

April 1, 2011

IN RESPONSE, PLEASE  
REFER TO: M110321

MEMORANDUM TO: R. W. Borchardt  
Executive Director for Operations

FROM: Annette Vietti-Cook, Secretary /RA/

SUBJECT: STAFF REQUIREMENTS – BRIEFING ON NRC RESPONSE TO  
RECENT NUCLEAR EVENTS IN JAPAN, 9:00 A.M., MONDAY,  
MARCH 21, 2011, COMMISSIONERS' CONFERENCE ROOM,  
ONE WHITE FLINT NORTH, ROCKVILLE, MARYLAND (OPEN  
TO PUBLIC ATTENDANCE)

The Commission was briefed by the NRC staff on the NRC response to recent nuclear events in Japan.

Direction to the staff was provided in a tasking memorandum, COMGBJ-11-0002 - NRC Actions Following the Events in Japan, dated March 23, 2011.

cc: Chairman Jaczko  
Commissioner Svinicki  
Commissioner Apostolakis  
Commissioner Magwood  
Commissioner Ostendorff  
OGC  
CFO  
OCA  
OIG  
OPA  
Office Directors, Regions, ACRS, ASLBP (via E-Mail)  
PDR

## SCHEDULING NOTE

**Title:** BRIEFING ON THE STATUS OF NRC RESPONSE TO EVENTS IN JAPAN AND BRIEFING ON STATION BLACKOUT (Public)

**Purpose:** To provide the Commission with an update on the status of the events in Japan and to provide an overview of U.S. nuclear plant preparedness to prevent and cope with station blackout.

**Scheduled:** April 28, 2011  
9:30 am

**Duration:** Approx. 1 hour and 45 minutes

**Location:** Commissioners' Conference Room, 1<sup>st</sup> floor OWFN

<b>Participants:</b>	<b>Presentation</b>
<b><u>NRC Staff Panel</u></b>	<b>50 mins.*</b>
<b>Marty Virgilio</b> , Deputy Executive Director for Reactor and Preparedness Programs <u>Topic:</u> Update on NRC Response to Japanese Events	10 mins.*
<b>Pat Hiland</b> , Director, Division of Engineering, NRR <u>Topic:</u> Station Blackout and Advanced Accident Mitigation (B.5.b) Overview	10 mins.*
<b>George Wilson</b> , Chief of Instrumentation and Control Branch, Division of Engineering, Office of Nuclear Reactor Regulation <u>Topic:</u> Station Blackout Preparedness and Coping	15 mins.*
<b>Eric Bowman</b> , Senior Project Manager, Division of Policy and Rulemaking, Office of Nuclear Reactor Regulation <u>Topic:</u> Advanced Accident Mitigation (B.5.b)	15 mins.*
<b>Commission Q &amp; A</b>	<b>50 mins.</b>
<b>Discussion – Wrap-up</b>	<b>5 mins</b>

\*For presentation only and does not include time for Commission Q & A's.



# **Station Blackout and Advanced Accident Mitigation (B.5.b) Overview**

**Pat Hiland, Director**

**Division of Engineering**

**Office of Nuclear Reactor Regulation**

**April 28, 2011**

# Station Blackout Background

- **WASH-1400, “Reactor Safety Study,” issued 1975, indicated that station blackout (SBO) could be an important contributor to the total risk from nuclear power plant accidents**
- **In 1980, the Commission designated the issue of station SBO as Unresolved Safety Issue (USI) A-44, “Station Blackout”**
- **NRC issued the final SBO Rule (10 CFR 50.63) on June 21, 1988**
- **SBO Rule requires each plant to be able to cope and recover from an SBO event**

# **Station Blackout Staff Evaluations**

- **NRC issued Regulatory Guide (RG) 1.155, “Station Blackout,” on August 1988 and endorsed NUMARC 87-00 industry guidance to implement the SBO Rule**
- **All 104 plants met the SBO rule requirements at the time of the staff’s review**
  - **Safety Evaluations**
  - **Pilot Inspections**
- **License Renewal Application reviews - Staff verifies the scoping and aging management of systems, structures, and components required for SBO in accordance with 10 CFR 54.4(a)(3) and 10 CFR 54.21**

# **Station Blackout - New Reactors**

- **All new standard reactor designs must include an alternate ac (AAC) power source with diverse design to cope with an SBO for 8-hours**
- **New reactors with passive designs cope with an SBO with battery power for 72-hours**

## **B.5.b Requirements**

### **NRC Imposed Requirements after the events of September 11, 2001**

- **Interim Compensatory Measures Order EA-02-026**
- **License Condition**
- **10 CFR 50.54(hh)(2)**

## **10 CFR 50.54(hh)(2)**

**“Each licensee shall develop and implement guidance and strategies intended to maintain or restore core cooling, containment, and spent fuel pool cooling capabilities under the circumstances associated with loss of large areas of the plant due to explosions or fire ....”**



# **Station Blackout Preparedness and Coping**

**George Wilson**

**Branch Chief, Division of Engineering  
Office of Nuclear Reactor Regulation**

**April 28, 2011**

# **SBO Rule**

- **Rule in Federal Register 10CFR50.63  
“Loss of all alternating current power”**
- **SBO Rule requires each plant to be able to cope and recover from an SBO event of specified duration**
- **NRC issued Regulatory Guide (RG) 1.155, “Station Blackout,” on August 1988 and endorsed NUMARC 87-00 industry guidance to implement the SBO Rule**

# **SBO Coping**

- **Rule provided guidance on how to calculate the plant specific SBO duration.**
- **The coping duration based on following factors:**
  - **The redundancy of the onsite emergency ac power sources**
  - **The reliability of the onsite emergency ac power sources**
  - **The expected frequency of loss of offsite power**
  - **The probable time needed to restore offsite power**
- **SBO event ends when either offsite or onsite power is restored**

# **Coping Methods**

- **AC independent**
  - **44 plants rely on batteries only**
  - **Maximum duration 4 hours**
- **Alternate AC**
  - **60 plants in this category**
  - **Emergency Diesel Generators from adjacent unit with excess capacity**
  - **Gas turbine generators, diesel generators and hydro units**
  - **Appendix R Diesel generators**

# **Staff Review of SBO Rule Implementation**

- **NRC staff reviewed and approved by safety evaluations all 104 plants SBO submittals.**
- **NRC staff conducted pilot inspections at 8 sites (2 per region) using NRC Temporary Instruction 2515/120**
- **Inspection results revealed that the licensees were implementing the SBO Rule consistent with NRC requirements and staff's safety evaluations**

# Design Overview

- **Battery coping plants - maximum coping duration is 4 hours**
- **Battery life may be extended to required duration by load shedding**
- **Effects of loss of ventilation.**
- **Condensate, compressed air and RCS inventories verified for adequacy**
- **Procedures developed for SBO**
- **Operator training**

# **SBO Procedures**

- 1. Specific actions for restoration of AC power**
- 2. Ensure support equipment functional without AC**
- 3. High priority on steam driven pumps**
- 4. Identify RCS leakage paths**

# **Grid Interface**

- **Grid Interface Enhancements**
  - **Grid operator evaluates network on daily basis**
  - **Plant procedures for degraded grid conditions**
  - **Plant controlled work in switchyard**
  - **High priority for TSO to restore power**
  - **New guidelines from NERC**

# Summary

- **Only one U.S plant has had an SBO, it was in 1990 (App. 1 hour)**
- **SBO compliance evaluated for**
  - **License renewal**
  - **Power uprates**
  - **License amendment requests**
  - **New Reactors**
- **Staff interfacing with FERC to maintain reliability with future changes in generation mix and transmission system upgrades.**



# **Extensive Damage Mitigating Guidelines (B.5.b)**

**Eric E. Bowman**

**Senior Project Manager**

**Division of Policy and Rulemaking**

**Office of Nuclear Reactor Regulation**

**April 28, 2011**

## **B.5.b Strategies**

- **Details Designated Official Use Only - Security Related Information**
- **Flexible, Deployable Strategies Providing Alternate Means to Accomplish Key Safety Functions**

# **Phased Approach**

- **Phase 1 – Readily Available Materials and Personnel**
- **Phase 2 – Spent Fuel Pools**
- **Phase 3 – Core Cooling and Containment**

# **Phase 1 – Readily Available**

- **Existing Programs & Equipment**
- **Best Practices from Initial Response**
- **Lessons Learned from Analyses**

# **Phase 1 Strategies**

- **Memoranda of Understanding**
- **Fire Fighting Enhancements**
- **Passive Measures**

# **Phase 2 - Spent Fuel Pool Cooling**

- **Make-up Water**
- **Cooling Spray**
- **Power Independence**

# **Phase 3 - Core Cooling and Containment**

- **Key Safety Functions Based on Plant Specifics**

## **Boundary Conditions:**

- **Loss of All Internal Power Distribution**
- **Minimum Staffing**

# **Utility of B.5.b Strategies in SBO**

- **Entry Conditions More Conservative than SBO**
- **Use of Strategies Has Potential to Extend Duration for Supplying Key Safety Functions**

# Acronyms

- **B.5.b – Mitigating Strategies Requirements from Order EA-02-026, Section B.5.b, the Subsequent License Conditions, and 10 CFR 50.54(hh)(2)**
- **SBO – Station Blackout**

UNITED STATES OF AMERICA  
U.S. NUCLEAR REGULATORY COMMISSION

BRIEFING ON THE STATUS OF NRC RESPONSE TO  
EVENTS IN JAPAN AND  
BRIEFING ON STATION BLACKOUT

APRIL 28, 2011

9:30 A.M.

TRANSCRIPT OF PROCEEDINGS

Public Meeting

Before the U.S. Nuclear Regulatory Commission:

Gregory B. Jaczko, Chairman

Kristine L. Svinicki, Commissioner

George Apostolakis, Commissioner

William D. Magwood, IV, Commissioner

William C. Ostendorff, Commissioner

## APPEARANCES

### NRC Staff Panel:

Bill Borchardt  
Executive Director for Operations

Pat Hiland  
Director, Division of Engineering, NRR

George Wilson  
Chief of Instrumentation and Control Branch,  
Division of Engineering, Office of Nuclear Reactor  
Regulation

Eric Bowman  
Senior Project Manager, Division of Policy and Rulemaking,  
Office of Nuclear Reactor Regulation

## 1 PROCEEDINGS

2 CHAIRMAN JACZKO: Good morning, everyone. Before we begin  
3 today's meeting, I wanted to recognize that this is National Administrative  
4 Professionals Week and take this opportunity to acknowledge the dedicated  
5 efforts and the high-quality performance of our agency's administrative  
6 professionals. It's always, I think, a great opportunity during this week to make  
7 sure we highlight the work that those people do every day to allow us to do our  
8 jobs and to keep everything working and functioning. This is also a very special  
9 day at the NRC. This is Bring Your Children to Work Day here at headquarters,  
10 so there'll be lots of people, our future work force, running around, learning the  
11 business, I think, at the agency.

12 With that, I'll turn to the agenda for today's briefing. The  
13 Commission meets this morning to receive a brief update on the situation in  
14 Japan and the NRC's ongoing efforts there to assist the Japanese government,  
15 but then the remainder of today's meeting will focus on the NRC station blackout  
16 rule, which is our regulatory approach for ensuring that licensees can effectively  
17 cope with a loss of alternating current electrical power. And, I think, certainly this  
18 is a situation that has relevance, as our task force looks at the situation in Japan,  
19 but we also have seen that this is a rule that has relevance here for us in the  
20 United States. Severe storms in the south last night provided a reminder of this.  
21 One or more nuclear power plants experienced a loss of nearly all their off-site  
22 power, leading to shutdowns of those plants. All of the safety systems performed  
23 as they were designed and all available diesel generators started and loaded.  
24 And, ultimately, the core cooling systems are operating normally. In addition, the  
25 spent fuel cooling is currently in service. So, all these plants are stable and

1 they're being placed in a cooled-down condition.

2           Of course, these storms are also a reminder that these storms have  
3 tremendous impact, and there have been many people who have lost their lives  
4 as a result of this, so we always want to remember that as we talk about these  
5 issues. But it was certainly a reminder of the importance of this particular rule  
6 and dealing with the potential that not all of the alternating power capabilities  
7 function.

8           So, today, the staff will give us a general background on the rule's  
9 development as well as more detailed information on the structure of our  
10 regulatory approach for dealing with station blackout. And this is one of the  
11 many significant issues that the agency's senior level task force is examining as  
12 part of our comprehensive review of the safety of the U.S. nuclear facilities as a  
13 result of the situation in Japan. And, certainly, from my perspective, I think the  
14 purpose for us today is to get a good base line of information for the Commission  
15 to get us all at the same level of knowledge about this rule, so that if we get  
16 recommendations from the task force in this area, we'll be able to move  
17 expeditiously and promptly to address those, and we'll have a good  
18 understanding of the basis of the existing rule, and then, if there are changes to  
19 be made, what those changes would be and how we would effectively and  
20 expeditiously move forward with those recommendations. With that, I would offer  
21 any colleagues, my colleagues to make any comments that they would like.  
22 Commissioner Svinicki.

23           COMMISSIONER SVINICKI: Thank you, Mr. Chairman. First of  
24 all, I appreciate your recognition of the hard-working administrative professionals  
25 here at NRC who make possible all of the important work that we do here. And I

1 also would add, that, although, as you've indicated, we're still working to gain  
2 knowledge of the events in Japan, station blackout certainly identifies itself as an  
3 important issue that we need to be looking at, so thank you for today's meeting.

4 CHAIRMAN JACZKO: Okay, Bill. I'll turn it to you.

5 MR. BORCHARDT: Well thank you, good morning, what I'll do is  
6 begin today's briefing with just a very brief overview of the situation in Japan.  
7 Since March 21, when we held the last Commission meeting, on the Japan issue,  
8 I would say that the situation has definitely improved but we're still in the accident  
9 mitigation phase. Off site and on-site AC power has been restored, however  
10 they're still using temporary pumps and hoses to inject water into the reactor  
11 vessels and spent fuel pool, and into the containments. There's still many  
12 unanswered questions regarding the status of various pieces of equipment, the  
13 reactor vessel integrity, the spent fuel pool.

14 Regarding the core, the reactor vessel, and the containment, as  
15 well as the spent fuel conditions, I would describe the situation as not being quite  
16 stable, but certainly not as highly dynamic as it was on March 21 when we last  
17 met on this subject. The changes that are occurring within the plant are slower  
18 and allowing more time for the Japanese operators and regulators to respond  
19 and take corrective actions, as necessary.

20 There's still feed and bleed operations in progress. That is a  
21 somewhat dynamic situation, as well as there's unfiltered and unmonitored  
22 release paths that remain to be a concern at the Fukushima site. One of the  
23 things that make this difficult for the Japanese in responding to this event and for  
24 to us to understand the exact situation is that there's a number of suspect  
25 accuracy and failed instrumentation at the site, affecting all of the units that really

1 hamper our ability to get a clear and consistent picture of the situation.

2           As you know, the site team in Japan continues. We're providing  
3 technical support to the ambassador. We're interacting with the Japanese  
4 officials of NISA, our regulatory counterpart, and the operator TEPCO. And the  
5 team in Japan is also coordinating the efforts of the consortium of private  
6 companies as well as non-government organizations as they work with the  
7 government of Japan. Our operation center remains on a 24/7 response  
8 capability. We're providing direct support to the site team as well as coordinating  
9 all of the related headquarters activities by the technical staff.

10           One of the major developments over the last month has been the  
11 creation and development of TEPCO's recovery plan, which is called a road map  
12 towards restoration from the accident at Fukushima Power Station. There is a  
13 number of elements in this road map, and it focuses on nitrogen injection that will  
14 help minimize the potential for future hydrogen detonations, flooding of  
15 containment to cool the core, working on process to provide reliable spent fuel  
16 pool makeup to achieve long-term cooling. They'll also work on the Unit 4  
17 structural integrity of the spent fuel pool, looking at ways of providing waste  
18 storage and processing as well as controlling radioactive material on-site and off-  
19 site. And then, finally, to address the issue that I mentioned earlier, enhanced  
20 monitoring of off-site conditions at the plant. So, our overall assessment is that  
21 the Japanese are making progress on addressing the safety and the  
22 environmental issues and that the road map that's been put into place is certainly  
23 a good start towards long-term restoration.

