2015. After receiving the operating licensee TVA could load fuel into the reactor and continue the startup testing and inspections required prior to commercial operation. In April 2014, TVA reported in a public meeting that the project was on schedule to meet regulatory requirements necessary to receive the operating license in early 2015, which is within the timeframe needed to begin commercial operation by December 2015. Receipt of an operating license in early 2015, instead of late 2014, is attributable to delays in TVA's construction schedule and testing of components and systems consistent with TVA's responsibility to demonstrate that WBN Unit 2 meets regulatory requirements. The NRC staff's review of the TVA Operating License application for WBN Unit 2 is mostly complete as the staff continues to document safety conclusions in supplements to the safety evaluation report, and inspection conclusions about the as-built plant in inspection reports.

As described in 10 C.F.R. 50.57, an operating license may be issued by the Commission upon making certain findings. With respect to completion of construction, the Commission must find that construction of the facility has been substantially completed in conformity with the construction permit and the application as amended, the provisions of the Atomic Energy Act of 1954 (Act), as amended, and the rules and regulations of the Commission. With respect to plant operations, the Commission must find that the facility will operate in conformity with the application as amended, the provisions of the Act, and the rules and regulations of the Commission. Further, the Commission must find that there is reasonable assurance (i) that the activities authorized by the operating license can be conducted without endangering the health and safety of the public-- and (ii) that such activities will be conducted in compliance with the Commission's regulations. The NRC will only issue an operating license for Watts Bar Unit 2 after the NRC staff verifies that the facility has been substantially completed and meets the Commission's regulations as described above.

The Honorable Jeff Sessions

QUESTION 4. Three pieces of legislation have recently been introduced in the United States Senate.

The Dry Cask Storage Act of 2014 (S. 2325) would ensure that every nuclear reactor operator complies with an NRC-approved plan that would require the safe removal of spent nuclear fuel from the spent fuel pools and place the spent fuel into dry cask storage within 7 years of the time the plan is submitted to the NRC, among other things. The legislation also provides funding to help reactor licensees implement the plans and expands the emergency planning zone for non-compliant reactor operators to 50 miles.

The Safe and Secure Decommissioning Act of 2014 (S. 2324) would prohibit the NRC from issuing exemptions from its emergency response or security requirements for spent fuel stored at nuclear reactors that have permanently shut down until all of the spent nuclear fuel stored at the site has been moved into dry casks.

The Nuclear Plant Decommissioning Act of 2014 (S. 2326) would grant states and local communities a substantial role in the crafting and preparation of decommissioning plans for retired nuclear plants located in those areas.

For each piece of legislation, please answer the following questions:

a. **According to NRC's criteria for substantial safety improvement benefits, would the legislation make current or future decommissioned power plants safer?**

b. **Would you expect the legislation to increase or decrease interest in siting and constructing nuclear power plants?**

c. **What impact, if any, would the legislation have on electricity prices?**

ANSWER.

a) The NRC's regulations were promulgated to provide reasonable assurance of protection of the public health and safety and the environment. The NRC has not performed a detailed technical analysis on the impacts of these three pieces of legislation. In general, it does not appear that the three bills would provide a substantial improvement in the protection of the public health and safety or the environment, but could increase the cost of operating and decommissioning a facility. A detailed technical analysis of the proposed changes would consider a number of factors, including, but not limited to, the effect on the margin of safety, impacts on the environment, impact on occupational radiation exposure, and impacts on the cost to decommission the facility. The NRC offers the following initial thoughts on the impacts of the proposed legislation.

With respect to the Dry Cask Storage Act of 2014, the Commission recently reviewed the technical feasibility of spent fuel storage and concluded that it is technically feasible to safely and securely store spent fuel in either wet or dry storage for at least 60 years beyond a reactor's licensed life. A discussion of the basis for this conclusion is provided in SECY-13-0061, "Waste Confidence – Continued Storage of Spent Nuclear Fuel," which is publicly available. The requirements of the Dry Cask Storage Act would apply to both operating and

decommissioning facilities. This Act would require expansion of emergency planning zones beyond current requirements if eligible fuel is not transferred to dry storage within the time frame specified in this Act. This could represent a significant increase in costs to maintain emergency preparedness.

With respect to the Safe and Secure Decommissioning Act of 2014, the NRC has a process for granting exemptions that focuses on safety and security. Many NRC regulations do not contain requirements that apply to a permanently shutdown and defueled facility. Licensees for those facilities may request exemptions to reduce the requirements commensurate with the reduced risk at a shutdown and defueled facility. The NRC performs a detailed technical review of all exemption requests submitted by licensees. The NRC grants exemptions only when the exemptions are authorized by law, will not present an undue risk to the health and safety of the public, and are consistent with the common defense and security; special circumstances, as defined in the NRC's regulations, also must be present. Implementation of the Act could require licensees of decommissioning nuclear facilities to maintain security and emergency preparedness measures that would likely not result in a substantial safety improvement based on the results of NRC's past evaluation of exemption requests. Further details of the exemption process are provided in the response to Senator Vitter's Question 2.

With respect to the Nuclear Plant Decommissioning Act of 2014, the NRC's current regulations were promulgated to provide reasonable assurance that the decommissioning process is conducted safely and securely, with no adverse impact on the health and safety of the public or the environment. The NRC reviews the licensee's Post Shutdown Decommissioning Activities Report (PSDAR) to verify that it meets the applicable regulations. The NRC publishes notification of receipt of the PSDAR, and makes it available

for public comment. The NRC conducts a public meeting in the vicinity of the decommissioning facility to explain the decommissioning process to members of the public and to answer questions. The NRC also encourages licensees to interact with the affected States and local communities to solicit comments and views on the decommissioning process. The NRC is currently authorized by the Atomic Energy Act of 1954, as amended, to regulate nuclear and radiological safety. As such, the NRC regulates only the radiological decommissioning of nuclear facilities. In general, State and local government entities establish the requirements for site restoration activities.

b) This question would be best posed to industry representatives, who would have the appropriate information and expertise to provide a comprehensive response. However, the NRC finds it helpful, for budgeting and planning purposes, to receive information regarding future nuclear industry plans and projections. If one or more of these bills were enacted, it would be valuable for the NRC to learn of any likely impacts the enactments would have on the NRC's future workload, including in the area of new reactor licensing.

c) Electricity pricing falls outside the NRC's areas of responsibility and expertise.

Senator BOXER. Thank you.

The Honorable Kristine L. Svinicki.

STATEMENT OF KRISTINE L. SVINICKI, COMMISSIONER, NUCLEAR REGULATORY COMMISSION

Ms. SVINICKI. Thank you, Chairman Boxer, Ranking Member Vitter and members of the committee for the opportunity to appear before you today at this oversight hearing on NRC's implementation of actions to enhance and maintain nuclear safety.

The Commission's Chairman, Dr. Allison Macfarlane, in her statement on behalf of the Commission, has provided a comprehensive description of key agency accomplishments and challenges in carrying out NRC's important mission.

The NRC continues to implement safety significant lessons learned from the Fukushima accident in accordance with established agency processes and procedures while also maintaining our focus on ensuring the safe operation of nuclear facilities and the safe use of nuclear materials across the Country.

The next period of implementation of Fukushima-related Tier 1 regulatory actions lasting several years will require discipline and focus from the NRC staff experts as they review and oversee a large body of complex, interrelated work.

I am confident that the NRC's dedicated professional staff members are up to the task of meeting these challenges. I thank them once again for their sustained commitment to the agency and to its work.

I appreciate the opportunity to appear today and look forward to your questions.

Thank you.

[The responses by Kristine Svinicki to additional questions follows.]

Environment and Public Works Committee Hearing
June 4, 2014
Follow-Up questions for Written Submission

Senator Barbara Boxer to Commissioner Kristine L. Svinicki

QUESTION 1.
As a follow up to the questions I asked during the hearing regarding Commission meetings and travel, please describe your current practice related to your public calendar, including the nature of the information included in it and the schedule for updating that information. In addition, please indicate whether:

a. You will provide advanced public notice of your meetings with outside stakeholders on your calendar in a manner similar to the Consumer Product Safety Commission[1], with the understanding that on occasion the times, attendees and agendas of meetings might change and require revision.
b. You will provide advance public notice of your staff's meetings with outside stakeholders on your calendar in a manner similar to the Consumer Product Safety Commission[2], with the understanding that on occasion the times, attendees and agendas of meetings might change and require revision.
c. You will keep your public calendar up to date instead of following the practice many Commissioners appear to follow of updating them retrospectively every 1-2 months.
d. You will include meetings between your staff and outside stakeholders on your public calendar.
e. The meetings listed on our public calendar will include a description of the meeting agenda.
f. The meetings listed on your public calendar will include a list of attendees.
g. The meetings listed on your public calendar will include meetings that take place outside NRC, including meetings that take place domestically and internationally.

ANSWER:
Each Commissioner currently provides on his or her page on the NRC's website, at a minimum, a list of meetings and events with external organizations and entities, including speaking engagements. These sites are updated on a regular basis, approximately every 2–4 weeks. The amount of information each Commissioner provides publicly concerning meetings takes into consideration the sensitivity of the issues discussed, such as under an "open door" policy visit from a member of the NRC staff, protecting the privacy of any individuals with whom Commissioners meet, personal security, and other concerns. Advance notice of Commission meetings is available on the NRC's website, in accordance with the Government in the Sunshine Act, and is continually updated. These meetings are also webcast. Because Commissioners' individual calendars change on a frequent, if not daily, basis, and in consideration of security concerns involved in providing advance notice of foreign or domestic travel, Commissioners generally do not provide advance notice of their meetings and trips. The Commissioners do, however, in keeping with the Commission's prohibition on *ex parte* communications, notify parties in pending adjudicatory proceedings that contested issues will not be discussed before visiting facilities involved in such proceedings. My practices are consistent with those outlined here.

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[1] http://www.cpsc.gov/en/Newsroom/Public-Calendar/
[2] http://www.cpsc.gov/en/Newsroom/Public-Calendar/

QUESTION 2.
NUREG 1738[3], "Technical Study of Spent Fuel Pool Accident Risk at Decommissioning Nuclear Power Plants," was published in February 2001. On March 26, 2014, your staff told EPW staff that newer studies are "generally consistent with the older generic studies such as NUREG-1738" and that "the staff continues to support the 2001 technical assessments on the three points as noted below." At the Committee's May 14, 2014 hearing, in response to my question as to whether the NRC still stood by the findings in the report, Mike Weber (NRC's Deputy Executive Director for Operations) stated "We stand by the findings in new reg 1738, which is the document you are referring to." Please indicate whether you stand by each of the following findings contained in NUREG 1738, and if you do not, please indicate why not:

a. "SFP fires could have health effects comparable to those of a severe reactor accident....Large seismic events that fail the SFP are the dominant contributor [to causing an SFP fire]"
b. "Further, the analysis indicates that timely evacuation, implemented through either pre-planned or ad hoc measures, can significantly reduce the number of early fatalities due to a zirconium fire."
c. "[T]he long-term consequences of an SFP fire may be significant. These long-term consequences (and risk) decrease very slowly because cesium-137 has a half-life of approximately 30 years."
d. "Because the possibility of a zirconium fire leading to a large fission product release cannot be ruled out even many years after final shutdown, the safeguards provisions at decommissioning plants should undergo further review."
e. "[T]he consequences from a zirconium fire could be serious."
f. "Insurance, security, and emergency planning requirement revisions need to be considered in light of other policy considerations, because a criterion of "sufficient cooling to preclude a fire" cannot be satisfied on a generic basis."
g. Figure 2.1, which shows that even after a reactor had been shut down for 1 year, it would take only about 3 hours for PWR reactor fuel to heat to 900 degrees Celsius and only about 7 hours for BWR reactor fuel to heat to 900 degrees Celsius, even when the spent fuel pool accident does not prevent the assemblies from being air cooled?
h. Figure 2.2, which shows that for PWR reactor fuel that is subject to a spent fuel pool accident that does not allow for air cooling to occur (the so-called adiabatic case in which the pool would only partially drain and thus preclude air circulation), it would take only 6 hours for the fuel to heat up even one year after the reactor shuts down?

ANSWER:
It is my understanding that NUREG-1738 was developed by the NRC to document certain analyses that were performed to support NRC review of exemption requests related to offsite emergency preparedness received from decommissioning reactors. The analyses performed in NUREG-1738 were based on intentionally conservative assumptions that provided a large safety margin to account for uncertainty, resulting in conservative consequences, which was an appropriate regulatory approach for the issue under consideration. More recent and realistic analyses show that the consequences of these accident scenarios are not as severe as assumed in NUREG-1738 and that they evolve over a much longer period of time.

a. The analysis in NUREG-1738 is correct for the assumptions upon which the analysis is based. The offsite health impacts of a spent fuel pool zirconium fire as evaluated in that document can be comparable to those from a severe accident at an operating reactor as evaluated in NUREG-1150, "Severe Accident Risks: An Assessment for Five U.S.

[3] http://pbadupws.nrc.gov/docs/ML0104/ML010430066.pdf

Nuclear Power Plants." More recent studies, such as NUREG-1935, "State-of-the-Art Reactor Consequence Analyses" (SOARCA) and SECY-13-0112, "Consequence Study of a Beyond-Design-Basis Earthquake Affecting the Spent Fuel Pool for a U.S. Mark I Boiling Water Reactor," have concluded that, for the types of accidents examined at both reactors and spent fuel pools, probability-weighted health impacts would be low and well within the Commission's safety goals. During the development of SECY-13-0112, the NRC staff did not find any new information to challenge the view expressed in NUREG-1738 and earlier studies that large seismic events are the largest contributor to the likelihood of having a large radiological release from the spent fuel pool.

b. The analysis in NUREG-1738 is correct for the assumptions upon which the analysis is based. An early evacuation (which is defined in that document as an evacuation that is initiated and completed before the spent fuel pool release) is effective at reducing the number of early fatalities, because early fatalities arise from very high acute radiation exposures. Large acute radiation exposures can be significantly reduced, if not eliminated altogether, by an evacuation that is completed before the spent fuel pool release begins. As stated in this study, the effect of timely evacuation is the same whether it is implemented through pre-planned evacuation or whether it is implemented through effective ad-hoc measures. NUREG-1738 states, "The overall low risk in conjunction with differences in dominant sequences relative to operating reactors, results in a small change in risk at a decommissioning plant if offsite planning is relaxed." The NRC staff continues to believe that, in the unlikely event of a severe beyond design-basis accident resulting in a loss of air cooling, there is sufficient time for offsite agencies to take protective measures under a comprehensive emergency management (all-hazards) plan to protect the health and safety of the public.

c. As stated in NUREG-1738, as long as a zirconium fire is possible, the long-term consequences of a spent fuel pool fire may be significant. NUREG-1738 illustrates the change in health consequences from a zirconium fire as a function of time since shutdown, and demonstrates that early fatality risks, which are more sensitive to the inventory of short-lived radioactivity in an operating reactor, drop by a factor of about two within one to two years following shutdown, whereas latent fatality risks and long-term collective population doses, which are more sensitive to the inventory of the longer lived cesium-134 (half-life of two years) and cesium-137 (half-life of 30 years), drop much more slowly.

However, the NRC concept of risk also includes consideration of the probability of a release. This is illustrated by the finding in NUREG-1738 that "The risk at decommissioning plants is low and well within the Commission's safety goals. The risk is low because of the very low likelihood of a zirconium fire even though the consequences from a zirconium fire could be serious." Although the NRC staff cannot completely rule out large radiological releases from a spent fuel pool, the staff believes that the low probability of a release from a spent fuel pool at a plant in decommissioning further decreases with the passage of time due to the drop in decay heat from the spent fuel stored in the pool, and the fact that there would be no further additions to the inventory of fresh spent fuel because the plant is no longer operating. More recent analyses have been performed with site-specific information to determine whether a release from a spent fuel pool could occur at the site studied, considering that site's practice regarding the physical arrangement of the fuel in the spent fuel pool. For example, SECY-13-0112 demonstrated that a release is not expected to occur at the plant studied for at least 72

hours following a large, beyond design-basis seismic event that occurs more than 60 days after shutdown.

d. The finding in NUREG-1738 was appropriate, and further review of safeguards provisions at decommissioning plants has occurred since that document was issued. On June 4, 2001, the NRC staff submitted a policy paper "Policy Issues Related to Safeguards, Insurance and Emergency Preparedness Regulations at Decommissioning Nuclear Power Plants Storing Fuel in Spent Fuel Pools," SECY-01-0100, to the Commission for its consideration. The paper provided the Commission with the staff's assessment of the policy implications of the NUREG-1738 study related to decommissioning exemptions for insurance, emergency preparedness (EP), and safeguards. The paper also recommended that the NRC implement Commission policy direction in response to the paper in a future decommissioning rulemaking. However, in light of the terrorist events of September 11, 2001, the staff subsequently recommended withdrawal of the paper, and the Commission returned the paper to the staff without a decision on the policy issues presented in the paper. In 2002, the integrated decommissioning rulemaking effort was deferred to address higher priority activities.

   In light of the recent announcements of several nuclear power plants shutting down, the NRC staff is considering a future rulemaking related to insurance, EP, safeguards and security for decommissioning plants. Such a rulemaking would most likely consider the findings in NUREG-1738 and other more recent spent fuel studies (e.g., SECY-13-0112), as well as any applicable policy issues raised in SECY-01-0100 or identified separately. In addition, since the current security requirements in 10 CFR 73.55 "Power Reactor Security " were not implemented until May of 2010, insight in the security area will be greatly influenced by the ongoing decommissioning licensing actions.

   The NRC staff is using these insights, as well as additional information gained through subsequent studies and Commission policy decisions, to inform its current review of site-specific license amendment and exemption requests from the recently shutdown power reactors on a case-by-case basis.

e. This statement is correct. Over several decades of research, the NRC has consistently found that spent fuel pool fires are high-consequence, low probability events.

f. The finding in NUREG-1738 was appropriate, and further review of safeguards provisions at decommissioning plants has occurred since that document was issued. The NRC has taken a number of additional actions related to this finding.

   On June 4, 2001, the NRC staff submitted a policy paper "Policy Issues Related to Safeguards, Insurance and Emergency Preparedness Regulations at Decommissioning Nuclear Power Plants Storing Fuel in Spent Fuel Pools," SECY-01-0100, to the Commission for its consideration. The paper provided the Commission with the staff's assessment of the policy implications of the NUREG-1738 study related to decommissioning exemptions for insurance, EP, and safeguards. The paper also recommended that the NRC implement Commission policy direction in response to the paper in a future decommissioning rulemaking (see the response to part (d) for more details).

   Although SECY-01-0100 did not result in a rulemaking regarding insurance, EP, and safeguards requirements for decommissioning plants, it provides the staff's assessment

of the findings of NUREG-1738 at that time. The NRC staff is using this assessment, as well as additional information gained through subsequent studies and Commission policy decisions, to inform its review of site-specific license amendment and exemption requests from the recently shutdown power reactors on a case-by-case basis. On January 10, 2014, the staff issued for public comment a draft Interim Staff Guidance document, "Draft Interim Staff Guidance on Emergency Planning Exemption Requests for Decommissioning Nuclear Power Plants," NSIR/DPR-ISG-02. The guidance will assist the staff in processing requests for exemption from EP requirements for nuclear power reactors that are undergoing decommissioning. It considers historical experience and precedent with previously issued exemptions and a number of related studies, including NUREG-1738, SECY-01-0100, and SECY-13-0112. The staff is also considering insights from NUREG-1738 and SECY-01-0100 in conjunction with Commission policy decisions on SECY-93-127, "Financial Protection Required of Licensees of Large Nuclear Power Plants During Decommissioning," and SECY-04-0176, "Exemption Requests to Reduce Liability Insurance Coverage for Decommissioning Reactors after Transfer of All Spent Fuel From a Spent Fuel Pool to Dry Cask Storage," in its review of financial protection and insurance exemption requests from decommissioning licensees. In response to SECY-93-127, the Commission approved reductions in the amount of financial protection and insurance required of decommissioning reactor licensees. In response to SECY-04-0176, the Commission approved the denial of exemption requests from decommissioning reactor licensees that requested additional reductions of insurance requirements after transfer of all spent fuel from the spent fuel pool to dry cask storage. If granted, the insurance-related exemption requests would have lowered the level of liability insurance requirements below the minimum levels previously established by the Commission.

g. The analysis in NUREG-1738 is correct for the assumptions upon which the analysis is based. However, for its intended purpose (e.g., exemption requests from NRC requirements for offsite emergency preparedness for decommissioning reactors), the staff purposely introduced conservative assumptions into the analysis. These conservatisms include simplified treatment of the thermal-hydraulic response and the use of assumed and often bounding configurations that do not allow for thermal radiation between high power bundles and low power bundles (as stated in NUREG-1738) and also from the spent fuel assemblies to the spent fuel pool wall liner. In a more realistic calculation, as demonstrated in the recent Spent Fuel Pool Study (SECY-13-0112), thermal radiation heat transfer (in addition to air cooling) can play a significant role. For example, it could take more than 10 hours for the fuel to heat up to 900°C after one month of being moved from the reactor to the pool if the assemblies most recently removed from the reactor are distributed among older, cooler, fuel assemblies. In addition, NUREG-1738 makes simplifying assumptions regarding the pool failure leakage rate that results in instantaneous draindown of the pool. In the Spent Fuel Pool Study, even for a moderate leak scenario, it took more than two hours for the water level to reach the top of the fuel. In summary, the analyses performed in NUREG-1738 were based on intentionally conservative assumptions, and resulted in conservative consequences, which was an appropriate regulatory approach for the issue under consideration. More recent and realistic analyses show that the consequences of these accident scenarios are not as severe as assumed in NUREG-1738 and that they evolve over a much longer period of time.

h. The analysis in NUREG-1738 is correct for the assumptions upon which the analysis is based. However, as stated above, there are conservatisms associated with the analysis

in that document. In an adiabatic calculation, both the oxidation energy and radiation heat transfer are not taken into account. While the oxidation energy tends to increase the fuel temperature, thermal radiation would limit the fuel heatup. However, for partial draindown cases, the blocked airflow can limit the more energetic air (as opposed to steam) oxidation reaction, while thermal radiation only depends on the temperature and would play an important role in limiting the fuel heatup rate. The Spent Fuel Pool Study (SECY-13-0112), which – unlike NUREG-1738 – addressed these effects and showed that for small leak scenarios with blocked air flow at 107 days after shutdown, it would take more than 10 hours to increase the fuel temperature to 650°C. In addition, even for an adiabatic calculation, the actual decay time for the hottest fuel assemblies to reach 900°C in 10 hours requires a plant specific calculation.

Senator Tom Carper to Commissioner Kristine L. Svinicki

QUESTION 1.
Following the Fukushima accident, the NRC also ordered licensees to install new monitoring equipment for all spent fuel storage pools. Could you tell us about the new equipment, why they are important and when licensees are supposed to install them?

ANSWER:
During the events in Fukushima Dai-ichi, Unit 4, responders were without reliable instrumentation to determine the water level in the spent fuel pool. The instrumentation available to them was not functional or could not be accessed due to the accident conditions present at the time. Without reliable instrumentation, the operators were confronted with uncertainty regarding whether the spent fuel pool continued to maintain its necessary inventory of cooling water. In response, site personnel and other responders employed several methods to provide makeup water to the spent fuel pool. This activity may have diverted resources and attention more urgently needed for other efforts, as subsequent analysis determined that the water level in the Unit 4 spent fuel pool did not drop below the top of the stored fuel and no significant fuel damage had occurred.

In light of these events, the NRC issued Order EA-12-051, which requires licensees to install electrically powered primary and backup level instrumentation in the spent fuel pool and to provide a display that will allow a trained operator to monitor the water level from an area outside the area of the spent fuel pool floor. Licensees are required to complete implementation of the actions required by this Order no later than two refueling cycles after submittal of their February 28, 2013, overall integrated plan, or December 31, 2016, whichever comes first.

Senator David Vitter to Commissioner Kristine L. Svinicki

QUESTION 1.

What progress has been made in implementing the Near Term Task Force recommendations?

a. Have power plants taken any actions to mitigate the effects of severe earthquakes and flooding?
b. List the actions the NRC has already taken to address the NTTF recommendations, including any actions that are underway but not yet completed. I'd also ask them to list the actions licensees have already taken to mitigate the effects and actions that are currently underway. This seems to cover similar ground to question 5.

ANSWER:

a. The status of these activities as reported by the NRC staff is as follows. The NRC issued a Request for Information (RFI) to all nuclear power plant licensees on March 12, 2012, requesting that all licensees undertake detailed inspections ("walkdowns") to verify the adequacy of each plant's seismic and flooding protective features. This RFI was issued pursuant to 10 CFR § 50.54(f). During these licensee walkdowns, a number of items were identified and placed in licensee Corrective Action Programs to ensure that all seismic and flooding protective features at the sites remain capable of performing their intended functions.

   Additionally, the March 12, 2012, RFI included a request that these licensees reevaluate their flooding and seismic hazards using modern day methods and guidance. If a licensee determines that the reevaluated flood hazard is greater than that currently assumed in the design basis of a plant, the licensee is responsible for performing a more in-depth integrated assessment to determine the impact of this increased hazard on the facility. While the integrated assessment is being completed, the licensee is also responsible for implementing interim actions to compensate for the increased flooding hazard. With respect to the seismic hazard reevaluations, the NRC's initial review of an industry screening analysis and the interim evaluations provided confidence that none of the plants showed a preliminary change in risk that would cause concern. Consequently, interim actions were not necessary to ensure the systems can function. Licensees have implemented interim actions where initial flood hazard reevaluations have shown that a greater hazard exists than that previously identified for a site and for which a plant may have been designed.

b. The NRC has taken a number of actions to address the NTTF recommendations. These actions include the issuance of four orders covering Recommendation 4.2 (Order EA-12-049, "Mitigating Strategies"), Recommendation 5.1 (Order EA-12-050 "Reliable Hardened Vents," which was subsequently superseded by Order EA-13-109, "Severe Accident-Capable Hardened Vents" in June 2013), and Recommendation 7.1 (Order EA-12-051, "Spent Fuel Pool Instrumentation"). The NRC also issued the March 12, 2012 RFI discussed above in order to address Recommendation 2.1 (seismic and flooding hazard reevaluations), Recommendation 2.3 (seismic and flooding walkdowns), and Recommendation 9.3 (emergency preparedness).

   The NRC is currently evaluating nuclear power plant licensee progress toward compliance with the four aforementioned orders. With respect to the mitigating strategies and spent fuel pool instrumentation orders, the status is as follows. The NRC staff has reviewed all licensee integrated plans detailing how licensees will comply with the orders and has issued interim staff evaluations for all plants. The NRC staff is

currently conducting on-site audits at all plants to evaluate open items identified during the review of the integrated plans for each of these orders. Licensees have already begun procuring and installing the mitigating strategies equipment that will address the issues outlined in the mitigating strategies order. Safety evaluations documenting the NRC staff view of whether licensees are in compliance with the order are scheduled to be issued for the first plants beginning this fall. The NRC staff is currently reviewing the integrated plans submitted by licensees in June 2014 in response to the severe accident capable hardened vents order. The NRC plans to begin issuing interim staff evaluations by the end of the year.

The NRC staff has completed its review of all nuclear power plant licensee walkdown reports relative to Recommendation 2.3 and has issued staff assessments documenting completion of this effort. The NRC is continuing to review flooding hazard reevaluations for many plants in addition to reviewing the seismic hazard reevaluations submitted by nuclear power plant licensees in the Central and Eastern United States. As indicated in response to subpart a. above, issues related to existing flooding and seismic protection features identified during the flooding and seismic walkdowns have been entered into licensee Corrective Action Programs for resolution. Licensees have also implemented interim actions where initial flood hazard reevaluations have shown a greater hazard exists than that previously identified for a site and for which a plant may have been designed.

With respect to the emergency preparedness recommendations addressed in the aforementioned RFI, the NRC has issued staff assessments indicating that licensees have sufficiently addressed Phase 1 of the staffing portion of this recommendation regarding assurance that licensees have adequate staffing to respond to a multiunit event. Additionally, the NRC has issued staff assessments indicating that licensees have sufficiently addressed the communications portion of this recommendation regarding assurance that licensees have the capability to power communications equipment during a prolonged station blackout.