24           Moving into today's Commission meeting. Obviously, the  
25 earthquake and then the following tsunami resulted in a station blackout at the

1 site, which greatly complicated and contributed to the serious events in Japan.  
2 Today's briefing's going to be a technical background about the conditions in the  
3 U.S. plants, both the regulatory background and what processes and equipment  
4 exists in the plants. As I mentioned, on March 21, we did, what I would say, was  
5 an instant review of the situation and of the capabilities of U.S. facilities and  
6 concluded that there was no need to make immediate changes or to impose  
7 immediate orders on U.S. licensees. However, we have well underway the short-  
8 term, or 90 day review, that is looking at station blackout and a number of other  
9 issues, out of which may result in some future regulatory action or some  
10 requirement on licensees.

11           Following that 90 day review, there's going to be a longer-term  
12 review that will continue to use all of the technical information available from  
13 Japan in order to inform our regulatory approach moving forward. Very recently,  
14 we've issued a temporary instruction to our inspections staff that has been  
15 performed to evaluate the compliance with the existing regulations, and those  
16 results are being provided to the headquarters staff for analysis now.

17           We'll be hearing from three speakers today. The first is going to be  
18 Pat Hiland, who's going to provide an overview of the NRC station blackout rule,  
19 as well as the advanced accident mitigation strategies implemented at U.S.  
20 plants. George Wilson is going to discuss, in detail, the station blackout rule  
21 requirements and guidance, and the preparedness of U.S. power plants to cope  
22 and recover from a station blackout. And then, finally, Eric Bowman will discuss  
23 the mitigating strategy requirements imposed following the terrorist attacks of  
24 September 11, 2001. So I'll now turn the briefing over to Pat.

25           MR. HILAND: Thank you, Bill. Good morning Commissioners,

1 Chairman, and go to slide two, please, station blackout background. Looking  
2 back over 35 years ago, the WASH-1400 document was issued. And that  
3 document clearly stated that station blackout could be an important contributor to  
4 the risk of nuclear power plant accidents. In particular, it concluded that if a  
5 station blackout were to persist, it could lead to a core melt and containment  
6 failure. In 1980, the Commission designated the issue of station blackout as an  
7 unresolved safety issue, A-44. Additional regulatory requirements were imposed  
8 in 1988, when 10 CFR 50.63 was issued. It's known as the SBO rule, that rule  
9 requires each plant to be able to cope and recover from a station blackout event,  
10 specifically to assure that the core is cooled and that the containment integrity is  
11 maintained.

12           When the station blackout rule was issued, coincident with that was  
13 a Regulatory Guide 1.55 that was released. That regulatory guide endorsed an  
14 industry standard, 8700, providing guidance in how to implement the rule. All of  
15 the operating fleet, all 104 plants today, met the station blackout rule at the time  
16 based on a detailed review of each applicant's submittal of how they complied  
17 with the rule, as well as, we conducted two on-site inspections in each of the  
18 regions, for a total of eight, to provide us confidence that the rule was being  
19 properly implemented.

20           After that time period, under the reactor oversight program, we  
21 have our Component Design Basis Inspection, or CDBI inspection, that  
22 continually looks at those components that may be involved in the station  
23 blackout mitigation strategies, as well as there are other inspection modules for  
24 our regional inspectors and our site resident inspectors, such as the corrective  
25 action inspection program, a plant modification inspection module, as well as an

1 equipment alignment module. All of those items might touch on the station  
2 blackout. Feedback from the regions and from the inspections to date indicates  
3 that the component design basis inspections are pinpointing some of the SBO  
4 activities that we see in the field.

5           Regarding license renewal activities, the evaluation for renewing  
6 license has a specific requirement, and they're 10 CFR 54 for a review of the  
7 station blackout aging and components required, the safety systems and  
8 structures required for the SBO must be included in their aging management  
9 process.

10           Regarding new reactors, now, all new standard, that's a word I  
11 used in this slide, standard meaning that's not a passive new reactor, because  
12 the second bullet would tell you that's not all plants, but all new standard reactors  
13 are required to have an alternate AC power source. It's a diverse source,  
14 meaning that it must be different than the installed emergency or standby diesel  
15 generators. For new reactors with a passive design, that's an AP1000 has a  
16 passive design, its design includes a battery-power coping strategy of up to 72  
17 hours.

18           As you're aware, we responded to the September 11, 2001 terrorist  
19 attack through a number of initiatives. Initially, we issued interim compensatory  
20 measures in an order in February of 2002. Within that order is section B.5.b, and  
21 that's, we've heard the term B.5.b, and that's where it comes from. Those interim  
22 compensatory measures were inspected at each site, evaluated, and eventually  
23 became a license condition for all of our facilities. Just two years ago, in 2009,  
24 10 CFR 50.54(hh) was issued to codify those requirements.

25           And the last slide is just a paraphrase of that paragraph in

1 50.54(hh). And these mitigation strategies are for beyond designed basis events  
2 that could be beneficial in the context of the station blackout. With that, I'd like to  
3 turn it over to Mr. George Wilson to go into more detail.

4 MR. WILSON: Thank you, Pat. Good morning, Chairman,  
5 Commissioners. As Pat had stated, the 10 CFR 50.63 rule will also involve  
6 alternating current power. It intended each site to have to cope, and the big key  
7 here is to recover from the loss of off-site power, and we'll get both a little bit later  
8 on in the procedures. Once this rule was issued, the NRC staff met with the  
9 industry and several working groups, and they started developing the strategy  
10 that the rule would be implemented. So we developed Regulatory Guide 1.155.  
11 At the same time, the industry developed a NUMARC guide, it's 87-00, on how  
12 they would implement and deal with the rule. The NRC endorsed the NUMARC  
13 guidance as a way to implement and comply with the station blackout rule.

14 The real key with the station blackout rule was coping, and coping  
15 is defined as the time that it takes to recover either on-site or off-site alternate  
16 current power back into the plant. The rule specifically gave guidance on how  
17 you would calculate and how you would go about doing the coping of the plant.  
18 One of it was the on-site redundancy, the amount of diesel generators that you  
19 would have at the site, the reliability of the diesel generators. Their reliability was  
20 evaluated by different starting mechanisms; 10, 20, 50, to 100 start times, and  
21 then that was evaluated. Also, the expected frequency of the loss of off-site  
22 power, whether it would be hurricane-type winds, icing. That was also evaluated.  
23 And the probable time needed to restore the off-site power that you would restore  
24 based on your experience. All that criteria went into the coping analysis, and to  
25 the plant. And that's how it was defined.

1 I want to point out here that we have had several, we have had  
2 hurricanes here, and the diesel generator liability is a key here, both at Turkey  
3 Point in Hurricane Andrew and at Waterford in Hurricane Katrina, the diesel  
4 generators started and ran for multiple days. They never did go into a station  
5 blackout based on the reliability of the emergency diesel generators that we have  
6 at the American plants.

7 And the coping methods; there's two different coping mechanisms  
8 that can be used in U.S. plants. Forty-four of the plants in the U.S. are battery-  
9 only, so they can have a maximum coping period of up to four hours. When it  
10 was analyzed if the coping period went above four hours, then they had to either  
11 do modifications to the plant to reduce the coping time, or they had to install an  
12 alternate AC power that would come up. The AC, to be an alternate AC plant,  
13 with to do no coping analysis at all, you had to be able to be able to bring the  
14 power up within 10 hours, excuse me, 10 minutes, and tie it on to the buses. If it  
15 took longer than 10 minutes, then you had to do a combination of having an  
16 alternate AC power and a coping analysis that was done for the time that you  
17 would bring the plant up.

18 Sixty of the plants in the United States are alternate AC plants.  
19 They cope from anywhere from coping analysis of two hours up to 16 hours. The  
20 coping -- the alternate AC power sources are either hydro-generators,  
21 combustion turbines, gas turbines that they can use. It can be the alternate, it  
22 can be an opposite unit's diesel generator, if they have excess capacity.

23 The staff reviewed the SBO rule implementation by writing a safety  
24 evaluation for all 104 sites, and, in addition, as Pat had mentioned, we also went  
25 out and performed eight inspections with a temporary instruction that was written.

1 We did two units, or two plants, in each region, and there was no major issues  
2 identified during the temporary instruction. We did find some of the assumptions  
3 in the coping analysis, and those were resolved. And so, based on that and the  
4 safety evaluations, the staff had determined that the industry properly  
5 implemented the station blackout rule, and they were in compliance with that.

6           Basically, the design overview of the plants with the station  
7 blackout is that, as I stated, battery coping was a maximum of four hours. They  
8 also evaluated and looked at how you could extend battery life, and I'll get on to  
9 that in a little bit in the procedures by shedding loads. You had to evaluate the  
10 effects of ventilation. You had to use ventilation, so heat up calculations were  
11 done in each room to see what the impacts were. You looked at condensate any  
12 way that you could do manual operator actions, bringing in compressed air,  
13 minimize RCS inventory leakage. The leakage was based on, one of the key  
14 components is that for the reactor coolant pump seals in a pressurized water  
15 reactor, you could only assume 25 gallons per minute leakage for a total of 100  
16 gallons.

17           And the big key here is, operator training was performed and  
18 procedures were written. So not only did they have to write specific procedures  
19 on how they were going to deal and cope with a station blackout, but they had to  
20 be trained upon it.

21           For the specific SBO procedures, they did specific actions on the  
22 restoration of AC power. We, in the United States, were a little bit different,  
23 because there's a very close relationship between the grid operators and the  
24 nuclear power plants. And one of the things, when we wrote a generic letter, in  
25 Generic Letter 2006-02, that had to do with the grid interface with the nuclear

1 power plants, we verified that each one of the nuclear power plants would be the  
2 first load that would be restored if the grid was lost. So we went back and made  
3 sure that the primary reason is that for the safety of the power plants, but that is  
4 the first load that's restored in a grid when it goes down in that area.

5           They also developed procedures to enhance emergency diesel  
6 generator troubleshooting, and they looked at additional ways to bring power  
7 back on, so you look at additional procedures where you bring an alternate AC  
8 power on, and look at different ways you can tie it into the plant. They also  
9 ensured that the support equipment would be functional without alternating  
10 occurring power. That could be bringing in bottled air, putting in nitrogen air  
11 stations in there, looking at what valves would have to be manually operated and  
12 associated throttle position of those valves. Protection is done to any of the  
13 steam-driven pumps, HPCI, RCIC because that is used to mitigate an action of a  
14 station blackout, identify the RCS leakage packs, try to minimize the amount of  
15 water, and conserve the inventory of water that you have in the primary.  
16 Additionally, you look at past, the procedures actually look at past -- the first  
17 primary water source, which would be the Condensate Storage Tank, and  
18 looking past that, look how you could get additional water sources into the  
19 Condensate Storage Tank to further provide inventory water. Also look at  
20 stripping non-essential loads off on the DC, which is looking at taking off DC-  
21 powered pumps, or removing the starting-flash circuitry for a diesel generator,  
22 because that takes down the battery.

23           Also, you would look at, during the heat-up calculations that you  
24 would do in the room, that can cause some actuations to happen. So some of

1 the actions, the procedures would direct, would have operators go out and  
2 bypass the isolation for HPCI or RCIC to ensure the steam valves would stay  
3 open, you still have the steam supply for the steam-driven pumps. Also, look at  
4 the equipment that you would actually use to cool down and shut down the plant,  
5 and evaluate what that usage would be. This is -- the procedures got very  
6 specific, and they were site specific on exactly how they could cope and deal with  
7 a station blackout.

8           Also, in the United States, the grid interface, as I explained earlier --  
9 there are agreements between each one of the nuclear power plants and the  
10 local grid operators, based on voltage and frequency and the restoration of the  
11 plant. In addition, the NRC staff here locally, on Monday through Friday, do a  
12 grid report, and we look at what potentials for the grid is. And based on the fact  
13 that if the grid is stressed or strained, then sometimes maintenance at the power  
14 plants would minimize, to ensure that there's no trips, or minimize the chance  
15 that there would be a trip of the plant to maintain the grid reliability. We also  
16 have grid-reliability standards in the United States now, that are in full force by  
17 the Federal Energy Regulatory Commission, and those grid-reliability standards  
18 were written after the Northeast blackout, and they ensured additional reliability  
19 and stability in the grid, and additional studies are done on that to ensure that  
20 that is one of the reasons that, to try to maintain the stability of the off-site power.  
21 In addition, there's a specific grid-reliability standard for the nuclear power plants  
22 only, which is Nuclear 001, which specifically goes into voltage and frequency  
23 requirements at a nuclear power plant, because those are a lot tighter than  
24 normal loads that are on the grid.

1           In summary, in the United States, there has only been one  
2 identified case of a station blackout. That was at the Vogtle plant in 1990, and  
3 that event lasted for approximately 55 minutes. The plant was in a shutdown  
4 during the time, and it was because a truck had backed into one of the other  
5 transformers that was being used, caused a ground, and ended up being in a  
6 station blackout. The plant was able to restore one of the diesel generators and  
7 get power restored, and come out of the blackout. As Pat had stated earlier, we  
8 do still evaluate for station blackout compliance, and in the license renewal, we  
9 make sure that the recovery paths have an aging-management plan. And once  
10 again, that is recovery paths. And power uprates, if a licensee changes  
11 something, the staff goes back and ensures that the battery-loading capacity  
12 didn't change, which could potentially change your coping. We also look at  
13 license amendment requests. As stated earlier, one of the plants is a 16-hour  
14 coping plant, and originally it was a four-hour coping plant, but there was some  
15 operating experience that had happened at the particular plant out west, and  
16 based on that operating experience the staff was aware of, the licensee re-  
17 performed a coping analysis, and went from four hours to 16 hours. Which  
18 included -- that includes some modifications to ensure that the amount of fuel oil  
19 that they would need would be there.

20           And we also interface with FERC and NERC. We meet quarterly  
21 with FERC and NERC. If there's any issue at all that happens on the grid,  
22 there's a memorandum of agreement and a memorandum of understanding to  
23 sign with both agencies, which, if there is issues with the grid up to a certain  
24 level, if it does get severe, then our headquarters operations officer is called by

1 NERC, and the electrical branch is contacted to look at it. We also get anything  
2 that would cause local problems in the grid, so we're very in tune with the grid in  
3 looking at issues, and we would get those back out to the plants as they would  
4 get stuff back into us. Now I'm going to pass this on to Eric.

5 MR. BOWMAN: Thank you George. Good morning Chairman,  
6 Commissioners. I'm Eric Bowman. I'm the staff lead for the mitigating-strategies  
7 requirements that were imposed following the terrorist events of 9/11. As Pat  
8 had mentioned, we imposed these requirements through a series of regulatory  
9 actions, but for convenience' sake, I'll refer to them generically as the B.5.b  
10 requirements. By their terms, the B.5.b requirements are broadly applicable to  
11 any events that are related to explosions or fire. Due to the context in which the  
12 strategies to meet those requirements were developed, most of the details of the  
13 strategies on a site basis are designated for official use only, as security-related  
14 information. Although they were developed to address impacts to the plant due  
15 to explosions or fire, the result was a set of flexible, deployable strategies to  
16 accomplish the key safety functions for the reactor sites that could be useful in a  
17 wide variety of circumstances.

18 Throughout the development process for the B.5.b requirements,  
19 we met periodically with our international partners to share information on  
20 approaches to the problem and improve our response. The B.5.b development  
21 process was a deliberate, phased approach. Initially, we started out looking at  
22 what could be done with readily available materials or personnel. Then we  
23 moved on to see what can be done further to aid in the cooling of the spent fuel  
24 in the spent fuel pools, and the final phase of the development process was

1 looking at the core cooling and maintenance of containment. The efforts started  
2 out under the lead of the Office of Nuclear Security and Incident Response,  
3 ultimately transitioning to the NRR in the lead for operating reactors. We had  
4 great support from the regional offices, and analyses that came up from the  
5 Office of Research during the effort.

6           As I had mentioned, Phase 1 looked at what could be done with  
7 readily available materials and personnel. In large part, the reason for that was  
8 because we wanted to see what could be put in place rapidly to address the  
9 need, and also the terms of the order itself referred to the use of readily available  
10 materials and personnel. Phase 1 comprised a series of inspections,  
11 assessments, and analyses, drawing on existing equipment and procedures,  
12 best practices the licensees had for their initial responses, and lessons learned  
13 that came about from the research analyses. That phase culminated in the  
14 Phase 1 guidance document that was produced in February of 2005, describing  
15 what our expectations were for the characteristics of the strategies that would  
16 meet the requirements of the Interim Compensatory Measures Order. That  
17 guidance document is designated safeguards information.