In addition to the licensing activities described above, the NRC staff has also initiated rulemaking efforts to address some of the recommendations. These include a consolidated rule to codify the requirements associated with the mitigation strategies order and the integration of onsite emergency response processes, procedures, training, and exercises. Additionally, the NRC has also undertaken an effort to develop a rule for filtering strategies with drywell filtration and severe accident management of BWR Mark I and II containments.

QUESTION 2.
Are the current NRC regulations for emergency preparedness for nuclear power plants designed for plants that are decommissioning?

a. If not, how does the NRC determine what emergency preparedness requirements are appropriate to the risk presented by the facility?
b. How does the NRC exemption process work and why are exemptions allowed?
c. Will the NRC ensure that adequate safety requirements are in place for SONGS during decommissioning?
d. Does NRC have the ability to impose conditions as part of any exemption request that it might approve?

ANSWER:
There are no explicit regulatory provisions distinguishing Emergency Preparedness (EP) requirements for a nuclear power reactor that has been shut down from those for an operating power reactor. The EP requirements of 10 CFR 50.47, "Emergency Plans," and Appendix E, "Emergency Planning and Preparedness for Production and Utilization Facilities," to 10 CFR Part 50 continue to apply to a nuclear power reactor after permanent cessation of operations and removal of fuel from the reactor vessel. Consequently, to modify their emergency plans to reflect the reduced risk to public health and safety from power reactors that have been permanently shut down, power reactor licensees transitioning to a decommissioning status seek exemptions from certain EP regulatory requirements before amending their emergency plans.

a. When a licensee submits a request for an exemption from EP requirements for a nuclear power plant, the NRC staff reviews the request and its associated justifications. The justifications include technical analyses of the type and risk of accidents that could occur at the plant. The analyses would be used to provide the NRC reasonable assurance that in granting the requested exemption: (1) an offsite radiological release would not exceed the U.S. Environmental Protection Agency protective action guides at the site boundary (as applicable to design basis accidents such as fuel handling or radioactive waste processing accidents); and (2) in the unlikely event of a severe beyond design-basis accident resulting in a loss of air cooling, sufficient time would exist to initiate appropriate mitigating actions, or if needed, offsite protective actions using a comprehensive emergency management plan to protect the health and safety of the public. If the impacts were determined not to require offsite protective actions, then the licensee would not need to maintain compliance with certain offsite EP requirements. For the onsite risks at the plant, the NRC would require that the license continue to comply with the appropriate EP requirements.

b. The practice of considering exemptions is a well-established part of the NRC's regulatory process that allows licensees to address site-specific situations or implement alternative approaches for circumstances not necessarily contemplated in the regulations. The exemption process is not unique to decommissioning licensees or to the specific EP technical area, but is an important tool that allows the agency to provide appropriate regulatory relief, and licensees to make appropriate modifications to their programs commensurate with the site-specific risks that are present for a permanently shutdown reactor during decommissioning. The NRC makes decisions on exemption requests on a site-specific, case-by-case basis, following an established process that includes the staff's assessment of a detailed technical safety evaluation submitted by the licensee.

The NRC may grant exemptions from various regulatory requirements in response to a request from a licensee, applicant, or interested stakeholder, or on its own volition. For the Commission to consider granting an exemption, the request must provide information that demonstrates that specific criteria in the regulations will be met. For example, the controlling regulation for EP exemptions is 10 CFR 50.12, "Specific exemptions." The NRC staff review of requests for exemptions pursuant to 10 CFR 50.12 considers whether the exemptions are authorized by law, will not present an undue risk to the public health and safety, and are consistent with the common defense and security, and whether any special circumstances, as defined in the regulation, exist.

The special circumstances listed in 10 CFR 50.12 reflect some of the reasons that exemptions may be necessary. Special circumstances are present whenever application of a regulation conflicts with other rules or regulations, application of the regulation in the particular circumstance would not serve the underlying purpose of the rule, compliance with the regulation would result in undue hardship, the exemption would result in benefit to the health and safety of the public, the exemption would provide temporary relief from the applicable regulation and the licensee has made good faith efforts to comply, or there is present a material circumstance not considered when the regulation was adopted for which it would be in the public interest to grant the exemption.

The NRC will grant an exemption only if it concludes that required criteria are met. If granted, the exemption, which contains the staff's safety analysis and conclusions, is published in the *Federal Register*.

c. Yes, the NRC will continue to maintain appropriate safety requirements, and provide appropriate oversight for the San Onofre Nuclear Generating Station, Units 2 and 3 (SONGS) and other permanently shutdown nuclear power reactors through all phases of the decommissioning process. The licensees are required to comply with the existing conditions and technical specifications of their licenses until and unless those requirements are changed via a license amendment. The licensee for SONGS has requested license amendments and requested exemptions from certain regulations, and provided a technical justification to change the requirements based on the facility's permanently shutdown and defueled condition. The NRC staff applies the same rigor in its regulatory and technical evaluation of amendment and exemption requests regardless of whether a facility is in operation or in a permanently shutdown and defueled condition. The NRC will only approve a license amendment or grant an exemption for SONGS if the staff concludes its issuance will continue to provide reasonable assurance of adequate protection of the public health and safety. NRC's oversight and inspection activities will continue at the decommissioning sites.

d. Yes, the NRC staff may grant an exemption based on a requirement that the licensee satisfies certain conditions. In this case, the conditions would be fully described and evaluated, and incorporated into the license when the exemption is granted.

QUESTION 3.
Did the wildfire near SONGS threaten the plant?

a. Is there a relationship between fires such as the wildfire around SONGS and spent fuel pool fires?

ANSWER:
The wildfire near SONGS that oçcurred on May 14, 2014 did not threaten the plant. During the event, an NRC inspector responded to the control room at the plant and communicated status information to NRC staff members in the Region IV office (Arlington, TX). The wildfire approached within approximately one-half mile of the south side of the owner-controlled area before being extinguished by the combined efforts of SONGS fire department personnel, the Camp Pendleton fire department, and several helicopters that dumped seawater on the blaze. Because of smoke from the fire, several employees who were not essential for maintaining the safe operations of the plant, were evacuated from the south yard area of the plant as a precautionary measure. The SONGS fire brigade wetted vegetation along the south boundary of the owner-controlled area as a precaution.

a. The wildfire that occurred on May 14, 2014, posed no danger to the spent fuel pools at SONGS. The spent fuel assemblies are contained in a water-filled pool inside the Fuel Handling Building. This building and the spent fuel pool structure within it are robust structures that are protected from the effects of wildfires by restricting combustible material between the plant perimeter and the building. The building is protected from the effects of internally generated fires by fire detection and suppression equipment. SONGS also has fire response plans to ensure that fires, such as a wildfire, will not adversely impact the spent fuel pools. The sequences that could lead to a spent fuel pool fire are improbable and involve a sustained loss of heat removal capability (e.g., an event that results in draining the pool), the inability to replenish water inventory, and inadequate air flow for cooling.

QUESTION 4.
What is the NRC doing to address the allegations of retaliation for using the non-concurrence process?

a. How can EPW ensure that the NRC has the tools it needs?

ANSWER:
The NRC takes concerns of retaliation for using the Non-Concurrence Process (NCP) seriously. When an employee alleges that they have been retaliated against for using the NCP, they are informed of various avenues available to them to pursue their retaliation allegation, including the NRC's Office of the Inspector General, grievance procedures, whistleblower complaints with the Department of Labor under the Energy Reorganization Act, or complaints to the Office of Special Counsel. When the NRC became aware of potential retaliation concerns through an anonymous, targeted survey sent to employees who have used the NCP, a follow-up email was sent to these employees reminding them that we do not tolerate retaliation for using the NCP and informing them of avenues available to pursue allegations of retaliation. In addition, the agency plans to take several systemic actions, described below, to address the issue.

a. The NRC places emphasis on maintaining an environment where all employees are encouraged to promptly speak up and share concerns and differing views without fear of negative consequences. The last NRC Safety Culture and Climate Survey results indicated that 80 percent of employees who responded stated that they believed the NRC has a culture that is conducive to raising concerns. NRC will also continue to work to enhance our efforts in this area.

   Employees engage in informal discussions on issues of concern with their coworkers and supervisors. In some cases, such informal discussions are sufficient to resolve issues. In addition, however, employees have access to more formal processes for expressing concerns and having their differing views heard by decision makers, including the Open Door Policy, the Non-Concurrence Process (NCP), and the Differing Professional Opinions Program. The NRC both understands that fear of retaliation has the potential to inhibit employees from raising concerns and using the NCP and has the tools it needs to address employee concerns about the potential for retaliation. As addressed in the Planned Actions section of the agency's 2014 Non-Concurrence Process Assessment (available in the NRC's Agencywide Documents Access and Management System (ADAMS) at Accession No. ML14056A294), the agency has taken, and plans to take, multiple actions to address concerns of potential retaliation for using the NCP.

   NRC's NCP Management Directive includes comprehensive guidance on concerns of reprisal, including statements that the agency does not tolerate retaliation; that retaliation could be grounds for disciplinary action; that adverse personnel actions or negative performance appraisals involving non-concurring employees are not to be used in retaliation for involvement or participation in the NCP; that managers must take appropriate action in response to allegations of reprisal against non-concurring employees and other participants in the NCP; and regarding chilling effect concerns related to the NCP. The guidance also includes a list of avenues to pursue allegations of retaliation, including the NRC's Office of the Inspector General, grievance procedures, whistleblower complaints with the Department of Labor under the Energy Reorganization Act, or complaints to the Office of Special Counsel. The agency is also considering additional training for staff and managers, and will determine whether further effort is needed regarding an anti-harassment policy and procedure for retaliation for raising

differing views. The agency will continue to promote success stories and plans on hosting panel discussions to share experiences to help ensure that the staff's use of the NCP leads to better informed decisions. The NRC believes that these planned actions provide sufficient tools to create effective, lasting improvements to the NCP that will foster continued employee engagement and support safe and effective regulatory decision making for the agency.

QUESTION 5.
In the recent hearing one of the main issues brought to the attention of the Committee was the NRC's progress on implementation of Fukushima recommendations.

a. Please detail the progress that the Commission has made on each recommendation in detail.
b. Also, please note any implementation of these recommendations taken voluntarily by the nuclear industry.

ANSWER:

a. The NRC has taken a number of actions to address the Near Term Task Force (NTTF) recommendations.

   Tier 1 Activities: The NRC's Tier 1 activities are those activities that the agency determined should be started without unnecessary delay and for which sufficient resource flexibility, including critical skill sets, existed. These actions include the issuance of four orders covering Recommendation 4.2 (Order EA-12-049, "Mitigating Strategies"), Recommendation 5.1 (Order EA-12-050 "Reliable Hardened Vents," which was subsequently superseded by Order EA-13-109, "Severe Accident-Capable Hardened Vents" in June 2013), and Recommendation 7.1 (Order EA-12-051, "Spent Fuel Pool Instrumentation"). In addition, on March 12, 2012, the NRC issued a Request for Information (RFI) in order to address Recommendation 2.1 (seismic and flooding hazard reevaluations), Recommendation 2.3 (seismic and flooding walkdowns), and Recommendation 9.3 (emergency preparedness).

   The NRC is currently evaluating nuclear power plant licensee progress toward compliance with the four aforementioned orders. With respect to the mitigating strategies and spent fuel pool instrumentation orders, the NRC has reviewed all licensee integrated plans detailing how licensees will comply with the orders and has issued interim staff evaluations for all plants. The NRC staff is currently conducting on-site audits at all plants to evaluate open items identified during the review of the integrated plans for each of these orders. Licensees have already begun procuring and installing the mitigating strategies equipment that will address the issues outlined in the mitigating strategies order. Safety evaluations documenting the NRC staff view of whether licensees are in compliance with the order are scheduled to be issued for the first plants beginning this fall. The NRC staff is currently reviewing the integrated plans submitted by licensees in June 2014 in response to the severe accident capable hardened vents order. The NRC plans to begin issuing interim staff evaluations by the end of the year.

   The NRC has completed its review of all nuclear power plant licensee walkdown reports relative to Recommendation 2.3 and has issued staff assessments documenting completion of this effort. The NRC staff is continuing to review flooding hazard reevaluations for many plants in addition to reviewing the seismic hazard reevaluations submitted by nuclear power plant licensees in the Central and Eastern United States. Issues related to existing flooding and seismic protection features identified during the flooding and seismic walkdowns have been entered into licensee Corrective Action Programs for resolution. Licensees have also implemented interim actions where initial flood hazard reevaluations have shown that a greater hazard exists than that previously identified for a site and for which a plant may have been designed.

With respect to the emergency preparedness recommendations addressed in the aforementioned RFI, the NRC has issued staff assessments indicating that licensees have sufficiently addressed Phase 1 of the staffing portion of this recommendation regarding assurance that licensees have adequate staffing to respond to a multiunit event. Additionally, the NRC has issued staff assessments indicating that licensees have sufficiently addressed the communications portion of this recommendation regarding assurance that licensees have the capability to power communications equipment during a prolonged station blackout.

In addition to the licensing activities described above, the NRC staff has also initiated rulemaking efforts to address some of the recommendations. These include a consolidated rule to codify the requirements associated with the mitigating strategies order, the spent fuel pool level instrumentation order, and the integration of onsite emergency response processes, procedures, training, and exercises. Additionally, the NRC staff has undertaken an effort to develop a rule for filtering strategies with drywell filtration and severe accident management of BWR Mark I and II containments.

Tier 2 Activities: Tier 2 activities are those activities that, at the time of prioritization, could not be initiated in the near term due to resource or critical skill set limitations. Part of Recommendation 9.3, Emergency Preparedness, was evaluated by the NRC staff as Tier 2. Initially, a portion of this recommendation was to order licensees to do the following until rulemaking is complete: 1) add guidance to the emergency plan that documents how to perform a multi-unit dose assessment (including releases from spent fuel pools) using the licensee's site-specific dose assessment software and approach; 2) conduct periodic training and exercises for multi-unit and prolonged station blackout (SBO) scenarios, and 3) ensure that emergency preparedness (EP) equipment and facilities are sufficient for dealing with multiunit and prolonged SBO scenarios. The NRC staff re-evaluated options to resolve Tier 2 recommendations, assessed the objectives of Tier 2 items, and determined that the activities that industry has committed to undertake within Order EA-12-049 (Mitigating Strategies) would resolve two of the three items above. The NRC has incorporated these Recommendation 9.3 items into the rulemaking associated with NTTF Recommendations 4, 7.1, and 8 and plans to make these Recommendation 9.3 Tier 2 items generically applicable though this rulemaking.

Regarding multi-unit dose assessment, the staff requested additional details regarding the number of sites that currently have multi-unit dose assessment capability and when all licensees will have the capability to conduct multi-unit dose assessments. In April 2014, the staff completed its review of the licensees' multi-unit dose assessment capabilities. The staff reviewed the licensees' responses and noted that licensees have multi-unit or multi-source dose capabilities or will have these capabilities by December 31, 2014. The staff will verify the implementation of these dose assessment capabilities through the inspection program. Given the above approach, the staff does not believe an Order is warranted for the multi-unit dose assessment capability. Multi-unit dose assessment would become generically applicable through subsequent rulemaking for NTTF Recommendations 9.1 and 9.2 items under Tier 3.

The NRC staff is also planning to address re-evaluation of other natural external hazards. This requires the same resources (such as NRC and nuclear industry subject matter experts) that are being used for seismic and flooding hazards, which are considered the highest priority external events. The NRC will begin work on this issue once sufficient resources are available.

The NTTF also recommended that the NRC evaluate requiring licensees to provide reliable spent fuel makeup capabilities (NTTF Recommendations 7.2 – 7.5). These recommendations were to have three orders and an associated rulemaking to codify the orders. The orders were integrated into the Mitigating Strategies Order effort in March 2013. The rulemaking is part of the consolidated rule to codify the requirements associated with the mitigating strategies order and the integration of onsite emergency response processes, procedures, training, and exercises.

Tier 3 Activities: Significant action has not yet been taken on most of the Tier 3 activities because they are either dependent on the outcome of other recommendations, awaiting input from studies, or require the same resources that are currently being used for Tier 1 activities.

For the Japan Lessons Learned Tier 3 Activity on expedited transfer of spent fuel to dry cask storage, the NRC concluded (in COMSECY-13-0030) that such a regulatory requirement would provide only a minor or limited safety benefit and the costs would not be warranted. Therefore, the staff recommended that no further generic assessments be pursued related to possible regulatory actions to require the expedited transfer of spent fuel to dry cask storage. The Commission's recent vote on this issue (SRM-COMSECY-13-0030) approved this recommendation, but directed the staff to take some additional actions, such as informing licensees about the potential benefits of alternate spent fuel loading patterns and evaluating whether seismic re-evaluations of spent fuel pools are still needed as part of activities related to Recommendation 2.1.

Activities Not Within a Tier: Recommendation 1 was to evaluate the NRC's regulatory framework. The NRC staff submitted a policy paper, SECY-13-0132, in December 2013 recommending three improvement activities: 1) establish a design-basis extension category of events, along with requirements and associated internal NRC guidance, policies, and procedures; 2) establish Commission expectations for defense-in-depth through the development of a policy statement; and 3) clarify the role of voluntary industry initiatives in the NRC regulatory process. The Commission largely disapproved the staff recommendations, deferring to the ongoing work on the Risk Management Regulatory Framework, which is outside of the Fukushima Lessons-Learned Activities.

As directed by the Commission, the NRC staff revised the order issued to licensees for reactors with BWR Mark I and Mark II containments to require that improved venting capabilities be provided during severe accident conditions (see Tier 1 activity related to Recommendation 5.1). In addition, the Commission directed the NRC staff to use the rulemaking process to assess possible regulatory requirements for filtration strategies and other severe accident management functions for reactors with this type of containment design. The NRC staff has had numerous public meetings with the nuclear industry and other stakeholders to share analysis results and to discuss the cost/benefit assessments being prepared for various potential regulatory actions. A draft regulatory basis document will be issued for public comment in early 2015.

b. Some actions that the industry has taken to date may be considered voluntary because they have been taken before the NRC issued final applicable regulatory requirements. For example, the Recommendation 8 Rulemaking activities related to improving the onsite emergency response capabilities, including the integration of Severe Accident Management Guidelines, are not yet incorporated into NRC regulations. Nonetheless,

the NRC is aware that the industry has taken some actions to revise its generic Severe Accident Management Guidelines to address lessons learned from the Fukushima Daiichi accident. The NRC is also aware that the Institute for Nuclear Power Operations (INPO) independently prepared a lessons learned report (including a timeline for the accident), issued significant operating experience reports, and has performed assessments of the changes made by the operators of nuclear power plants to address the INPO reports and recommendations. While many of these are related to ongoing or planned regulatory activities, some exceed the NRC actions and can be viewed as voluntary actions going beyond regulatory requirements.

QUESTION 6.
I want to complement those of you who agreed with the recommendations of NRC staff and of your Advisory Committee on Reactor Safeguards (ACRS) the post Fukushima Tier 3 recommendation on whether a safety case exists for expedited transfer of spent fuel to dry casks be closed and that no further generic assessments be pursued on this matter. I am concerned about the amount of time it took the Commission to reach its decision on a matter that the staff and ACRS placed so clearly before you. The staff made its recommendation on Nov. 12 of last year. The ACRS provided its written comments to you on Dec 18. You issued a decision on May 23, 2014. I addressed the undue amount of time the Commission was taking in reaching decisions in my legislation. This episode reinforces the conclusion that legislative action is needed to help you produce work on a more timely basis.

a. Will you each agree to report on what steps you are taking to cut down on such undue delays?

ANSWER:
As a Commissioner, I strive to support timely action by our Commission on all matters coming before us. While we routinely have multiple, complex technical and adjudicatory matters on our docket at the same time, I work to conclude my own review, and work with my Commission colleagues to conclude our joint deliberation, with appropriate dispatch. Of course, we must balance the need for timely action against the necessity of conducting the requisite due diligence of relevant technical and legal analysis or briefs, as well as public comment records, where available. In short, our deliberations must be timely but also thorough, balanced, and fair.

QUESTION 7.
We have seen an inordinate amount of time and resources spent on a Tier Three item that demonstrably demonstrated that expedited transfer had very limited safety benefit. Isn't it time to focus on completing the implementation of the Tier One actions and begin to return to a normal order of business?

ANSWER:
Yes. The NRC is actively working on implementing the Near Term Task Force recommendations prioritized as Tier 1 and expects to complete a majority of the Tier 1 activities by the end of 2016. Following substantial completion of the Tier 1 activities, the NRC intends to complete the remaining work on the post-Fukushima activities using normal agency processes.

QUESTION 8.
Since the NRC has addressed the most safety-significant Tier 1 post-Fukushima items, when will post-Fukushima costs cease to drive increases in the NRC's budget?

ANSWER:
The NRC continues to implement the Near Term Task Force recommendations classified as Tier 1. While a great deal of progress has been made on these post-Fukushima activities, there is still additional work that needs to be completed with respect to implementing the most safety-significant Tier 1 recommendations. Much of this work focuses on ensuring compliance with the four orders issued in response to the Tier 1 recommendations (which includes one order that was superseded) and reviewing information submitted in response to NRC Requests for Information regarding seismic and flooding hazards and emergency preparedness. The NRC is also focused on a number of Tier 1 rulemaking activities. The NRC expects to make substantial progress on implementing all of the aforementioned Tier 1 activities by the end of 2016. Once it is determined that substantial progress has been made on these activities, the NRC intends to complete the remaining post-Fukushima activities using normal agency processes.

QUESTION 9.
Your FY '15 budget justification indicated that productivity has precipitously declined. In 2004, you used 1,776 hours as a measure of productivity. For FY '15, that figure has slipped to 1,375 hours. That's remarkable out of an employee work year of 2080 hours. Tell us the specifics of when you each first became aware of this inordinate decrease and what expectations and specific measures you have communicated to the staff to effect corrections in this course.

ANSWER:
The fee rule calculations carried out by NRC's Office of the Chief Financial Officer related to the figures cited in the question have been explained to me by the NRC staff, as follows. The FY 2004 Fee Rule used an estimate of 1,776 hours per direct full time equivalent (FTE) to calculate the program hourly rates, based on the Office of Management and Budget (OMB) circular A-76, "Performance of Commercial Activities." In the 2005 Fee Rule, the NRC revised the estimate of direct hours per FTE to more accurately reflect the NRC's costs of providing 10 CFR part 170 services. It had been determined that certain indirect costs, such as administrative and other activities that a direct FTE may perform but which are more accurately considered overhead, were included in the 1,776 hours, overestimating the total. Beginning in the FY 2005 Fee Rule, the NRC based the calculation of hourly rates on guidance from OMB circular A-25, "User Charges," which emphasizes that agency fees should reflect the full cost of providing services to identifiable beneficiaries. By using an estimate of direct hours per direct FTE that reflects only direct staff time, the NRC intends to reflect more accurate full costing. This revision from FY 2004 lowered the estimate of direct hours per direct FTE to 1,446, a decrease of 330 hours. The current projection of 1,375 hours per direct FTE is due to annual fluctuations in indirect activities, annual leave projections, and new employees.

QUESTION 10.
Has OMB, in any way, instructed you, either directly or indirectly, to withhold information regarding resource estimates for completing the NRC's statutorily mandated review of the Yucca Mountain license application and issue a final decision?

ANSWER:
In response to direction from Congress, the Commission directed the NRC staff to develop a plan for completing the licensing process for the Yucca Mountain repository construction authorization and that plan is to include an estimate of the resources necessary to complete that process, including the adjudicatory hearing. Consistent with OMB Circular A-11, section 22, "Communications with the Congress and the Public and Clearance Requirements," which governs the confidentiality of budget deliberations and Congressional communications, the resource estimates developed by the NRC staff are subject to OMB clearance prior to transmittal to Congressional committees, individual Members of Congress or their staffs, or the media. OMB has completed its review of the NRC staff's resource estimate. As of this writing, the NRC is preparing the transmittal of the estimate to Congress.

QUESTION 11.
Some contend that the "NRC's recent track record does not inspire confidence and does not bode well because at the end of the day, the American people don't want to have a reactor near them because of these problems and the industry is just not going to be there in the future." Has the NRC's annual assessment of trends in the industry's safety performance uncovered any negative trends that warrant regulatory action?

ANSWER:
The agency uses a number of methods to assess industry safety performance, such as the Reactor Oversight Process, the Industry Trends Program, the Accident Sequence Precursor program, and the monitoring of operating experience. Licensee performance weaknesses that are identified at individual plants or licensees are addressed via the licensee's corrective action program, and these programs are reviewed under the Reactor Oversight Process. The agency evaluates inspection results and operating experience for generic applicability and uses generic communications to communicate their impact to licensees. Since the inception of the Industry Trends Program in 2000, which monitors various numeric indicators of safety performance, there have been eight prediction limits that were either met or exceeded. Prediction limits are used to provide a consistent method for identifying potential short-term emergent issues before they manifest themselves as long-term trends. To date, no statistically significant adverse trends in safety performance have been identified.

QUESTION 12.
Please provide copies of any votes where NRC staff advised that a proposed action would not be cost beneficial or necessary for safety, but you chose to support the action anyway.

ANSWER:
The Secretary of the Commission informs me that I have cast approximately 700 votes, to date, in my term of service as an NRC Commissioner. In reflecting on this record, I recall no instance of having cast a vote in favor of a substantive regulatory action where the NRC staff advised that the action would not be cost beneficial or necessary for safety. That being said, I am concerned that the question is broadly scoped to include all proposed actions on which I have voted, including the many administrative matters that are brought before the Commission. When one considers these proposed actions, I must report that I have supported, in my capacity as a Commissioner, the advancement of agency programs that were recommended to me but not on the basis of either cost benefit or safety. Examples that come to mind include agency programs such as educational support to Minority Serving Institutions (e.g., Historically Black Colleges and Universities) and recruitment and job fair outreach to advance the employment of returning veterans from the wars in Iraq and Afghanistan (i.e., NRC's participation in "Feds Hire Vets"). Such programs were, however, not presented to me for evaluation as matters of safety or cost benefit, and I therefore interpret them to be outside of the intended scope of the question.

QUESTION 13.
The Nuclear Regulatory Commission 'is consistently ranked as one of the best places to work.' And yet, at the same time, some contend that whistleblowers in your agency cannot express their concerns. This seems a contradiction–that your agency provides an exceptional work environment that would, at the same time, stymie the thoughts and concerns of its workers. What processes are available for those who wish to express their concerns?

ANSWER:
The NRC strives to maintain an environment where all employees are encouraged to promptly speak up and share concerns and differing views without fear of negative consequences. The last NRC Safety Culture and Climate Survey results indicated that 80 percent of employees who responded stated that they believed that the NRC has a culture that is conducive to raising concerns. The NRC still works continuously to enhance its activities in this regard. Employees engage in informal discussions on issues of concern with their coworkers and supervisors, which in some cases is sufficient to resolve an issue. In addition, employees have access to various formal processes for expressing concerns and having their differing views heard by decision makers, including the Open Door Policy, the Non-Concurrence Process, and the Differing Professional Opinions Program.

QUESTION 14.
In the hearing it was repeatedly mentioned that the NRC has yet to deny such an exemption from safety. Have past exemptions resulted in a significant breach of safety?

ANSWER:
No past exemptions from safety regulations given to permanently shutdown reactors have resulted in a breach of safety.

Exemptions to certain regulations that were given to permanently shutdown reactors were based on permanent changes to configurations of the plant (such as permanent removal of the fuel from the reactor). Most of the NRC's operating reactor safety regulations do not address plants in a permanently shutdown status, and certain events or postulated safety significant situations at operating reactors are not applicable to permanently shutdown reactors. Therefore, the NRC has typically issued exemptions from the operational safety regulations that no longer applied to the licensee requesting the exemption. It should be noted that safety regulations applicable to permanently shutdown reactors remain in effect, and the NRC continues to maintain effective oversight to ensure compliance with these safety regulations.

Moreover, the NRC staff has not approved all exemption requests as originally requested. Some exemption requests have been modified or withdrawn in accordance with determinations made during the staff's review.

QUESTION 15.
Some have attempted to portray the NRC staff as having concluded that the risk of a spent fuel fire and subsequent harm to the public is on par or exceeds that of the 1986 accident at Chernobyl: "The fire could well spread to older spent fuel. The long term land contamination consequences of such an event could be significantly worse than those from Chernobyl." Is this quote from an NRC document or some other source?

ANSWER:
This quote is not from the NRC or an NRC document. The quote is from a paper by Robert Alvarez, et al., entitled, "Reducing the Hazards from Stored Spent Power-Reactor Fuel in the United States," dated April 21, 2003 (available in the NRC's Agencywide Documents Access and Management System (ADAMS) at Accession No. ML031130327). The NRC reviewed the 2003 Alvarez paper and issued a response, "NRC Review of Reducing the Hazards from Stored Spent Power Reactor Fuel in the United States," dated August 19, 2003 (ADAMS Accession No. ML031210075). In its response, the NRC concluded that the assessment performed in the Alvarez paper of possible spent fuel pool accidents stemming from potential terrorist attacks did not address such events in a realistic manner. The NRC response emphasized that, in many cases, the authors of the 2003 Alvarez paper relied on studies that made overly conservative assumptions or were based on simplified and very conservative models. The NRC concluded that the fundamental recommendation of the 2003 Alvarez paper, namely, that all spent fuel more than five years old be placed in dry casks through an expedited ten year program, was not safety or cost justified.

Spent fuel stored in both wet and dry storage configurations is safe and measures are in place to adequately protect the public. The NRC considers the risk of a spent fuel pool fire, or any nuclear accident, in terms of probability as well as consequences. The NRC has consistently emphasized that the probability of a spent fuel pool fire is extremely low. Therefore, the NRC has concluded that the overall risk posed by spent fuel pool fires is small.

QUESTION 16.
Following the Fukushima earthquake, tsunami, and hydrogen explosions, did the spent fuel pools maintain their integrity? In fact, didn't you agree with the staff's actual evaluation that the likelihood of an offsite release of radioactivity is occurring once in ten million years but that if it did, the individual latent cancer fatality risk resulting from a spent fuel pool accident in which large quantities are released is 1.52 x 10?

a. Didn't the ACRS also criticize the staff's excessive use of conservatisms in some of its scenarios?

ANSWER:
Yes. The spent fuel pools maintained their integrity following the earthquake, tsunami, and hydrogen explosions. This fact has been confirmed by numerous analyses that demonstrate that the spent fuel pools at the Fukushima Dai-ichi facility maintained their structural integrity during and following the accident.

With regard to generic spent fuel pool risk, the NRC staff has presented analyses to the Commission concluding that the likelihood of an offsite release from a spent fuel pool during an accident is very remote and on the order of 1 occurrence in 10 million years of operation. The staff assesses that the latent cancer fatality risk resulting from a spent fuel pool accident, should one occur, is very small and on the order of 1.52×10^{-8} per year, or a 0.000000152 percent chance. I do not dispute these conclusions.

a. Regarding the NRC staff's regulatory analysis on the expedited transfer of spent fuel to dry cask storage, the Advisory Committee on Reactor Safeguards (ACRS) stated that the cumulative effects of conservatisms and assumptions used in the high estimates, and in sensitivity studies of the regulatory analysis, resulted in exaggerated frequencies of fuel damage and exaggerated benefits of expedited transfer. (ADAMS Accession No. ML13346A739). The NRC staff responded to the ACRS in a letter dated January 31, 2014 (ADAMS Accession No. ML14008A256). In that letter, the NRC staff agreed with the ACRS's statements but stated that bounding or conservative values were intentionally used in the regulatory analysis for several parameters, particularly in the high estimate cases, to ensure that design, operational, and other site variations among the new and operating reactor fleet were addressed and to generally increase the calculated benefits from the proposed action. If these highly conservative results had indicated that further regulatory action was justified, the staff would have re-performed the regulatory analysis using more realistic assumptions. In a staff requirements memorandum dated May 23, 2014 (ADAMS Accession No. ML14143A360), the Commission agreed with the staff's and the ACRS's recommendations that no further generic assessments be pursued related to possible regulatory actions to require the expedited transfer of spent fuel to dry cask storage and that this Tier 3 Japan lessons-learned activity be closed.

QUESTION 17.
There was a document called a "legal analysis" released by the Chairman of the Senate Environment and Public Works Committee immediately following the June 4 hearing. In that document is an individual's narrative of events at the San Onofre Nuclear Generating Station (SONGS) regarding the NRC's Confirmatory Action Letter (CAL) issued to SONGS on March 27, 2012, and the adjudicatory process at the Atomic Safety and Licensing Board (ASLB). The factual basis for the author's narrative, and whether it reflects any nuclear regulatory expertise, is unclear from the document.

a. Was the NRC's stated purpose of the CAL issued to Southern California Edison (SCE) to formalize commitments that SCE made to ensure that the cause of the tube wear in both steam generators (Units 2 and 3) was understood and appropriately addressed in order to ensure safe operation had the plant been allowed to restart?
b. Would it be accurate to state that when a licensee modifies its current license basis (CLB) as described in its Updated Final Safety Analysis Report (UFSAR) using the 50.59 process, the plant's drawings are updated using that design change process, just as they would be if a proposed modification failed the 50.59 screening and a License Amendment Request (LAR) was required to modify the CLB, and therefore, the drawings the NRC staff would use to evaluate licensee response to an event in this circumstance are the updated drawings for the plant's CLB?
c. Are CALs "normally used to allow for speedier processing of minor changes and updates such as recognizing improvements in technology"?
d. Aren't CALs a tool used to memorialize a licensee's commitment to take specific actions, often in response to a performance or equipment problem that has been discovered and needs to be fixed?
e. Do CALs allow "minor changes or updates" or any other change to a reactor operating license?
f. Did the NRC Augmented Inspection Team (AIT) determine that, beyond the two license amendments that were obtained, there were no additional license amendments SCE should have sought in connection with the installation of the replacement steam generators?
g. Did the NRC inspect SONGS' plans to install the Replacement Steam Generators using NRC Inspection Procedure 50001 for Steam Generator Replacement Inspection, which included evaluating the 50.59 process?
h. Is it correct that the NRC Staff had not confirmed that Unit 2 was safe to restart based on SCE's commitments in the CAL at the time SCE made the decision to permanently retire SONGS Units 2 and 3?

ANSWER:
The question and its subparts are detailed, complex, and often case-specific. In responding, I have relied upon representations regarding the extensive documentary record in this matter provided to me by agency experts.

a. Yes. On March 23, 2012, SCE sent the NRC a letter describing the actions SCE was committing to take prior to returning Units 2 and 3 to power operation. The CAL restated and confirmed SCE's agreement to take certain actions, in response to the steam generator tube degradation in Units 2 and 3, to ensure safe operation of the units without undue risk to the public health and safety and the environment. The actions to which SCE committed for Units 2 and 3 were designed to ensure that the cause of the steam generator tube wear was understood, appropriately addressed, and reviewed by the NRC staff prior to returning to power operation.

b. The regulations in 10 CFR 50.59 state that a licensee may make changes to the facility as described in the final safety analysis report (as updated) (UFSAR), make changes in the procedures as described in the UFSAR, and conduct tests or experiments not described in the UFSAR without obtaining a license amendment if the changes satisfy the criteria listed in 10 CFR 50.59. Licensees evaluate proposed changes to determine if a license amendment is required. If the licensee determines that a license amendment is not required, the licensee would update its UFSAR and any other affected documents, as appropriate, to reflect the change at that time. If a licensee determines that a license amendment is required, the licensee would not revise its UFSAR or other documents until after the amendment is approved. Therefore, regardless of the process, the NRC would use the most current version of the plant's UFSAR procedures and drawings in all of its reviews and evaluations.

c. No. CALs are administrative actions and are issued to licensees subject to the NRC's jurisdiction to emphasize and confirm an agreement between the NRC and the licensee that the licensee will take certain actions in response to specific issues. The NRC expects licensees to adhere to any obligations and commitments addressed in a CAL. CALs are only issued when there is a sound technical and/or regulatory basis for the actions discussed in the CAL.

d. Yes. CALs may be issued to confirm several types of actions, including but not limited to:
   - "In-house" or independent comprehensive program audits of licensed activities.
   - Correction of training deficiencies.
   - Procedural improvements.
   - Equipment maintenance activities.
   - Equipment operation and safety verifications.
   - Voluntary, temporary suspension of licensed activities.
   - Root cause failure analyses.
   - Improved controls and security of licensed materials.

e. No. CALs do not allow for changes to a reactor operating license (see response to subpart c. above). The change process for a reactor operating license, including associated plant technical specifications, is specified in 10 CFR 50.90.

f. Consistent with its charter, the AIT did not specifically inspect or assess whether SCE should have sought additional license amendments in connection with the installation of the replacement steam generators. The AIT was chartered to identify the circumstances surrounding the tube degradation, review the licensee's actions following discovery of the conditions, evaluate the licensee's review of potential causes of the unusual steam generator tube wear, assess the adequacy of the licensee's actions to prevent recurrence, and inspect and assess the licensee's actions taken in response to the CAL. However, the AIT did report a minor violation of 10 CFR 50.59(d)(1) when closing unresolved item 05000362/2012007-10. The minor violation was due to the determination that the evaluation the licensee performed did not provide a correct basis for changing the computer code used for the reactor coolant system structural integrity analyses performed for the replacement steam generators. Ultimately, the NRC staff, separate from the AIT, determined that the change did not require a license amendment prior to its implementation. The AIT follow-up report provides more details about this minor violation and the NRC staff's rationale behind the determination that the licensee's

change did not require a license amendment. The AIT follow-up report is publicly available in the NRC's Agencywide Documents Access and Management System (ADAMS) at Accession No. ML12318A342.

g. Yes. The NRC completed a steam generator replacement inspection at SONGS using Inspection Procedure 50001, which included reviewing the 50.59 screenings and evaluations. More information on the inspections that were performed for Units 2 and 3 is available in Inspection Report numbers 05000361/2009007 and 05000362/2010009, which are publicly available in ADAMS at Accession Numbers ML100630838 and ML111300448 for Units 2 and 3, respectively.

h. This statement is correct. The NRC had not yet reached a conclusion regarding the safe restart of Unit 2 at the time SCE announced that SONGS Units 2 and 3 would be permanently shutdown and defueled.

Senator Jeff Sessions to Commissioner Kristine L. Svinicki

QUESTION 1.
Do you believe that the US nuclear fleet is operating more safely today than it was 5 years ago? 20 years ago? 30 years ago?

ANSWER:
The NRC assesses performance to a level which demonstrates compliance with our regulations and does not assess degrees of performance, or safety, beyond what our regulations require. The NRC does, however, continually examine newly identified issues, as manifested through the operating experience of the U.S. nuclear fleet. This ongoing look informs both our licensing and inspection programs, as well as helps us identify any generic issue resolution or research into emergent issues that may be needed. As an element of this systematic look, the NRC carries out the Industry Trends Program (ITP) and publishes a periodic report entitled, "Results of the Industry Trends Program for Operating Power Reactors." The first ITP paper was issued for fiscal year 2001 and evaluated input starting in 1988. In the years since ITP results have been published, the reports show a consistently improving trend in long term indicators dating back to 1988. These long term indicators are used for assessing whether there are any statistically significant adverse industry trends. To date, no statistically significant adverse trends have been identified.

QUESTION 2.
Three pieces of legislation have recently been introduced in the United States Senate.

The Dry Cask Storage Act of 2014 (S. 2325) would ensure that every nuclear reactor operator complies with an NRC-approved plan that would require the safe removal of spent nuclear fuel from the spent fuel pools and place that spent fuel into dry cask storage within 7 years of the time the plan is submitted to the NRC, among other things. The legislation also provides funding to help reactor licensees implement the plans and expands the emergency planning zone for non-compliant reactor operators to 50 miles.

The Safe and Secure Decommissioning Act of 2014 (S. 2324) would prohibit the NRC from issuing exemptions from its emergency response or security requirements for spent fuel stored at nuclear reactors that have permanently shut down until all of the spent nuclear fuel stored at the site has been moved into dry casks.

The Nuclear Plant Decommissioning Act of 2014 (S. 2326) would grant states and local communities a substantial role in the crafting and preparation of decommissioning plans for retired nuclear plants located in those areas.

For each piece of legislation, please answer the following questions:

a. According to NRC's criteria for substantial safety improvement benefits, would the legislation make current or future decommissioned nuclear power plants safer?
b. Would you expect the legislation to increase or decrease interest in siting and constructing nuclear power plants?
c. What impact, if any, would the legislation have on electricity prices?

ANSWER:

a. Under its Atomic Energy Act authorities, the NRC's regulations are promulgated to provide reasonable assurance of adequate protection of public health and safety. The NRC staff has not performed, or provided to the Commission, a detailed analysis of the impacts of these three pieces of legislation against that standard. In general, the NRC staff has not identified provisions of the three bills that would provide a substantial improvement in the protection of the public health and safety. Provisions would, however, increase the cost of operating and decommissioning a facility. A detailed technical analysis of the proposed changes would consider a number of factors, including, but not limited to, the effect on the margin of safety, impacts on the environment, impact on occupational radiation exposure, and impacts on the cost to decommission the facility.

   With respect to the legislation entitled, "The Dry Cask Storage Act of 2014", the Commission recently reviewed the technical feasibility of spent fuel storage and concluded that it is technically feasible to safely and securely store spent fuel in either wet or dry storage for at least 60 years beyond a reactor's licensed life. A discussion of the basis for this conclusion is provided in SECY-13-0061, "Waste Confidence – Continued Storage of Spent Nuclear Fuel," which is publicly available in the Agencywide Documents Access and Management System at Accession Number ML13143A387. The requirements of the legislation would apply to both operating and decommissioning facilities. The legislation would require expansion of emergency planning zones beyond current requirements if eligible fuel is not transferred to dry storage within the time frame

specified in the legislation. This could represent a significant increase in costs to maintain emergency preparedness.

With respect to the legislation entitled, "The Safe and Secure Decommissioning Act of 2014", the NRC has a process for granting exemptions that focuses on safety and security. Licensees may request exemptions to reduce regulatory requirements commensurate with the reduced risk at a shutdown and defueled facility. The NRC performs a detailed technical review of all exemption requests submitted by licensees. The NRC grants exemptions only when the exemptions are authorized by law, will not present an undue risk to the health and safety of the public, and are consistent with the common defense and security, and special circumstances, as defined in the NRC's regulations, are present. Implementation of the legislation could require licensees of decommissioning nuclear facilities to maintain security and emergency preparedness measures that are not commensurate with facility risk.

With respect to the legislation entitled, "The Nuclear Plant Decommissioning Act of 2014", the NRC's current regulations were promulgated to provide reasonable assurance that the decommissioning process is conducted safely and securely, with no adverse impact on the health and safety of the public. The NRC reviews the licensee's Post Shutdown Decommissioning Activities Report (PSDAR) to verify that it meets the applicable regulations. The NRC publishes notification of receipt of the PSDAR and makes it available for public comment. The NRC conducts a public meeting in the vicinity of the decommissioning facility to explain the decommissioning process to members of the public and to answer questions. The NRC is currently authorized by the Atomic Energy Act of 1954, as amended, to regulate nuclear and radiological safety. As such, the NRC regulates only the radiological decommissioning of nuclear facilities. In general, State and local government entities establish the requirements for site restoration activities.

b. I have no analysis of the impact that this legislation could have on interest in siting and constructing nuclear power plants. Parties interested in pursuing the development of new nuclear power facilities may have more direct testimony on this point.

c. Although electricity pricing falls outside the NRC's areas of responsibility and expertise, the response to subpart a. observes that costs for decommissioning and emergency preparedness would increase under some of the bills' provisions. These costs would be recovered through some mechanism; presumably, ultimately from electricity consumers.

Senator BOXER. Thank you.

The Honorable George Apostolakis.

STATEMENT OF GEORGE APOSTOLAKIS, COMMISSIONER, NUCLEAR REGULATORY COMMISSION

Mr. APOSTOLAKIS. Good morning, Chairman Boxer and members of the committee.

The Chairman has outlined many of our recent accomplishments, current challenges and future plans. I concur with the Chairman's statement that we understand the need to be proactive about our future, address challenges as they arise and maintain a focus on our mission.

I would emphasize that there are a number of important technical and policy currently facing the agency. These include: the assessment of seismic and flooding hazard re-evaluations and review of the associated risks and integrated assessments; the proposed station black out mitigation strategies rulemaking, the renewal of operating licenses for currently operating reactors beyond 60 years, referred to as subsequent license renewal; waste confidence; and the risk management regulatory framework which proposes a long term vision for a more risk informed and performance based regulatory framework.

I cannot recall a more significant group of actions by the agency in such a short period of time. The Commission's oversight and direction regarding these issues will shape the regulatory framework for a long time to come.

Thank you very much.

Senator BOXER. Thank you.

Next is Hon. William D. Magwood, IV.

STATEMENT OF WILLIAM D. MAGWOOD, IV, COMMISSIONER, NUCLEAR REGULATORY COMMISSION

Mr. MAGWOOD. Thank you, Madam Chairman. Good morning to you and former Chairman Inhofe.

It is a pleasure to meet with you today to talk about the progress we have made toward learning the lessons of Fukushima. The Chairman's statement has already highlighted much of our progress. I will add a few additional comments.

First, I note in the 3-years since the Fukushima accident in Japan took place, I have seen nothing that would make question the safety of U.S. nuclear power plants. Since March 2011, we have analyzed a vast array of technical issues, debated numerous complex regulatory policies and engaged in an open, public discussion about the lessons learned from the accident.

After all that, the essential conclusion reached by the Near-Term Task Force in the months after the accident remains valid. U.S. nuclear power plants are safe.

At the same time, I think it is important to emphasis the reason our plants are safe is that we in the United States, both regulators and the licensee community, place very high value in responding to operating experience.

U.S. plants are safe because we have learned from six decades of light water reactor operations and because we learned from

Three Mile Island and 9/11. We can do no less in the case of the Fukushima experience.

The NRC has taken clear and specific actions based on lessons learned. I believe the changes we have made thus far are appropriate and balanced. I believe the steps we and the licensees have taken thus far have made U.S. plants more resilient than they were before Fukushima.

For example, 2 weeks ago, I visited California's Diablo Canyon Plant which has obtained advanced new equipment and is building a new, robust facility to house it. Many other plants are doing the same thing.

There is still much work to be completed but I am confident that what we have done so far has been both necessary for public protection and balanced according to the threat.

Thank you and I look forward to your questions.

[The responses by William Magwood to additional questions follows.]

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555

COMMISSIONER

August 28, 2014

The Honorable Barbara Boxer
Chairman, Committee on Environment
and Public Works
United States Senate
Washington, D.C. 20510

The Honorable David Vitter
Ranking Member, Committee on Environment
and Public Works
United States Senate
Washington, D.C. 20510

Dear Chairman Boxer and Ranking Member Vitter:

Thank you for the opportunity to appear before the Committee on Environment and Public Works at the June 4, 2014 hearing entitled "Oversight Hearing: NRC's Implementation of the Fukushima Near-Term Task Force Recommendations and other Actions to Enhance and Maintain Nuclear Safety." By letter dated June 30, 2014, you provided additional questions for the record related to this hearing; my responses to these questions are enclosed. In developing these responses I have worked closely with my colleagues; my responses closely track the responses you should be receiving from the Chairman and the other members of the Commission.

Sincerely,

William D. Magwood, IV

Enclosure

The Honorable Barbara Boxer

QUESTION 1. As a follow up to the questions I asked during the hearing regarding Commission meetings and travel, please describe your current practice related to your public calendar, including the nature of the information included in it and the schedule for updating that information. In addition, please indicate whether:

a. You will provide advanced public notice of your meetings with outside stakeholders on your calendar in a manner similar to the Consumer Product Safety Commission, with the understanding that on occasion the times, attendees, and agendas of meetings might change and require revision.
b. You will provide advance public notice of your staff's meetings with outside stakeholders on your calendar in a manner similar to the Consumer Products Safety Commission, with the understanding that on occasion the times, attendees, and agendas of meetings might change and require revision.
c. You will keep your public calendar up to date instead of following the practice many Commissioners appear to follow of updating them retrospectively every 1-2 months.
d. You will include meetings between your staff and outside stakeholders on your public calendar.
e. The meetings listed on your public calendar will include a description of the meeting agenda.
f. The meetings on your public calendar will include a list of attendees.
g. The meetings listed on your public calendar will include meetings that take place outside NRC, including meetings that take place domestically and internationally.

ANSWER

Since the beginning of my tenure on the Commission, I have posted my calendar on the NRC's public website. My posted calendar includes a list of all meetings with outside companies and non-governmental organizations, both foreign and domestic, as well as my visits to licensees, license applicants, and universities and my speaking engagements. I strive to update this listing monthly, and the updates cover the prior month's meetings. The list of meetings identifies all organizations represented at each meeting and the location of each meeting. As you are aware, I am resigning my position at the NRC as of August 31, 2014 to begin my tenure as the Director-General of the Organisation for Economic Cooperation and Development's Nuclear Energy Agency. As a result, I will have no official meetings as anticipated by your question after the end of August.

The Honorable Barbara Boxer

QUESTION 2. NUREG 1738, "Technical Study of Spent Fuel Pool Accident Risk at Decommissioning Nuclear Power Plants," was published in February 2001. On March 26 2014, your staff told EPW staff that newer NRC studies are "generally consistent with the older generic studies such as NUREG-1738" and that "the staff continues to support the 2001 technical assessments on the three points as noted below." At the Committee's May 14, 2014 hearing, in response to my question as to whether the NRC still stood by the findings in the report, Mike Weber (NRC's Deputy Executive Director for Operations) stated "We stand by the findings in NUREG-1738, which is the document you are referring to." Please indicate whether you stand by each of the following findings contained in NUREG-1738, and if you do not, please indicate why not:

a) "SFP fires could have health effects comparable to those of a severe reactor accident.... Large seismic events that fail the SFP are the dominant contributor [to causing an SFP fire]."

b) "Further, the analysis indicates that timely evacuation, implemented through either pre-planned or ad hoc measures, can significantly reduce the number of early fatalities due to a zirconium fire."

c) "[T]he long-term consequences of an SFP fire may be significant. These long-term consequences (and risk) decrease very slowly because cesium-137 has a half-life of approximately 30 years."

d) "Because the possibility of a zirconium fire leading to a large fission product release cannot be ruled out even many years after final shutdown, the safeguards provisions at decommissioning plants should undergo further review."

e) "[T]he consequences from a zirconium fire could be serious."

f) "Insurance, security, and emergency planning requirement revisions need to be considered in light of other policy considerations, because a criterion of "sufficient cooling to preclude a fire" cannot be satisfied on a generic basis."

g) Figure 2.1, which shows that even after a reactor had been shut down for 1 year, it would take only about 3 hours for PWR reactor fuel to heat to 900 degrees Celsius and only about 7 hours for BWR reactor fuel to heat to 900 degrees Celsius, even when the spent fuel pool accident does not prevent the assemblies from being air cooled.

h) Figure 2.2, which shows that for PWR reactor fuel that is subject to a spent fuel pool accident that does not allow for air cooling to occur (the so-called adiabatic case in which the pool would only partially drain and thus preclude air circulation), it would take only 6 hours for the fuel to heat up even one year after the reactor shuts down.

ANSWER.

a) The analysis in NUREG-1738 is correct for the assumptions upon which the analysis is based. The offsite health impacts of a spent fuel pool zirconium fire as evaluated in that

document can be comparable to those from a severe accident at an operating reactor as evaluated in NUREG-1150, "Severe Accident Risks: An Assessment for Five U.S. Nuclear Power Plants." More recent studies, such as NUREG-1935, "State-of-the-Art Reactor Consequence Analyses" (SOARCA) Report and SECY-13-0112, "Consequence Study of a Beyond-Design-Basis Earthquake Affecting the Spent Fuel Pool for a U.S. Mark I Boiling Water Reactor," have concluded that, for the types of accidents examined at both reactors and spent fuel pools, probability-weighted health impacts would be low and well within the Commission's safety goals. In the unlikely event of an accident at either a reactor or spent fuel pool, the probability-weighted offsite economic impacts could be comparable. This is because while the economic impacts of a spent fuel pool fire could be large, a spent fuel pool accident is expected to be less likely than a reactor accident. During the development of SECY-13-0112, staff did not find any new information to challenge the view expressed in NUREG-1738—and earlier studies—that large seismic events are the largest contributor to the likelihood of having a large radiological release from the spent fuel pool.

b) The analysis in NUREG-1738 is correct for the assumptions upon which the analysis is based. An early evacuation (which is defined in that document as an evacuation that is initiated and completed before the spent fuel pool release), is effective at reducing the number of early fatalities, because early fatalities arise from very high acute radiation exposures. Large acute radiation exposures can be significantly reduced, if not eliminated altogether, by an evacuation that is completed before the spent fuel pool release begins. As stated in this study, the effect of timely evacuation is the same whether it is implemented through pre-planned evacuation or whether it is implemented through effective ad-hoc measures. NUREG-1738 states, "The overall low risk in conjunction with differences in dominant sequences relative to operating reactors, results in a small change in risk at a decommissioning plant if offsite planning is relaxed." NRC staff continues to believe that, in the unlikely event of a severe beyond design-

basis accident resulting in a loss of air cooling, there is sufficient time for offsite agencies to take protective measures under a comprehensive emergency management (all-hazards) plan to protect the health and safety of the public.

c) As stated in NUREG-1738, as long as a zirconium fire is possible, the long-term consequences of a spent fuel pool fire may be significant. NUREG-1738 illustrates the change in health consequences from a zirconium fire as a function of time since shutdown, and demonstrates that early fatality risks, which are more sensitive to the inventory of short-lived radioactivity in an operating reactor, drop by a factor of about two within one to two years following shutdown, whereas latent fatality risks and long-term collective population doses, which are more sensitive to the inventory of the longer lived cesium-134 (half-life of two years) and cesium-137 (half-life of 30 years), drop much more slowly.

However, the NRC concept of risk also includes consideration of the probability of a release. This is illustrated by the finding in NUREG-1738 that "The risk at decommissioning plants is low and well within the Commission's safety goals. The risk is low because of the very low likelihood of a zirconium fire even though the consequences from a zirconium fire could be serious." Although the staff cannot completely rule out large radiological releases from a spent fuel pool, staff believes that the probability of a release from a spent fuel pool at a plant in decommissioning decreases with the passage of time due to the drop in decay heat from the spent fuel stored in the pool, and the fact that there would be no further additions to the inventory of fresh spent fuel because the plant is no longer operating. More recent analyses have been performed with site-specific information to determine whether a release from a spent fuel pool could occur at the site studied, considering that site's practice regarding the physical arrangement of the fuel in the spent fuel pool. For example, SECY-13-0112 demonstrated that a

release is not expected to occur at the plant studied for at least 72 hours following a large, beyond design-basis seismic event that occurs more than 60 days after shutdown.

d) The finding in NUREG-1738 was appropriate. Moreover, further review of safeguards provisions at decommissioning plants has occurred since that document was issued. Since NUREG-1738, the NRC has taken a number of additional actions—described below—that support this finding.

On June 4, 2001, the NRC staff submitted a policy paper "Policy Issues Related to Safeguards, Insurance and Emergency Preparedness Regulations at Decommissioning Nuclear Power Plants Storing Fuel in Spent Fuel Pools," SECY-01-100, to the Commission for consideration. The paper provided the Commission with the staff's assessment of the policy implications of the NUREG-1738 study related to decommissioning exemptions for insurance, emergency preparedness (EP), and safeguards. The paper also recommended the NRC implement Commission policy direction in response to the paper in a future decommissioning rulemaking. However, in light of the terrorist events of September 11, 2001, the staff subsequently recommended withdrawal of the paper, and the Commission returned the paper to the staff without a decision on the policy issues presented in the paper. In 2002, the integrated decommissioning rulemaking effort was deferred, to address higher priority activities.

In light of the recent announcements of several nuclear power plants shutting down, the NRC staff is considering a future rulemaking related to insurance, EP, safeguards and security for decommissioning plants. Such a rulemaking would most likely consider the findings in NUREG-1738 and other more recent spent fuel studies (e.g., SECY-13-0112), as well as any applicable policy issues raised in SECY-01-0100 or identified separately. In addition, since the current security requirements in 10 CFR 73.55 "Power Reactor Security " were not implemented until

May of 2010, further developments in the security area will be greatly influenced by the ongoing decommissioning licensing actions.