18           High-level overview of what we can speak of publicly about the  
19 Phase 1 strategies; they involved coordination of response with off-site  
20 responders, improvements to the firefighting capabilities on-site, and what I  
21 would term as passive measures, such as configuration of fuel within the spent  
22 fuel pools in order to enhance coolability.

23           In Phase 2, we looked further at what could be done to promote  
24 spent fuel cooling using measures that didn't rely on readily available materials or

1 personnel. The results of this phase were a set of mitigating strategies that are  
2 required for the licensees to be able to provide makeup water, or cooling spray to  
3 the fuel, using means that are diverse from the normal methods for makeup  
4 water or cooling of the pools. The diversity includes a diversity from the power  
5 supplies within the spent fuel pool building, or the building containing the spent  
6 fuel pool -- whatever it's called on the site. And a number of the strategies within  
7 this group are use of motor forces diverse entirely from on-site power distribution.

8           The Phase 3 looked at what else could be done for core cooling  
9 and containment. In that effort, we worked with the industry to identify just what  
10 are the key safety functions that would need to be satisfied, based on the design  
11 characteristics of the plants. The results here were two sets of mitigating  
12 strategies; one that is required of pressurized water reactors, and one that is  
13 required of boiling water reactors. For the majority of these strategies, the entry  
14 conditions assume a loss of all internal power distribution, both alternating  
15 current and direct current, and minimum staffing on-site, so it's slightly more  
16 conservative than a station blackout condition.

17           Because of the passive nature of the initial strategies, as well as  
18 the entry conditions being more conservative, assuming a loss of all internal  
19 power distribution, the B.5.b strategies, if they were used in the event of an  
20 extended station blackout, would have the potential to extend the period for  
21 which a licensee could supply the key safety functions without on-site power  
22 available. Subject to your questions, that concludes my briefing.

23           MR. BORCHARDT: That completes the staff's presentation.

24           CHAIRMAN JACZKO: Thanks, appreciate the insights. We'll start

1 with Commissioner Magwood with questions.

2           COMMISSIONER MAGWOOD: Thank you. Thank you for your  
3 presentations today. Very informative. Let me ask sort of a basic question on  
4 station blackout, something that I've been looking at in the last several weeks,  
5 and I just wanted to sort of hear your thoughts about this. The -- you've talked  
6 about the maximum life of the batteries and the coping strategy being four hours.  
7 And I wonder if you could describe how the agency dealt with this, came up with  
8 a four-hour coping duration, while at the same time, the procedures clearly  
9 indicate that this is supposed to be a site-specific analysis where you look at site-  
10 specific characteristics of the plant, off-site power resources, and one would think  
11 you would have a variety of conclusions after going through that analysis. But  
12 yet most of the plants, a vast majority of the plants, have this four-hour coping  
13 strategy. Can you reconcile those for me?

14           MR. WILSON: Yeah, the four-hour coping analysis was arrived  
15 when the staff worked with the industry, and they looked at how long, roughly, it  
16 would take to restore off-site power in various places. The estimate was .9 to  
17 two hours, so based on that, the staff doubled the time and said you will cope  
18 with a station blackout for four hours. So the industry came up with, it would be  
19 .9 to two hours, like I said, and we doubled it to have a safety margin there, to --  
20 you'd cope with four hours. We chose four hours based on the size and the  
21 capacity of the batteries, so anything longer than that, modifications were made  
22 or you brought an additional source on, but that's where the original four hours  
23 came from.

24           COMMISSIONER MAGWOOD: What's our actual experience with

1 loss of off-site power, in terms of how long it takes to restore off-site power?

2 MR. WILSON: There is some data that was -- we used a NUREG,  
3 6890, that has some data in it, and it would go anywhere from .5 hours to three  
4 hours. We're also in, one of the statements that I made is we have constant  
5 communications with NERC and FERC, and they have done some studies and  
6 done some projections across the country on certain circumstances. How long it  
7 would take to restore an off-site power, and we're presently looking at that, and  
8 we have that to the quick-look team.

9 COMMISSIONER MAGWOOD: When you're thinking about the  
10 restoration of off-site power, it's interesting that having an alternative source of  
11 off-site power is one of the options that you look at in mitigating a station  
12 blackout. However, when you think about the sorts of events that lead to the loss  
13 of off-site power, what is the thinking in terms of, if you lose one source of  
14 transmission from one off-site source, why do you think you have a second?  
15 What sorts of scenarios would it be useful to have the second, redundant off-site  
16 power source if you lost the first one? If you have a hurricane that takes out the  
17 transmission lines for one source of off-site power, why would you think there'd  
18 be a second?

19 MR. WILSON: I would go ahead and say you're not asking a  
20 question with alternate AC source, or are you asking a question about the  
21 redundancy of off-site power?

22 COMMISSIONER MAGWOOD: Yes.

23 MR. WILSON: Well, the more off-site power lines that you have,  
24 unless you would have a common cause failure that would wipe out a switchyard,

1 the more lines that would come in and you have a more redundant off-site power,  
2 then that would give you more capability to mitigate an accident. You would want  
3 an alternate AC source, the staff would like to have an alternate AC source,  
4 because the capacity of an alternate AC source is above that of the battery, so  
5 there's more margin if I have an alternate AC source. There's no requirement, as  
6 you had mentioned, to protect that alternate AC source from events. I mean,  
7 from environmental effects. There's no requirement. We have, Appendix A,  
8 GDC-2, that affects safety-related stuff from environmental effects, but those  
9 requirements are not for the alternate AC source, so it is not a safety-related  
10 source as robust as the emergency diesel generators, but it does have a longer  
11 capacity and capability. That's the reason we'd want it, but there's no  
12 requirement as such to have an underground cable which would protect it from,  
13 like, high winds. There's no requirement that we have for that.

14           COMMISSIONER MAGWOOD: But you mentioned that the  
15 procedures that have been developed for station blackouts -- how much work  
16 has been done to reconcile, or I guess to merge the station blackout procedures  
17 with the severe-accident management guidelines? How much coordination is  
18 there between those two?

19           MR. WILSON: Well, the station blackout is an abnormal operating  
20 procedure. The SAMGs are above anything that you would have, so they're way  
21 beyond what a station blackout. The basis of the SAMGs, when you go through  
22 them, is you would have power to do certain things, to get water back or to  
23 minimize the release path. So as far as I know, they're not in tune, they don't go  
24 from one to the other. The station blackout specifically tries to restore power, but

1 as far as I know, and -- Donny, can you add anything?

2 MR. HARRISON: You got it.

3 MR. WILSON: But they're not in tune where one feeds into the  
4 other. They're used for a different purpose.

5 COMMISSIONER MAGWOOD: So you never assumed that in the  
6 case of a severe accident, that you lost offside power? Is that what you're  
7 saying?

8 CHAIRMAN JACZKO: Donny, do you want to maybe go up to the  
9 mic?

10 MR. HARRISON: I'm Donny Harrison from NRR. The answer to  
11 your question would be no. If you're into the SAMGs, you're into an event that's  
12 gone beyond your normal emergency procedures and your abnormal  
13 procedures, but what you might be in is going through the SAMG guidelines  
14 looking for water sources, for containment flooding, and that type of thing. But at  
15 the same time; you may have your station-blackout procedures open also, and  
16 you're trying to recover AC power. You might be doing the coping strategies of  
17 taking loads off your batteries so you can prolong their life. So you may be  
18 actually in both at the same time. That's kind of what would probably happen.

19 COMMISSIONER MAGWOOD: I mean, I've looked at some of the  
20 SAMGs. I haven't looked at all of them. I've looked at some examples of  
21 SAMGs for specific plants. You might want to stick around for this. And I'm just  
22 curious as to what -- most of the SAMGs, as I read them, seem to anticipate that  
23 you do have power

24 MR. HARRISON: Well for most things, you need water and you

1 need to pump it, so implicit in that, you're going to need some type of power  
2 supply or steam, if you can run a RCIC pump off the steam and have DC power  
3 for the control of the pump. So the SAMGs basically are geared towards a list of  
4 water supplies for containment flooding. Some of them need AC power, some of  
5 them probably need DC power for control. Again, then you get into the strategy  
6 of, "Can I prolong the battery life so I can control the RCIC pump?" if that's what  
7 you're using to provide water to the core. So it's a mix, and the SAMGs are  
8 guidelines. They're not procedural for specific events. So what it is is a list,  
9 oftentimes, and so you'll get into that and you'll start going through the list saying,  
10 "What is available? What isn't available?" and you'll get down to what you've got.

11           COMMISSIONER MAGWOOD: All right, I think I'll leave it at that  
12 for now. Let me ask just sort of a broad question. This is something that  
13 actually, Eric, Leeds and I have talked about a little bit already. Which is, what  
14 are the options if one were to have the desire to have a longer coping time? A  
15 longer coping duration? What technical options immediately present themselves  
16 in your mind to increase the duration?

17           MR. WILSON: Well, the way you would have to -- right now, we  
18 don't know about the batteries. You could potentially have a higher-capacity  
19 battery would be one way, but even with an alternate AC source, you have to  
20 have everything on-site. Like the one plant that has a 16-hour coping analysis.  
21 That means their alternate AC source has enough fuel capacity. It's already  
22 there that it will run for 16 hours, and they need to get off-site power back within  
23 16 hours because that is all the capacity that's there unless they're going to  
24 mitigate and bring additional fuel oil and stuff on for the source. So to go beyond

1 a four-hour capacity, I think you would have to have an alternate AC source and  
2 you would have to have the capability of those -- well you'd have to have  
3 everything there for it to run if you wanted to cope with something for longer than  
4 four hours, or change the battery out to a higher-capacity battery that could  
5 handle a larger discharge.

6 Another option would be to potentially bring in a battery charger  
7 that you could bring in, with a power supply to recharge the batteries and  
8 maintain that capacity. That would be something that would -- you wouldn't have  
9 to change your batteries. That would be, just bring another battery charger,  
10 charge the batteries, and you could extend the capacity of those batteries that  
11 you have on-site now.

12 COMMISSIONER MAGWOOD: And I understand there are a small  
13 number of licensees that are doing something along those lines now, is that  
14 correct?

15 MR. WILSON: Yes, there is one licensee that I'm aware of that has  
16 brought a temporary battery charger in, they have it in their procedures that they  
17 would charge, and increase the capacity of that battery. And that is one of the  
18 coastal plants in the United States that a hurricane could actually affect.

19 COMMISSIONER MAGWOOD: Thank you very much. Thank you,  
20 Chairman.

21 CHAIRMAN JACZKO: Commissioner Ostendorff?

22 COMMISSIONER OSTENDORFF: Thank you Mr. Chairman.  
23 Thank you all for being here today. I wanted to maybe start out with Pat, I guess  
24 it's a question for you and perhaps George. Just a big picture, looking at what

1 the NRC does via regions, resident-inspector programs, to assess the readiness  
2 of a specific plant to deal with a station blackout. I understand there was a one-  
3 time inspection done back in the '80s that is part of, also, license-renewal  
4 application process. Are there any other looks that the NRC takes via its resident  
5 inspectors or by other mechanisms, to provide an NRC perspective on the  
6 licensee's readiness to deal with the station blackout conditions?

7 MR. WILSON: Pat, I'll take this one if you don't mind. Actually,  
8 after Generic Letter 2006-02, we have written some procedures. We used to go  
9 out and do a temporary instruction that looked at the worst grid conditions, so  
10 whether that would be -- mostly in the summer, where the grid would be  
11 stressed. So we used to have a temporary instruction that would go out and look  
12 at summer readiness, to make sure that the plant was ready for the extreme grid  
13 conditions that could happen in the summer. We changed -- actually went in and  
14 changed one of the procedures. The adverse weather procedure actually looks  
15 at summer readiness for the plant, on a grid-type basis. Not specifically for  
16 station blackout, but it looks at -- are the diesels ready, or are they monitoring the  
17 grid? So specifically looks at that -- not looking at non-compliance with station  
18 blackout, but looks at because the grid's stressed during those conditions. And  
19 that's something the resident inspectors do.

20 COMMISSIONER OSTENDORFF: Anything there, Pat?

21 MR. HILAND: I'd like to add something, just a minor comment. My  
22 first 10 years in the Commission, I was a resident inspector at three different  
23 power plants. PWR and two boiling-water reactors. And the job of the resident  
24 inspector is to be aware of the plant conditions every day. He goes into the

1 plant, he hears what the plant modifications are, what the design changes are, he  
2 understands the need for the alternate AC sources on-site, both the standard  
3 diesel or in Oconee's case, the hydro plant, as well as what's there for the station  
4 blackout. And so you rely on that daily presence, five days a week or actually  
5 seven days a week, of the resident inspector. So I would add that only, just  
6 emphasize.

7           COMMISSIONER OSTENDORFF: Let me just kind of maybe add  
8 another question on to that, that is related to this precise query. And that is --  
9 and Commissioner Magwood was asking questions about the four-hour battery  
10 time and so forth, as one component of the coping strategies for a specific plant.  
11 Can you talk a little bit -- I guess George, about -- is the coping strategy a  
12 dynamic, evolving, living piece? Or is it static? Can you talk a little bit about how  
13 that might be updated as conditions at the plant, or in that particular part of the  
14 grid, may change?

15           MR. WILSON: The coping analysis that was done was a one-time  
16 snapshot that the licensees had to look at their coping analysis. We do evaluate,  
17 as I stated, in some of the license amendments like power uprate, if the battery  
18 capacity would be affected if they were changing and adding DC loads, and we'd  
19 go back and look at that. And as in the case of the one unit, due to operating  
20 experience, we challenged them and they went back and redid their calculation,  
21 ended up being a 16-hour coping plant. There has been several findings on  
22 station blackout. They look at the assumptions. So it is -- there are issues that  
23 are identified in different inspection procedures, but we do not go back and  
24 reevaluate the full-blown assumptions and calculations that a licensee does.

1                   MR. BORCHARDT: I think that's -- the key is that the regional  
2 inspections that are done, as well as the resident inspectors, will look at every  
3 design change that's made at the plant, or nearly every, and then they'll look at  
4 50.59 evaluations to make sure that all the proper considerations were taken into  
5 account. One of those would be loading on diesels, and if you change the load  
6 of the diesel, or you change the load on a battery, those would all be evaluated  
7 and would likely lead to an issue, perhaps, with station blackout. We don't do  
8 station blackout reviews per se, but there's many, many ways that you would get  
9 to a station-blackout issue just in the normal course of our oversight activities.

10                   COMMISSIONER OSTENDORFF: Okay, thank you. Let me go  
11 back to a comment that George had mentioned in his briefing, and that was, we  
12 do have experience with hurricanes, and the Chairman mentioned the tornadoes  
13 we've had just in the last 24 hours, and certainly we had a tornado here in the  
14 last couple weeks down in southern Virginia that impacted a switchyard at a  
15 nuclear power plant. From the hurricane experience, or tornadoes, is there any  
16 big area of query that you think the NRC needs to look at, or feel pretty  
17 comfortable that our exiting processes adequately assess the impact of these  
18 weather-related events on off-site power availability?

19                   MR. WILSON: Well, I know one of the things that the staff has  
20 done, to give you an example to add defense and depth, when industry and  
21 utilities have come in and asked for an extension, an AOT extension, a lot of  
22 outage time on some sort of power source, either being a diesel generator or  
23 transformer or one of the lines, one of the things that the staff requires is the  
24 replacement of that power source with some sort of other power source. Not

1 safety related, but they bring in temporary diesel generators, and with that, the  
2 temporary diesel generators, what we have seen is that there are temporary  
3 diesel generators, so if something would happen, you could easily get one of the  
4 temporary diesel generators, and they got them at Waterford during Hurricane  
5 Katrina, they had the temporary diesel generators brought on-site. They had  
6 them in case they did lose off-site power, or they had a problem with the other  
7 diesels, and they had that temporary diesel there. So that we know that they do  
8 have that capability to do it, and they also line up fuel sources, I think, based on  
9 some discussions -- and one of my staff members, actually out in Waterford  
10 during Katrina, the roads were blocked, they had no other way, so they were  
11 starting to bring fuel oil through with a barge. So we have had lessons learned  
12 from the hurricanes that not only do they have extra power sources that they can  
13 get, but also, you have to think outside the box, to look to see how you're going  
14 to get the fuel oil there if the roads were blocked. So that is stuff that we've got  
15 lessons learned, and it has seemed to work. At Turkey Point, they ran the  
16 diesels for a couple weeks, so it seems to work.