The NRC staff is using these insights, as well as additional information gained through subsequent studies and Commission policy decisions, to inform its current review of site-specific license amendment and exemption requests from the recently shutdown power reactors on a case-by-case basis.

e) This statement is correct. Over several decades of research, the NRC has consistently found that spent fuel pool fires are high-consequence, low probability events.

f) The finding in NUREG-1738 was appropriate, and further review of safeguards provisions at decommissioning plants has occurred since that document was issued. The NRC has taken a number of additional actions related to this finding.

On June 4, 2001, the NRC staff submitted a policy paper "Policy Issues Related to Safeguards, Insurance and Emergency Preparedness Regulations at Decommissioning Nuclear Power Plants Storing Fuel in Spent Fuel Pools," SECY-01-100, to the Commission for consideration. The paper provided the Commission with the staff's assessment of the policy implications of the NUREG-1738 study related to decommissioning exemptions for insurance, EP, and safeguards. The paper also recommended the NRC implement Commission policy direction in response to the paper in a future decommissioning rulemaking (see the response to part (d) for more details).

Although SECY-01-0100 did not result in a rulemaking regarding insurance, EP, and safeguards requirements for decommissioning plants, it provides the staff's assessment of the findings of

NUREG-1738 at that time. The NRC staff is using this assessment, as well as additional information gained through subsequent studies and Commission policy decisions, to inform its review of site-specific license amendment and exemption requests from the recently shutdown power reactors on a case-by-case basis. On January 10, 2014, the staff issued for public comment a draft Interim Staff Guidance document, "Draft Interim Staff Guidance on Emergency Planning Exemption Requests for Decommissioning Nuclear Power Plants," NSIR/DPR-ISG-02. The guidance will assist staff in processing requests for exemption from EP requirements for nuclear power reactors that are undergoing decommissioning. It considers historical experience and precedent with previously issued exemptions and a number of related studies, including NUREG-1738, SECY-01-0100 and SECY-13-0112. The staff is also considering insights from NUREG-1738 and SECY-01-0100 in conjunction with Commission policy decisions on SECY-93-127, "Financial Protection Required of Licensees of Large Nuclear Power Plants During Decommissioning," and SECY-04-0176, "Exemption Requests to Reduce Liability Insurance Coverage for Decommissioning Reactors after Transfer of All Spent Fuel From a Spent Fuel Pool to Dry Cask Storage," in its review of financial protection and insurance exemption requests from decommissioning licensees. In response to SECY-93-127, the Commission approved reductions in the amount of financial protection and insurance required of decommissioning reactor licensees. In response to SECY-04-0176, the Commission approved the denial of exemption requests from decommissioning reactor licensees that requested additional reductions of insurance requirements after transfer of all spent fuel from the spent fuel pool to a dry cask storage. If granted, the exemption requests would have lowered the level of liability insurance requirements below the minimum levels previously established by the Commission.

g) The analysis in NUREG-1738 is correct for the assumptions upon which the analysis is based. However, for its intended purpose (e.g., exemption requests from NRC requirements for

offsite emergency preparedness for decommissioning reactors), the staff purposely introduced conservative assumptions into the analysis. These conservatisms include simplified treatment of the thermal-hydraulic response and the use of assumed and often bounding configurations that do not allow for thermal radiation between high powered bundles and low power bundles (as stated in NUREG-1738) and also from the spent fuel assemblies to the spent fuel pool wall liner. In a more realistic calculation, as demonstrated in the recent Spent Fuel Pool Study (SECY-13-0112), thermal radiation heat transfer (in addition to air cooling) can play a significant role. For example, it could take more than 10 hours for the fuel to heat up to 900°C even after one month of being moved from the reactor to the pool if the assemblies most recently removed from the reactor are distributed among older, cooler, fuel assemblies. In addition, NUREG-1738 makes simplifying assumptions regarding the pool failure leakage rate that results in instantaneous draindown of the pool. In the Spent Fuel Pool Study, even for a moderate leak scenario, it took more than two hours for the water level to reach the top of the fuel. In summary, the analyses performed in NUREG-1738 were based on intentionally conservative assumptions, and resulted in conservative consequences, which was an appropriate regulatory approach for the issue under consideration. More recent and realistic analyses show that the consequences of these accident scenarios are not as severe as assumed in NUREG-1738 and that they evolve over a much longer period of time.

h) The analysis in NUREG-1738 is correct for the assumptions upon which the analysis is based. However, as stated above, there are conservatisms associated with the analysis in that document. In an adiabatic calculation, both the oxidation energy and radiation heat transfer are not taken into account. While the oxidation energy tends to increase the fuel temperature, thermal radiation would limit the fuel heatup. However, for partial draindown cases, the blocked airflow can limit the more energetic air (as opposed to steam) oxidation reaction, while thermal radiation only depends on the temperature and would play an important role in limiting the fuel

heatup rate. The Spent Fuel Pool Study (SECY-13-0112), which – unlike NUREG-1738 - addressed these effects and showed that for small leak scenarios with blocked air flow at 107 days after shutdown, it would take more than 10 hours to increase the fuel temperature to 650°C. In addition, even for an adiabatic calculation, the actual decay time for the hottest fuel assemblies to reach 900°C in 10 hours requires a plant specific calculation.

The Honorable Tom Carper

QUESTION 1. **Efficiency is one of the cornerstones of good regulation. The NRC is facing a much different nuclear industry than it had expected to face just a few years ago in terms of licensing actions and other high priority activities. I understand that the NRC senior management is taking on a new initiative to ensure that the NRC is flexible and responsive to a changing environment and priorities. Could you tell us more about this initiative?**

ANSWER.

In early June 2014, the NRC launched a new initiative, Project Aim 2020. Project Aim seeks to provide more specific projections of the workload for the agency five years out, and to prepare the NRC to excel long into the future. The objective of the project is to develop this workload forecast, along with a framework and recommendations to enhance the NRC's ability to plan and execute its mission. The project team will establish the foundation to improve NRC's operational excellence, agility, and culture, while also refining the basis for agency planning through 2020 and beyond. Project Aim also will focus on improving the NRC's flexibility and responsiveness to significant external and internal changes. It is my understanding that the project team will provide its report and recommendations to the Commission no later than December 2014.

The Honorable David Vitter

QUESTION 1. **What progress has been made in implementing the Near Term Task Force recommendations?**

a) Have power plants taken any actions to mitigate the effects of severe earthquakes and flooding?

b) List the actions the NRC has already taken to address the NTTF recommendations, including any actions that are underway but not yet completed. I'd also ask them to list the actions licensees have already taken to mitigate the effects and actions that are currently underway. This seems to cover similar ground to question 5.

ANSWER.

Implementation of the Near Term Task Force (NTTF) recommendations is a multistep process that involves: identifying, gathering and assessing information on a topic for resolution; deliberating with both internal and external stakeholders to facilitate a decision; taking a regulatory action on the decision; licensee implementation of the regulatory action; and NRC inspection to assure that the regulatory actions were implemented correctly by the licensees. Some recommendations have been fully dispositional, but most are in progress. The NRC staff remains focused on completion of the NTTF Tier 1 actions, which NRC staff determined should be started without unnecessary delay.

a) The NRC issued a Request for Information (RFI) to all nuclear power plant licensees on March 12, 2012, requesting that all licensees undertake detailed inspections ("walkdowns") to verify the adequacy of each plant's seismic and flooding protective features. This RFI was issued pursuant to 10 CFR § 50.54(f). During these licensee walkdowns, a number of items

were identified and placed in licensee Corrective Action Programs to ensure that all seismic and flooding protective features at the sites remain capable of performing their intended functions.

Additionally, the March 12, 2012, RFI included a request that these licensees reevaluate their flooding and seismic hazards using modern day methods and guidance. If a licensee determines that the reevaluated flood hazard is greater than that currently assumed in the design basis of a plant, the licensee is responsible for performing a more in-depth integrated assessment to determine the impact of this increased hazard on the facility. While the integrated assessment is being completed, the licensee is also responsible for implementing interim actions to compensate for the increased flooding hazard. With respect to the seismic hazard reevaluations, the NRC's initial review of an industry screening analysis and the interim evaluations provided confidence that none of the plants showed a preliminary change in risk that would cause concern. Consequently, interim actions were not necessary to ensure the systems can function.

b) The NRC has taken a number of actions to address the NTTF recommendations. These actions include the issuance of four orders covering Recommendation 4.2 (Order EA-12-049, "Mitigating Strategies"), Recommendation 5.1 (Order EA-12-050 "Reliable Hardened Vents," which was subsequently superseded by Order EA-13-109, "Severe Accident-Capable Hardened Vents" in June 2013), and Recommendation 7.1 (Order EA-12-051, "Spent Fuel Pool Instrumentation"). The NRC also issued the March 12, 2012 RFI discussed above in order to address Recommendation 2.1 (seismic and flooding hazard reevaluations), Recommendation 2.3 (seismic and flooding walkdowns), and Recommendation 9.3 (emergency preparedness). These actions represent the majority of NTTF Tier 1 actions, which NRC staff determined should be started without unnecessary delay, and for which sufficient resource flexibility, including availability of critical skill sets, exists.

The NRC is currently evaluating nuclear power plant licensee progress toward compliance with the four aforementioned orders. With respect to the mitigating strategies and spent fuel pool instrumentation orders, the NRC has reviewed all licensee integrated plans detailing how licensees will comply with the orders and has issued interim staff evaluations for all plants. The NRC is currently conducting on-site audits at all plants to evaluate open items identified during the review of the integrated plans for each of these orders. Licensees have already begun procuring and installing the mitigating strategies equipment that will address the issues outlined in the mitigating strategies order. Safety evaluations documenting the NRC staff view of whether licensees are in compliance with the order are scheduled to be issued for the first plants beginning this fall. The NRC is currently reviewing the integrated plans submitted by licensees in June 2014 in response to the severe accident capable hardened vents order. The NRC plans to begin issuing interim staff evaluations by the end of the year.
The NRC has completed its review of all nuclear power plant licensee walkdown reports relative to Recommendation 2.3 and has issued staff assessments documenting completion of this effort. The NRC is continuing to review flooding hazard reevaluations for many plants in addition to reviewing the seismic hazard reevaluations submitted by nuclear power plant licensees in the Central and Eastern United States. As indicated in response to part a) above, issues related to existing flooding and seismic protection features identified during the flooding and seismic walkdowns have been entered into licensee Corrective Action Programs for resolution. Licensees have also implemented interim actions where initial flood hazard reevaluations have shown a greater hazard exists than that previously identified for a site and for which a plant may have been designed.

With respect to the emergency preparedness recommendations addressed in the aforementioned RFI, the NRC has issued staff assessments indicating that licensees have

sufficiently addressed Phase 1 of the staffing portion of this recommendation regarding assurance that licensees have adequate staffing to respond to a multiunit event. Additionally, the NRC has issued staff assessments indicating that licensees have sufficiently addressed the communications portion of this recommendation regarding assurance that licensees have the capability to power communications equipment during a prolonged station blackout.

In addition to the licensing activities described above, the NRC has also undertaken rulemaking efforts to address some of the recommendations. These include a consolidated rule to codify the requirements associated with the mitigation strategies order and the integration of onsite emergency response processes, procedures, training, and exercises. Additionally, the NRC has also undertaken an effort to develop a rule for filtering strategies with drywell filtration and severe accident management of BWR Mark I and II containments.

The Honorable David Vitter

QUESTION 2. **Are the current NRC regulations for emergency preparedness for nuclear power plants designed for plants that are decommissioning?**

a. If not, how does the NRC determine what emergency preparedness requirements are appropriate to the risk presented by the facility?

b. How does the NRC exemption process work and why are exemptions allowed?

c. Will the NRC ensure that adequate safety requirements are in place for SONGS during decommissioning?

d. Does NRC have the ability to impose condition as part of any exemption request that it might approve?

ANSWER.
The Emergency Preparedness (EP) requirements of 10 CFR 50.47, "Emergency Plans," and 10 CFR Part 50. Appendix E, "Emergency Planning and Preparedness for Production and Utilization Facilities," continue to apply to a nuclear power reactor after permanent cessation of operations and removal of fuel from the reactor vessel. There are no explicit regulatory provisions distinguishing EP requirements for a power reactor that has been shut down from those for an operating power reactor. The staff submitted a policy paper entitled "Policy Issues Related to Safeguards, Insurance and Emergency Preparedness Regulations at Decommissioning Nuclear Power Plants Storing Fuel in Spent Fuel Pools," SECY-010-100, to the Commission for consideration on June 4, 2001. However, in light of the terrorist events of September 11, 2001, the staff recommended withdrawal of the paper and the Commission returned the paper to the staff without a decision on the issues presented in the paper.

Under current regulations, to modify their emergency plans to reflect the reduced risk to public health and safety commensurate with power reactors that have been permanently shut down, power reactor licensees transitioning to a decommissioning status seek exemptions from certain EP regulatory requirements before amending their emergency plans.

a. When a licensee submits a request for an exemption from EP requirements for a nuclear power plant, the NRC staff reviews the request and its associated justifications. The justifications include technical analyses of the type and risk of accidents that could occur at the plant. The analyses would be used to provide the NRC reasonable assurance that in granting the requested exemption: (1) an offsite radiological release would not exceed the U.S. Environmental Protection Agency protective action guides at the site boundary (as applicable to design basis accidents such as fuel handling or radioactive waste processing accidents); and (2) in the unlikely event of a severe beyond design-basis accident resulting in a loss of air cooling, sufficient time would exist to initiate appropriate mitigating actions, or if needed, offsite protective actions using a comprehensive emergency management plan to protect the health and safety of the public. If the impacts would not require offsite protective actions, then the licensee would not need to maintain compliance with certain offsite EP requirements. For the onsite risks at the plant, the NRC would require that the license continue to comply with the appropriate EP requirements.

b. The practice of considering exemptions is a well-established part of the NRC's regulatory process that allows licensees to address site-specific situations or implement alternative approaches for circumstances not necessarily contemplated in the regulations. The exemption process is not unique to decommissioning licensees or to the specific EP technical area, but is an important tool that allows the agency to provide appropriate regulatory relief, and

licensees to make appropriate modifications to their programs commensurate with the site-specific risks that are present for a permanently shutdown reactor during decommissioning. The NRC makes decisions on exemption requests on a site-specific, case-by-case basis, following an established process that includes the staff's assessment of a detailed technical safety evaluation submitted by the licensee.

The NRC may grant exemptions from various regulatory requirements in response to a request from a licensee, applicant, or interested stakeholder, or on its own volition. For the Commission to consider granting an exemption, the request must provide information that demonstrates that specific criteria in the regulations will be met. For example, the controlling regulation for EP exemptions is 10 CFR 50.12, "Specific exemptions." The NRC staff review of requests for exemptions pursuant to 10 CFR 50.12 considers whether the exemptions are authorized by law, will not present an undue risk to the public health and safety, and are consistent with the common defense and security, and whether any special circumstances, as defined in the regulation, exist.

The special circumstances listed in 10 CFR 50.12 reflect some of the reasons that exemptions may be necessary. Special circumstances are present whenever application of the regulation conflicts with other rules or regulations, application of the regulation in the particular circumstance would not serve the underlying purpose of the rule, compliance with the regulation would result in undue hardship, the exemption would result in benefit to the health and safety of the public, the exemption would provide temporary relief from the applicable regulation and the licensee has made good faith efforts to comply, or there is present a material circumstance not considered when the regulation was adopted for which it would be in the public interest to grant the exemption.

The NRC will grant an exemption only if it concludes that all the required criteria are met. If granted, the exemption, which contains the staff's safety analysis and conclusions, is published in the *Federal Register*.

c. Yes, the NRC will continue to maintain appropriate safety requirements, and provide appropriate oversight for the San Onofre Nuclear Generating Station, Units 2 and 3 (SONGS) and other permanently shutdown nuclear power reactors through all phases of the decommissioning process. The licensees are required to comply with the existing conditions and technical specifications of their licenses until those requirements are changed via a license amendment. The licensee for SONGS has requested license amendments and requested exemptions from certain regulations, and provided a technical justification to change the requirements based on the facility's permanently shutdown and defueled condition. The NRC staff applies the same rigor in its regulatory and technical evaluation of amendment and exemption requests regardless of whether a facility is in operation or in a permanently shutdown and defueled condition. The NRC will only approve a license amendment or grant an exemption for SONGS if the staff concludes its issuance will continue to provide reasonable assurance of adequate protection of the public health and safety. NRC's oversight and inspection activities will continue at the decommissioning sites.

d. Yes, the NRC staff may grant an exemption based on a requirement that the licensee satisfies certain conditions. In this case, the conditions are fully described and evaluated, and incorporated into the license when the exemption is granted.

The Honorable David Vitter

QUESTION 3. **Did the wildfire near SONGS threaten the plant?**

a) Is there a relationship between fires such as the wildfire around SONGS and spent fuel pool fires?

ANSWER.
The wildfire near SONGS that occurred on May 14, 2014 did not threaten the plant. During the event, an NRC inspector responded to the control room at the plant and communicated status information to NRC staff members in the Region IV office (Arlington, TX). The wildfire approached within approximately one-half mile of the south side of the owner-controlled area before being extinguished by the combined efforts of SONGS fire department personnel, the Camp Pendleton fire department, and several helicopters that dumped seawater on the blaze. Because of smoke from the fire, several employees were evacuated from the south yard area of the plant as a precautionary measure. The SONGS fire brigade wetted vegetation along the south boundary of the owner-controlled area as a precaution.

a. The wildfire that occurred on May 14, 2014, posed no danger to the spent fuel pools at SONGS. The spent fuel assemblies are contained in a water-filled pool inside the Fuel Handling Building. This building and the spent fuel pool structure within it are robust structures that are protected from the effects of wildfires by restricting combustible material between the plant perimeter and the building. The building is protected from the effects of internally generated fires by fire detection and suppression equipment. SONGS also has fire response plans to ensure that fires, such as a wildfire, will not adversely impact the spent fuel pools.

The sequences that could lead to a spent fuel pool fire are improbable and involve a sustained loss of heat removal capability (e.g., an event that results in draining the pool), the inability to replenish water inventory, and inadequate air flow for cooling.

The Honorable David Vitter

QUESTION 4. **What is the NRC doing to address the allegations of retaliation for using the non-concurrence process?**

a) How can EPW ensure that the NRC has the tools it needs?

ANSWER.
The NRC takes concerns of retaliation for using the Non-Concurrence Process (NCP) seriously. When an employee alleges that they have been retaliated against for using the NCP, they are informed of various avenues available to them to pursue their retaliation allegation, including the NRC's Office of the Inspector General, grievance procedures, whistleblower complaints with the Department of Labor under the Energy Reorganization Act, or complaints to the U.S. Office of Special Counsel. When the NRC became aware of potential retaliation concerns through an anonymous, targeted survey sent to employees who have used the NCP, a follow-up email was sent to these employees reminding them that we do not tolerate retaliation for using the NCP and informing them of avenues available to pursue allegations of retaliation.

a) At present, although there is room for improvement, I believe the NRC as the tools and authority to address the situation. The NRC understands that fear of retaliation has the potential to inhibit employees from raising concerns and using the Non-Concurrence Process (NCP). As addressed in the Planned Actions section of the agency's 2014 Non-Concurrence Process Assessment (available in the NRC's Agencywide Documents Access and Management System (ADAMS) at Accession No. ML14056A294), the agency has taken and plans to take multiple actions to address concerns of potential retaliation for using the NCP. Our finalized NCP Management Directive includes comprehensive guidance on concerns of reprisal, including that the agency does not tolerate retaliation; that retaliation could be grounds for disciplinary action;

that adverse personnel actions or negative performance appraisals involving non-concurring employees are not to be used in retaliation for involvement or participation in the NCP; and that managers must take appropriate action in response to allegations of reprisal against non-concurring employees and other participants in the NCP, as well as chilling effect concerns related to the NCP. The guidance also includes a list of avenues to pursue allegations of retaliation, including the NRC's Office of the Inspector General, grievance procedures, whistleblower complaints with the Department of Labor under the Energy Reorganization Act, or complaints to the Office of Special Counsel. The agency is also considering additional training for staff and managers, and will determine whether further effort is needed regarding an anti-harassment policy and procedure for retaliation for raising differing views. The agency will continue to promote success stories and plans on hosting panel discussions to share experiences to help ensure the staff's use of the NCP leads to better informed decisions. The NRC believes that the planned actions provide sufficient tools to create effective, lasting improvements to the NCP that will foster continued employee engagement and support safe and effective regulatory decisionmaking for the agency.

The Honorable David Vitter

QUESTION 5. **In the recent hearing one of the main issues brought to the attention of the committee was the NRC's progress on implementation of Fukushima recommendations.**

a) Please detail the progress that the commission has made on each recommendation in detail.

b) Also, please note any implementation of these recommendations taken voluntarily by the nuclear industry.

ANSWER.

a) Following the events at Fukushima on March 11, 20111, the Near Term Task Force (NTTF) was established to complete the near-term review required by the NRC Chairman's tasking memorandum of March 23, 2011. A report to the Commission was made with recommendations to the Commission in SECY-11-0093, "Near-Term Report and Recommendations for Agency Actions Following the Events in Japan," dated July 12, 2011. On August 19, 2011, the Commission directed NRC staff to recommend a prioritization of the Task Force recommendations by October 3, 2011. NRC staff reviewed the NTTF recommendations within the context of the NRC's existing regulatory framework and considered the various regulatory vehicles available to the NRC to implement the recommendations. This review and assessment was conducted by a team consisting of NRC senior management representatives and technical experts, who initially verified that none of the NTTF findings identified an imminent hazard to public health and safety. The NRC team then performed an assessment of each NTTF recommendations to determine the required regulatory activities, an estimated schedule, and associated resource impacts, and also conducted public meetings with external stakeholders to better inform the NRC staff assessment.

As a result of the NRC staff's prioritization and assessment process, the NTTF recommendations were prioritized into three tiers. The first tier consists of those NTTF recommendations which the staff determined should be started without unnecessary delay and for which sufficient resource flexibility, including availability of critical skill sets, exists. The second tier consists of those NTTF recommendations which could not be initiated in the near term due to factors that include the need for further technical assessment and alignment, dependence on Tier 1 issues, or availability of critical skill sets. Finally, the third tier consists of those NTTF recommendations that require further staff study to support a regulatory action, have an associated shorter-term action that needs to be completed to inform the longer-term action, are dependent on the availability of critical skill sets, or are dependent on the resolution of NTTF Recommendation 1. The status of actions in each tier is discussed below.

Tier 1 Activities

The NRC has taken a number of actions to address the Near Term Task Force NTTF recommendations. These actions include the issuance of four orders covering Recommendation 4.2 (Order EA-12-049, "Mitigating Strategies"), Recommendation 5.1 (Order EA-12-050 "Reliable Hardened Vents," which was subsequently superseded by Order EA-13-109, "Severe Accident-Capable Hardened Vents" in June 2013), and Recommendation 7.1 (Order EA-12-051, "Spent Fuel Pool Instrumentation"). In addition, on March 12, 2012, the NRC issued a Request for Information RFI in order to address Recommendation 2.1 (seismic and flooding hazard reevaluations), Recommendation 2.3 (seismic and flooding walkdowns), and Recommendation 9.3 (emergency preparedness).

The NRC is currently evaluating nuclear power plant licensee progress toward compliance with the four aforementioned orders. With respect to the mitigating strategies and spent fuel pool instrumentation orders, the NRC has reviewed all licensee integrated plans detailing how

licensees will comply with the orders and has issued interim staff evaluations for all plants. The NRC is currently conducting on-site audits at all plants to evaluate open items identified during the review of the integrated plans for each of these orders. Licensees have already begun procuring and installing the mitigating strategies equipment that will address the issues outlined in the mitigating strategies order. Safety evaluations documenting the NRC staff view of whether licensees are in compliance with the order are scheduled to be issued for the first plants beginning this fall. The NRC is currently reviewing the integrated plans submitted by licensees in June 2014 in response to the severe accident capable hardened vents order. The NRC plans to begin issuing interim staff evaluations by the end of the year.

The NRC has completed its review of all nuclear power plant licensee walkdown reports relative to Recommendation 2.3 and has issued staff assessments documenting completion of this effort. The NRC is continuing to review flooding hazard reevaluations for many plants in addition to reviewing the seismic hazard reevaluations submitted by nuclear power plant licensees in the Central and Eastern United States. Issues related to existing flooding and seismic protection features identified during the flooding and seismic walkdowns have been entered into licensee Corrective Action Programs for resolution. Licensees have also implemented interim actions where initial flood hazard reevaluations have shown a greater hazard exists than that previously identified for a site and for which a plant may have been designed.

With respect to the emergency preparedness recommendations addressed in the aforementioned RFI, the NRC has issued staff assessments indicating that licensees have sufficiently addressed Phase 1 of the staffing portion of this recommendation regarding assurance that licensees have adequate staffing to respond to a multiunit event. Additionally, the NRC has issued staff assessments indicating that licensees have sufficiently addressed the

communications portion of this recommendation regarding assurance that licensees have the capability to power communications equipment during a prolonged station blackout.

In addition to the licensing activities described above, the NRC has also undertaken rulemaking efforts to address some of the recommendations. These include a consolidated rule to codify the requirements associated with the mitigation strategies order, the spent fuel pool level instrumentation order, and the integration of onsite emergency response processes, procedures, training, and exercises. Additionally, the NRC has undertaken an effort to develop a rule for filtering strategies with drywell filtration and severe accident management of BWR Mark I and II containments.

Tier 2 Activities

Tier 2 activities are those activities that, at the time of prioritization, could not be initiated in the near term due to resource or critical skill set limitations.

Part of Recommendation 9.3, Emergency Preparedness, was evaluated by the NRC staff as Tier 2. Initially, a portion of this recommendation was to order licensees to do the following until rulemaking is complete: 1) add guidance to the emergency plan that documents how to perform a multi-unit dose assessment (including releases from spent fuel pools) using the licensee's site-specific dose assessment software and approach; 2) conduct periodic training and exercises for multi-unit and prolonged station blackout (SBO) scenarios, and 3) ensure that emergency preparedness (EP) equipment and facilities are sufficient for dealing with multiunit and prolonged SBO scenarios. The NRC staff re-evaluated options to resolve Tier 2 recommendations and assessed the objectives of Tier 2 items and determined that the activities that industry has committed to undertake within Order EA-12-049 (Mitigating Strategies) would resolve two of the three items above. The NRC has incorporated these Recommendation 9.3

items into the rulemaking associated with NTTF Recommendations 4, 7.1, and 8 and plans to make these Recommendation 9.3 Tier 2 items generically applicable though this rulemaking.

Regarding multiunit dose assessment, the staff requested additional details regarding the number of sites that currently have multi-unit dose assessment capability and when specifically all licensees will have the capability to conduct multiunit dose assessment. In April 2014, the staff completed its review of the licensees' multiunit dose assessment capabilities. The staff reviewed the licensees' responses and noted that licensees have multiunit or multi-source dose capabilities or will have these capabilities by December 31, 2014. The staff will verify the implementation of these dose assessment capabilities through the inspection program. Given the above approach, the staff does not believe an Order is warranted for the multiunit dose assessment capability. Multiunit dose assessment would be generically applicable through subsequent rulemaking for NTTF Recommendations 9.1 and 9.2 items under Tier 3.

The NRC staff is also planning to address re-evaluating other natural external hazards. This requires the same resources, such as NRC and nuclear industry subject matter experts that are being used for seismic and flooding hazards, which are considered the highest priority external events. The NRC will begin work on this issue once sufficient resources are available.

The Task Force also recommended that the NRC staff require licensees to provide reliable spent fuel makeup capabilities (NTTF 7.2 – 7.5). These recommendations were to have three orders and an associated rulemaking to codify the orders. The orders were integrated into the Mitigation Strategies Order effort in March 2013. The rulemaking is part of the consolidated rule to codify the requirements associated with the mitigation strategies order and the integration of onsite emergency response processes, procedures, training, and exercises.

Tier 3

No significant action has been taken on most of the Tier 3 activities because they are either dependent on the outcome of other recommendations, awaiting input from studies, or require the same resources that are currently being used for Tier 1 activities (for example, "other external hazards" uses the same expertise as the seismic and flooding reevaluations).

For the Japan Lessons Learned Tier 3 Activity on expedited transfer of spent fuel to dry cask storage, the NRC concluded (in COMSECY-13-0030) that such a regulatory requirement would provide only a minor or limited safety benefit and the costs would not be warranted. Therefore, the staff recommended that no further generic assessments be pursued related to possible regulatory actions to require the expedited transfer of spent fuel to dry cask storage. The Commission's recent vote on this issue (SRM-COMSECY-13-0030) approved this recommendation, but directed the staff to take some additional actions such as informing licensees about the potential benefits of alternate spent fuel loading patterns and evaluating whether seismic re-evaluations of spent fuel pools are still needed as part of activities related to Recommendation 2.1.

Activities Not Within a Tier

Recommendation 1 was to improve the NRC's regulatory framework. The NRC staff submitted a SECY Paper, SECY-13-0132, in December 2013 recommending three improvement activities: 1) establish a design-basis extension category of events and requirements and associated internal NRC guidance, policies, and procedures; 2) establish Commission expectations for defense-in-depth through the development of a policy statement; and 3) clarify the role of voluntary industry initiatives in the NRC regulatory process. The Commission largely disapproved the staff recommendations, deferring to the ongoing work on the Risk Management Regulatory Framework. That is outside of the Fukushima Lessons-Learned Activities.

As directed by the Commission, the NRC staff revised the order issued to licensees for reactors with BWR Mark I and Mark II containments to require that improved venting capabilities be provided during severe accident conditions (See Tier 1 activity related to Recommendation 5.1). In addition, the Commission directed the NRC staff to use the rulemaking process to assess possible regulatory requirements for filtration strategies and other severe accident management functions for reactors with this type of containment design. The NRC staff has had numerous public meetings with the nuclear industry and other stakeholders to share analysis results and to discuss the cost/benefit assessments being prepared for various potential regulatory actions. A draft regulatory basis document will be issued for public comment early in 2015.

b) Some actions that the industry has taken to date may be considered voluntary because they have been taken before the NRC issued final applicable regulatory requirements. For example, the Recommendation 8 Rulemaking activities related to improving the onsite emergency capabilities, including the integration of Severe Accident Management Guidelines, are not yet incorporated into NRC regulations. However, the NRC is aware that the industry has taken some actions to revise its generic Severe Accident Management Guidelines to address lessons learned from the Fukushima Daiichi accident. The NRC is also aware that the Institute for Nuclear Power Operations (INPO) independently prepared a lessons learned report (including an important timeline for the accident), issued significant operating experience reports, and has performed assessments of the changes made by the operators of nuclear power plants to address the INPO reports and recommendations. While many of these are related to ongoing or planned regulatory activities, some exceed the NRC actions and can be viewed as voluntary.

The Honorable David Vitter

QUESTION 6. **I want to complement those of you who agreed with the recommendations of NRC staff and of you Advisory Committee on Reactor Safeguards (ACRS) the post-Fukushima Tier 3 recommendation on whether a safety case exist for expedited transfer of spent fuel to dry casks be closed and that no further generic assessments be pursued on this matter. I am concerned about the amount of time it took the Commission to reach its decision on a matter that the staff and ACRS placed so clearly before you. The staff made its recommendation on Nov. 12 of last year. The ACRS provided its written comments to you on Dec. 18. You issued a decision on May 23, 2014. I addressed the undue amount of time the Commission was taking in reaching decisions in my legislation. This episode reinforces the conclusion that legislative action is needed to help you produce work on a more timely basis.**

a. **Will you each agree to report on what steps you are taking to cut down on such undue delays?**

ANSWER.

While I concur that the Commission should act upon matters as expeditiously as possible, appropriate reflection is required to ensure that complex matters are fully considered before the Commission issues direction that may impact safety or security. Many of the more complex matters that the Commission considers may include a public Commission meeting, which further lengthens the time of review.

It is also vitally important to efficient Commission decision-making that the staff papers that the Commission considers are of the highest quality and that there are no undue delays in the preparation of the staff papers. To that end, I note that the Commission has directed the staff to undertake a new initiative, Project AIM 2020. This initiative seeks to provide more specific

projections of the workload for the agency five years out, and to prepare the NRC to excel long into the future. The project team will establish the foundation to improve NRC's operational excellence, agility, and culture, while also refining the basis for agency planning through 2020 and beyond. Project Aim also will focus on improving the NRC's flexibility and responsiveness to significant external and internal changes.

As you are aware, I am resigning my position at the NRC as of August 31, 2014 to begin my tenure as the Director-General of the Organisation for Economic Cooperation and Development's Nuclear Energy Agency. However, I am certain that the Commission will continue to keep the Committee up-to-date on all efforts to improve regulatory efficiency once I have left the NRC.

The Honorable David Vitter

QUESTION 7. **We have seen an inordinate amount of time and resources spent on a Tier Three item that demonstrably demonstrated that expedited transfer had very limited safety benefit. Isn't it time to focus on completing the implementation of the Tier One actions and begin to return to a normal order of business?**

ANSWER.

The NRC staff remains focused on completion of the NTTF Tier 1 actions, which NRC staff determined should be started without unnecessary delay, and is working to complete lower-priority items on a slower schedule. After the Fukushima accident, a task force of senior NRC staff reviewed the circumstances of the event to determine what lessons could be learned. In July 2011, the task force provided a report with recommendations to enhance U.S. reactor safety, and these became the foundation of the NRC's post-Fukushima activities. The Commission then approved a three-tiered prioritization of the recommendations. The NRC is actively working on implementing the Near Term Task Force recommendations prioritized as Tier 1 and expects to complete a majority of the Tier 1 activities by the end of 2016. Following substantial completion of the Tier 1 activities, the NRC intends to complete the remaining work on the post-Fukushima activities using normal agency processes for prioritizing workloads. This means that remaining Tier 2 and Tier 3 items will be completed alongside other NRC licensing and regulatory actions of a similar priority.

The Honorable David Vitter

QUESTION 8. **Since the NRC has addressed the most safety-significant Tier 1 post-Fukushima items, when will post-Fukushima costs cease to drive increases in the NRC's budget?**

ANSWER.

The NRC continues to implement the Near Term Task Force recommendations classified as Tier 1. While a great deal of progress has been made on these post-Fukushima activities, there is still additional work that needs to be completed with respect to implementing the most safety-significant Tier 1 recommendations. Much of this work focuses on ensuring compliance with the four orders issued in response to the Tier 1 recommendations (which includes one order that was superseded) and reviewing information submitted in response to NRC Requests for Information regarding seismic and flooding hazards and emergency preparedness. The NRC is also focused on a number of Tier 1 rulemaking activities. The NRC expects to make substantial progress on implementing all of the aforementioned Tier 1 activities by the end of 2016. Once it is determined that substantial progress has been made on these activities, the NRC intends to complete the remaining post-Fukushima activities using normal agency processes.

The Honorable David Vitter

QUESTION 9. **Your FY '15 budget justification indicated that productivity has precipitously declined. In 2004, you used 1,776 hours as a measure of productivity. For FY '15, that figure has slipped to 1.375 hours. That's remarkable out of an employee work year of 2080 hours. Tell us the specifics of when you each first became aware of this inordinate decrease and what expectations and specific measures you have communicated to the staff to effect corrections in this course?**

ANSWER:
The FY 2004 Fee Rule used an estimate of 1,776 hours per direct FTE to calculate the program hourly rates, based on the Office of Management and Budget (OMB) circular A-76, "Performance of Commercial Activities." In the 2005 Fee Rule, NRC revised the estimate of direct hours per FTE to more accurately reflect the NRC's costs of providing part 170 services. It was determined that certain indirect costs such as administrative and other activities that a direct FTE may perform but which are more accurately considered overhead were included in the 1,776 hours, overestimating the total. Beginning in the FY 2005 Fee Rule, NRC based the calculation of hourly rates on guidance from OMB circular A-25, "User Charges" which emphasizes that agency fees should reflect the full cost of providing services to identifiable beneficiaries. NRC believes that by using an estimate of direct hours per direct FTE that reflects only direct staff time we can achieve more accurate full costing. This revision from FY 2005 lowered the estimate of direct hours per direct FTE to 1,446, a decrease of 330 hours. The current projection of 1,375 hours per direct FTE is due to annual fluctuations in indirect activities, annual leave projections, and new employees.
These changes were made to address the issue of accurate accounting of direct and indirect costs.

The issue of a decline in productivity may not be directly addressed by these accounting changes. The Commission has noted a concern with a troubling trend in the backlog of licensing actions, particularly in operating reactors. In the Staff Requirements Memorandum for the implementation of the FY 14 budget, the Commission provided direction to the staff to take actions necessary to reverse this trend, including assignment of personnel with the appropriate skill sets to the organizations needing assistance, and the expanded use of rehired annuitants, limited term appointment and/or contractors. The staff is taking actions to address this issue.

The Honorable David Vitter

QUESTION 10: **Has OMB, in any way, instructed you, either directly or indirectly, to withhold information regarding resource estimates for completing the NRC's statutorily mandated review of the Yucca Mountain license application and issue a final decision?**

ANSWER:
I am not aware of any OMB direction to withhold information regarding resource estimates for completing the NRC's statutorily mandated review of the Yucca Mountain license application and issue a final decision. OMB Circular A-11 section 22, "Communications with the Congress and the Public and Clearance Requirements," governs the confidentiality of budget deliberations and congressional communications. In accordance Circular A-11 requirements, these resource estimates are subject to OMB clearance prior to transmittal to congressional committees, individual Members of the Congress, or their staff, or the media.

The Honorable David Vitter

QUESTION 11. **Some contend that the "NRC's recent track record does not inspire confidence and does not bode well because at the end of the day, the American people don't want to have a reactor near them because of these problems and the industry is just not going to be there in the future." Has the NRC's annual assessment of trends in the industry's safety performance uncovered any negative trends that warrant regulatory action?**

ANSWER.

The agency uses a number of methods to assess industry safety performance, such as the Reactor Oversight Process, the Industry Trends Program, the Accident Sequence Precursor program, and the monitoring of operating experience. Licensee performance weaknesses that are identified at individual plants or licensees are addressed via the licensee's corrective action program and these programs are reviewed under the Reactor Oversight Process. The agency evaluates inspection results and operating experience for generic applicability and uses generic communications to communicate their impact to licensees. Since the inception of the Industry Trends Program in 2000, which monitors various numeric indicators of safety performance, there have been eight prediction limits that were either met or exceeded. Prediction limits are used to provide a consistent method for identifying potential short-term emergent issues before they manifest themselves as long-term trends. To date, no statistically significant adverse trend has been identified. In accordance with the Commission's direction in 2013, the staff has been working to review the implementation of the Industry Trends Program for lessons learned since its inception to determine if any program enhancements may be warranted.

The Honorable David Vitter

QUESTION 12. Please provide copies of any votes where NRC staff advised that a proposed action would not be cost beneficial or necessary for safety, but you chose to support the action anyway.

ANSWER.

I have not issued any votes where the NRC staff advised that a proposed action would not be cost beneficial or necessary for safety where I chose to support Commission action against the advice of the staff. However, I have attached my vote on SECY-12-0025, "Proposed Orders and Requests for Information in Response to Lessons Learned From Japan's March 11, 2011 Great Tohoku Earthquake and Tsunami." I note that in the staff's paper, they recommended that these proposed items be instituted to ensure adequate protection of safety at U.S. nuclear power plants. As reflected in my vote, upon reviewing the staff's recommendations, I did not agree that all recommended actions were necessary for adequate protection, but nevertheless felt that they were prudent measures that would have a positive impact on public health and safety.

The Honorable David Vitter

QUESTION 13. **The Nuclear Regulatory Commission "is consistently ranked as one of the best places to work." And yet, at the same time, some contend that whistleblowers in your agency cannot express their concerns. This seems a contradiction—that your agency provides an exceptional work environment that would, at the same time, stymie the thoughts and concerns of its workers. What processes are available for those who wish to express their concerns?**

ANSWER.
The NRC strives to maintain an environment where all employees are encouraged to promptly speak up and share concerns and differing views without fear of negative consequences. Although we are striving to improve in this area, the last NRC Safety Culture and Climate Survey results indicated that 80 percent of employees who responded stated that they believed the NRC has a culture that is conducive to raising concerns. This is consistent with my observations of NRC staff as dedicated professionals who place a high priority on public safety and, accordingly, do not hesitate to raise issues of safety. Employees are expected to routinely engage in informal discussions on issues of concern with their coworkers and supervisors. In addition to informal discussions, which are expected to be sufficient to resolve most issues, individuals have access to various processes for expressing concerns and having their differing views heard by decision-makers, including the Open Door Policy, the Non-Concurrence Process, and the Differing Professional Opinions Program.

The Honorable David Vitter

QUESTION 14. **In the hearing it was repeatedly mentioned that the NRC has yet to deny such an exemption from safety. Have past exemptions resulted in a significant breach of safety?**

ANSWER.
No past exemptions from safety regulations given to permanently shutdown reactors have resulted in any breach of safety.

Exemptions to certain regulations that were given to permanently shutdown reactors were based on permanent changes to configurations of the plant (such as permanent removal of the fuel from the reactor). Most of the NRC's operating reactor safety regulations do not address plants in a permanently shutdown status, and certain events or postulated safety significant situations at operating reactors are not applicable to permanently shutdown reactors. Therefore, the NRC typically issued exemptions from the operational safety regulations that no longer applied to the licensee requesting the exemption. It should be noted that safety regulations applicable to permanently shutdown reactors remain in effect, and the NRC continues to maintain effective oversight to ensure compliance with these safety regulations.

QUESTION 15. **Some have attempted to portray the NRC staff as having concluded that the risk of a spent fuel fire and subsequent harm to the public is on par or exceeds that of the 1986 accident at Chernobyl: "The fire could well spread to older spent fuel. The long term land contamination consequences of such an event could be significantly worse than those from Chernobyl." Is this quote from an NRC document or some other source?**

ANSWER.

The quote mentioned above was not from the NRC. The quote is from a paper by Robert Alvarez et al. entitled, "Reducing the Hazards from Stored Spent Power-Reactor Fuel in the United States," dated April 21, 2003 prepared for the journal "Science & Global Security". The NRC reviewed the 2003 Alvarez paper and issued a response, "NRC Review of Reducing the Hazards from Stored Spent Power Reactor Fuel in the United States," dated August 19, 2003 (ADAMS Accession No. ML031210075). In this response, the NRC concludes that the assessment performed in this paper of possible spent fuel pool accidents stemming from potential terrorist attacks did not address such events in a realistic manner. The NRC response emphasized that, in many cases, the authors of the 2003 Alvarez paper relied on studies that made overly conservative assumptions or were based on simplified and very conservative models. The NRC concluded that the fundamental recommendation of the 2003 Alvarez paper, namely that all spent fuel more than 5 years old be placed in dry casks through an expedited 10-year program costing many billions of dollars, was not justified. Spent fuel stored in both wet and dry storage configurations is safe and measures are in place to adequately protect the public.

QUESTION 16. **Following the Fukushima earthquake, tsunami, and hydrogen explosions, did the spent fuel pools maintain their integrity? In fact, didn't you agree with the staff's actual evaluation that the likelihood of an offsite release of radioactivity is occurring once in ten million years but that if it did, the individual latent cancer fatality risk resulting from a spent fuel pool accident in which large quantities are released is 1.52 x 10?**

a) Didn't the ACRS also criticize the staff's excessive use of conservatisms in some of its scenarios?

ANSWER

Numerous confirmatory analyses have been conducted that demonstrate that the spent fuel pools at the Fukushima Dai-ichi facility maintained their structural integrity during and following the accident, The International Atomic Energy Agency has conducted independent inspections of the Fukushima Dai-ichi site and maintains all of their records on their publicly-available website at http://www.iaea.org/newscenter/focus/fukushima. The NRC was also asked by the Japan Nuclear Regulation Authority (NRA) to review the structural integrity of the spent fuel pool within the damaged reactor building at Fukushima Dai-ichi Unit 4. In a letter to NRA dated April 25, 2014 (available in the NRC's Agencywide Documents Access and Management System (ADAMS) at Accession Number ML14111A120), the NRC confirmed that the actions taken to reinforce the Unit 4 spent fuel pool structure and the Unit 4 structural integrity analyses performed were reasonable and adequate.

a) Regarding the NRC staff's regulatory analysis on the expedited transfer of spent fuel to dry cask storage, the Advisory Committee on Reactor Safeguards (ACRS) stated that the cumulative effects of conservatisms and assumptions used in the high estimates, and in sensitivity studies of the regulatory analysis, resulted in exaggerated frequencies of fuel damage

and exaggerated benefits of expedited transfer. (ADAM Accession No. ML13346A739). The NRC staff responded to the ACRS in a letter dated January 31, 2014 (ADAMS Accession No. ML14008A256). In that letter, the NRC staff agreed with the ACRS's statements, that bounding or conservative values were intentionally used in the regulatory analysis for several parameters, particularly in the high estimate cases, to ensure that design, operational, and other site variations among the new and operating reactor fleet were addressed, and to ensure that the results of the analysis were bounding. If these highly conservative results had indicated that further regulatory action was justified, that staff would have re-performed the regulatory analysis using more realistic assumptions. In a staff requirements memorandum dated May 23, 2014 (ADAMS Accession No. ML14143A360), the Commission agreed with the staff's and the ACRS's recommendation that no further generic assessments be pursued related to possible regulatory actions to require the expedited transfer of spent fuel to dry cask storage and that this Tier 3 Japan lessons-learned activity be closed.

The Honorable Jeff Sessions

QUESTION 1. **Do you believe that the US nuclear fleet is operating more safely today than it was 5 years ago? 20 years ago? 30 years ago?**

ANSWER.

The NRC does not define levels of safety above the standard of safety required by our regulations. The NRC continually examines and refines its regulations and reactor oversight program to address newly identified issues, research, and operating experience. The NRC has published the *Results of the Industry Trends Program for Operating Power Reactors* since the inception of the Industry Trends Program (ITP); the first ITP paper was issued for fiscal year 2001 and evaluated input starting in 1988. In the years since ITP results have been published, the reports show a consistently improving trend in long term indicators dating back to 1988. These long term indicators are used for assessing whether there are any statistically significant adverse industry trends. To date no statistically significant adverse trend has been identified.

The Honorable Jeff Sessions

QUESTION 2. Three pieces of legislation have recently been introduced in the United States Senate.

The Dry Cask Storage Act of 2014 (S. 2325) would ensure that every nuclear reactor operator complies with an NRC-approved plan that would require the safe removal of spent nuclear fuel from the spent fuel pools and place the spent fuel into dry cask storage within 7 years of the time the plan is submitted to the NRC, among other things. The legislation also provides funding to help reactor licensees implement the plans and expands the emergency planning zone for non-compliant reactor operators to 50 miles.

The Safe and Secure Decommissioning Act of 2014 (S. 2324) would prohibit the NRC from issuing exemptions from its emergency response or security requirements for spent fuel stored at nuclear reactors that have permanently shut down until all of the spent nuclear fuel stored at the site has been moved into dry casks.

The Nuclear Plant Decommissioning Act of 2014 (S. 2326) would grant states and local communities a substantial role in the crafting and preparation of decommissioning plans for retired nuclear plants located in those areas.

For each piece of legislation, please answer the following questions:

a. **According to NRC's criteria for substantial safety improvement benefits, would the legislation make current or future decommissioned power plants safer?**

b. **Would you expect the legislation to increase or decrease interest in siting and constructing nuclear power plants?**

c. **What impact, if any, would the legislation have on electricity prices?**

ANSWER.

a) The NRC's regulations were promulgated to provide reasonable assurance of protection of the public health and safety and the environment. The NRC has not performed a detailed technical analysis on the impacts of these three pieces of legislation. In general, it does not appear that the three bills would provide a substantial improvement in the protection of the public health and safety or the environment, but could increase the cost of operating and decommissioning a facility. A detailed technical analysis of the proposed changes would consider a number of factors, including, but not limited to, the effect on the margin of safety, impacts on the environment, impact on occupational radiation exposure, and impacts on the cost to decommission the facility. The NRC offers the following initial thoughts on the impacts of the proposed legislation.

With respect to the Dry Cask Storage Act of 2014, the Commission recently reviewed the technical feasibility of spent fuel storage and concluded that it is technically feasible to safely and securely store spent fuel in either wet or dry storage for at least 60 years beyond a reactor's licensed life. A discussion of the basis for this conclusion is provided in SECY-13-0061, "Waste Confidence – Continued Storage of Spent Nuclear Fuel," which is publicly available in the Agencywide Documents Access and Management System at Accession

Number ML13143A387. The requirements of the Dry Cask Storage Act would apply to both operating and decommissioning facilities. The Act would require expansion of emergency planning zones beyond current requirements if eligible fuel is not transferred to dry storage within the time frame specified in the Act. This could represent a significant increase in costs to maintain emergency preparedness.

With respect to the Safe and Secure Decommissioning Act of 2014, the NRC has a process for granting exemptions that focuses on safety and security. Many of the regulations do not contain requirements that are appropriate to a permanently shutdown and defueled facility. Licensees for those facilities may request exemptions to reduce the requirements commensurate with the reduced risk at a shutdown and defueled facility. The NRC performs a detailed technical review of all exemption requests submitted by licensees. The NRC grants exemptions only when the exemptions are authorized by law, will not present an undue risk to the health and safety of the public, and are consistent with the common defense and security, and special circumstances, as defined in the NRC's regulations, are present. Implementation of the Act could require licensees of decommissioning nuclear facilities to maintain security and emergency preparedness measures that would likely not be a substantial safety improvement based on the results of NRC's past evaluation of exemption requests. Further details of the exemption process are provided in the response to Senator Vitter's Question 2.

With respect to the Nuclear Plant Decommissioning Act of 2014, the NRC's current regulations were promulgated to provide reasonable assurance that the decommissioning process is conducted safely and securely, with no adverse impact on the health and safety of the public or the environment. The NRC reviews the licensee's Post Shutdown Decommissioning Activities Report (PSDAR) to verify that it meets the applicable

regulations. The NRC publishes notification of receipt of the PSDAR, and makes it available for public comment. The NRC conducts a public meeting in the vicinity of the decommissioning facility to explain the decommissioning process to members of the public and to answer questions. The NRC also encourages licensees to interact with the affected States and local communities to solicit comments and views on the decommissioning process. The NRC is currently authorized by the Atomic Energy Act of 1954, as amended, to regulate nuclear and radiological safety. As such, the NRC regulates only the radiological decommissioning of nuclear facilities. In general, State and local government entities establish the requirements for site restoration activities.

b) This question falls outside the NRC's areas of expertise. However, the NRC finds it helpful, for budgeting and planning purposes, to receive information regarding future nuclear industry plans and projections. If one or more of these bills were enacted, it would be valuable for the NRC to learn of any likely impacts the enactments would have on the NRC's future workload, including in the area of new reactor licensing.

c) Electricity pricing falls outside the NRC's areas of responsibility and expertise.

Senator BOXER. Thank you so much.

Last but certainly not least, Hon. William Ostendorff. Welcome.

STATEMENT OF WILLIAM C. OSTENDORFF, COMMISSIONER, NUCLEAR REGULATORY COMMISSION

Mr. OSTENDORFF. Thank you, Chairman Boxer and Senator Inhofe, for the chance to be here today.

Regarding Fukushima, great strides have been made in those activities we determined should be initiated without unnecessary delay, the most safety significant items in Tier 1. Such activity has led licensees to reevaluate seismic hazards using present day methodologies.

I note that licensees submitted these evaluations in March of this year to the NRC. Our staff has completed its initial evaluation of these submissions and confirmed that plants continue to operate while the NRC and industry conduct further more detailed evaluations at certain plants.

As noted by Chairman Macfarlane, the industry has just opened a regional response center in Phoenix which has equipment for generators to be provided to the nuclear power plant within 24 hours to supplement onsite equipment as necessary.

As a Commissioner, I have great confidence in the NRC's decision making on Fukushima actions. Throughout, the Commission and our staff have relied upon solid principles of science, engineering and risk management.

I appreciate the committee's oversight role and look forward to your questions.

[The responses by William Ostendorff to additional questions follows.]

UNITED STATES
NUCLEAR REGULATORY COMMISSION
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OFFICE OF THE
COMMISSIONER

September 8, 2014

The Honorable Barbara Boxer
Chairman, Committee on Environment and Public Works
United States Senate
Washington, D.C. 20510

The Honorable David Vitter
Ranking Member, Committee on Environment and Public Works
United States Senate
Washington, D.C. 20510

Dear Chairman Boxer and Ranking Member Vitter:

I appeared before the Committee on Environment and Public Works on June 4, 2014, along with my colleagues on the Commission. On June 30, 2014, you forwarded questions for the hearing record. Enclosed are my responses to the questions posed to me but not to Chairman MacFarlane. For those questions that were posed to me as well as Chairman MacFarlane, please refer to Chairman MacFarlane's responses. I collaborated in their development and agree with the responses she provides.

If I can be of further assistance, please do not hesitate to contact me.

Sincerely,

William C. Ostendorff

Enclosures (As stated)

Committee on Environment and Public Works
June 4, 2014
Follow-up Questions for Written Submission

Questions for Commissioner Ostendorff
The Honorable Thomas R. Carper

QUESTION 1.

In March 2014, most nuclear power plant operators were required to provide new analyses of earthquake hazards facing their plants. These evaluations showed that a great number of plants may face a higher earthquake hazard than previously determined. The NRC reviewed these reports and prioritized these plants. Could you discuss the criteria the NRC used to prioritize the plants and the overall safety of our nuclear fleet?

ANSWER.

Licensees of nuclear power plants in the Central and Eastern United States (CEUS) were required to submit a re-evaluated seismic hazard calculated using current-day probabilistic seismic hazard analysis (PSHA) methods by March 31, 2014. The NRC staff considered several factors in prioritizing (or screening) these hazard submittals, including the following:

(1) The extent to which the re-evaluated seismic hazard exceeds the current design basis;

(2) The site's overall seismic hazard, based on an examination of the re-evaluation; and

(3) Previous estimates of plant capacity (e.g., Individual Plant Examination of External Events insights).

The NRC continues to have confidence that the conservatisms and defense-in-depth provided in reactor design and robust construction, coupled with the results of the detailed seismic inspections ("walkdowns"), ensure that the plants can operate safely while more analyses are done.

Committee on Environment and Public Works
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QUESTION 12.

Please provide copies of any votes where NRC staff advised that a proposed action would not be cost beneficial or necessary for safety, but you chose to support the action anyway.

ANSWER.

I do not recall voting to approve any staff actions where the staff advised that a proposed action would not be cost justified or necessary for safety.

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QUESTION 15.

Some have attempted to portray the NRC staff as having concluded that the risk of a spent fuel fire and subsequent harm to the public is on par or exceeds that of the 1986 accident at Chernobyl: "The fire could well spread to older spent fuel. The long term land contamination consequences of such an event could be significantly worse than those from Chernobyl." Is this quote from an NRC document or some other source?

ANSWER.

The quote mentioned above was not from the NRC. The quote is from a paper by Robert Alvarez, et al. entitled, "Reducing the Hazards from Stored Spent Power-Reactor Fuel in the United States," dated April 21, 2003 (available in the NRC's Agencywide Documents Access and Management System (ADAMS) at Accession No. ML031130327). The NRC reviewed the 2003 Alvarez paper and issued a response, "NRC Review of Reducing the Hazards from Stored Spent Power Reactor Fuel in the United States," dated August 19, 2003 (ADAMS Accession No. ML031210075). In its response, the NRC concluded that the paper's assessment of possible spent fuel pool accidents stemming from potential terrorist attacks did not address such events in a realistic manner. The NRC response emphasized that, in many cases, the authors of the 2003 Alvarez paper relied on studies that made overly conservative assumptions or were based on simplified and overly conservative models. The NRC concluded that the fundamental recommendation of the 2003 Alvarez paper, namely that all spent fuel more than 5 years old be placed in dry casks through an expedited 10-year program costing many billions of dollars, was not justified. Spent fuel stored in both wet and dry storage configurations is safe, and measures are in place to adequately protect the public.

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QUESTION 16

Following the Fukushima earthquake, tsunami, and hydrogen explosions, did the spent fuel pools maintain their integrity? In fact, didn't you agree with the staff's actual evaluation that the likelihood of an offsite release of radioactivity is occurring once in ten million years but that if it did, the individual latent cancer fatality risk resulting from a spent fuel pool accident in which large quantities are released is 1.52 x 10?

a) Didn't the ACRS also criticize the staff's excessive use of conservatisms in some of its scenarios?

ANSWER.