17 MR. HILAND: Yeah, let me just add -- and Turkey Point's a good  
18 example, where hurricanes are something that you see on the weather map,  
19 approaching you. And there are procedures at the site, and they initiated it at  
20 Turkey Point. They shut the plant down before the hurricane got there. They  
21 started up the diesels, and essentially, they were well prepared for that event.  
22 So there is a process, versus a tornado is unknown. That tornado, you get  
23 about, at luck, 15, 30 minutes of warning, for a tornado warning, to react. But for  
24 hurricanes, we have procedures in place. Our regional office goes into a standby

1 mode in the response center. The resident inspectors for Hurricane Andrew  
2 were on-site throughout the entire event, and so there are some preparatory  
3 work that you can do for a hurricane.

4 COMMISSIONER OSTENDORFF: Thank you. Eric, I'd like to turn  
5 to you for a minute here on B.5.b. And again, thank you for your presentation,  
6 and I recognize that there are limitations as to what you might be able to address  
7 in this session, but let me just ask this question. Can you talk in general terms as  
8 to what the NRC does to inspect the ability of the licensee to carry out B.5.b-type  
9 actions, as far as equipment reliability, testing that equipment, operator training,  
10 et cetera?

11 MR. BOWMAN: That's examined on a triennial basis, as part of the  
12 triennial fire protection inspection. We added the B.5.b requirements and the  
13 strategies that meet them as an inspectable area there, January 1 of 2010. So  
14 they look at -- so they look at the capabilities of the equipment to be used to meet  
15 the strategies, the maintenance on the equipment, and the training of the  
16 personnel.

17 COMMISSIONER OSTENDORFF: So we have a little bit over a  
18 year experience with that. Is that what we -- you said January 1, 2010? Any big  
19 "ah-ha" kind of lessons learned from that level one year experience so far?

20 MR. BOWMAN: If I could defer that to the closed session, I'd  
21 prefer.

22 COMMISSIONER OSTENDORFF: Thank you. Thank you, Mr.  
23 Chairman.

24 MR. BORCHARDT: Commissioner, I would also just acknowledge

1 that the industry has done a review of that equipment, of their own. They've  
2 identified some issues that are being resolved. Some of them are being informed  
3 by the uniqueness of what happened in Japan, as to where equipment is stored,  
4 for example. It was looked at differently now, given the tsunami kind of flooding  
5 issues, than we might have looked at it previously.

6 COMMISSIONER OSTENDORFF: Thank you.

7 CHAIRMAN JACZKO: If I could just clarify, the tri-annual is not the  
8 first inspections we've done at B.5.b. We did, following implementation of B.5.b  
9 we did a temporary instruction, as I recall, to inspect all the B.5.b implementation.

10 MR. BOWMAN: That's correct, sir. There were, I believe, four or  
11 five temporary inspections that were conducted along the development process.  
12 In 2008, we did a final verification that everything was in place. Then we  
13 transitioned to monitoring it through the reactor oversight process and the tri-  
14 annual fire protection inspection, and --

15 CHAIRMAN JACZKO: Okay. So that, I just wanted to clarify.

16 MR. BOWMAN: That's correct.

17 COMMISSIONER OSTENDORFF: Thanks for the clarification.

18 MR. BOWMAN: Sure.

19 COMMISSIONER OSTENDORFF: Thanks, Chairman.

20 CHAIRMAN JACZKO: Commissioner Svinicki?

21 COMMISSIONER SVINICKI: Thank you all for your presentations.  
22 My colleagues have touched on some topics I might have addressed. They  
23 might not have posed the questions in the exact same way, so I apologize if I'm  
24 covering any of the same ground a little bit.

1           At a very high level, Bill, you talked about the fact, you gave a  
2 status report on what's happening in Japan, and you talked a little bit about our  
3 90 day and our longer term review. As long as our colleagues in Japan are  
4 focused, as they are now, very immediately and deeply still on mitigation, dealing  
5 with the circumstances on the ground there, they're obviously appropriately  
6 focused on that and not focused, right now, in being able to look at detailed  
7 chronologies of events, or lessons learned, or things like that. And yet, we have  
8 underway this near term review.

9           And so, my thought turns on station blackout to a question that I still  
10 want to ask you, because we do know quite a bit, and we have a presence in  
11 Japan, and we've been learning a lot about the events. I would ask any of you if  
12 you want to respond: based on what you know today, is there anything about the  
13 events that occurred in Japan, with relation to station blackout, that cause you to  
14 immediately identify areas in our regulations that you would assess today are  
15 potentially inadequate, based on what you know right now?

16           MR. BORCHARDT: Right after the event, and every day since, we  
17 ask ourselves whether or not there's some regulatory action we need to take to  
18 assure the protection for the 104 plants in this country. And to date, we have not  
19 identified anything that requires immediate action. That doesn't mean we won't  
20 identify some things that we want to raise to the Commission for future  
21 consideration. Station blackout rule oversight might be one of those.

22           But the short term task force is looking at station blackout. I believe  
23 they'll address it to some degree. I think it'll, if I were to guess, would guess that  
24 will also be an element of the longer term review, as we gain more and more  
25 information about the existence or the conditions of switch gear inside of the

1 plants in Japan, which we really have no idea of the condition of that equipment.

2 COMMISSIONER SVINICKI: And I think, somewhat, my question  
3 is rooted in a comment, that I believe you made representing the U.S., and you  
4 were also, I think, Vice President, the Convention on Nuclear Safety, a really  
5 important international meeting on national nuclear safety cooperation  
6 internationally. But I think you indicated in your remarks there that we may be  
7 learning about this event even a decade from now.

8 So is it accurate to say that, for our 90 day review and also the  
9 longer term, that we will, by, perhaps, the end of the year, we'll be looking at  
10 issuing some further recommendations if appropriate? It will still be challenging  
11 to have good fidelity and solid knowledge of all of the events that occurred over  
12 in Japan. Is it true that the team that's doing the 90 day review and our longer  
13 term review, they're going to struggle with that issue?

14 MR. BORCHARDT: Clearly. I mean, and their charter  
15 acknowledged that they're to use whatever information they have available today.  
16 Because we didn't want to wait until we had all of the information; who knows  
17 how long that would be? So we didn't want to delay in doing what was  
18 appropriate and prudent to do now, or in the near term. And so they will identify  
19 many holes in our knowledge that, hopefully, many of those will be filled during  
20 the time period of the longer term review. But it's not outside the realm of  
21 possibility that it'll be years before we know the full condition of, you know, the  
22 inside of the core, and various pieces of equipment that are currently in very high  
23 radiation areas.

24 COMMISSIONER SVINICKI: And this may sound simple, but  
25 sometimes things are more complicated than we think. Do we have a good

1 ability right now to do a comparison between our requirements on station  
2 blackout and Japan's requirements on station blackout? That sounds very  
3 simple, like, as long as we can translate it, why don't we have the ability to just  
4 lay those side by side? Is that more complicated than we think?

5 MR. BORCHARDT: I don't know, you know, and I don't know how  
6 much of the short term task force, they've looked into that. But you're right, it  
7 sounds like it'd be pretty simple, it's something you could do through a web  
8 search even. But I don't really know, if Artie or -- where's Artie?

9 CHAIRMAN JACZKO: Right behind you.

10 MR. BORCHARDT: Yeah. We'll have to get back to you.

11 COMMISSIONER SVINICKI: Okay, but that is something that it  
12 would be your understanding that, for the 90 day review, they'll at least try to  
13 access whatever they can in terms of comparability, and that would inform  
14 whatever it is the 90 day review would put forward?

15 MR. BORCHARDT: I think that sounds reasonable.

16 COMMISSIONER SVINICKI: Okay.

17 MR. BORCHARDT: they're not doing it now, they will be later  
18 today.

19 [laughter]

20 CHAIRMAN JACZKO: Let's make sure that they have their, you  
21 know, that that's a task, that they can complete in the appropriate way, then  
22 they'll do that.

23 COMMISSIONER SVINICKI: And then I would characterize some  
24 of my colleagues' questions, based on the presentations you gave, they have to  
25 do with something I think the NRC has been questioned about since this event

1 occurred, and it is: how frequently do we challenge and reassess underlying  
2 assumptions that we've made in developing the regulations we have in place?  
3 So, George, you talked quite a bit today about looking at any time a licensee  
4 might propose a change on-site, we will look at the evaluation they did to comply  
5 with station blackout. We'll see if there's any effect there, and we would  
6 challenge that.

7           But I think that some of the questions that I think NRC has been  
8 asked have to do with: do we look at our assumptions about broader external  
9 conditions? And George, you've mentioned working with the Federal Energy  
10 Regulatory Commission on grid reliability, grid status, the North American  
11 Electric Reliability Corporation. We have important relationships there where we  
12 reassess that. But, of course, that's very dynamic, as the nation looks at maybe  
13 having more renewable energy, the grid may look different in the future.  
14 Can you characterize our overall engagement on really having access to the best  
15 information about external things like grid reliability, so that we can constantly be  
16 informing whether our regulatory assumptions that we've made in the past are  
17 adequate?

18           MR. WILSON: We -- as I had stated, we meet quarterly with both  
19 NERC and FERC. And if anything comes up, we're aware of it. We actually are  
20 noticed and given information if they're going to change any of their reliability  
21 standards. We have commented on the reliability standards to ensure that the  
22 safety of the nuclear power plants are maintained. I feel very confident about the  
23 status of the grids.

24           When they do new reports, we know that they are doing new  
25 research reports, such as there's three reports out right now that we're looking at,

1 based on the frequency response of the grid and the interconnection. We do  
2 have, joint Commission meetings with the Federal Energy Regulatory  
3 Commission and we also invite NERC. We have contacts with the Department of  
4 Energy on their grid sector, their energy sector, to evaluate that.  
5 So, as things do change, we do re-look at that. And to see if we do have to  
6 evaluate the grid assumptions and the staff has been looking very hard at this for  
7 the last three years, specifically with stuff that changes in the grid, and to see  
8 how the renewable sources such as, specifically, wind, and how that's taken,  
9 because it potentially affects the reliability. And there has been an incident  
10 where the wind just stopped blowing and there was 1100 megawatts that was  
11 lost in ERCOT, which is the Texas grid. So I feel very confident, we know the  
12 status of it and are evaluating that.

13 COMMISSIONER SVINICKI: And you mentioned, in response to a  
14 question from Commissioner Ostendorff, that our site-by-site evaluation of the  
15 compliance with station blackout was a bit of a one-time snapshot. Based on the  
16 answer you just gave me, do you have all of the authorities that you need, if you  
17 did need to change an underlying assumption that was external to the plant  
18 conditions itself, having to do with a grid or something else? Do you feel  
19 confident that you have the authority to compel that licensees have to take that  
20 changed circumstance into account?

21 MR. WILSON: Yeah, I think that we have the process that we do  
22 look at it potentially as plant-specific backfit, or if we thought there was a broad  
23 look at potential rulemaking, and route that through the process. So I would think  
24 that process is in place to do that.

25 COMMISSIONER SVINICKI: Okay. And my last question is -- I'll

1 rope in Pat, because I think this is a little bit of a put you on the spot question, but  
2 for George and Pat: we've talked a lot about four hour batteries. We talked a  
3 little bit about eight hour batteries. But, you know, you're probably, like many of  
4 us, since this event occurs, there's been a lot of discussion about four hour  
5 battery life.

6           And I don't know if, perhaps, at a family event, or a barbeque, or  
7 anything, maybe some member of your family might come up to you and say,  
8 "Well, you know, we have natural events that can occur, like hurricanes: those  
9 can be multi-day events. What is the basis for having four hours?" Just to a lay  
10 person, when they come to you and say, "Is it really only four hours that nuclear  
11 power plants have to cope with some sort of event of a long duration?" What do  
12 you say to -- if you were talking to a family member, what would you say to that?

13           MR. HILAND: Yeah, I'll start. First of all, the, I would talk to the  
14 family member and say, "That's the maximum that we allow reliance on a  
15 battery." We have a high expectation that you restore either off-site power or one  
16 of your emergency diesels, or an alternate AC power source. It doesn't mean  
17 that the battery -- as you heard, we have an example of a plant that has a small  
18 generator; maybe they bought it at Home Depot. And they bring it in, they  
19 charge the battery, or recharge the battery.

20           That means you can extend the life of the battery, but the four hour  
21 coping time is the maximum we allow. That's not to say the batteries can't last  
22 longer than that. I don't have the details of all the batteries at the plants, but  
23 they're tested periodically to assure that they're in a high state of readiness.  
24 That's how I would answer that question.

25           Our experience is the reliability of our emergency diesels is very

1 high. Very high reliability, and it's very -- demonstrated very promptly to restore  
2 emergency diesel that either didn't start the first time, there's a problem with it,  
3 the mechanics are on-site, the operators know how to operate the controls of the  
4 diesel. So we have some high level of confidence that, within four hours, they'll  
5 get either off-site power back, of course that doesn't happen if you have a  
6 hurricane, or they'll get the emergency diesels back on line. That's my answer.  
7 George?

8 MR. WILSON: Yeah. What I would add is, because I've been  
9 asked this question. I commute two hours each way and I get asked this  
10 question a lot, recently. And how I've answered is that we've only had one  
11 station blackout in the United States. Our diesels are very reliable, and they  
12 restored that power within 55 minutes. I also explain that we have redundant  
13 power supplies. So you have to have something to take out multiple sources of  
14 power. And once I explain that, I've, usually they stop, or I run overboard --  
15 [laughter]

16 COMMISSIONER SVINICKI: All right, thank you. Thank you all  
17 very much. Thank you.

18 CHAIRMAN JACZKO: Commissioner Apostolakis.

19 COMMISSIONER APOSTOLAKIS: Thank you, Mr. Chairman. I  
20 guess most of my questions have been asked, but I, we've been talking about  
21 assumptions and so on. It seems to me, two of the assumptions that we have  
22 been making regarding station blackout now have to be questioned in light of  
23 what has happened in Japan.

24 One is the time that we consider when we try to manage station  
25 blackout. I mean, we talk about four hours, eight hours, some PRAs go to 24

1 hours. But as far as I know, there are no studies that go to weeks. And that's the  
2 first assumption. The second assumption is that there may be major  
3 infrastructure damage. So when you, Mr. Wilson, talk about diesel reliability, I  
4 assume you are talking about under conditions that are not as severe as what we  
5 have seen in Japan. So are these the two assumptions that we have to revisit  
6 now, in light of Japan? The time and the state of the infrastructure?

7 MR. BORCHARDT: Well, in my view, clearly the state of the  
8 infrastructure is very important. I mean, it's for station blackout, it's for  
9 emergency preparedness, it really cuts across the entire spectrum of plant  
10 response to an event. We practice emergency response activities assuming that  
11 there is the infrastructure surrounding the plant. So there's clearly a good lesson  
12 learned.

13 Regarding the duration of the time, I think there is something, we  
14 certainly need to evaluate. But I do believe that our regulatory processes and  
15 requirements, even though they might, you know, they talk about four hours for  
16 the batteries. We, as Pat and George mentioned, have requirements for  
17 reliability of the diesel generators, for tech specs, times for how long they can be  
18 out of service, and all of those requirements, and fuel storage tanks  
19 requirements, that assume that it's going to be a longer duration event than just  
20 four hours, certainly.

21 COMMISSIONER APOSTOLAKIS: But certainly not weeks,  
22 though. I don't know of any study that went out that far.

23 MR. BORCHARDT: No, but I think that there are, there are plant  
24 procedures and protocols in place to get the tanks refilled for diesel generators. I  
25 mean, diesel generators are an incredibly important system for plant response.

1 And there are -- every plant that I'm aware of has arrangements to have their  
2 facilities, their tanks refilled, in the event that they need to go on long term  
3 operation of the diesel generators. When we had the northeast blackout a  
4 number of years ago, there were some plants that had, off-site power was out,  
5 for a time period, and all those preparations were put into play in order to go,  
6 assume that we would have long term loss of transmission capability.

7 COMMISSIONER APOSTOLAKIS: Now, I have a question  
8 regarding the temporary instruction. I'm trying to understand what exactly the  
9 inspectors did that led you to the conclusion that there are no issues. Did they  
10 go in there and look at whether our regulations and the commitments of the  
11 licensee are met? Or did they go beyond that and they looked at, you know,  
12 what if we have a major external event, natural phenomenon, what's going to  
13 happen? Are you prepared to cope with it? Is that something that the task force  
14 will look into and the inspectors just looked at the current commitments and  
15 made sure that they are, in fact, satisfied? And then, of course, the conclusion  
16 that there are no issues probably makes sense.