Numerous confirmatory analyses have been conducted that demonstrate that the spent fuel pools at the Fukushima Dai-ichi facility maintained their structural integrity during and following the accident, The International Atomic Energy Agency has conducted independent inspections of the Fukushima Dai-ichi site and maintains all of their records on their publicly available website at http://www.iaea.org/newscenter/focus/fukushima. The NRC was also asked by the Japan Nuclear Regulation Authority (NRA) to review the structural integrity of the spent fuel pool within the damaged reactor building at Fukushima Dai-ichi Unit 4. In a letter to NRA dated April 25, 2014 (available in the NRC's Agencywide Documents Access and Management System (ADAMS) at Accession Number ML14111A120), the NRC confirmed that the actions taken to reinforce the Unit 4 spent fuel pool structure and the Unit 4 structural integrity analyses performed were reasonable and adequate.

a) Regarding the NRC staff's regulatory analysis on the expedited transfer of spent fuel to dry cask storage, the Advisory Committee on Reactor Safeguards (ACRS) stated that the cumulative effects of conservatisms and assumptions used in the high estimates, and in sensitivity studies of the regulatory analysis, resulted in exaggerated frequencies of fuel damage and exaggerated benefits of expedited transfer. (ADAM Accession No.

ML13346A739). The NRC staff responded to the ACRS in a letter dated January 31, 2014 (ADAMS Accession No. ML14008A256). In that letter, the NRC staff agreed with the ACRS's statements that bounding or conservative values were intentionally used in the regulatory analysis for several parameters, particularly in the high estimate cases, to ensure that design, operational, and other site variations among the new and operating reactor fleet were addressed, and to ensure that the results of the analysis were bounding. If these highly conservative results had indicated that further regulatory action was justified, that staff would have performed the regulatory analysis again using more realistic assumptions.

In a staff requirements memorandum dated May 23, 2014 (ADAMS Accession No. ML14143A360), I voted—as did a majority of the Commission—to approve the staff's analysis and recommendation that no further generic assessments be pursued for possible regulatory actions to require the expedited transfer of spent fuel to dry cask storage and that this Tier 3 Japan lessons-learned activity be closed.

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The Honorable David Vitter

QUESTION 17.

There was a document called a "legal analysis" released by the Chairman of the Senate Environment and Public Works Committee immediately following the June 4 hearing. In that document is an individual's narrative of events at the SONGS regarding the NRC's Confirmatory Action Letter (CAL) issued to SONGS on March 27, 2012, and the adjudicatory process at the Atomic Safety and Licensing Board (ASLB). The factual basis for the author's narrative, and whether it reflects any nuclear regulatory expertise, is unclear from the document.

a) Was the NRC's stated purpose of the CAL issued to SCE to formalize commitments that SCE made to ensure that the cause of the tube wear in both steam generators was understood and appropriately addressed in order to ensure safe operation had the plant been allowed to restart?

ANSWER.

Yes. On March 23, 2012, SCE sent the NRC a letter describing the actions it was committing to take prior to returning Units 2 and 3 to power operation. The NRC responded with a CAL, which confirmed SCE's agreement to take specific actions to address the steam generator tube degradation in Units 2 and 3 in order to ensure safe operation . The actions to which SCE committed were designed to ensure that the cause of the steam generator tube wear was understood, appropriately addressed, and reviewed by the NRC staff prior to returning to power operation.

b) Would it be accurate to state that when a licensee modifies its current license basis (CLB) as described in its Updated Final Safety

Analysis Report (UFSAR) using the 50.59 process, the plant's drawings are updated using that design change process, just as they would be if a proposed modification failed the 50.59 screening and a License Amendment Request (LAR) was required to modify the CLB, and, therefore, the drawings that the NRC staff would use to evaluate licensee response to an event in this circumstance are the updated drawings for the plant's CLB?

ANSWER.

The regulations in 10 CFR 50.59 state that a licensee may make changes to the facility as described in the final safety analysis report (as updated) (UFSAR), make changes in the procedures as described in the UFSAR, and conduct tests or experiments not described in the UFSAR without obtaining a license amendment if the changes satisfy the criteria listed in 10 CFR 50.59. If, using those criteria, the licensee determines that a license amendment is not required, the licensee would update its UFSAR and any other affected documents, including drawings, as appropriate, to reflect the change. If a licensee determines that a license amendment is required, the licensee would not revise its UFSAR or other documents unless and until the NRC approved its license-amendment application.

The NRC uses the most current version of the plant's UFSAR procedures and drawings in its reviews and evaluations.

c) Are CALs "normally used to allow for speedier processing of minor changes and updates such as recognizing improvements in technology?"

ANSWER.

No. CALs are administrative actions and are issued to NRC licensees to emphasize and confirm a licensee's agreement to take certain actions in response to a specific issue at a

specific site. The NRC expects licensees to adhere to obligations and commitments addressed in a CAL. CALs are only issued when there is a sound technical and/or regulatory basis for the actions discussed in the CAL.

d) Aren't CALs a tool used to memorialize a licensee's commitment to take specific actions, often in response to a performance or equipment problem that has been discovered and needs to be fixed?

ANSWER.

Yes. The NRC issues CALs to confirm the following types of actions (note that this is not an exhaustive list):

- "In-house" or independent comprehensive program audits of licensed activities
- Correction of training deficiencies
- Procedural improvements
- Equipment maintenance activities
- Equipment operation and safety verifications
- Voluntary, temporary suspension of licensed activities
- Root cause failure analyses
- Improved controls and security of licensed materials

e) Do CALs allow "minor changes or updates" or any other change to a reactor operating license?

ANSWER.

No. CALs do not allow for changes to a reactor operating license (see response to (c) above). The amendment process for a reactor operating license, including associated plant technical specifications, is specified in 10 CFR 50.90.

f) Did the NRC augmented inspection team (AIT) determine that, beyond the two license amendments that were obtained, there were no additional license amendments SCE should have sought in connection with the installation of the replacement steam generators?

ANSWER.

The AIT did not specifically inspect or assess whether SCE should have sought additional license amendments in connection with the installation of the replacement steam generators. The AIT was chartered to identify the circumstances surrounding the tube degradation, review the licensee's actions following discovery of the conditions, evaluate the licensee's review of potential causes of the unusual steam generator tube wear, assess the adequacy of licensee's actions to prevent recurrence, and inspect and assess the licensee's actions taken in response to the CAL. However, the AIT did report a minor violation of 10 CFR 50.59(d)(1) when closing unresolved item (URI) 05000362/2012007-10. The minor violation was due to the determination that the evaluation the licensee performed did not provide a correct basis for changing the computer code used for the reactor coolant system structural integrity analyses performed for the replacement steam generators. Ultimately, the NRC staff determined that the change did not require a license amendment. The AIT follow-up report provides more details about the minor violation that was identified and the NRC staff's rationale behind the determination that the licensee's change did not require a license amendment. The AIT follow-up report is publicly available in the NRC's Agencywide Documents Access and Management system (ADAMS) at Accession No. ML12318A342.

g) Did the NRC inspect SONGS' plans to install the replacement steam generators using the NRC Inspection Procedure 50001 for

Steam Generator Replacement Inspection, which included evaluating the 50.59 process?

ANSWER.

Yes. The NRC completed thorough steam-generator-replacement inspections at SONGS using Inspection Procedure 50001, which included reviewing SCE's 10 CFR 50.59 screenings and evaluations. More information on the inspections that were performed for Units 2 and 3 are available in Inspection Report Nos. 05000361/2009007 and 05000362/2010009, which are publicly available in ADAMS at Accession Numbers ML100630838 and ML111300448 for Units 2 and 3, respectively.

h) Is it correct that the NRC staff had not confirmed that Unit 2 was safe to restart based on SCE's commitments in the CAL at the time SCE made the decision to permanently retire SONGS Units 2 and 3?

ANSWER.

This statement is correct. The NRC had not yet reached a conclusion whether SONGS Unit 2 could safely restart at the time SCE announced that SONGS Units 2 and 3 would be permanently shut down and defueled.

Senator BOXER. I want to thank you all for your testimony.

Chairman Macfarlane, the NRC is still withholding two categories of documents from this committed related to the San Onofre investigation. You have repeatedly told me that the reason the NRC is withholding these documents is because of "constitutional separation of powers concerns."

After working feverishly with your legal staff and my legal team, I couldn't get the information. I asked a reknowned constitutional scholar, Morton Rosenberg, who worked for CRS in the American Law Division for 35 years, and whom you have cited often in your correspondence with us.

This is what he says. He says, your letters to me demonstrate "a profound misunderstanding of Congress' investigatory powers and that they misState court decisions, they ignore overwhelmingly contrary case law that supports the committee's right to receive the materials and show a lack of awareness of over 90 years of congressional investigations in which agencies have had to give Congress what it asks for."

I am going to ask unanimous consent that his paper is placed in the record at this time.

[The referenced information follows:]

May 27, 2014

To: The Honorable Barbara Boxer
Chairman, Senate Committee on Environment
and Public Works

From: Morton Rosenberg
Legislative Consultant

Re: Legal Substantiality of the Nuclear Regulatory Commission's Grounds for Refusing to Comply With Valid Committee Requests for Documents

You have asked that I assess the legal substantiality of the Nuclear Regulatory Commission's (NRC) refusal to comply with your Committee's requests for certain documents that will allow it to evaluate the adequacy of NRC's response to the discovery of reactor coolant leaks at Units 2 and 3 at the San Onofre Nuclear Generating Station (SONGS) in San Clemente, California, which led to its shutdown and ultimate decommissioning.

My views in this matter have been informed by my 35 years of work as a Specialist in American Public Law with the American Law Division of the Congressional Research Service, during which time I concentrated particularly on constitutional and practice issues arising from interbranch conflicts in the course of congressional oversight and investigations of Executive agency implementation of their statutory missions. My understandings have been further refined by my hands-on assistance during inquiries and the preparation of testimony on investigative matters before many committees, including your Committee, and by the research involved in the writing and publication by the Constitution Project of a monograph entitled "When Congress Comes Calling: A Primer on the Principles, Practices, and Pragmatics of Legislative Inquiry." Since my retirement I have continued to consult on such issues, most recently with respect to the foundational constitutional requirements a committee must meet to hold a witness in criminal contempt of Congress.

1. Background

The following chronology of events and descriptions of the statutory and procedural framework within which nuclear facility licenses are granted and modified, and the interplay between key interested parties in the SONGS matter that has aroused Committee concerns, relies essentially on formal decisions rendered by NRC's Atomic Safety and Licensing Board (ASLB) and by the Commission itself. The ASLB decision addressed the question whether a Confirmatory Action Letter (CAL) issued to the licensed operator of the SONGS by NRC staff properly allowed the licensee to avoid the formal license amendment procedure or did it constitute a *de facto* license amendment that should have been subject to a public adjudicatory hearing.[1] The ASLB held that it was a *de facto* license amendment. As a consequence, the licensee decided to cease its efforts to repair the facility and to decommission it. The Commission's subsequent decision involved the request of NRC staff to vacate ASLB's ruling as moot, which was granted.[2] The rulings provide an authoritative factual history of what occurred and shed light on NRC's internal decisionmaking processes.

On January 31, 2012, Southern California Edison (SCE), the licensee operator of the SONGS, informed the NRC that one of its two newly installed steam generator systems had experienced unexpected reactor coolant leaks as a result of degradation of its coolant tubes. Shortly thereafter, the new coolant system of the facility's second unit was found to be suffering from the same defect. The generators had been in operation for less than two years. Both of the operating SONGS units were shut down pending the NRC's assessment of the licensee's evaluation of the cause of the leaks, the nature of the danger posed by the faults, and the corrective actions necessary to safely restart the units. The assessment was conducted by NRC Staff. SCE, working with the designer and manufacturer of the generators, Mitsubishi Heavy Industries (MHI), sought approval from NRC Staff to develop a proposal to return the two units to power operation. On March 27, 2012, NRC issued a Confirmatory Action Letter (CAL) to confirm the actions the licensee committed to take.

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[1] In the Matter of Southern California Edison Company (San Onofre Nuclear Generating Station, Units 2 and 3), LBP-13-07, 77 NRC 307 (May 13, 2013)(ASLB Opinion).

[2] In the Matter of Southern California Edison Company, (San Onofre Nuclear Generating Station (Units 2 and 3) CLI-13-09 (December 5, 2013)(Commission Vacatur).

The regulatory process for nuclear plants is extraordinarily exacting. The operating license contains the exact design basis blueprints for the reactor and every safety and support system. It also delineates the maintenance schedule and the types of procedures used to assure that critical systems function effectively over decades of intense use despite high pressures, intense heat and concentrated radiation.[3] Licensees, under penalty of law, may not deviate from the terms of their reactor operating licenses.[4] This is to ensure that if anything goes wrong in a system at a nuclear plant at any time, staff or inspectors should be able to go immediately to the license blueprints and support documents to check on the last known condition of that system and its expected behavior under various stresses. If the actual system differs from the license blueprints staff could not in an emergency pinpoint what is going wrong since there would be no way to know what a properly working system should look like.

Normally, changes to NRC-issued licenses are made through license amendments. The license amendment process is governed by NRC regulations[5] and regulatory guidance for a reactor license may be amended hundreds of times during its term. A licensee must submit a license amendment request to the NRC for prior approval if the licensee proposes to modify the license terms and conditions or technical specifications, or if a proposed change, test or experiment meets the criteria of 10 CFR 50.59 (c)(2). The amendment process may entail regulations and federal laws mandating the involvement of the public by posting the proposed change in the Federal Register, soliciting comments, and holding formal hearings. [6]

However, the issuance by staff of a Confirmatory Action Letter (CAL) bypasses these public notice and participation processes. It is normally used to allow for speedier processing of minor changes and updates such as recognizing improvements in technology. But a licensee must request a license amendment if the proposed action requires that existing technical specifications be changed,[7] or if a change, test or experiment satisfies any of the eight criteria in 10 C.F.R. 50.59 (c)(2). For changes that more than minimally increase the possible occurrence of an "accident", "malfunction of a structure, system or

[3] 42 U.S.C. 2232(a).
[4] 42 U.S.C .2131.
[5] See, 10 C.F.R secs. 50.90 to 50.92.
[6] 42 U.S.C 2239(a)(1)(A); 10 C.F.R. 2.105.
[7] 10 C.F.R. 50.59 (c)(1)(i).

component important to safety," or the consequences of such accidents and malfunctions, or "create the possibility" of such accidents or malfunctions, a license amendment must be sought.[8]

On June 18, 2012, Friends of the Earth submitted a petition to intervene, in which it sought a hearing on the restart of both SONGS units, and a stay of any decision to authorize a restart pending conclusion of the requested hearing. Friends of the Earth argued, among other things, that SCE's replacement of the steam generators in Units 2 and 3 in 2010 and 2011 pursuant to 10 C.F.R 50.59, without first obtaining NRC approval via a license amendment, was unlawful, and that the process for resolving the CAL constituted a *de facto* license amendment. The Commission referred Friends of the Earth's Section 50.59 claim to the NRC Director for Operations for appropriate action under 10 C.F.R. 2.206, and referred its *de facto* license amendment claim to the ASLB for consideration.

In the meantime, the NRC continued processing the CAL. In its October 1, 2012, Unit 2 Return to Service Report, SCE indicated it would operate Unit 2 at no more than 70% power for no more than 150 days before conducting the next set of inspections of that units steam generator tubes.

On April 5, 2013, SCE submitted a license amendment for SONGS Unit 2 that would restrict its operation to no more than 70% of the then-current authorized power level and requested that the change remain in effect for a period of 18 to 24 months of plant operation. The NRC Staff ultimately approved allowing Unit 2 to operate for 150 days at 70% power, agreeing that the changes were minor.

On May 13, 2013, the ALSB issued an exhaustive 39 page opinion and order concluding that for three independent reasons the NRC's Staff CAL process with SCE constituted a *de facto* license amendment proceeding that is subject to a hearing opportunity under Section 189 of the Atomic Energy Act: SCE's Unit 2 Restart Plan, if implemented would (1) grant SCE authority to operate without the ability to comply with all technical specifications in its existing license; (2) grant SCE authority to operate beyond the ambit, or outside the restrictions of its existing license; and (3) grant SCE authority to operate its

[8] 10 C.F.R. 50.59 (c)(i-viii).

replacement steam generators in a manner that constitutes a test or experiment that meets the criteria in 10 C.F.R. 50. 59(c)(2) (viii) for seeking a license amendment. [9]

On May 23, 2013, Friends of the Earth filed a motion to convene a licensing board on the CAL Restart Plan and to consolidate SCE's April 5 license amendment with it. On June 7, 2013, the day petitions for review of ASLB's ruling were due, SCE notified NRC Staff that it would not seek to restart the plant. In response the staff sought, and was granted, an extension of time to file a petition for review of the ASLB decision to determine an appropriate course of action in light of SCE's decision to decommission the plant. Staff did not file a petition for review, however, but instead filed a motion to vacate the Board's decision. Friends of the Earth, and the States of New York and Vermont, as *amici,* opposed the motion.

A unanimous Commission voted to vacate the ASLB decision, apparently on the grounds that because SCE ended the adjudication by permanently shutting down the plant, "no live controversy remains between the litigants in this case." The Commission rejected the contention of Friends of the Earth that the issue is capable of recurrence and that the ASLB opinion would be an in-depth guide and precedent for resolving future CAL process situations. The Commission countered that the NRC's precedents deny precedential value to unappealed Board rulings; the possibility of recurrence principle under NRC precedent only applies when it is possible the same litigants will be involved, which is not possible here; and any future case with similar CAL issues should be "appropriately decided in the context of a concrete dispute, with 'self-interested opposing positions.'" The Commission noted that in similar situations it has vacated Board decisions "as a routine matter." Finally, the Commission found "vacatur particularly appropriate here, where the litigants vigorously disputed (among other things) the proper scope of the Board's review and whether CAL constituted a *de facto* license amendment. When vacating for mootness, we neither approve nor disapprove the underlying Board ruling. Therefore we take no position on the Board's decision." The Commission also dismissed the concerns of New York and Vermont that vacatur removes the Board from public access, remarking that the opinion is an agency record and

[9] ASLB Opinion at 24-37.

will be picked up by various reporting services and thus will remain a source for future supportive arguments.

NRC Chairman Macfarlane, in presenting separate additional views, agreed that the case was moot and that the longstanding practice of vacatur in such situations is appropriate here, but attempted to address the concern that vacation in such a "summary fashion may send the wrong message at a time when the NRC has not yet fully evaluated the issues that gave rise to the adjudicatory proceeding at San Onofre." She concedes that NRC Staff is dissatisfied with the Board's opinion and was of the view that a denial of the vacatur would have had a negative effect on Staff and licensee decisionmaking concerning future CAL action letters and cause confusion. "I am concerned that the affirmative act of vacatur, based on the motion before us, gives the perception of rejecting the Board's decision, without benefit of a robust debate." The NRC Chairman's only solution, however, is to "require any litigant seeking vacatur to provide a robust discussion for its argument that vacatur is warranted. We should then take into account the particular facts at hand in deciding whether to vacate."

2. Legal Issues Raised by NRC to Support Its Refusal to Comply With Committee Document Requests

Sensitized by the 2011 Fukushima nuclear meltdown disaster, the Committee has been at the forefront of efforts to assure that the NRC is capable of avoiding a similar calamity occurring here. Since learning of the SONGS coolant leakage it has been proactive in its efforts to monitor NRC's effectiveness in determining the cause of the failure, limiting its immediate dangers, and taking steps to assure that similar failures do not recur. Since the outset of its investigation, the Committee has sought information from the agency, the licensee, the manufacturer, and other sources about what was known and when was it known, about the defects in the design, construction and installation of the new steam generators. As evidence has accumulated that NRC monitoring of safety during the design and installation of the generators may have been compromised as a result of increased reliance on its non-public CAL process, agency resistance to Committee requests for more sensitive internal documents appears to have increased.

These refusals to comply have been accompanied by constitutional and other legal justifications that are highly problematic and unsupported by accepted law and practice. The NRC's legal positions are set forth in two letters to Chairman Boxer from NRC Chairman Allison M. Macfarlane, dated December 23, 2013 and January 28, 2014. The correspondence suggests that "separation of powers concerns" protect against forced agency disclosure of certain categories of documents in order to assure that there is not even the potential appearance of external influence on its actions by Congress. These concerns are said to be heightened by NRC's status and special role as an independent regulatory agency. The document categories identified encompass documents from an on-going NRC investigation, pre-decisional adjudicatory and enforcement documents, and internal deliberative documents, particularly those regarding the agency's efforts to gather and provide documents in response to the Committee's requests. Revelation of such documents, it is claimed, would serve to undermine the ability of NRC personnel to communicate freely and candidly with one another to make sound and independent decisions.

In support of her assertions, the NRC Chairman demonstrates a profound misunderstanding of the plenary nature of Congress's investigatory power in the circumstances prevalent in the SONGS matter; misstates the authority of three cited cases dealing with the law on congressional intercession in agency decisionmaking; ignores the overwhelming contrary case law on the deliberative process privilege that is applicable in this situation; and shows a lack of awareness of over 90 years of congressional investigations in which agencies have been consistently obliged to provide documents and testimony regardless of whether a litigation or adjudication is pending or anticipated, or to explain why an enforcement action or investigation was or wasn't taken, or whether the agency failure to provide requested information was for the purpose of obstructing a congressional inquiry, all in the face of agency claims of constitutional or common law privilege or policy.[10]. Finally, the NRC Chairman invokes the wise adjuration of the appeals court In *United States v. AT&T* that negotiation is vital in settling interbranch disputes over unclear allocations of constitutional power between the political branches. In that case the dispute was over the validity of a claim of presidential executive privilege to prevent a congressional committee from obtaining national security information from a

[10] See, Morton Rosenberg, "Congressional Investigations of the Department of Justice, 1920-2007: History, Law, and Practice, (CRS Report RL34197, August 20, 2008).

private entity working for the government. In the present circumstance, there is no question of constitutional power allocation. The NRC is a creation of the Congress which alone is responsible for its mission, authority and funding and is, as will be more fully detailed below, subject to Congress's plenary oversight power to determine how well it is performing. This is not to gainsay the need or appropriateness of negotiation oversight process, but as a practical matter, in the present circumstances, it is the jurisdictional committee that has the final say as to when negotiation has reached an impasse. Delay is well recognized as an anathema to effective oversight.

The following sections will briefly detail the breadth of the congressional oversight and investigatory power; the status of the NRC as an independent regulatory agency; the standard for finding congressional abuse of an agency's investigatory process; the unavailability to the NRC of use of the deliberative process privilege; the accessibility to congressional committees of proprietary information; and the question of waiver of privileges when a committee gains access to such materials.

3. The Breadth of the Investigatory Power[11]

Congress possesses broad and encompassing powers to engage in oversight and conduct investigations reaching all sources of information necessary to carry out its legislative functions. In the absence of a countervailing privilege or self-imposed statutory restriction upon its authority, Congress and its committees have virtually plenary power to compel production of information needed to discharge their legislative functions. Within certain constraints, the information so obtained may be made public.

These powers have been recognized in numerous Supreme Court cases, and the broad legislative authority to seek information and enforce demands was unequivocally established in two Supreme Court cases arising out of the 1920's Teapot Dome Scandal. In *McGrain v. Daugherty,*[12] which considered a Senate investigation of the Department of Justice, the Court described the

[11] See generally, Morton Rosenberg, "When Congress Comes Calling: A Primer on the Principles, Practices, and Pragmatics of Legislative Inquiry (Constitution Project, 2009)(Oversight Monograph)
[12] 273 US. 135 (1927).

power of inquiry, with the accompanying process to enforce it, as "an essential and appropriate auxiliary to the legislative function." The Court explained:

> A legislative body cannot legislate wisely or effectively in the absence of information respecting the conditions which the legislation is intended to effect or change; and where the legislative body does not itself possess the requisite information—which not infrequently is true—recourse must be had to others who do possess it. Experience has taught that mere requests for such information often are unavailing, and also that information which is volunteered is not always accurate or complete; so some means of compulsion are essential to obtain what is needed.[13]

The Court also pointed out that the target of the Senate investigation, the Department of Justice, like all other executive departments and agencies, is a creation of Congress, from which it receives its powers, duties and funding, and is subject to its plenary legislative and oversight powers to determine "whether its functions were being properly discharged or were being neglected or misdirected, and particularly whether the Attorney General and his assistants were performing or neglecting their duties in respect of the institution and prosecution of proceedings to punish crimes and enforce appropriate remedies against the wrongdoers—specific instances of alleged misconduct being recited."[14]

In another Teapot Dome case that reached the Supreme Court, *Sinclair v. United States,*[15] a different witness at the congressional hearings refused to provide answers to questions and was prosecuted for contempt of Congress. Based on a separate lawsuit between the government and an oil company, the witness had declared "I shall reserve any evidence I may be able to give for those courts... and shall respectfully decline to answer any questions propounded by your committee." The Court upheld the witness' conviction after considering and unequivocally rejecting his contention that the pending lawsuit provided an excuse for withholding information from the Committee.[16]

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[13] Id., at 174-75
[14] Id., at177-78.
[15] 279 U.S. 263 (1929).
[16] Id., at 295

Subsequent Supreme Court rulings have consistently reiterated and reinforced the breadth of Congress's investigative authority. For example, in *Eastland v. Servicemens Fund,* [17] the Court explained that "[t]he scope of [C]ongress's power of inquiry...is as penetrating and far-reaching as the potential power to enact and appropriate under the Constitution."[18] In addition, the Court, in *Watkins v. United States,*[19] stated that the broad power of inquiry "encompasses inquiries concerning the administration of existing laws as well as proposed or possibly needed statutes."[20] Congress's investigative power is at its peak when the subject is alleged fraud, waste, abuse, or maladministration within a government department.[21]

4. The NRC is in No Way Exempt From Congressional Oversight

Congress has the power to create agencies and offices and can select the manner of appointment of officials and limit the President's power to remove at will. In historical practice, Congress creates, locates, and abolishes agencies and offices. Congress also sets the qualifications for officeholders, as well as the terms of their tenure and compensation. In short, it can tailor agencies and offices of government in virtually any way it wants. Independent regulatory agencies (IRA's) are an example of such tailoring. IRA's are typically collegial bodies whose members appointed by the President and confirmed by the Senate and have staggered, lengthy terms. The key independence characteristic is that members are removable by the President only for cause. Other indicia of their independence include freedom from having their rules vetted by OMB's Office of Information and Regulatory Affairs and having to get clearance from OMB for testimony and legislative proposals to Congress. Thus the independence is from executive control - not from congressional control - by means of the power of the purse and oversight. Even in the very rare occasions when an IRA is given a degree of funding freedom, there is still a legislative oversight presence. The NRC has no special indicia of independence that removes it from the plenary oversight of the legislature.

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[17] 421 U.S. 491 (1975).
[18] Id., at 504 n. 15.
[19] 354 U.S. 178 (1957).
[20] Id., at 187.
[21] Id.

5. Prevailing Appellate Case Law Permits Congressional Intercessions in Agency Adjudicatory Proceedings for Legitimate Oversight Purposes

NRC Chairman MacFarlane cites the 1966 ruling In *Pillsbury Co. v. FTC*[22] for the proposition that seeking a pre-decisional document in an agency's formal adjudication would be deemed an exercise of congressional undue influence that would taint the proceeding. *Pillsbury* involved a Senate hearing in which the Committee members subjected FTC officials to intense interrogation about which of two evidentiary standards was to be applied in an anti-trust adjudication then pending before the Commission. The members clearly indicated which standard they favored. That standard was selected and the loser, Pillsbury, appealed and the 5th Circuit held the inquiry was an improper intrusion into the agency adjudicatory process because it cast doubt on the appearance of impartiality by the decisionmakers. There was no finding that the interrogation influenced the agency's ultimate decision or was intended to do so. The court broadly ruled that "[w]hen [a congressional] investigation focuses directly and substantially upon the mental and decisional processes of a Commission in a case before it, Congress is intervening [impermissibly] into agency's adjudicatory function." The ruling was subsequently severely criticized as an unjustified judicial interference with the political process of policymaking: deciding whether to apply the rule of reason or a per se rule to acquisitions under Clayton Act is, it was argued, a policy decision which legislators should be free to do. In fact over the next 48 years only one court has overturned a quasi-judicial agency ruling on grounds of undue political influence. All other rulings to date have evinced a clear predilection to defer to congressional actions where they involve legitimate exercises of legislative oversight and oversight functions. Taint will not be unless the pressure is directly on the decisionmaker, concerns the merits of the case, and is not minimal.[23] Interestingly, NRC Chairman Macfarlane also cites *ATX v. Department of Transportation,* one of the cases that did not find taint. In that case 125 members of Congress, including the chair of the House jurisdictional committee and two subcommittee chairs of that committee, wrote to the Transportation Secretary to vehemently oppose the grant of an application to operate an airline to a person deemed unworthy. An appeals

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[22] 354 F. 2d 952 (5th Cir. 1966).