17 MR. BORCHARDT: In general, we want to give our inspectors  
18 guidance to go out and inspect against existing requirements. They may identify  
19 topics and ideas that go beyond the design basis or beyond the regulatory  
20 requirements. We were certainly becoming aware of some of those ideas, but as  
21 a general rule, we inspect against existing requirements. The task force would  
22 be the proper vehicle to say, okay, that's fine, but do we need to revisit what the  
23 regulatory requirement is? Does it need to go further than the current construct  
24 does?

25 COMMISSIONER APOSTOLAKIS: The B.5.b equipment. I don't

1 know if it's appropriate to ask the question now, but did you consider major  
2 catastrophe and what it could do to the B.5.b equipment?

3 MR. BOWMAN: The B.5.b was the response to an event that  
4 involved explosions and fire, so that was generally the focus of what was looked  
5 at in developing the mitigating strategies that would meet the requirements. We  
6 can discuss it further in the closed session. I think that would probably be  
7 appropriate.

8 COMMISSIONER APOSTOLAKIS: Commissioner Magwood  
9 mentioned earlier that what will happen at a particular site is, of course, site-  
10 specific. And I'm wondering whether we have site-specific accident sequences  
11 and somebody, the licensee, or us, or both, are looking at these sequences and  
12 make sure that the regulatory requirements we have, or the commitment of the  
13 licensee, since it's beyond design basis, are actually consistent with the site-  
14 specific nature of these events.

15 And one example, for example, we -- one example, for example,  
16 okay. When we assume that the operators will actually do something, are we  
17 considering the possibility they won't do it? Or that they would do the right thing,  
18 or the wrong thing? You know where I'm going with this. Are you using PRA at  
19 all, when you're doing these evaluations?

20 MR. HARRISON: I think, in a general sense, if you go back to the  
21 IPEs and IPEEEs, there was considerations that would be PRA-oriented analysis  
22 to address some of this. The IPE and IPEEE were used to close out a number of  
23 the safety issues that were, in the mid-80s, related to various capabilities. So  
24 those were reviewed in that context. Now, we also have SPAR models, and  
25 licensees have internal event PRA models that they have. And again, that

1 should inform their SAMG's as to, like, if you need a diesel generator or fire pump  
2 capability, if you have that capability, you can put that in your plant-specific PRA  
3 and show that you could mitigate some severe accidents using that.

4 COMMISSIONER APOSTOLAKIS: So some of it is done.

5 MR. HARRISON: Some of it is there.

6 COMMISSIONER APOSTOLAKIS: Okay. Thank you, Mr.  
7 Chairman.

8 CHAIRMAN JACZKO: Okay, I'll go back to Commissioner  
9 Svinicki's question about the family picnic, or whatever, wherever it was. One of  
10 the things I'm having trouble reconciling, I think Commissioner Magwood raised  
11 this point too, is the four hour, the four hour time, the coping time, and I think,  
12 Pat, you did a nice job explaining that's the maximum time that we would allow  
13 before we would expect off-site power to be restored. Where I'm having a hard  
14 time reconciling that is we have lots of examples where it takes longer than four  
15 hours to restore off-site power. So there seems to be an inconsistency with that  
16 assumption, and I think, George, you said the same thing: that our data says that  
17 restoration takes about three hours. So I'm not sure if that, if that includes some  
18 run time for the diesels and then four hours, or if that is four hours with, say, an  
19 immediate loss of off-site power and an immediate inability of the diesels to  
20 operate. How do you reconcile those two issues?

21 MR. WILSON: Well, the four hours is based on losing all alternate  
22 current power. So that's the losing the diesels and losing off-site power. As to  
23 diesels are running and you have your power supply --

24 CHAIRMAN JACZKO: Right.

25 MR. WILSON: -- and that's what we've seen here, in the U.S., the

1 diesels have ran. We've only had that one event. But the four hours, like I said,  
2 is, that's just based on having no power and just doing, only coping on the  
3 batteries by itself. If you have -- if you can do a combination, then you do an  
4 analysis. You do a coping period that, if you think your batteries, you're going to  
5 need your batteries for two hours, you would do a coping analysis that says, I  
6 can handle just on the batteries for two hours, then I have my alternate AC power  
7 come on, and then I do an analysis on how long I would think that alternate AC  
8 power needs to run before I would restore the power. That's how they're all  
9 combined. So the four hours is the, what I would consider to be the worst-case  
10 scenario, where I have nothing, I'm just on my batteries. And, like I said, there  
11 are processes that --

12 CHAIRMAN JACZKO: And I appreciate that. The point, though, is  
13 that, clearly, if we get into a situation which is the situation we have in Japan,  
14 which is, where you lose the diesels, it takes more than four hours, in some  
15 cases, to get off-site power restored. In the hurricane situation, you know,  
16 Turkey Point, you said the diesels were running for days? I'm interpreting that to  
17 mean that it was days before off-site power was restored. I mean, I think, from  
18 Browns Ferry last night, they still have not restored, maybe they have one line,  
19 not fully restored, but they have one line, so that they seem to be okay, there. So  
20 --

21 MR. HILAND: [inaudible] emergency diesels there.

22 CHAIRMAN JACZKO: And, again, and in that case, the diesels are  
23 running. But, of course, the station blackout is the rule for when the diesels  
24 aren't running, is not the rule for when the diesels are running. It's intended to be  
25 that situation in which they don't, they don't run, for whatever reason. So, again,

1 that's why I think, from a risk perspective, we don't believe it's a significant event.  
2 But four hours doesn't seem to be a reasonable time to restore off-site power if  
3 you've, if you've lost the diesels immediately. So I'm not sure where we have the  
4 data that supports that right now. I mean, unless I'm, I mean, tell me if I'm wrong,  
5 I guess it's what I'm trying to ask. Am I wrong about hurricanes? Did it only take  
6 four hours to restore site power and they just didn't --

7 MR. HILAND: No, you're correct. You're correct. But the four  
8 hours, as George described, came from an analysis that what was the ability to  
9 restore off-site power, and what was the ability to restore, how reliable were the  
10 emergency diesels. Now, they came up with two hours. And we said, okay, two  
11 hours is the average at the time. We're not going to allow anyone to give an  
12 analysis greater than four hours, with that expectation.

13 And you're right. In the hurricane situation, the reason the plants  
14 have, you know, preemptive procedures, when they see a hurricane approach,  
15 they shut the plant, they turn on their emergency diesels, and that's, they  
16 anticipate the loss of the off-site power. You know, the four hours is, you want to  
17 restore either off-site or an emergency diesel. And we, we may confuse  
18 emergency diesel with alternate AC power. And alternate AC means your  
19 emergency diesels are out of service, as some, some mechanical problem or  
20 common mode, and you have this alternate AC. And there's a number of plants  
21 that chose that path. The alternate AC, and the reason for the time frames, is  
22 how much fuel do you have on-site for this alternate AC, whatever the gas  
23 turbine, how much gas do you have available to run it? And you know, typically -  
24 -

25 CHAIRMAN JACZKO: Those alternate ACs are not seismically

1 qualified.

2 MR. WILSON: That's correct, they're not.

3 MR. HILAND: Right, that's correct.

4 CHAIRMAN JACZKO: So they're not intended to necessarily  
5 survive --

6 MR. HILAND: That's correct.

7 CHAIRMAN JACZKO: -- some of those type of events.

8 MR. HILAND: Right.

9 CHAIRMAN JACZKO: Well, I appreciate that and as I said, I'm just  
10 trying to understand the, you know, kind of the basis. And, again, just to  
11 reiterate, it's not, the diesel reliability is very high, and I was just looking back at  
12 the statement's consideration for the original ruling, even, I think, in the time from  
13 the 80s to the time in which the rule was ultimately implemented, there were  
14 improvements in diesel generator reliability. I assume that those improvements  
15 have only enhanced over time, to today. So the likelihood of a station blackout is  
16 very low, but in the event that there is a station blackout, that's externally driven,  
17 I'm not convinced that, in that situation, four hours is a reasonable time to restore  
18 off-site power. And that may be something that we want to look up a little bit  
19 more.

20 There's been, I think, a lot of good questions about the coping  
21 analysis and the living nature of that coping analysis. I understand that the staff  
22 has looked at this issue in the past, and one of the, I think one of the options that  
23 was considered, given that the rule doesn't appear to allow, directly, the agency  
24 to require an update, that coping analysis, one of the issues that was presented  
25 was the possibility of a generic letter. I don't know if you have any information on

1 the status of that. Is that something the staff is pursuing, or are they no longer  
2 pursuing a generic letter to update coping analyses?

3 MR. WILSON: Actually, we were, we have evaluated looking,  
4 looking into going to the rulemaking as what we have looked at. So that is  
5 something that the staff is still looking, and we'll pass the data that we have on to  
6 the 30 day look team --

7 CHAIRMAN JACZKO: Okay.

8 MR. WILSON: We do have, we do have some data that we've  
9 done and that data will be passed on to the, to the look team. And I was not  
10 aware of a generic letter. We were looking at a lot of data that we had received,  
11 both from FERC and NERC, and some of the NUREG studies, and looking to  
12 see whether or not we had to go after rulemaking and --

13 CHAIRMAN JACZKO: Okay.

14 MR. WILSON: -- enhance the station blackout rule itself.

15 CHAIRMAN JACZKO: So that is, that is effectively ongoing at this  
16 point, although not at a, maybe not gotten to a --

17 MR. WILSON: Yes, we're still, we're still accumulating data.

18 CHAIRMAN JACZKO: Okay. Good. Thanks. To what, and we've  
19 talked a little bit about, kind of from the external perspective, what the station  
20 blackout does, but I wanted to explore just an issue of, obviously, a significant  
21 consideration that we've seen from Japan is the impact on spent fuel pools. And  
22 to what extent are the spent fuel pools and the limited power needs that they may  
23 have included in the station blackout considerations. Is that a piece of it, or is it  
24 just the core?

25 MR. WILSON: No, the station blackout rule did not evaluate the

1 spent fuel pool cooling, so that was not part of the rule itself. That was one of the  
2 reasons that we had added the other portion, and had Eric go over some of the  
3 B.5.b strategy, because that specifically evaluated the spent fuel pool.

4           CHAIRMAN JACZKO: They, maybe under severe -- I mean, are  
5 there procedures, maybe under severe accident, or under, I guess it would be  
6 more under the B.5.b, to provide power to, to whatever systems are necessary  
7 for circulation in the pools? Do those procedures exist more on a kind of a  
8 severe accident perspective, or?

9           MR. WILSON: Well, I have some rough data that, we have  
10 conducted a survey of the spent fuel pools. It was done in the mid-90s, and  
11 about a third of the plants, the spent fuel pools themselves are actually on a --  
12 the back-up power is the diesel generator, so they're actually on the safety  
13 buses. They're manually loaded, so they are on a safety-related power supply.  
14 A large number of the other ones actually have RHR as a back-up to provide  
15 spent fuel pool cooling or make-up, so RHR is a safety-related system, then that  
16 would be the back-up of the diesel.

17           And then there's several others that they can put a spool piece in to  
18 cross-connect systems, to provide additional cooling and make-up mechanisms.  
19 So we did look at that in the 90s and evaluate that. So there are ways that they  
20 could transfer power, since they could get the battery backup, or a system that is  
21 powered by the 1E safety-related system, to provide that. So that has been  
22 looked at.

23           CHAIRMAN JACZKO: All right. And then, just turn to the last  
24 question. And maybe it, almost may be the opposite of, the flip side of what  
25 Commissioner Apostolakis raised, which is: to what extent are we, and how are

1 we modeling station blackout in some of the risk assessments that we do? Do  
2 we have a good way to model these kinds of events as we look at our severe  
3 accident and the, I mean, particular in the PRA? How exactly do we model these  
4 kind of events? And I think, hinting from Commissioner Apostolakis, we don't  
5 necessarily look beyond 24 hours for this kind of situation, into the longer, longer  
6 time frame. And is that a non-conservatism or a conservatism in the PRA  
7 analysis that we have.

8 MR. HARRISON: The way that the point-specific PRA's are  
9 developed, the key becomes the probability of recovery of off-site power,  
10 ultimately. I know back in the '80s, it was, like, 50 percent of all events were  
11 recovered in the first half-hour, and it kind of works down from there. So, and  
12 most of the data says that at least prior from my past, we had no events that  
13 went beyond like 10 or 11 hours, or something like that. So that gives you a tail  
14 of the curve on the recovery curve.

15 So most PRAs run for 24 hour mission times, if there's some critical  
16 issue that occurs after that, they may run to 32 hours, or something like that. But  
17 what they're looking for is reaching a safe, stable condition at the plant, so if I can  
18 -- I got power back or I've got some capability where I can maintain that, then  
19 they'll stop the analysis and declare it successful. What that will mean is if you're  
20 into an extended outage after an earthquake or whatever, you're going to have to  
21 provide fuel to the diesels, and in that situation it's determined that, within a day,  
22 you can get those supplies there. Or, within eight hours, you'll be able to get that  
23 fuel supply to the plant and be able to provide it. So, that's an inherent  
24 assumption, I would say, that's underneath the PRA: that those capabilities will  
25 be there.

1           CHAIRMAN JACZKO: As we go forward, I mean, and again, as we  
2 get more information and the task force is looking at this kind of things, I mean,  
3 that obviously would probably be relevant data inputs to see if some of those  
4 assumptions are no longer unnecessarily valid as we go forward. So, again, we  
5 appreciate your information. I don't know if anyone has any other questions.  
6 Commissioner Magwood?

7           COMMISSIONER MAGWOOD: Just a quick question about Japan.  
8 One of the things about the early portions of the events in Japan that was a bit  
9 frustrating was recognizing that the Japanese were unable to provide emergency  
10 power to the plant and weren't able to connect the -- they brought generators in  
11 but couldn't get them connected. Do we have any more insight or understanding  
12 as to what the problem was in the early days of the event?

13           MR. BORCHARDT: I don't have a definitive answer. It's another  
14 one of those areas where we don't have clear information, but we do have good  
15 indication that the switch gear on the lower elevations of the building were  
16 severely affected by the tsunami, and that probably, and this is just my opinion,  
17 probably caused serious degradation to the electrical distribution within the plant.  
18 So even if you had an electrical supply, the temporary generator, there's no place  
19 to make an easy connection.

20           CHAIRMAN JACZKO: Any other questions?

21           COMMISSIONER APOSTOLAKIS: I'd like to make one brief  
22 comment. The key in developing the accident sequence in a station blackout is  
23 the recovery of off-site power, as Donnie mentioned. The 0.9 to two hours range  
24 that you mentioned referred to routine failures of the grid. People now have two  
25 separate curves, which goes back to your question, Mr. Chairman. There is one

1 curve for recovery from these routine events, and another one from major  
2 external events. And that time goes much longer than two hours. So the four  
3 hours which was conservative I guess applies only to the routine events and not  
4 to the longer.

5 CHAIRMAN JACZKO: Well, again, I thank you all for your insightful  
6 information, and it's given us lots of things to think about. And we'll adjourn now  
7 and have just a brief closed portion to discuss some of the B.5.b. issues. Thank  
8 you.

9 [Whereupon, the proceedings were concluded]

IN RESPONSE, PLEASE  
REFER TO: M110428

June 8, 2011

MEMORANDUM TO: R. W. Borchardt  
Executive Director for Operations

FROM: Annette Vietti-Cook, Secretary */RA/*

SUBJECT: STAFF REQUIREMENTS – BRIEFING ON THE STATUS OF  
NRC RESPONSE TO EVENTS IN JAPAN AND BRIEFING ON  
STATION BLACKOUT, 9:30 A.M., THURSDAY, APRIL 28, 2011,  
COMMISSIONERS' CONFERENCE ROOM, ONE WHITE FLINT  
NORTH, ROCKVILLE, MARYLAND (OPEN TO PUBLIC  
ATTENDANCE) and COMMISSIONERS' EXECUTIVE  
CONFERENCE ROOM, ONE WHITE FLINT NORTH,  
ROCKVILLE, MARYLAND (CLOSED TO PUBLIC ATTENDANCE)

The Commission was briefed by the NRC staff on the status of the NRC response to events in Japan and provided an overview of U.S. nuclear plant preparedness to prevent and cope with station blackout. As part of the NRC's longer term review, staff should, to the extent practicable, perform a comparison between the NRC's requirements for station blackout and the corresponding Japanese regulatory requirements and provide it to the Commission in the form of a Commissioners' Assistants note. This effort should be mindful of the impact on the Japanese regulator and the NRC personnel supporting the event follow-up.