[23] See, Morton Rosenberg and Jack Maskell, Congressional Intervention in the Administrative Process: Legal and Ethical considerations, CRS Report RL32113, 8-9,12-21, 36-42 September 25, 2003 CRS Intervention Report

court found that the opposition did not taint the decision to deny the application.

6. The Standard for Finding Congressional Influence that Abuses the Agency Investigatory Process is Very High

The NRC Chairman also cites approvingly the decision in *SEC v. Wheeling-Pittsburgh Steel Co.* [24] and blandly notes that the district court held that the "SEC's decision to investigate should not be rooted in third-party political pressure." That is hardly an accurate portrayal of the ruling. The *Wheeling-Pittsburgh court* made it clear that a court will deem a request for a the enforcement of an administrative subpoena an abuse of the judicial process only if it was *in fact* shown that the subpoena was being issued because of congressional influence, the agency knew that the process was being abused, that it knowingly did nothing, and that it vigorously pursued the frivolous charges. Under the standard articulated by the appeals court the motivation of the Members of Congress is irrelevant; the focus is on the actual impact of the congressional intercession on the motivation of the agency itself. Simply the appearance of impropriety is not enough. [25]

7. The Deliberative Process Privilege Is Likely to Be Held Unavailable to the NRC

The deliberative process privilege permits government agencies to withhold documents and testimony relating to policy formulation from the courts. The privilege was designed to enable executive branch officials to seek a full and frank discussion of policy options with staff without the risk of being held to account for rejected proposals.

Executive branch officials often argue, as they have here, in addition that congressional demands for information regarding an agencies policy development process would interfere with, and perhaps "chill," the frank and open internal communications necessary for policymaking. In addition, they may argue that privilege against premature disclosure of proposed policies before the agency considers and adopts them. Agencies may further argue that

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[24] 482 F. Supp.555(W.D. Pa. 1979), vacated and remanded, 648 F. 2d 118 (3d Cir. 1981) (en banc), discussed in CRS Intervention Report at pp.30-36.
[25] Intervention Report at 30-36.

the privilege prevents the public from confusing matters merely considered or discussed during the deliberative process with those that constitute the grounds for a policy decision. These arguments, however, do not necessarily pertain to Congress in its oversight and legislative roles.

The courts have recognized that Congress's oversight process would be severely undermined were they to uniformly block disclosure of internal deliberations. Such a broad application of the privilege would encourage agencies to disclose only materials that support their positions and withhold those with flaws, limitations, unwanted implications, or other embarrassments. Oversight would cease to become an investigative exercise of gathering whole evidence and would become a "show and tell" performance.

As with common law claims of attorney-client privilege and work product immunity, congressional practice has been to allow committees discretion over acceptance of deliberative process claims. In 1997 a D.C. Circuit ruling showed that the deliberative process privilege claim is easily overcome by an investigatory body's showing of need for the information. In *In re Sealed Case (Espy)*[26] a unanimous panel distinguished between the presidential communications privilege and the deliberative process privilege and described the severe limits of the latter as a shield against congressional investigative demands. The appeals court held that the deliberative process privilege is a common law privilege that Congress can more easily overcome than the constitutionally rooted presidential communications privilege. Moreover, in congressional investigations the claim of deliberative process privilege "disappears altogether when there is reason to believe government misconduct occurred."[27] The court's understanding thus severely limits the extent to which agencies can rely on the privilege to resist investigative demands. A congressional committee merely needs to show that it has jurisdiction and authority, and that the information sought is necessary to its investigation to overcome the privilege claim. A plausible showing of waste, fraud, abuse, or maladministration would conclusively overcome an assertion of the privilege. The *Espy* view was reiterated by the appeals court in 2004 in *Judicial Watch, Inc v. Department of Justice.*[28]

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[26] 121 F. 3d 729 (D.C. Cir. 2007).

[27] 121 F,3d at 746.

[28] 365 F. 3d 1108 (D.C. Cir. 2004). See also In re Subpoena Duces Tecum, 145 F. 3d 1422, 1424 (D.C. Cir. 1998);In re Subpoena Served Upon Comptroller of the Currency, & Sec'y of Bd. Of Federaal Reserve Sys.., 967 F. 2d 630, 634

8. Proprietary Information and Trade Secrets Are Accessible to Congressional Committees

Congress's authority and power to obtain information, including but not limited to proprietary information, is extremely broad. The courts, when applying Congress's broad investigatory power to obtain confidential or proprietary information have expressly held that executive agencies and private parties may not deny Congress access to such documents even if they contain trade secrets whose disclosure to the public is otherwise statutorily barred.[29] Specifically, courts have held that the release of information to a congressional committee is not considered disclosure to the general public[30] and once the documents are in congressional control, the courts will presume that committees of Congress will exercise their power responsibly and with proper regard to the rights of the parties.[31] Moreover, it would appear that courts may not prevent congressional disclosure when such disclosure would serve a valid legislative purpose.[32]

9. Release of Attorney-Client. Work Product, or Deliberative Process Material to Congress Does Not Waive Applicable Privileges in Other Forums

Government agencies and private parties often assert that yielding to committee demands for material arguably covered by the attorney-client, work product or deliberative process privileges will waive those privileges in other forums. Applicable case law, however, is to the contrary. When a congressional committee compels the production of a privileged communication through a

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(D.C. Cir. 1992); Texaco P.R., v. Dept. of Consumer Affairs, 60 F. 3d 867, 885 (1st Cir. 1995); Convertino v. U.S. Dept. of Justice, 674 F. Supp. 2d 97,102-05 (D.D.C. 2009);Chaplancy of Full Gospel Churches v. Johnson, 217 F.R.D. 250, 256-58 (D.D.C. 2003), rev'd on other grounds sub. Nom. In re New England, 375 F. 3d 1169 (D.C. Cir. 2004). .

[29] See. e.g., FTC v. Owens-Corning Glass Fiberglass Corp., 626 F. 25 966, 970 (D.C. Cir. 1980); Exxon Corp. v. FTC, 589 F. 2d 582, 585-86 D.C. Cir. 1978), cert. denied 441 U.S. 943 (1979); Ashland Oil Co., Inc. v. FTC, 548 F. 2d 977, 979 (D.C. Cir.1976).,

[30] See, Owens –Corning Fiberglass Corp., 626 F, 2d at 970; see also Exxon Corp. 589 F,2d at 589; Ashland Oil, 548 F,2d at 979; Moon v. CIA, 514 F. Supp. 836, 840-41 (SDNY 1981).

[31] See, Owens-Corning Fiberglass Corp., 626 F. 2d at 970; Exxon Corp., 589 F.2d at 589; Ashland Oil, 548 F.2d at 979; Moon v. CIA , 514 F, Supp. at849-51.

[32] Doe v. McMillan, 412 U.S. 306 (1973).

properly issued subpoena, it does not prevent assertion of the privilege elsewhere,[33] as long as it is shown that the compulsion was in fact resisted.[34]

10. Concluding Observations

I conclude that your Committee has jurisdiction, and authority and grounds for the successful exercise of compulsory process should the withholding of the documents you seek from NRC continues.

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[33] See, e.g., FTC v .Owen-Corning Fiberglasss Corp.., 626 F. 2d at 970; Exxon Corp. v. FTC, 589 F. 2d at 582; ; Rockwell International Corp. v U.S. Dept. of Justice, 235 F. 3d 598, 604 (D.C. Cir. 2001);; Florida Hous of Representatives v. Dept. of Commerce, 961 F. 2d 941, 946 (11th[h] Cir. 1992);; United States v. Zolin, 809 F. 2d 1411-1415 (9th Cir. 1987), aff'd in part, vacated in part, 491 U.S. 554 (1989)..

[34] See, Ironworkers Union Local No. 17Insurance Fund v. Phillip Morris, Inc., 35 F. Supp. 2d 582 (N.D. Ohio, E.D. 1999) and Commonwealth of Massachusetts v. Phillip Morris, et al., 1998 Lexis (Mass. Sup. Ct. , July 30 1998).

2014

Non-Concurrence Process Assessment

Office of Enforcement

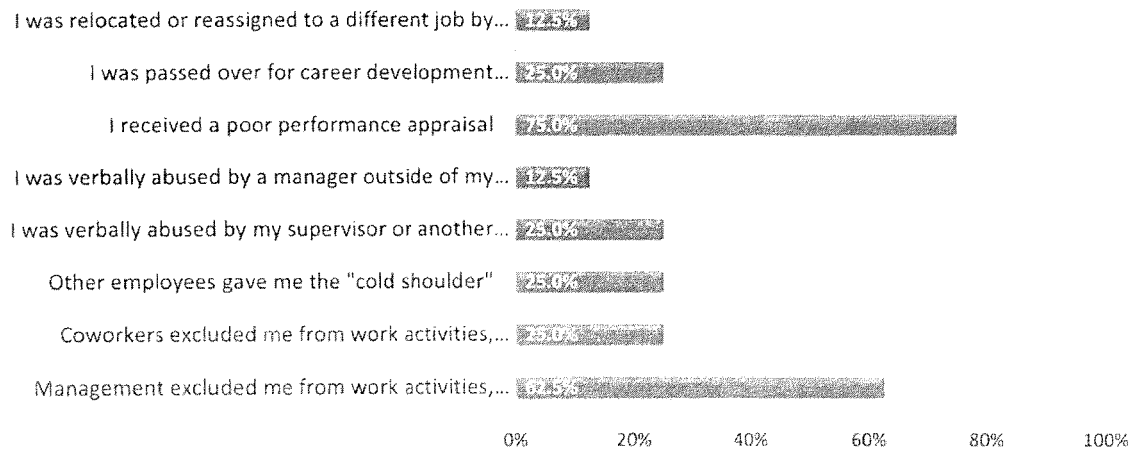
U.S.NRC

United States Nuclear Regulatory Commission

Protecting People and the Environment

NCP Submitter Survey

Did you experience any of the following consequences as a result of using the Non-Concurrence Process? (select all that apply)



Senator BOXER. Chairman Macfarlane, you are clearly relying on misguided and deeply flawed legal advice. It is time for you to decide for yourself will the NRC follow the law and give the committee what it has asked for or not.

Chairman MACFARLANE. Chairman Boxer, I would like to be clear that the Commission has not come to its position lightly. We have spent much time and effort studying the situation, seeking views on the situation so that we feel we have been able to provide you with as much information as we believe we can.

There are two categories of documents that we feel we need to protect but we trust that the many, many documents that we have already provided to you for your investigations have been helpful.

Senator BOXER. Let me just say, obviously the answer to my question is you are going to stick with the legal advice you have been given which I am told by a scholar is totally wrong. I didn't say you came to the decision lightly; I said you came to it wrongly. If you still take that position, this committee is going to do its work; we are going to get these documents.

When you read this analysis, we will send it to your team, we hope that you will change your mind because it is very, very serious, what is being withheld. We need to see it. By the way, we will get it one way or the other but we need to have it.

Many of you have said you are very pleased with the progress you are making post-Fukushima. Can we put up those 12 recommendations? You used words that exclaim all the progress from the Chairman on down. I would like to ask you, as far as you know, have any of these 12 been implemented?

Chairman MACFARLANE. Some of them have been.

Senator BOXER. Which ones have been implemented?

Chairman MACFARLANE. What we did at the Commission after the Near Term Task Force presented us with those 12 recommendations was prioritize those recommendations into three categories.

Senator BOXER. No, no. I am asking you, these 12 recommendations that were made by your top staff, and all of you lauded them, I want to know, I have the answer, I just want to get you to confirm it. I have the answer, not one of these has been implemented by industry on the ground. Do you disagree with that?

Chairman MACFARLANE. Chairman, those are recommendations. Based on those recommendations, we issued a number of orders, a number of requests for information and we have entered into a number of rulemakings.

Senator BOXER. I am asking you a question. Has industry implemented any of these 12? They haven't. You can sit there and say you are proud and everything else. The fact is not one of these has been implemented on the ground. It is 3 years and counting.

Senator VITTER. Madam Chairman, I would like to hear from the commissioner.

Senator BOXER. I am running out of time so you can ask on your time.

This last question is very important because it deals with a decision you made which is to keep the spent fuels where they are and not move them to dry casks. In that decision, you assumed emergency planning at these plants would be in place.

I am asking each of you a very important question. You saw the photo, would you show the photo one more time, of how close that fire came to San Onofre where 8 million of our people live within 50 miles. When I saw that, my heart stopped and I assume your hearts stopped too.

That plant is shut down and if these fuel rods are hot, you have decided not to move them. I am asking each of you if you are asked to waive the requirement that this plant have an evacuation plan in place, if you are asked to waive that, will you deny that request? You are making a face like you didn't understand, so I will say it again.

You have been asked, as I understand, by the operator to waive the requirement that there be emergency evacuation planning at that site. They don't want to do it anymore. They don't want to have the sirens. They don't want to have the plan and a fire came within a half a mile of 8 million people. Will you deny that request? I am asking yes or no.

Chairman MACFARLANE. Exemptions are not waivers. The plant may have applied for an exemption. That is not a waiver.

Senator BOXER. Will you deny the exemption?

Chairman MACFARLANE. Emergency preparedness at decommissioning plants may, in some cases, be reduced in scope but it will not be eliminated. I want to be clear on that. Exemptions for decommissioning plants are done on a site specific basis. They are carefully considered.

Senator BOXER. I am asking you, will you deny the exemption from safety for this plant when it is presented to you, yes or no or you don't know?

Chairman MACFARLANE. We will ensure that the plant will be safe.

Senator BOXER. That is not the answer to my question. Say yes or no or I don't know or I can't answer it. Will you deny a request for an exemption from emergency plans.

Chairman MACFARLANE. We will ensure that the plant will be safe.

Senator VITTER. Madam Chair, will you let our witnesses answer your question? The way it normally works is you get to ask the question but they do get to answer.

Senator BOXER. Will you answer yes or no or I don't know? I don't need a lengthy explanation because my question is quite simple. Will you vote to deny an exemption from safety rules from the operator at San Onofre, yes, no, or I don't know yet?

Chairman MACFARLANE. As I said, exemptions are done on a site specific basis and they are based on established——

Senator BOXER. The more you talk, the more you ignore my question. I have given you three choices that are fair, yes, no, I don't know.

Senator VITTER. Madam Chair, we don't normally have hearings requiring the witnesses to fill in——

Senator BOXER. When you have this gavel, you make the rules. Yes, no or I don't know, would you please answer?

Chairman MACFARLANE. At this point in time, I have not been presented with enough information to make a decision.

Senator BOXER. Then you don't know.

Ms. Svinicki.

Ms. SVINICKI. Respectfully, Chairman, I won't prejudge the action, so I don't know.

Mr. APOSTOLAKIS. I don't know either.

Senator BOXER. Yes?

Mr. MAGWOOD. I haven't seen the exemption request yet.

Mr. OSTENDORFF. I agree with my colleagues.

Senator BOXER. Let me just say, for the record, never has the NRC ever denied a request for an exemption from safety. I have to tell you this is in my mind, it is in my heart and the people in my State expect you to protect them.

The fact that you cannot commit today to uphold the safety planning for this plant given that the number of fuel rods in there are far greater than planned for the plant, which you allowed, not you but the Commission allowed. It is outrageous and you wonder why people are losing confidence.

Senator.

Senator VITTER. I want to go directly to the so-called exemption issue too because I think it is a lot of semantics being used, quite frankly, to confuse and scare the public.

Commissioner Svinicki, is it correct that we are talking about some changes that are made with your permission if an exemption is granted when a site goes from being an operating nuclear facility to a facility that is shut down? We are talking about changes made presumably to reflect the fact that those are two very different animals. Is that what we are talking about generally?

Ms. SVINICKI. Yes, Senator Vitter. As Chairman Macfarlane noted, in our regulations in some instances there is not a provision for whether the reactor is operating or in the process of decommissioning, so the NRC historically had a heavy reliance on the use of exemptions to reflect the changes in the facility as it is decommissioned and the changes in risk.

Senator VITTER. Thank you.

I am not suggesting, and I know you aren't either, that a plant that has been shut down, you can just walk away from that site and not worry about it. I am not suggesting that, but it does seem reasonable that there is a significant difference between a nuclear plant that is operating and a nuclear plant that is shut down.

I think a lot of this debate is being revved up over these semantics but presumably these exemptions are about reflecting that change, is that fair to say?

Ms. SVINICKI. Yes, Senator.

Senator VITTER. As reactors are shut down, are there a number of requirements that were necessary for reactor operations when a reactor was up and running that are no longer applicable when a reactor is shut down?

Ms. SVINICKI. Yes, Senator, but I would note that any request for exemption is extremely case specific. They are accompanied by a safety evaluation done by the proposer, the licensee, and that is, as Chairman Macfarlane indicated, very thoroughly reviewed by NRC. That is the process but it is specific to each exemption request.

Senator VITTER. In these cases of decommissioning, has there ever been an exemption granted from all safety requirements sim-

ply because a plant has moved from operational to being shut down?

Ms. SVINICKI. I am not aware of any approval that was that sweeping. Again, as I have indicated, they are very specific to the request itself, the scope is specific.

Senator VITTER. Commissioner Ostendorff, I wanted to ask you about the expedited transfer vote. The staff submitted their recommendations in this area on November 12, 2013. The Commission didn't take action on it until May 23, 2014.

I am concerned that taking so long to move on in that area really clutters your table and doesn't allow you to properly focus on the Tier 1 recommendations, the high priority recommendations.

Do you think the length of time the Commission took to approve such a steep, clear staff recommendation was appropriate?

Mr. OSTENDORFF. I supported the staff's recommendation with my vote and I also supported the views of the Advisory Committee on reactor safeguards. I am a member of a five member commission. We all take different periods of time to review and do our due diligence. I respect my colleagues and the time period they took to resolve these. I think it was perhaps a bit longer than it needed to be.

I understand your concern. That is part of the dynamic of being a part of an independent regulatory commission.

Senator VITTER. Thank you.

Chairman Macfarlane, a final question on Yucca Mountain. I am very concerned that various folks are dragging their feet, obstructing on Yucca Mountain basically in an effort to shut down nuclear period. I think that would really be unfortunate.

I have asked you in previous hearings and I want to ask again, in your order directing the staff to complete the SER, you noted that the Commission doesn't have adequate resources to fully complete the Yucca review and issue a decision as the court told you to do.

In light of that, have you proposed a supplemental budget request to OMB?

Chairman MACFARLANE. We have not.

Senator VITTER. The obvious question is, why not? The courts said get on with this, it is a requirement under the law. You have said, we don't have the resources, so why aren't you taking the steps to at least request what you need to do, what is mandated under law and by the courts?

Chairman MACFARLANE. Senator, the courts required us to begin the licensing process again using the funds that we had and we have done so. We are complying with the law. Any further decision to ask for additional money will be a Commission decision.

Senator VITTER. I would urge the Commission to face that because you have already said we don't have the resources to do this. That already seems crystal clear to you, so I think it is simply going to increase the foot dragging and the delay never to even make a request to the Administration to get you what you need.

Chairman MACFARLANE. In my view, when the applicant, in this case the Department of Energy, shows that it has the resources and is seeking to complete the work, that is the point in time when we should move forward to seek additional funds.

Senator VITTER. Thank you.

Senator BOXER. Senator Inhofe.

Senator INHOFE. Thank you, Madam Chairman.

On that, you might remember the last hearing we had, I posed a question that the workload, from the way I see it, has decreased substantially because of all these things that are happening. This is not one of the questions I was going to ask but as an observation, it would seem to me that the lack of resources and personnel should not be a real strong point as it could have been in the past. That is just an opinion.

Commissioner Ostendorff, despite the NRC staff and the majority of the commissioners concluding that the spent fuel pools would be safe even in the event of a massive earthquake, why would the NRC now expend additional agency, industry and industrial resources on additional site specific studies? Do you have any short answer to that?

Mr. OSTENDORFF. Senator, I think your question is dealing with spent fuel transfer or does it deal with seismic studies? I want to make sure I understand.

Senator INHOFE. Yes, on the studies.

Mr. OSTENDORFF. The Commission decision has been to not require further work to require any look at expedited transfer. We have closed that issue.

Senator INHOFE. In 2012, the District Court remanded NRC's waste confidence rule. When will the revised rule become final?

Mr. OSTENDORFF. There is a draft rule that is supposed to come to the Commission this summer. We expect completion of that waste confidence rulemaking in the fall of this year.

Senator INHOFE. Given that spent fuel pool integrity was an issue raised by the D.C. Circuit in their remand of your waste confidence rule, how do you plan to satisfy the court if the seismic safety or the spent fuel pool remains an open question under the review?

Mr. OSTENDORFF. Senator, I understand the question. I would just comment that since this involves an adjudication by the D.C. Circuit, there are certain things we can't address but I would just tell you that I personally believe the Commission decision on expedited transfer of spent fuel from the pools has been very clear and that we have confidence in the existing spent fuel integrity.

Senator INHOFE. That is fine.

Chairman Macfarlane, I am a little concerned about your vote on the expedited transfer of spent fuel. The other four commissioners as well as the staff agreed with their assessment that the risk of the public is so low that a $3 billion cost of expediting transfer would not be warranted.

However, you didn't agree and cited a paper you wrote in 2003 with Ed Lehman and Bob Alvarez that held a position contrary to the NRC staff. Do you agree now that the spent fuel pools at Fukushima survived a massive earthquake, a 45 foot tsunami and hydrogen explosives, is that correct?

Chairman MACFARLANE. Apparently they have. I think we are still collecting information but apparently.

Senator VITTER. It is also my understanding that staff has studied the safety of the pools ten times now and has consistently con-

cluded that the fuel pools are safe. Can you tell me how much money and how many full time employees have been working on this issue?

Chairman MACFARLANE. At this moment, I can't.

Senator VITTER. If you can provide that for the record, it would be very interesting to me to see what kind of resources are used because I know it is quite a bit.

Should your vote against the NRC cause me to question your open mindedness about things like Yucca Mountain? I know you had positions in the past, statements were made in the past and we had the paper we just referred to. Are you open minded?

Chairman MACFARLANE. Absolutely. In fact, my vote, if you would have a close look at it, is based entirely on the two reports provided by the staff.

Senator VITTER. You weren't able to completely answer the question the Chairman was asking when she asked for a specific answer. Is there anything you would like to add to elaborate on that question?

Chairman MACFARLANE. The question of exemptions?

Senator VITTER. Yes.

Chairman MACFARLANE. For decommissioning reactors, thanks for the opportunity.

I would just say that when we do consider exemptions, they are certainly done on a site specific basis; we don't grant the same kind of exemption for every plant. They follow an established process that is based on a detailed technical analysis.

There is no exemption from safety. The plants themselves have to show that safety is maintained. We take our safety mission very, very seriously at the NRC. The staff takes that mission very seriously as well.

Senator VITTER. I know the staff has and the Commission has for the past several years. I mentioned my first experience was back in 1997. I know it is a very thoughtful commission and we are very pleased we have this commission.

Let me reinforce the remarks made by others that we want to make sure that we encourage the Administration to keep it at full staff so we can continue. When I mentioned the odds, 1 in 4 million years, just think about that a bit when you are making these considerations.

Thank you, Madam Chairman.

Senator BOXER. Senator, thank you for bringing up the evacuation issue because that is what I will now talk about again.

It is my understanding that the Commission has never in its history turned down a request for an exemption from having to have evacuation plans. Do any of you think I am wrong on that? If so, which one did you turn down?

Chairman MACFARLANE. I'll have to take that for the record, Chairman.

Senator BOXER. Just know that we have exhausted the record and there isn't any but you go ahead and let us know if I am wrong.

Let's be clear about this, folks. This commission has a very easy record to access on that question and there has never been a time

when an operator was told they had to keep an evacuation plan in place.

Let me tell you again, your job is to ensure safety. Let me say this. To the Chairman, is this not your quote? When asked whether or not a shut down plant could be dangerous, this is what you said, "The fire could well spread to older spent fuel. The long term land contamination consequences of such an event could be significantly worse than those from Chernobyl." Do you remember saying or writing that?

Chairman MACFARLANE. That's from the 2003 paper?

Senator BOXER. Yes.

Chairman MACFARLANE. It was a collaborative effort, that paper.

Senator BOXER. Did you sign that statement?

Chairman MACFARLANE. I am one of the authors, that is correct.

Senator BOXER. Thank you.

Is it not true that the NRC said in 2001, spent fuel fires could have health effects comparable to those of a severe reactor accident? Does anyone think that is a misstatement by myself? OK.

Let's be clear anyone who says it is not serious because you are shut down, if there is a fire, doesn't know what they are talking about, let's just be clear.

Senator Vitter interrupted me several times, doesn't know that my operator for San Onofre submitted these many pages of exemption requests. Let me tell you what they are asking for.

The proposed exemption would allow the operator to discontinue offsite emergency planning activities—Senator Markey, would you join me up here. I know you were presiding and we appreciate you being here.

Let me say again, this is what they are asking for. The operator is asking to discontinue offsite emergency planning activities and reduce the scope of onsite emergency planning. Examples of requirements subject to proposed exemption that are related to discontinuing offsite emergency planning activities include, but are not limited to, requirements for offsite agency emergency plans, emergency planning zones and ingestion pathway zones, the emergency operations facility, evacuation time estimates, offsite notification timeliness, offsite dose projections, protected action recommendations, and examples of requirements, subject to the proposed exemption, that are related to reducing the scope of onsite emergency planning activities.

They are basically asking to be let off the hook and if you grant this exemption, and you have never turned down one before, and you won't answer my question, none of you will, I am going to show again the picture—I want Senator Markey to see this—of how close the fire in California came to that decommissioned plant.

Do any of you know how many hot spent fuel rods are in that plant?

Chairman MACFARLANE. I do not have an exact number. I can take that for the record.

Senator BOXER. Does anyone else know how many? Just for the record, 2,600. Do you know what it was designed for?

Chairman MACFARLANE. The original design or after the reracking had been done? If it was the original design and the open frame racks, probably about a quarter of that amount.

Senator BOXER. Thirteen hundred. This doesn't go into other decommissioned plants.

Anyone who says that a shut down plant is not as dangerous has to just read what the Chairman said. Read what the NRC said, the consequences of an event could be significantly worse than those in Chernobyl.

I represent those people just like Senator Vitter represents his people and he worries night and day about their safety from hurricanes and the rest, I worry about my people. I am not going to stop because I can't get any one of you to commit to me that you will turn down this request for everything that they want to waive. You have never turned it down before and you won't answer the question. Yes, would you like to answer?

Mr. OSTENDORFF. Just for clarification, this commission has not received any document or request for Commission decision making on this topic.

Senator BOXER. You don't know your work. This was sent to you on March 31, so what happened to your record keeping? Your people didn't give you this information? Madam Chairman, why doesn't the Commissioner know about this?

Chairman MACFARLANE. It has been sent to the staff; it has not been brought up to the commission.

Senator BOXER. How long does the staff sit on it before they let you know about it?

Chairman MACFARLANE. As I said before, we have an established process and the staff does detailed technical analysis. We do not take these decisions lightly; we take them very seriously.

Senator BOXER. When are you going to have the staff report?

Chairman MACFARLANE. I do not know but I can get that for you.

Senator BOXER. You do not know. Let me tell you, you'd better know because I have 8 million people living within 50 miles of that site. I had a fire that came within half a mile of that site and the operator had to evacuate the people inside. Now they don't want to have an evacuation plan. This is a no-brainer.

I am sorry. You can sit there and say we take it seriously. Really? Let me just tell you that this facility sits on an earthquake zone and a tsunami zone. You know it happens. You yourself wrote in collaboration with others that an accident here could be worse than Chernobyl.

All I am saying is March 31, I got this. I think it would be nice if the commissioners got this. As a matter of fact, I am going to make sure that before the staff goes through it, the commissioners get this. Yes, sir?