The Commission looks forward to upcoming briefings from the agency task force conducting a systematic review of our processes and regulations to determine whether the agency should make additional improvements to our regulatory system.

cc: Chairman Jaczko  
Commissioner Svinicki  
Commissioner Apostolakis  
Commissioner Magwood  
Commissioner Ostendorff  
OGC  
CFO  
OCA  
OIG  
OPA  
Office Directors, Regions, ACRS, ASLBP (via E-Mail)  
PDR

FK 2168 of 2833

## SCHEDULING NOTE

**Title:** BRIEFING ON THE PROGRESS OF THE TASK FORCE REVIEW OF NRC PROCESSES AND REGULATIONS FOLLOWING THE EVENTS IN JAPAN (Public)

**Purpose:** To provide the Commission a 30-day status report on the task force's review of NRC processes and regulations and identify issues for agency action, if any.

**Scheduled:** May 12, 2011  
9:30 am

**Duration:** Approx. 2 hours

**Location:** Commissioners' Conference Room, 1<sup>st</sup> floor OWFN

**Participants:** Presentation

**NRC Staff Panel** 50 mins.\*

**Bill Borchardt**, Executive Director for Operations

**Marty Virgilio**, Deputy Executive Director for Reactor and Preparedness Programs

**Charlie Miller**, Director, Office of Federal and State Materials and Environmental Management Programs and Chair of the Task Force

[Note: The other task force members will be seated in the well.]

Topic: 30-day status of the task force review

**Commission Q & A** 50 mins.

**Discussion – Wrap-up** 5 mins.

\*For presentation only and does not include time for Commission Q & A's.



# **Briefing on the Progress of the Task Force Review of NRC Processes and Regulations Following the Events in Japan**

**Bill Borchardt**  
**Executive Director for Operations**  
**May 12, 2011**

# **Agenda**

- **Overview**  
**Martin Virgilio**
- **Task Force Activities**  
**Dr. Charles Miller**

## **Actions to Date**

- **Status of event in Japan and NRC response**
- **Information Notice 2011-05, “Tohoku-Taiheiyou-Oki Earthquake Effects on Japanese Nuclear Power Plants”**

## **Actions to Date (Cont'd)**

- **Temporary Instruction (TI) 2515/183**
  - **Extensive damage mitigation guidelines (EDMGs)**
  - **Station blackout (SBO)**
  - **Seismic and flooding**
- **TI 2515/184 on severe accident management guidelines (SAMGs)**

# **Tasking Memorandum and Charter**

- **Tasking Memorandum – COMGBJ-11-0002, “NRC Actions Following the Events in Japan”**
  - **March 23, 2011**
- **Task force charter**
  - **March 30, 2011**

# **Review Strategy**

- **Near-term review**
  - **Formulate recommendations for near-term action**
  - **Identify a framework and topics for longer-term review**
  - **Provide report in July 2011**

# **Task Force Activities 30-Day Update**

**Dr. Charles L. Miller, Lead  
NRC Task Force**

# **Current Assessment**

- **To date the task force has not identified any issues that undermine our confidence in the continued safety and emergency planning of U.S. plants**
- **Task force review likely to recommend actions to enhance safety and preparedness**

# **Task Force Review Approach**

- **Systematic and methodical**
  - **Insights from past lessons learned efforts**
  - **Focused on Fukushima-related issues**
- **Defense-in-depth approach**
  - **Prevention, mitigation, emergency preparedness (EP)**

# **Task Force Decisionmaking**

- **Recommendations will be informed by:**
  - **Safety goals**
  - **Defense-in-depth philosophy**
  - **NRC Principles of Good Regulation**
  - **Existing technical requirements**
  - **Regulatory analysis guidelines**

# Prompt Actions

- **Task force requested an inspection of SAMG implementation**
- **Task force encouraged public release of guidance for developing EDMGs**

# **Scope of Review**

- **U.S. power reactors and their spent fuel pools**
- **Near-term and longer-term recommendations**

# Areas of Focus

- **Protection from design basis natural phenomena**
- **Consideration of beyond design basis natural phenomena**
- **Mitigation for long-term SBO**
  - **Including multiple unit events**
- **Emergency preparedness**
- **NRC programs**

# **Protection From Design Basis Natural Phenomena**

- **Evaluation of the design basis and safety margins for seismic, flooding, and other external events that could cause long-term SBO or loss of ultimate heat sink**
- **Consideration of related design basis external events**

# **Consideration of Beyond Design Basis Natural Phenomena**

- **Survivability of AC power during beyond design basis external events**
  - **Evaluation of emergency AC power and distribution**
  - **Evaluation of alternative sources of AC to power safety equipment in the event normal sources are lost**

# Mitigation

- **Mitigating the consequences of long-term SBO to:**
  - **Prevent core damage and containment failure**
  - **Prevent spent fuel damage and mitigate releases**

# **Considerations for Preventing Core Damage and Containment Failure**

- **Heat removal capability**
- **PWR reactor coolant pump seals**
- **Containment venting**
- **Hydrogen control measures**

# **Considerations for Preventing Spent Fuel Damage and Mitigating Releases**

- **Heat removal capability**
  - **Water cooling**
  - **Air cooling**
  - **Fuel inventory**
- **Hydrogen control measures**
- **Filtering, monitoring, and scrubbing releases**

# **Cross-Cutting Considerations for Mitigation**

- **Emergency operating procedures, SAMGs, and EDMGs**
  - **Integration**
  - **Training and exercises**
- **Personnel availability and safety**
- **Instrumentation**
- **Decision-making and command and control**

# **Considerations for Emergency Preparedness**

- **Evaluation of emergency plans considering:**
  - **Infrastructure damage**
  - **Multi-unit events**
  - **Long-term SBO**
- **Licensee dose projection and radiation monitoring**
- **Appropriate use of potassium iodide**

# **NRC Program Considerations**

- **Regulatory framework, including beyond design basis events**
- **Reactor licensing**
- **Operator licensing**
- **Reactor inspection**
- **Operating experience**
- **Information access/integration**

# **Information Gathering Examples**

- **Agency expertise**
- **NRC Operations Center and Japan site teams**
- **Inspection results**
- **Stakeholder input**
- **International cooperation**

# **Next Steps**

- **Evaluate TI 2515/183 and 184 results**
- **Commission meetings**
  - **June 15, 2011 status briefing**
  - **July 19, 2011 final briefing**
- **Near-term task force report in July 2011**

# Acronym List

- **AC – Alternating Current**
- **EDMG – Extensive Damage Mitigation Guideline**
- **EP – Emergency Preparedness**
- **NRC – Nuclear Regulatory Commission**
- **PWR – Pressurized Water Reactor**

## **Acronym List (Cont'd)**

- **SAMG – Severe Accident Management Guideline**
- **SBO – Station Blackout**
- **SFP – Spent Fuel Pool**
- **TI – Temporary Instruction**

UNITED STATES OF AMERICA  
U.S. NUCLEAR REGULATORY COMMISSION

BRIEFING ON THE PROGRESS OF THE TASK FORCE  
REVIEW OF NRC PROCESSES AND REGULATIONS  
FOLLOWING THE EVENTS IN JAPAN

MAY 12, 2011

9:30 A.M.

TRANSCRIPT OF PROCEEDINGS

Public Meeting

Before the U.S. Nuclear Regulatory Commission:

Gregory B. Jaczko, Chairman

Kristine L. Svinicki, Commissioner

George Apostolakis, Commissioner

William D. Magwood, IV, Commissioner

William C. Ostendorff, Commissioner

## APPEARANCES

## NRC Staff:

Bill Borchardt  
Executive Director for Operations

Marty Virgilio  
Deputy Executive Director for Reactor and Preparedness  
Programs

Charlie Miller  
Director, Office of Federal and State Materials and  
Environmental Management Programs and Chair of the Task  
Force

## PROCEEDINGS

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CHAIRMAN JACZKO: Good morning. Before we begin today's meeting, I wanted to take a moment to acknowledge the passing of a former NRC Chairman, Lando Zech, earlier this year. Before his time with the NRC, he served 39 years with the U.S. Navy, retiring as their chief of Naval Personnel. And his life will be celebrated with services, today I believe, followed by internment with full military honors in Arlington National Cemetery. I just wanted to take a moment to honor his service to the Commission and ultimately, to the nation.

I'll now turn to the subject of today's meeting, the systematic and methodical safety review that the Commission has launched in response to the events in Japan. Although we remain at a very early stage in the process, the task force we'll be hearing from today will be discussing their short-term, 90-day review and how that's progressing and ultimately, their next steps.

Among the broad range of issues they'll be examining are flooding, seismic, and other natural hazards, station blackout mitigation strategies, and emergency preparedness. And this is the first in a series of meetings that will focus on the task force's short-term, 90-day review. There will also be a public Commission meeting at the 60-day and 90-day mark, so approximately 30 days from now and then another 30 days following that, to keep the public informed of additional developments as we do this short-term review.

Ultimately, the task force report will be made public, and I know Charlie is going to talk a little bit about that today. Unfortunately, because of the time constraints with doing this quick review, we've not had the opportunity to have the kind of public participation we normally would have in an agency action.

1 But the purpose of this meeting and the following meetings we'll have are to  
2 serve as an opportunity for the public to hear about the progress we're making,  
3 the issues that are being looked at, and to provide some insight on the direction  
4 that the task force may be heading.

5 As we transition into the longer term review, the Commission has  
6 asked the staff to more fully engage stakeholders in a way that unfortunately the  
7 time constraints of this short-term review do not allow.

8 I just want to say that this is going to be a very important meeting.  
9 This is the first opportunity for the Commission to hear from the task force. This  
10 is the first opportunity for the public to hear from the task force. And so I certainly  
11 look forward to hearing from you on what issues you're identifying, what  
12 processes you'll be taking, and fundamentally, I fully expect that there are going  
13 to be lessons that we are going to learn. And likely, because of those lessons,  
14 we'll be making changes to the way that we do business and the way the industry  
15 does business in this country.

16 One of the issues that I'll certainly be keeping a close eye on, as we  
17 go forward, is the importance in the time frame in which we make changes. I  
18 think it will be very important that whatever changes come out of this process, we  
19 do these in an expedited way. I think it will not be acceptable if 10 years from  
20 now, we're still working through the recommendations of this task force or even  
21 the long-term task force that comes out of this process, so I certainly will be  
22 keeping an eye towards how we can implement whatever recommendations the  
23 task force does provide to us, in a very expedited way, to put these issues to rest  
24 as quickly as possible. I think that will be important for stability for the industry,  
25 it'll be important for the agency and ultimately, for our public stakeholders. So

1 with that, I would offer my colleagues an opportunity to make any opening  
2 comments. Commissioner Magwood.

3           COMMISSIONER MAGWOOD: Yes, just a few brief comments.  
4 You know, it's been two months since the earthquake and tsunami in Japan  
5 brought so much death and destruction to that country and caused damage to  
6 Fukushima Daiichi reactors. And, as you know, the work to stabilize those  
7 reactors is still going on, and our thoughts and hopes go with those who continue  
8 that difficult work.

9           You know, we today are here to discuss what we can learn from  
10 this experience. And I wanted to sort of highlight the fact that I really believe that  
11 we brought our A-team to this task. You know, this agency has the best  
12 expertise in nuclear safety in the world, bar none. And we've brought our best  
13 and brightest to this work. So I, you know, I thank Dr. Miller for leading that  
14 effort.

15           You know, while this task force continues its work, I wanted to echo  
16 Chairman's comments about public participation, you know, as this work goes on  
17 in the short-term task force. And I think it's very important that the Commission  
18 work with the staff to consider the best way to engage the public as we go  
19 forward, because I think it's very important to make sure that our stakeholders  
20 have a chance to have a voice in this process.

21           I also think that, you know, we have other things that are beyond  
22 this task force's mandate that we should also consider; for example,  
23 communications that we've had with stakeholders, the public, and the states in  
24 the early days of this event. I think there's some lessons learned to be had there  
25 as well. And I also think there's some lessons learned beyond where our agency

1 can cover, but I wanted to highlight the fact that this incident also showed that  
2 there's some interesting aspects to the international framework to respond to  
3 emergencies. And we learned some lessons there, and I think that, you know,  
4 that we and others in the United States Government should give some careful  
5 thought to that and maybe make some recommendations for the future. With  
6 that, I look forward to hearing what the task force has to say, and I appreciate all  
7 your work on this. Thank you.

8 CHAIRMAN JACZKO: Thank you. Okay. With that, Bill, I'll turn it  
9 over to you.

10 MR. BORCHARDT: Good morning. Before we get into the  
11 activities of the task force, I'm just going to spend a moment talking about the  
12 situation in Japan, just to provide a brief update. I'd say that we are still -- well,  
13 TEPCO and the Japanese government are still in the active accident mitigation  
14 phase of their activities. While plant conditions are not exactly stable, you might  
15 say that they're static. The core vessel containment, spent fuel conditions, while  
16 they change, they're not changing at such a rapid pace that it's causing any kind  
17 of undue concern.

18 There have been some new issues identified. There's been some  
19 structural conditions that have recently been identified that are receiving  
20 increased focus and attention. I would describe the feed-and-bleed situation that  
21 they're using to control temperature inside the reactor vessels as something that  
22 deserves considerable, continued attention. It's not steady state yet. It requires  
23 constant monitoring and adjustment.

24 There is also the situation of unfiltered and unmonitored release  
25 paths that are continuing at various degrees amongst the three units: Units 1, 2,

1 and 3 that were operating at the time of the event. And then, of course, the  
2 remaining challenge is still that the reliability of instrumentation complicates our  
3 understanding of the exact plant conditions at any given time.

4           TEPCO has initiated a multi-phase effort, a recovery plan, that has  
5 a number of important activities embedded within it. The enclosure over the units  
6 is beginning. Right now, they're doing the enclosure over Unit 1. They're  
7 working on a number of ventilation modifications to improve conditions inside of  
8 the plant, installing closed loop cooling for Units 1 and 2 on the spent fuel pools,  
9 and then engineered systems around the facility to help contain those releases  
10 that I mentioned earlier.

11           There's at least six challenges that I would say are of concern for  
12 continued operations and recovery activities. The first is the radiation fields  
13 inside the reactor buildings, which are certainly going to impact the rate that work  
14 can be done and the accessibility of various parts of the plant and pieces of  
15 equipment. Similarly, high humidity levels inside of the reactor building is going  
16 to be problematic for the workforce. There's considerable amount of debris  
17 inside of the spent fuel pools and in the turbine buildings, much of this caused by  
18 the tsunami, and also some of it from the hydrogen explosions that occurred  
19 shortly after the events started.

20           I mentioned that there are some structural concerns that have  
21 recently been identified, at least potential structural issues in the Units 3, 4 spent  
22 fuel pool. There's the challenge of what to do with the radioactive waste that has  
23 been generated and is being held in various tanks and locations around the  
24 plant. And then there's the natural challenge that -- they're now entering into the  
25 rainy season, which will just complicate more the activities around the plant. I

1 mean, there's an immense cleanup challenge resulting from the tsunami by itself,  
2 and then much of the soil and the cleanup that needs to be done has the added  
3 complication of it being a radioactive contamination area as well.

4 But overall, I believe the Japanese are making progress on  
5 addressing these issues. They have a well-organized plan and are moving  
6 ahead deliberately.

7 I'd like to also add my thanks to Charlie Miller and the entire team  
8 that we've put together on this task force. They've been working on this very  
9 diligently, and with that, I'm going turn over to Marty, who will begin the  
10 presentation and Charlie will give the details.

11 MR. VIRGILIO: Thank you, Bill. Good morning, Chairman,  
12 Commissioners. What I want to do is talk a little about the status of our activities  
13 subsequent to the event itself. And as you know, on March 11 the event took  
14 place and we activated our emergency response facility, went into the monitoring  
15 mode, and subsequently dispatched a team out to the site. Our first interest was  
16 in ensuring that the tsunami itself was not going to have an impact on our  
17 licensees in the Pacific and on the west coast. And subsequently, we've been  
18 providing support to the Ambassador, the citizens of Japan, and the government  
19 of Japan.

20 Subsequent to the event, the nuclear power industry reacted and  
21 took a number of actions to assess the capabilities of the nuclear power plants to  
22 respond to events such as occurred at the Fukushima site. And we began our  
23 activities. I think the first was the Information Notice that we issued on March 18.  
24 This provided a description of the event, as best we knew it at the time, and  
25 highlighted to the nuclear power industry the underlying regulations that we have

1 in place to ensure that nuclear power plants are designed and operated in a  
2 manner that would be responsive to such events and preserve safety.

3           Subsequent to that was on March 31; we issued a similar  
4 Information Notice, and that Information Notice was directed to our fuel cycle  
5 facilities, so they would have the same information as the reactors. If you go to  
6 Slide 4, the next set of actions that we took were Temporary Instructions.  
7 Temporary Instructions are basically -- provide guidance to our inspectors on  
8 activities that we'd like them to conduct, in terms of gathering information and  
9 assessing compliance with our requirements.

10           The first of the Temporary Instructions we issued was on March 23,  
11 and that TI was focused on independently assessing the adequacy of the actions  
12 that licensees had taken in response to the Fukushima event. And we went out  
13 and we asked our inspectors to look at what licensees were doing with respect to  
14 the capabilities and strategies they had to respond to large fires, and explosions  
15 respond to station blackout events, respond to flooding events. The inspectors  
16 actually conducted walk-downs of the facilities, look at the equipment, look at the  
17 operability of equipment, looked at the procedures, looked at the maintenance,  
18 looked at the training and everything that surrounds the capabilities that were put  
19 in place to address these kinds of events.

20           We're now getting -- from that first TI we're getting the inspection  
21 reports back. I think the final reports are due back today. And we're getting  
22 some insights from those inspection activities, with respect to what they're  
23 finding.

24           The second of the Temporary Instructions we issued was on April  
25 29. That instruction was, as a result of Charlie's task force, and the need for

1 additional information with respect to severe accident management guidelines.  
2 These guidelines were put in place in the 1990s and they were voluntary industry  
3 initiatives, so they didn't have what we consider and use in our jargon a  
4 regulatory footprint, and hadn't been inspected and followed up on. So, in order  
5 to assist the task force in their effort, we've got the inspectors now out in the field,  
6 looking out the adequacy of these severe accident management guidelines and  
7 how they've been maintained over the years.

8           The third in the series that is not on this slide is a bulletin.  
9 Yesterday we issued a bulletin to the nuclear power industry, and that bulletin  
10 requests information, specifically with respect to the licensees -- what the  
11 licensees have done to implement strategies to respond to large fires and  
12 explosions. If you recall, following 9/11, we issued a series of orders requiring  
13 licensees to take a set of actions to respond to large fires and explosions,  
14 beyond the design basis of the plant. We subsequently codified those orders in a  
15 set of regulations and we've inspected those over time, but we wanted to go back  
16 out and check again to make sure that we understood clearly what licensees had  
17 done. So, there's a set of actions required by that bulletin, both short-term action  
18 and longer term actions.

19           The first set of actions, we're asking licensees to verify that  
20 equipment and staff are capable of performing the required actions. And the  
21 second set of requests for information, basically, is a longer term, asking  
22 licensees to provide us information on the maintenance testing, offsite support,  
23 and other features that were required by that regulation.

24           If you go to Slide 5, what I want to talk about next is what Charlie's  
25 been tasked to do, Charlie Miller and the task force. On the 23rd of March, the

1 Chairman, on behalf of the Commission, tasked the staff to establish this task  
2 force to perform a systematic and methodical review of our processes and  
3 regulations in light of the events at Fukushima. On March 30, the EDO then took  
4 that tasking and converted that into a charter for the task force, and we  
5 established the task force in response to that tasking memo and charter.

6 The task force, as we know, is led by Charlie Miller. I'd like to -- as  
7 Commissioner Magwood's "the A-team," we have Gary Holahan, Jack Grobe,  
8 Dan Dorman, Nathan Sanfilippo, and Amy Cabbage on that team. And we've  
9 provided their resumes for you, for your benefit. But it certainly is the A-team.

10 If you go to Slide 6, the task force in the charter was directed to  
11 evaluate available technical and operational information on the reactors,  
12 including spent fuel pools, in light of the accident at Fukushima. They're to  
13 develop near-term recommendations and suggest a framework for us to move  
14 forward into the longer term, if there are any additional information or issues that  
15 we need to address.

16 They're doing information gathering and as several of you noted,  
17 we're not involving all of the stakeholders at this phase, but we have involved  
18 certain stakeholders in the near-term, in order to gather information that they  
19 need to conduct their assessment. And as the Chairman summarized, they will  
20 provide a report with their recommendations to the Commission, outlining any  
21 policy issues or operational issues that we identify, and that will be provided to  
22 the Commission in July.

23 So with that background, I'd like to introduce Charlie Miller and  
24 allow Charlie to tell you a little bit more about the work of the task force. Thank  
25 you.

1 MR. MILLER: Thank you, Marty. Good morning. As Marty  
2 mentioned, I've got a very experienced team here. We kind of added it up and  
3 determined that we've got collectively over 150 years of regulatory experience  
4 among us, and I think the team is fairly diverse. And I can assure you that as we  
5 go through our deliberations, we have a lot of lively discussions and have to  
6 come to agreement on issues that sometimes takes some time. So I feel very  
7 fortunate at that, because I get a lot of different perspectives and views in what  
8 we're doing.

9 If I could have Slide 8, please. I thought it was important to give  
10 you our current assessment, as we stand today. And as we stand today, the task  
11 force has not identified any issues that we think would undermine our confidence  
12 in the continued safety and emergency planning for nuclear plants in this country.  
13 That said, we do expect that we're likely to have findings and recommendations  
14 that will further enhance the safety of the nuclear plants in this country.

15 Slide 9, please. The Commission instructed the task force to be  
16 systematic and methodical as we went through our thought process. In doing  
17 this, the task force has tried to take the lessons learned from past efforts,  
18 especially the lessons learned from the TMI lessons learned. We feel that we're  
19 more focused and structured now, as an agency, than we were at the time of  
20 TMI, and that framework is much more mature than it was at the time of TMI.

21 The task force is screening issues to ensure that there is a nexus  
22 for what happened at Fukushima and that the issues that we look at are related  
23 to our insights from what happened at Fukushima. But we want to make sure  
24 that our focus isn't so narrow that we miss some related insights that we might  
25 get. For example, flooding can occur from other ways than tsunamis.

1                   In our report, we're going to give a very high-level narrative of what  
2 happened at Fukushima, but only to the extent that it's necessary for us to inform  
3 our insights and our recommendations. A longer term review will look at the  
4 sequence of events in more detail once that's known, and that's probably going  
5 to take a considerable period of time.

6                   The principles that we're really following start with defense-in-depth.  
7 It's been an agency principle since day one, and we follow it every day. We want  
8 to make sure that we have the appropriate balance in what we're looking at  
9 between protection, mitigation, and emergency preparedness in our  
10 requirements.

11                  Slide 10, please. In keeping with that approach, the task force  
12 thought about how we would be making our recommendations. We identified  
13 several existing policies and guidelines to help frame the way that we thought  
14 and the way that we did our business. We looked at existing regulatory policies  
15 and guidelines such as safety goals. I've mentioned defense-in-depth, existing  
16 requirements in our regulatory analysis guidelines. Consistent with the principles  
17 of good regulation, the task force is striving to develop a set of recommendations  
18 that will further enhance the coherence, predictability, clarity, and transparency of  
19 our regulatory requirements, programs, and processes.

20                  Slide 11, please. During the task force deliberations, the  
21 importance of severe accident management guidelines has been highlighted.  
22 Marty has already touched on that. SAMGs, as they're known, were  
23 implemented as a voluntary initiative by the industry in the 1990s. And they're  
24 not covered by our regulations. Consequently, we do not evaluate them as part  
25 of the agency's routine reactor oversight process. Marty mentioned that the task

1 force has already taken an action. At our request, the Office of Nuclear Reactor  
2 Regulation put out a Temporary Instruction, asking inspectors to go take a further  
3 look at this. I'd like to thank NRR for their timely issuance of this. The results,  
4 we expect to get back towards the end of May. And we very forward look at this,  
5 as task force did, for further insights to help us formulate our recommendations.

6 We wanted them to be able to look at the availability and the  
7 maintenance of these SAMGs. The training and exercises are conducted to  
8 support them. And again, I think that this will go a long way in helping us try to  
9 formulate some recommendations, and you'll hear me talk about a little bit more  
10 as this presentation goes on.

11 We also recognized the benefit of making the public knowledgeable  
12 of some of the efforts that took place following 9/11. Following 9/11, the agency  
13 worked with the industry, and there was some industry guidelines that were put in  
14 place to meet the regulations that we put in place. And we've asked that these  
15 be made public, because I think it'll help the public get a better understanding as  
16 to some of the things heretofore have not been made public. While these  
17 guidelines do not give the specific of some of these features, I think it helps a lot  
18 to know that U.S. plants do have some additional features added as a result of  
19 9/11. This information also may be useful in international collaborations that we'll  
20 be doing from here forward.

21 Slide 12, please. The Commission directed the task force to  
22 address operating and new power reactor issues in their spent fuel pools. We'll  
23 identify issues that need to be addressed in the near-term and in the longer term,  
24 as has been mentioned. The applicability of the lessons learned to some of our  
25 other licensed facilities will be taken on in a longer term review, and that's not

1 part of the near-term task force review. With regard to the -- on agency's  
2 response to the incident in Japan, that's being addressed by our line  
3 organization, and NSIR is not part of the task force's review.

4 Slide 13, please. Let me now get into some detail about the areas  
5 of focus of the task force efforts. Consistent with our systematic and methodical  
6 approach and the fundamentals and principles of defense-in-depth, the task force  
7 has identified the following area of focus. The first area of focus is on protection  
8 from design basis natural phenomena. Then we've extended our focus to  
9 consider beyond design basis natural phenomena. Again, we're looking at  
10 extended station blackout. If you found yourself in an extended station blackout,  
11 what can we do to better protect? Finally, we're focusing on emergency  
12 preparedness as a final line of defense to protect public health and safety.

13 Now, we're also looking internally, as a task force, to see where the  
14 agency itself and the staff itself may be able to change the way that we do  
15 business with regard to our own internal programs, and where potential  
16 enhancements could get made. I'll expand upon each of these as the  
17 presentation proceeds. Slide 14, please.

18 First layer of defense-in-depth is protection. The Fukushima event  
19 reinforces the importance of protection from natural phenomena. In light of the  
20 Fukushima event, the task force is evaluating design basis requirements for  
21 seismic and flooding events and the associated safety margins, including how  
22 those requirements and margins evolved over time. In addition, we're evaluating  
23 design basis in the margins for external events that could affect large areas of  
24 the plant that might be affected from an extended station blackout or the loss of  
25 the ultimate heat sink. We're not limiting ourselves to just the earthquake-

1 tsunami pair. As I mentioned, flooding can occur from other phenomenon. So  
2 we're looking at things like seismic events followed by dam failures, seismic  
3 events followed by fire, large amounts of precipitation that could cause a dam to  
4 be compromised, et cetera.

5           But we also wanted to be able to acknowledge, however, existing  
6 agency efforts that have been ongoing and started before the event at  
7 Fukushima. Generic Issue 199 is addressing the updated seismic hazards in the  
8 Central and the Eastern United States. There's going to be a new generic issue  
9 as it relates to dam failures. The task force has tried to look at these activities  
10 and other ongoing agency activities to see if the focus on those activities is  
11 sufficient in evaluating their effectiveness in addressing the Fukushima lessons  
12 learned. And if not, the task force will make recommendations for how they  
13 might be enhanced.

14           Slide 15, please. The task force is evaluating the survivability of  
15 AC power to provide core and spent fuel pool cooling during and beyond design  
16 basis external events. This includes an evaluation of AP power sources and their  
17 distribution. It includes support systems, things like diesel fuel transfer, tanks,  
18 cooling, et cetera. We also want to be able to include in our thinking the  
19 availability of alternate AC sources for station blackout and other available AC  
20 sources that could be utilized. The task force is evaluating these issues to  
21 explore existing and potential capability to maintain AC power during beyond  
22 design basis events.

23           Slide 16, please. The next layer of defense is mitigation. We're  
24 very focused on ways and looking at mitigating the consequences of a long-term  
25 station blackout to first, prevent core and containment and damage, and

1 secondly, to prevent spent fuel damage in spent fuel pools, and any potential  
2 releases. Fukushima highlighted the challenges regarding long-term station  
3 blackout and the ability to cope until offsite support can be effectively  
4 implemented. I'll give you some more details of this in the forthcoming slides.

5 Slide 17, please. We're looking at the availability of AC  
6 independent heat removal capability. Reactor core isolation cooling, auxiliary  
7 feed water for example. We're looking at strategies to ensure that station  
8 blackout event is not further complicated by things like the loss of reactor coolant  
9 pump seal integrity in PWRs. We're looking at effectiveness of containment  
10 venting strategies. Hardened vents have been put into the American -- U.S.  
11 Mark I BWRs. These are there as an intended function to prevent containment  
12 overpressure failure. Hydrogen control measures to prevent containment failure  
13 in the event of core damage is an extremely important subject. Mark I and Mark  
14 II BWRs are inerted with nitrogen. Mark III BWRs and ice condenser PWRs have  
15 hydrogen igniters that have backup power. The design of large dry PWR  
16 containments is such that they're supposed to be able to withstand hydrogen  
17 detonations. So we're trying to take a step back in looking at all of that, and see  
18 where we stand in the U.S. industry and as a regulator. These are features that  
19 are in our plants today, but I think it's worthy of a look.

20 Slide 18. For spent fuel pools, we're looking at heat removal  
21 capability to prevent fuel damage. We're looking at water cooling, ways to get  
22 make-up water, sprays, things of that nature. We're looking at the fact that if you  
23 lost water, would there be air coolability maintained in the pools. We're looking at  
24 things like reduced fuel inventory in spent fuel pools to minimize the heat load  
25 and enhance air cooling. We're also looking at considerations to mitigate the

1 releases in the event of fuel damage. The task force is exploring whether  
2 hydrogen control in spent fuel buildings is needed as a defense-in-depth  
3 measure, the capability to filter and monitor releases, and the capability to scrub  
4 releases by sprays. All of these things are issues that have come to bear that  
5 we're trying to examine.

6           Next slide, please. We've identified what we consider to be cross-  
7 cutting considerations for evaluation, and let me elaborate a little bit on that. The  
8 task force has identified three areas, here, that are somewhat related. The  
9 emergency operating procedures are for design basis transients and accidents.  
10 They're included in the NRC requirements. With regard to station blackout, there  
11 are procedures for coping and recovery in a beyond design basis scenario.  
12 These are also part of our rules through the station blackout rule. As we've  
13 mentioned a number of times in this presentation, the severe accident  
14 management guidelines were a voluntary enhancement. But we've noticed, in  
15 our examination, that these are limited to core and containment and do not  
16 consider the spent fuel pool. So, we looked at the extensive damage mitigation  
17 guidelines that resulted from our efforts after 9/11 where there could be a loss of  
18 a large area of the plant due to explosion or fire. This, again, is beyond design  
19 basis.

20           So while we thought about these things, and we've looked at these  
21 things, and we've put things in place prior to Fukushima, one of the things that  
22 the task force is really looking at is are they really integrated together in any  
23 way? And is there a better way to integrate them together? You have various  
24 levels of training. You have various levels of requirements. You have various  
25 levels of procedures and configuration control. So we're trying to look at the

1 integration of these, or whether there could be better integration of these, so that  
2 you would get a more seamless response if you should ever experience a severe  
3 accident.

4           We're looking at issues as do the control room operators in a tech  
5 support center have adequate information to monitor and mitigate beyond design  
6 basis events. Spent fuel pool level, for example, is one issue. Survivability and  
7 backup power. Are the expectations clear with regard to command and control  
8 and decision-making? Transition timing from the operators in the control room to  
9 the TSC, decision points for initiating requests for offsite help. One of the  
10 advantages that we do have in this country is that -- as part of our regulations,  
11 50.54(X) does allow for a licensee to take an emergency action immediately,  
12 even if that action causes them to have to violate license conditions or Tech  
13 Specs -- if they feel that public health and safety protection is imminent. These  
14 actions, however, have to be approved at a senior reactor operator level as a  
15 minimum. So we're trying to look at all of that together to see where the  
16 command and control issues are and if there's anything that needs to be further  
17 enhanced in that regard. Next slide, please.