Mr. OSTENDORFF. I think we have all been aware that our staff has received the document you are referring to but as the Chairman noted, it is in a staff process. I will tell you I had a discussion for the last week with Mike Johnson, who I think is here, who briefed me on the status of this and he's working in his discussions with FEMA on these issues.

I want to assure you that this is working through our process and we owe you a response as to when a decision can be expected.

Senator BOXER. I will await that response but I want to say again, to me, there is an urgency and to you, there should be. This isn't just any power plant. This is a nuclear power plant that has

many of these spent fuel rods in an earthquake zone, a tsunami zone and a fire came within a half a mile.

I hope the staff will work overtime just like my staff does when there is an emergency because that is what I consider it.

Chairman MACFARLANE. Chairman, I just want to be clear that emergency preparedness will not be eliminated at the site. I want to be clear about that. We will not eliminate emergency preparedness.

Senator BOXER. So you are agreeing that you will not allow them this exemption they are asking for all of this?

Chairman MACFARLANE. We will not eliminate emergency preparedness. Sometimes it is reduced in scope after we consider the request.

Senator BOXER. Let me ask you then, you will not waive the requirement for offsite evacuation plans?

Chairman MACFARLANE. I do not know the details of this.

Senator BOXER. You will not waive their request to be exempted from having warning sirens?

Chairman MACFARLANE. I do not know the details of this request. They have to prove to us that they can maintain the safe level of operation under decommissioning.

Senator BOXER. You don't know right now if you will eliminate offsite evacuation plans, warning sirens, what about relocation centers?

Chairman MACFARLANE. We will ensure that the site will be safe. We will ensure there are adequate measures in place to respond to any kind of radiological emergency. That is our mission.

Senator BOXER. Fair enough. Let me ask you this. Do you think offsite evacuation plans are a necessary part of that facility being safe? Do you personally believe? You can't answer for anyone else. Do you believe that having offsite evacuation plans are a necessary part of having that facility safe?

Chairman MACFARLANE. An operating facility, of course, always requires evacuation plans.

Senator BOXER. You will not waive that requirement?

Chairman MACFARLANE. I will have to consider it, consider the site specific requirements.

Senator BOXER. You have never said no to exemptions of all offsite emergency plans. That is why I am drilling down on this because the NRC, who cares a lot about safety, that is your job, has never ever turned down such plans.

Let me just tell you this. I am deeply troubled that commissioners haven't seen this. Maybe they knew about the fire. If I were one of you, I certainly would have said what's happening. This could have been—I don't even want to say the type of disaster. All I have to do is quote the Chairman in her 2003 paper in which she said, "The fire could well spread to older spent fuel. The long term land contamination consequences of such an event could be significantly worse than those from Chernobyl."

Senator Vitter.

Senator VITTER. I have a couple of things on this topic for the record.

First of all, I want to reState what I said. The Chairman was sort of suggesting that I was saying that a decommissioned site, a

run of the mill industrial site doesn't need concern, doesn't need a lot of careful regulation.

As I explicitly said, I think nothing could be further from the truth. Clearly, an operating nuclear facility is a pretty different animal than a decommissioned site. I was simply making the point that under your rules, the only way to account for that are the so-called exemptions.

Maybe people would feel better if we had a different rule rather than talk about exemptions. That is semantics, not substance. That is my first point.

My second point is I find it ironic and confusing that the Chair is now disappointed that your staff is actually reading this stack of paper very carefully and taking it very seriously. If you all are a rubber stamp, as she has been suggesting, for any suggested exemptions, then the staff could whip through it in a week, give it to you and you all would have voted by now.

That is not happening I assume because you and your staff actually take this seriously, actually read it line by line and go through a thorough process. It shouldn't drag on forever. We deserve to know what a reasonable timetable is. Commissioner Ostendorff has said you will get back to us with that, but I don't think we should be complaining about a careful, thorough process.

I just wanted to make those few points.

Senator BOXER. Senator, thank you.

What I did say was in light of this near disaster, I am very disappointed that the commissioners haven't gotten more involved at this point.

Senator Markey.

Senator MARKEY. Thank you, Madam Chair. Thank you for calling this very important hearing today.

Fukushima reminded us of the devastating effects of a nuclear reactor meltdown. Radiation from the accident was detected over 1,000 miles away. Land contamination continues to keep tens of thousands of people from returning to their homes and cleanup cost estimates continue to rise. Industry admitted it will cost well over $100 billion.

Meanwhile, in the United States, we have packed so much radioactive waste into spent fuel pools that even NRC studies conclude that spent fuel fires could spread as much contamination as a meltdown of an operating reactor.

Throughout the United States, many pools, including the one at the Pilgrim Nuclear Power Plant, are dangerously overcrowded. The solution to this is simple. Take the waste out of pools and put it into safer, dry cask storage.

That is why I recently introduced the Dry Cask Storage Act which gives plants 7 years to remove all the waste that can be removed from the pool and put it into safer, dry cask storage, provides funding to help offset the cost and increases the size of emergency planning zones around plants that choose not to remove the waste from their pools.

Madam Chair, is it true that removing waste from the pool and putting it into dry cask storage reduces the amount of radioactivity that could potentially be released if a spent fuel fire were to occur?

Chairman MACFARLANE. Operating reactors need pools because when they discharge their fuel, it is very hot and it needs the water circulation to keep it cool, so you need the spent fuel pool.

When the spent fuel has aged at least 5 years, right now in the United States, it can be then transferred to a dry cask. Those dry casks are safe, they are passive systems. The spent fuel pools are active systems and require active circulation of water.

Senator MARKEY. Didn't the NRC studies show that even at decommissioned reactors, it was never possible to rule out the possibility of a spent fuel fire?

Chairman MACFARLANE. I think there are a variety of studies out there. I can take that for the record because I myself would like to see more analysis of the number of these issues.

Senator MARKEY. Are any of you familiar with any NRC studies that show that there could, in fact, be a fire? Are any of you familiar with that at all?

Mr. APOSTOLAKIS. Yes, Senator. There could be a fire. The question is, how likely is it. The NRC studies have shown that it is extremely unlikely. That is what the studies say.

Senator MARKEY. The Commission recently voted to allow plants to continue to overfill these pools for as long as they wished to do so. Each of you is saying it is highly unlikely that there will be a fire and therefore, there is no need to move toward dry cask storage, is that correct? Is that what you are saying?

Mr. APOSTOLAKIS. There were four main inputs I considered in my vote: the detailed staff analysis which argued that way; the Advisory Committee of Reactor Safeguards' independent experts agreed with the staff; and the historical record that showed the spent fuel pools withstood earthquakes beyond design basis. There was a statement by Dr. Thompson who raised a lot of issues and questions and there was a distinguished member of the Advisory Committee that rebutted all the issues he raised.

All the evidence pointed to the extremely low likelihood of a fire there.

Senator MARKEY. Let me read to you from the NRC's statements. It says, "An SFP fire could have health effects comparable to those of a severe reactor accident, large seismic events that fail the SFP are the dominant contributor to causing an SFP fire."

Where there are earthquake zones, southern California is an example but they are all over the Country, how do you deal with that in terms of your own agency's conclusion with regard to the danger of a fire that could become a catastrophe? Madam Chair?

Chairman MACFARLANE. The Commission has voted on this issue and the Commission decided that this issue needed no further study.

Senator MARKEY. I appreciate that but again, we just had Fukushima. We know that many of the nuclear power plants in our Country are built on or near earthquake faults and we have the Commission's actual conclusion.

I understand the industry does not want to spend the money. I understand that the industry doesn't want to have to absorb this kind of cost but again, I am dealing here with your own agency's conclusion about the danger that exists.

Mr. APOSTOLAKIS. Senator, the seismic re-evaluation project will also look at the spent fuel pools again.

Senator MARKEY. What is the timeline for that?

Mr. APOSTOLAKIS. It is in progress.

Chairman MACFARLANE. For the top priority group of plants, their seismic probabilistic risk assessments will be completed by 2017.

Senator MARKEY. The whole concept of probabilistic risk assessment is one that is very long and obviously goes back to the late 1970's and early 1980's with assessments made even then with regard to the probability of an accident and the need to build in proper protection.

PRA is the longstanding standard. It just seems to me almost irresponsible that we are going to wait until 2017 to complete that kind of a study knowing the danger that exists, the longer that decommissioned plants sit there with these spent fuel rods in place.

Have you implemented any permanent seismic safety measures? Are you planning to do that before 2017?

Chairman MACFARLANE. Yes. There has been a seismic hazard re-analysis that we ordered as a result of lessons learned from Fukushima. Actually, it was already in progress before the Fukushima accident but we moved it up. We are trying to be proactive.

Senator MARKEY. You have done the analysis. Have you put anything in place in order to ensure there are safeguards there?

Chairman MACFARLANE. Yes, certainly. The plants are built with a significant amount of margin. The analysis has analyzed the hazard. We are now trying to understand, with the probabilistic risk assessments, is the capacity of the plants to withstand that re-analyzed hazard.

Senator MARKEY. You haven't put any new standards in place on a permanent basis since Fukushima, none? For me, that is still unforgivable. We know what can happen. We know what the consequences are.

We saw what happened in Three Mile Island, the potential consequences of a reactor meltdown years before Chernobyl and Fukushima. Now, experts have given us clear warnings that a spent fuel pool fire could actually be worse than a reactor meltdown.

With that much at stake, I think the Commission's vote not to heed these warnings was simply irresponsible.

Chairman MACFARLANE. Senator, may I clarify a point. In 2012, we requested the plants to do seismic and flooding hazard walk downs. The plant operators had to go through the plants, make sure that all the bolts were tightened. I think they completed that.

Senator MARKEY. That's a study.

Chairman MACFARLANE. It wasn't a study. They actually walked through the plants and made sure that everything was as it was supposed to be, that they met their licensing basis for their seismic hazard.

In some cases, they found small problems. They have corrected them or they are in the process of correcting them.

Senator MARKEY. But those are pre-Fukushima standards and you have not promulgated any post-Fukushima standards thus far.

They are still, in many instances, not in compliance with pre-Fukushima.

Chairman Macfarlane, the Department of Justice recently indicted five members of the Chinese military on charges of hacking into U.S. company systems. According to the indictment, the Chinese efforts included the theft of nuclear reactor trade secrets from Westinghouse. These steps started in May 2010 and lasted until at least January 2011.

At the very same time that those steps occurred, Westinghouse was hosting a job shadow program that placed dozens of Chinese personnel at U.S. nuclear reactors for months during the identical timeframe in which the alleged thefts occurred.

This job shadow program was approved by the Nuclear Regulatory Commission. I recently wrote a letter asking you for more information on this program. I look forward to your response.

Chairman Macfarlane, did any of the Chinese nationals who were stationed at American nuclear reactors have unescorted access to the facilities?

Chairman MACFARLANE. This job shadow program was a private sector activity. It was not under the control of the NRC. The NRC insured that its security regulations were followed during this time and I respectfully ask you to refer all other questions on this topic to the Justice Department.

Senator MARKEY. Let me ask you this. Would NRC rules and regulations allow unescorted Chinese nationals to go through private nuclear complexes? Do regulations allow that to occur, that the Chinese would be unescorted and walking through a domestic nuclear complex?

Chairman MACFARLANE. I can tell you that our security regulations were followed.

Senator MARKEY. I am asking, do those regulations allow for Chinese nationals to walk through our nuclear power plants unescorted?

Mr. APOSTOLAKIS. No, Senator, they are not allowed to do that.

Senator MARKEY. They are not allowed.

Mr. APOSTOLAKIS. No.

Senator MARKEY. Then how could it have happened then that they were walking through our power plants, especially post-9/11?

Chairman MACFARLANE. Senator, we are in the process of responding to your letter. I do request that you direct your further questions to the Department of Justice.

Senator MARKEY. I appreciate that. I am just trying to get at the heart of what you allow and then what happened. I am getting a bit of, I think, a mixed message. Mr. Apostolakis, you are saying that they would not be permitted under your regulations?

Mr. APOSTOLAKIS. That is my understanding, Senator, yes.

Senator MARKEY. So how could they possibly gain access, unescorted Chinese nationals, into nuclear power plants, especially post-9/11, with these additional security provisions, many of them things that I am the author of with regard to access to our nuclear power plants?

Mr. APOSTOLAKIS. I don't know, Senator.

Senator MARKEY. You do not know.

Chairman MACFARLANE. We are in the process of responding to your letter. Again, I ask that you refer all further questions to the Department of Justice on this topic.

Senator MARKEY. I will just say this in conclusion. The NRC claims to foster a safety conscious work environment where "personnel feel free to raise safety concerns without fear of retaliation, intimidation, harassment or discrimination."

In the past year, my office has heard from an increasing number of whistleblowers from many different offices at NRC. These people are all serious, dedicated individuals who are calling my staff because they feel they are not being heard by their own managers and colleagues. They feel that when they step forward to report safety, security or other problems, they are systematically retaliated against.

I have raised this concern many times with you. I am holding a report written by the NRC but not yet publicly released that actually surveyed those who have attempted to use NRC's formal processes for resolving policy disagreements.

A staggering 75 percent of those who used them said they received a poor performance appraisal after they raised their whistleblowers concerns. Almost two-thirds of them said they were excluded from work activities by their management; 25 percent were passed over for promotions; 25 percent were even verbally abused by their colleagues and their supervisors.

Those results are shameful. I ask that portions of this report be entered into the record and request your formal written response on what you plan to do to fix these problems.

Senator BOXER. Without objection, so ordered.

[The referenced information follows:]

Senator MARKEY. I thank you. I will just say that I began chairing a committee overseeing the Nuclear Regulatory Commission in 1981. I had a hearing onsite at San Onofre in 1983. This just continues, this whole pattern just continues at the agency and it is one that troubling, especially post-Fukushima.

It is very important for this culture to change. I am just afraid that it has not.

Thank you, Madam Chair.

Senator BOXER. Thank you, Senator.

Senator SESSIONS.

Senator SESSIONS. Thank you, Madam Chairman.

I appreciate both of your interest, Senators, and study of this over the years. I do have a different view.

I think the good news is that in our nuclear power industry, unlike our coal, natural gas and other industries, we have not had a single individual be killed in the entire process of that industry, nor have we had a person, to my knowledge, made sick as a result of a nuclear accident. I would say today we have had a pretty good record.

Commissioner Ostendorff, Senators Sanders, Boxer and Markey introduced a Nuclear Plant Decommissioning Act which grants a large role to States and communities in the development and decommissioning of nuclear plants.

Based on your experience, would you share with us any thoughts you have as to whether that would make it more or less likely that a new nuclear plant would be built in America?

Mr. OSTENDORFF. Senator, I believe the predictability and stability of a regulatory process is very important. We are an independent regulatory agency. We base our decision making on solid principles of science, engineering and risk management. We think then Nation benefits from that from the public health and safety perspective.

I could foresee some potential problems in that predictability being lessened if there were confusion or blurring of lines as to the role between the Federal agency, us, and the States.

Senator SESSIONS. I just think that is transparent. Now we are going to have a nearby city extort the power company for whatever ideas they may have that may not be in the public interest and result in much less likelihood, in my view, that we could have new, safe, clean nuclear plants built.

I really think, colleagues, that creating a situation in which States, cities and counties can now impose regulations on building of a nuclear power plant or the decommissioning of it in retrospect is bad policy. I strongly oppose that. I just don't think that's good.

Mr. OSTENDORFF. Senator, can I add something to that?

Senator SESSIONS. Yes.

Mr. OSTENDORFF. I came to this agency after I had been an official at the Department of Energy, following many years in the military. I would tell you that the transparency and openness of the NRC whereby we engage the entire American public. Last year we had 1,000 public meetings with States, local, communities, and anti-nuclear groups.

There is a significant process by which they are able to bring their voices to bear and share their concerns. I think that isn't reflected upon often enough when these kinds of issues arise.

Senator SESSIONS. Thank you.

With regard to the pool storage, just because the rods are kept in a pool storage doesn't mean it is going to blow up or cause a fire, does it?

Mr. OSTENDORFF. That is correct, if I can make two technical points. Studies of the pools at Fukushima, as the Chairman mentioned earlier in responding to a question, to date we are not aware of any damage to the pools at Fukushima Daiichi as far as structural integrity.

The spent fuel pool study on which we based our decision had some significant conservatisms and we could certainly provide those for the record. The significant conservatisms showed that we were taking almost worse case analyses to look at the integrity.

I would also add that the current initiatives being taken by the U.S. nuclear industry with respect to the flex program, mitigating strategies to add additional pumps, hoses, sources of water, as well as the spent fuel pool level instrumentation requirements that we have levied, those are other steps from a mitigation standpoint that have not been discussed today.

Senator SESSIONS. Thank you. With regard to this whole process, the professional staff took insights and guidance, did they not, Madam Chairman, before they made a recommendation?

Chairman MACFARLANE. They did.

Senator SESSIONS. Mr. Ostendorff, they recommended the process you have adopted for pool storage, a majority of the Commission of four to one voted to adopt that process.

Ms. Svinicki, do you think that the staff considered the concerns Senator Markey and others have raised? Did the Commission consider those concerns before you made a decision?

Ms. SVINICKI. Yes, Senator, I agree with the observations and technical points made by Commissioner Ostendorff. Earlier Commissioner Apostolakis talked about the record that was available to us in this decision. I also had reliance on the same input as Commissioner Apostolakis previously testified to.

Senator SESSIONS. If the staff or outside people had expressed concerns that were validated and you felt created a risk, would you have voted differently?

Ms. SVINICKI. Yes, Senator, again, as my colleagues have acknowledged, it was a very complex, large record. It was voluminous and I think each of us spent a considerable amount of time in evaluating that.

The NRC staff indicated that they did a 30 year survey of other studies and research. It was a fulsome record, it was maybe a lot of material to go through but I think those of us who supported the staff's recommendations did so based on a thorough review of the matter before us.

Senator SESSIONS. Would you say that the Commission is working better under Chairman Macfarlane than some of the difficulties you had previously?

Ms. SVINICKI. I do appreciate the acknowledgement from some of the members of the committee of Chairman Macfarlane's leadership. As the longest serving member of the Commission, I really commend her. She and I don't agree all the time, but her leadership has been tremendous and the collegial tone she set for our work I think has been such a wonderful thing.

Senator SESSIONS. I note other members are nodding their heads in agreement with that. Congratulations, Chairman Macfarlane, you took over a difficult challenge. I am not sure you and I agree on all nuclear issues, but it was important that we get the Commission more collegial, more open and I believe you are achieving that.

You have created and protected the Country here for a number of decades now without any serious accidents and you haven't hesitated to crack down on plants that have even small errors in safety.

I know you hammered one in Alabama and I think you were probably right. Thank you for what you do and I know they improved immediately the errors noted by your team.

Thank you, Madam Chairman.

Senator BOXER. I want to thank the Commission. You'll be glad to know I just have a few more questions.

I am glad there is a spirit of collegiality among all of you. That is fine. You ought to have it at the workplace so that whistleblowers don't get attacked and shut out. I want to thank Senator Markey for pointing that out.

It is easy for five grownups to be collegial. I am very collegial with all my colleagues. We go at it, we certainly don't agree, but I really like them personally, so good for you for that. You need to take that spirit and infuse it so that whistleblowers aren't fearful. We look forward to your response.

Mr. Magwood, you said you had no concerns with safety at any of our plants in this testimony today, is that correct?

Mr. MAGWOOD. I said I don't have concerns about safety at U.S. nuclear power plants.

Senator BOXER. That's what I just said.

Mr. MAGWOOD. Yes. I am certainly not saying there are not issues that need to be looked into at specific plants.

Senator BOXER. But you said I don't have any concerns post-Fukushima. Let me ask you this question. Why did San Onofre shut down, why did Crystal River shut down, why did Vermont Yankee shut down, why did Kewaunee shut down, why is Oyster Creek going to close at the end of 2019 if they are all so honky dory?

Mr. MAGWOOD. I think you would find that for each of those plants there is a different reason. I could go through each one if you like but some were for financial reasons, others were for——

Senator BOXER. Why don't you tell us about the ones that have safety problems because you said you had no concerns, so which one of those had safety problems?

Mr. MAGWOOD. I don't think any of those plants were shut down because they were not being operated safely. I think some of those plants were shut down because they had equipment issues——

Senator BOXER. That's safety, isn't it?

Mr. MAGWOOD. No, it was never a safety issue.

Senator BOXER. There wasn't a safety issue at San Onofre?

Mr. MAGWOOD. San Onofre's steam generators were flawed.

Senator BOXER. They were leaking.

Mr. MAGWOOD. The plant was not—the plant was shut down after the leak was discovered.

Senator BOXER. My point. When a commissioner says in the opening statement, I have no concerns, let's be clear, there are concerns. When Senator Sessions says, which we all hope is true, that everything is safe, we've never had a problem—we did have a couple, but this is what we all want, so we all want it to be true.

Let me assure everyone here before Fukushima, the Japanese were saying the same things, Senator Sessions. The Japanese were saying we have safety in our nuclear industry and then Fukushima.

If we do our jobs and you do yours, we can avoid something like that. When you tell us that you haven't done one of the 12 recommendations of your own staff, not one has been implemented, that is disastrous. I think any one of the American people would say, wait, it's been 3 years.

I am going to turn to another issue of travel. In our last hearing, you all committed to making your travel and meeting calendars available. You have all made some effort in response and I thank you but it is not really enough. Only Chairman Macfarlane's meeting calendar contains any detail about what each meeting was about.

Until just a couple of days ago, Chairman Macfarlane and Commissioner Svinicki's calendars hadn't been updated since March. Not a single one of you provided advance public notice of any of your meetings.

By contrast, the Consumer Product Safety Commission's meeting policy requires advance public disclosure of all meetings including travel. I am sure you know why this is the case. The American people need to know who you are meeting with because your decisions are very important.

If an agency that regulates toys and other consumer products can do that disclosure, so can an agency that regulates nuclear reactors. We have bipartisan support for this.

Going forward, will each of you commit to providing advance notice of your meetings and your travel and providing information about the topics intended to be discussed at each meeting? Let's start with the Chairman.

Chairman MACFARLANE. I commit to providing to the degree that I can because my schedule changes on a daily, sometimes hourly basis, as I am sure does yours.

Senator BOXER. Sure.

Chairman MACFARLANE. Certainly advance notice of my travel and other meetings to the degree that I can.

Senator BOXER. Commissioner Svinicki.

Ms. SVINICKI. Chairman Boxer, I would request the opportunity to respond for the record.

Senator BOXER. Sure.

Ms. SVINICKI. Thank you.

Senator BOXER. Commissioner Apostolakis.

Mr. APOSTOLAKIS. I will not have any problem doing that.

Senator BOXER. Thank you.

Commissioner Magwood.

Mr. MAGWOOD. At my confirmation hearing, I promised to make my calendar available. I have done that from the moment I have been on the Commission. I have published my calendar continuously.

I have not made a practice of putting a lot of detail in the calendar. I will look at doing that.

Senator BOXER. Thank you because it is important that we know who you are meeting with.

Commissioner Ostendorff.

Mr. OSTENDORFF. Chairman Boxer, my calendar, as far as meetings with groups, is on my website. I have an open door policy. I understand your concern.

Senator BOXER. Excellent.

Commissioner Magwood, this is delicate but travel records you provided to this committee indicate you have spent 127 days on international travel since 2010. They also indicate that before you leave the Commission this summer, you will be spending more than 3 weeks visiting the United Arab Emirates, Malaysia, Japan and Brazil.

Do you think it best serves the NRC safety mission to have you traveling the world just before you resign your seat?

Mr. MAGWOOD. I do think my travel is appropriate. First, let me indicate that I am not going to Brazil. That was an invitation I was

considering and have ultimately decided not to take that trip. The other visits I think are very important.

Despite the fact that I am stepping down from the Commission later this summer, the presence of an NRC commissioner in many of these countries is important whether it is me or Commissioners Ostendorff or Apostolakis. It doesn't really matter which of us it is.

The fact that the United States Nuclear Regulatory Commission goes to these countries and represents the causes of regulatory independence is very important to these people, so I think my travels are important.

Senator BOXER. I am seriously interested. In the United Arab Emirates, do they have nuclear power there? What is the issue there you will be addressing in that country?

Mr. MAGWOOD. I hesitate to get into a lot of detail in an open session. Let me say that we are watching very closely as a new regulator is assembled. They have a lot of challenges. Some of them are cultural challenges. It is a good time for someone from the NRC to visit again to reinforce some of the messages about regulatory independence as they both assemble a new regulator and assemble nuclear power plants which are under construction.

Senator BOXER. Independence from?

Mr. MAGWOOD. From other policy issues.

Senator BOXER. I don't understand that but that is OK. Malaysia, what is happening over there?

Mr. MAGWOOD. The same sort of thing. Malaysia is considering new nuclear power plants. They have a regulator that is in the process of being restructured. Our staff thinks it is a good time for an NRC commissioner to go and talk about issues such as regulatory independence. I was happy to try to do that.

Senator BOXER. Japan, I think is good. Are you going to go and get a briefing on Fukushima?

Mr. MAGWOOD. I am actually planning to visit Fukushima again.

Senator BOXER. Good.

Let me say this. I think that makes a lot of sense. Everybody makes a decision but I want to speak as someone who cares a lot about the safety at the San Onofre plant. You haven't even seen the documents I gave to Mr. Ostendorff. There is so much to be done.

Not one of the 12 recommendations has gone into place. The operator at San Onofre is asking for exemptions from all kinds of emergency planning when a fire was half a mile away. I need your leadership here.

Maybe your leadership is more important in the United Arab Emirates but from my point of view, I am being honest here, you have a backlog. The Chairman couldn't answer a lot of questions because she has to get back to me. I just hope you will consider this.

In any event, I want to thank you all. I know these hearings are very difficult because you have made decisions, as the Chairman said, and you are done with looking at spent fuel, you voted. No, you are not done because we have oversight over you and it is uncomfortable.

We are going to keep on doing it. I think this is our ninth since Fukushima and we are going to keep it up.

I want to thank all colleagues and we stand adjourned.

[Whereupon, at 11:22 a.m., the committee was adjourned.]

[Additional material submitted for the record follows.]

STATEMENT OF HON. THOMAS CARPER, U.S. SENATOR FROM THE STATE OF DELAWARE

EPW Hearing: NRC's Implementation of the Fukushima Near-Term Task Force Recommendations and other Actions to Enhance & Maintain Nuclear Safety. Thank you Chairman Boxer for holding this very important hearing. I want to welcome our witnesses and also congratulate Senator Whitehouse for taking the helm of the Subcommittee on Clean Air and Nuclear Safety.

Just like Chairmen Boxer and Whitehouse, I am a firm believer that climate change is occurring and humans are the primary drivers of it because of our carbon pollution. But you don't have to take our word for it. The leading scientists of our time agree. Last month, a team of more than 300 climate scientists issued the third National Climate Assessment Report. It is the most comprehensive study on the impact of climate change on the United States. The report finds clear correlation between human influence, predominantly the burning of fossil fuel, and increasing U.S. temperatures.

The devastating consequences of climate change are too great for any of us to sit on the sidelines. It is with this potential future in mind that I applaud the EPA's new Clean Power Plan to cut carbon emissions from the nation's existing power plants by 30 percent by 2030. This proposal moves our nation a step toward protecting our environment and our economy. But in order to meet the president's carbon emission reduction goals, nuclear energy must be part of our energy mix. Without nuclear energy those goals will be nearly impossible to achieve.

In recent years, we have seen the closure of several plants and face the potential retirement of up to 6 percent of our nuclear generation in the foreseeable future. According to the EPA, 6 percent of nuclear capacity is equal to avoiding releasing 200 to 300 million metric tons of CO_2 over a 10-year period. This is equivalent to the CO_2 2 emissions of 25 million average family households. So, it is critical that we work together to ensure a safe and economically viable nuclear fleet. With nuclear power as part of our "all of the above" energy policy, we benefit from passing on cleaner air and a more hospitable climate to future generations. But to have nuclear energy in this country we must continue to have a safe nuclear fleet and have a strong, independent agency overseeing the industry.

I welcome back the NRC Commissioners to this committee and look forward to hearing an update on recent safety concerns and actions. I look forward to working with all of you to ensure we continue to have a safe and efficient regulatory regime to keep this important industry alive as we move toward a cleaner energy future.

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