18           Emergency preparedness. The third level of defense-in-depth is  
19 emergency preparedness and the task force wants to make sure we take a  
20 thorough look at it. As Fukushima has taught us, it was a situation where you  
21 had major infrastructure damage. Evaluation of evacuation and sheltering  
22 following natural disasters with a large amount of infrastructure damage is  
23 something that we need to look at a little bit farther. Also, if you look at the way  
24 that we've analyzed accidents in the United States and the way that we deal with  
25 them, it really focused on a single unit being affected. Fukushima is a situation

1 that go beyond the design basis. Looking at reactor licensing issues, operator  
2 licensing issues, reactor inspection program -- does it need to be refocused  
3 anyway? Should we have additional inspections in certain areas? And we're  
4 trying to take a look at our evaluation of operating experience program. We do  
5 an awful lot of work in that area, but are there better things that we could even  
6 improve upon with regard to looking at domestic and international events that  
7 might help us learn some lessons before an event happens? We're trying to  
8 examine areas for possible enhancement of information access and integration  
9 across technical organizational boundaries. Let me explain for a minute what  
10 that means to us.

11           As part of our effort, we've had an opportunity to talk to a lot of  
12 staff. And we have a lot of great expertise in this agency. But in other forums,  
13 we've many times talked about how the agency has gone through a transition  
14 with many of our more experienced people having retired, a number of our staff  
15 have less than five years of regulatory experience. We have a very bright,  
16 dedicated staff, but as they gain more experience, it's important that people who  
17 are working on related areas talk to each other and understand what they're  
18 doing in these related areas. You might have someone who's an extreme expert,  
19 for example, on diesel generators or spent fuel pools, didn't know certain aspects  
20 of it, but are they talking with people who are looking at other aspects of it?  
21 People who are very adept in looking at adequate cooling in spent fuel pools, and  
22 what would happen if you lost adequate cooling? A better focus perhaps on the  
23 integration of people who are looking at some of the severe accident  
24 consequences following a 9/11 type of an event. There are areas that I think that  
25 we could possibly make some recommendations on that we're still trying to gel.

1                   Let's go to slide 22. I think it's important to try to explain how we're  
2 gathering information. As I've mentioned, we've had the opportunity to interview  
3 dozens of agency experts on a wide variety of technical topics: seismic,  
4 tsunamis, flooding, spent fuel pools, hydrogen control, emergency preparedness,  
5 EOP SAMGs, emergency mitigation guidelines. We've had the opportunity to  
6 continue to get the insights from our coverage in the operations center and our  
7 site team in Japan, and I'm fortunate to have Dan Dorman on the team who  
8 spent some time in Japan as part of our site team. We've had the opportunity to  
9 talk to FEMA for any insights that they might have for emergency preparedness.  
10 And we've had the opportunity to gain the insights by understanding how INPO is  
11 going about their efforts with regard to gathering information.

12                   That said, and while we've talked a little bit in this meeting about  
13 the limited time we've had for stakeholder input, I want to assure you we're not  
14 working in a cave, okay. There have been a lot of published articles,  
15 Congressional testimony, correspondence to the agency from various  
16 stakeholders and concerned public citizens about the affairs following Fukushima  
17 and the U.S. plants. We're trying to make sure that we take a look at all of those  
18 as they come available to us to see if insights that we get from that can better  
19 inform us in our decision-making process.

20                   We've already begun some international interactions. I've had the  
21 opportunity to attend the NEA Steering Committee -- Nuclear Energy Agency  
22 Steering Committee meeting recently where the Japanese made a presentation.  
23 I also had an opportunity to talk to them outside of that meeting. Gary Holahan  
24 has chaired the MDEP Steering Committee where we also had presentations by  
25 the Japanese. Various members of the NRC staff have had a number of

1 interactions from various Japanese delegations and have an opportunity to give  
2 us insights from that. But we're trying to focus on where those insights take us  
3 with regard to what we can learn for U.S. plants. As a task force, as we said,  
4 we're not focused on the specifics of every single day of what's going on in  
5 Fukushima. That's being handled in the line organization. Next slide, please.

6 Well, what are our next steps, are the Chairman has mentioned.  
7 Our next meeting and update will be in the middle of June where we'll give you a  
8 status briefing and if I could give you a little bit of coming attractions for that  
9 briefing as we say it. By then we'll have the results of the both Temporary  
10 Instructions and how those insights may help better inform us with regard to our  
11 recommendations. If we identify any other prompt task force actions that were  
12 needed, we'll report that at that time. Further, our near-term evaluation of  
13 lessons learned from Fukushima will give us additional insights I think we can  
14 report at that time as we formulate our recommendations from the information  
15 that we've gathered. And then finally, we hope to give you at that time a better  
16 vision for how we would proceed in the long term as an agency for those issues  
17 that are more appropriate for long term review and consideration. Finally, our  
18 task force report will become publicly available as we move towards the July  
19 Commission meeting.

20 Chairman, Commissioners, that concludes my presentation and  
21 we'll be happy to take your questions. Thank you.

22 CHAIRMAN JACZKO: Well, thank you, Charlie, and Bill, and Marty  
23 for a very informative presentation. We will start our questions with  
24 Commissioner Svinicki.

25 COMMISSIONER SVINICKI: Thank you, Mr. Chairman, and I

1 thank you, Dr. Miller, Charlie, for agreeing to lead the team and for the team's  
2 hard work, and as you mentioned, not working in a cave. There are an awful lot  
3 of NRC employees who aren't on the team who are supporting you in that work,  
4 so I'm very grateful for their, I think, what is a very strong, both professional and  
5 personal commitment to the work that they're doing, so I'm grateful for that. The  
6 last time the Commission met in the days immediately following the events I had  
7 made a comment about faith in nuclear technology maybe being shaken, but that  
8 we don't regulate and we can't respond on the basis of faith, that has to be on  
9 the basis of facts. I had the opportunity yesterday to be at an event where  
10 Chairman Jaczko was speaking and in response to a question he received, he  
11 had an insight that since he didn't use it in his opening remarks, I'll repeat it here  
12 because I think it's very, very important.

13 I think the question he was asked had to do with the many  
14 international meetings that have been called in the coming months, and it had to  
15 do with what is the specific agenda and objective of the various meetings that  
16 Chairman Jaczko will be, I'm sure, representing the NRC at. And he gave an  
17 answer about the fact that at some point, there needs to be a mutually agreed  
18 upon internationally accepted set of understandings and facts about the events  
19 that occurred there. And since, in Japan, they are still in a process -- as we've  
20 talked about -- getting to the stabilizing point and responding to the events. This  
21 isn't the moment in time where we perhaps have that kind of internationally  
22 agreed to -- and a set of -- a chronology of events, a set of facts on the ground  
23 that we all know, we're very confident of, and that there's no longer uncertainties  
24 associated with. And it will take time to get to that point. And I think that's  
25 important to repeat here, again, I thought it was an insightful response to the

1 question that the Chairman received yesterday. So, the international community  
2 will begin to organize itself to achieve that mutually agreed to set of facts of what  
3 occurred there.

4 And I -- Charlie, you mentioned in your presentation, that you have  
5 begun to talk to international counterparts. Is it too early to begin organizing how  
6 we will get to that more searching examination of a chronology or set of events  
7 given that, again, Japan is very focused on the events on the ground there? Or  
8 do you see the beginnings of any of that -- or maybe Bill Borchardt would answer  
9 that -- starting to take shape now? How will we get to that set of facts?

10 MR. BORCHARDT: There's a meeting that's been called by the  
11 Director General of IAEA, Mr. Amano, that's going to be held the week of June  
12 20. That's -- in part, as I understand, they're currently planning a ministerial  
13 meeting but then also, in part, a more detailed discussion of some technical  
14 experts. I believe that what we'll see coming out of that meeting is more  
15 indications of what an overall plan is for the international community with the  
16 participation, obviously, of IAEA and the Nuclear Energy Agency, and then all of  
17 the member states of the IAEA participating -- that out of that will be kind of this  
18 umbrella view -- if you will -- of how we will address it internationally.

19 I'm aware that the IAEA has put together a team of international  
20 experts that is going to be going to Japan to begin that kind of multi-national  
21 assessment of plant conditions and perhaps contribute to the chronology that's  
22 being developed in Japan. And I would expect, coming out of this June 20  
23 ministerial meeting, there'll be a number of other subsequent international  
24 meetings. One that's already been identified is that the Convention on Nuclear  
25 Safety -- which is normally held every three years -- had decided this last April to

1 hold a -- what they're calling an "extraordinary meeting," and that is that -- in, I  
2 believe it's going to be in August of next year -- a special meeting that will focus  
3 on the international response -- member state by member state, of all the people  
4 -- of all the countries that belong to the Convention -- on what they've done  
5 individually and collectively in response to the events of Fukushima.

6 COMMISSIONER SVINICKI: If I could ask -- I'm really just  
7 sincerely unaware of this. But we talk about the set of actions that were taken in  
8 the United States that were ordered after 9/11 for nuclear power plants, that were  
9 in response to the measures that can look at catastrophic events and have some  
10 application, of course, then to natural disasters. And we've talked -- the NRC  
11 has talked a lot about this in the days since Fukushima. Are you aware -- did any  
12 other country's nuclear safety authority look at the U.S. experience of 9/11 and  
13 put in place for their power plants anything akin to what we had done? I'm just --  
14 I'm genuinely not aware if other countries took action based on our 9/11 events  
15 for their nuclear power plants -- in terms of catastrophic -- dealing with  
16 catastrophic events.

17 MR. BORCHARDT: Yeah, I'd have to give you a complete answer  
18 after some specific review. But my recollection is that just about every country  
19 looked at the events of 9/11. They looked at what we did -- and I know we've  
20 actively shared with a select member of countries, specifically, what we've done,  
21 the kinds of analyses that have occurred in the U.S. -- and many countries have,  
22 in fact, taken similar actions. I don't believe there's anyone that's done anything  
23 quite as comparable as we've done, but there are a number of countries that I am  
24 familiar with that have taken specific measures.

25 COMMISSIONER SVINICKI: And I have been aware of some

1 countries certainly expressing an interest in how we approached our analysis and  
2 evaluation after those events. I'll just reflect -- we have Senator Carper, who is  
3 the Chairman of our Oversight Sub-Committee in the Senate, and he had said  
4 that one of the great regrettable outcomes of these events would be if we failed  
5 to learn from them. So I think, much as we've tried to share after 9/11, I imagine  
6 there'll be a similar international spirit of coming together and really wanting to  
7 learn these lessons after these tragic events.

8           If I were -- to turn now to a couple of specific questions that I had.  
9 Charlie, you had mentioned that the task team's efforts are very separate from  
10 our Office of NSIR, looking at lessons learned in terms of the kind response we  
11 mustered internally, operation center -- and again, some of these may be very  
12 kind of procedural things of how we conducted ourselves. Is there a timeframe  
13 for NSIR's review? Is it going to be at all coincident with any of the lessons  
14 learned or recommendations that you bring forward, or is it entirely a separate  
15 effort?

16           MR. VIRGILIO: Commissioner, it is running in parallel. It started  
17 while we were still in the operation center. And over the last -- I would probably  
18 say it was last month that we concluded the information gathering exercise from -  
19 - principally from people that stood the watches, and were interacting with the  
20 team as the event unfolded. I don't have a time -- a specific time as to when we  
21 would finish that, but it's probably along the same lines or timelines that Charlie's  
22 team is working to that we would have that assessment completed.

23           COMMISSIONER SVINICKI: Okay. Thank you. And Marty, I think  
24 you had referenced that we were starting to receive some insights from the  
25 results of the walkdowns that were done in response, I think, to the Temporary

1 Instruction or -- actually, INPO had initiated some walkdowns by licensees and  
2 now we've built on that through our efforts. Is there anything that you can  
3 discuss, just at the very highest level, in terms of even areas that would -- what  
4 areas are we getting insights from?

5 MR. VIRGILIO: Well, we'll have the inspection results completed  
6 today, I believe, and we'll do a complete assessment. But I can give you a little  
7 bit of anecdotal information I have from talking to Regional Administrators and  
8 NRR. And that tells us that none of the observations posed a significant safety  
9 issue, but there was -- there were observations that in some cases, equipment  
10 that was relied on would not start, that it had not been maintained, that  
11 procedures -- and these are anecdotal, they don't add it up at any one plant, but  
12 if you look across the entire fleet, there were some places where the capabilities  
13 to deal with the large fires and explosions, the station blackouts, design basis  
14 external events like the flooding, where there were discrepancies in terms of the  
15 procedures, the equipment, and the training.

16 COMMISSIONER SVINICKI: Okay. And that's again, as you said,  
17 anecdotal, or at a very high level. It sounds like the staff will be processing  
18 through in a more systematized fashion, exactly what we found there. So I  
19 appreciate you sharing at a very high level.

20 MR. VIRGILIO: And that information would then be provided to  
21 Charlie and the team for their use.

22 COMMISSIONER SVINICKI: Oh, okay, very well. And that is a  
23 good segue way to the very last item that I wanted to cover, which is -- Charlie,  
24 could you talk a little bit -- because we talk about your team, and I think it's  
25 interesting -- we talk about your scope, which is expansive, and you're looking at

1 a lot of issues. You actually have a very small team, so could you help me  
2 understand a little bit more? My perception is you're really tapping into -- and  
3 you credited NRR for some responsiveness and help -- but, could you just broad-  
4 brush explain how you're tapping into all the other areas and programs that are --  
5 program support, because it just doesn't seem like something that a team so  
6 small could get done in the amount of time that you have. So, could you help me  
7 understand how you utilize the rest of the agency?

8 MR. MILLER: Sure. One of the things that we have got great  
9 support for is -- I feel I have all the agency's resources at my disposal. The  
10 Office Directors and Regional Administrators have been very cooperative. If we  
11 need to talk to someone in a certain technical area, the team makes a request,  
12 and we get a very timely response, and people come over and talk to us.

13 We have had many hours of discussions with them. A typical  
14 session can go two, three hours, where we go back and forth. We ask questions.  
15 They give presentations. It helps us to get a better understanding of what the  
16 state of affairs is now, and what the individual members of the staff are looking at  
17 with their efforts. And it gives us a better understanding with regard to how our  
18 own plants in the United States -- and as seen by our own NRC regulators who  
19 oversee them every day -- see how we are prepared and how our plants are  
20 designed to withstand design basis and beyond design basis events -- and where  
21 the staff, through what they're doing every day is assuring safety and where the  
22 staff, and what they're doing every day, are looking at the various issues,  
23 independent of what the task force is looking at. So we wanted to get the  
24 insights of what's already going on within the agency and where we might make  
25 recommendations if things should be enhanced in any way.

1                   But it's been an extremely valuable because while we have a broad  
2 brush of experience on the task force, bringing in people who deal with particular  
3 issues every day can't be equaled. I mean, it's given us a tremendous amount of  
4 insight.

5                   COMMISSIONER SVINICKI: Okay, that's very helpful. Thank you,  
6 Mr. Chairman.

7                   CHAIRMAN JACZKO: Commissioner Apostolakis.

8                   COMMISSIONER APOSTOLAKIS: Thank you, Mr. Chairman. I  
9 would also like to thank the members of the task force for the great job they're  
10 doing, serving the Commission and the nation. I will start with a question that  
11 probably needs some clarification. If I wanted to play the devil's advocate, I  
12 would say we are allowing the plants to operate because they meet our  
13 regulations, and yet the purpose of the task force is to see how the regulations  
14 might be changed. So why don't we shut them down until we know?

15                  MR. MILLER: Well, I guess the way I would answer that question,  
16 Commissioner, is first of all, you're right, we're allowing our plants to operate  
17 because they do meet our regulations. We think our regulations are robust. But  
18 we also consider ourselves, as a staff, especially a learning organization, and we  
19 always look for ways where safety can be enhanced where it makes sense. But  
20 as I went through in my presentation, we want to make sure that our process is  
21 disciplined this time and so if there are any areas that we would recommend  
22 where safety should be enhanced, it's going to have some real meaning and not  
23 just, you know -- if we look back to the time that TMI happened, a lot of what was  
24 put in post-TMI enhanced the safety of nuclear plants in this country, but it didn't  
25 -- we didn't have the structure that we have today with regard to the discipline

1 that we have to put in to looking at what regulatory enhancements need to get  
2 made.

3 COMMISSIONER APOSTOLAKIS: So it is then a preliminary  
4 conclusion of your team that we are talking about enhancements to safety.

5 MR. MILLER: Yeah. Right. Right. And --

6 COMMISSIONER APOSTOLAKIS: But we are safe enough  
7 already.

8 MR. MILLER: But some of these enhancements may not  
9 necessarily result in changes to our regulations. There may be some practical  
10 things though.

11 COMMISSIONER APOSTOLAKIS: But it is enhancements.

12 MR. MILLER: Pardon me.

13 COMMISSIONER APOSTOLAKIS: It is enhancements we're  
14 talking about. We're not talking about --

15 MR. MILLER: Currently from what we focused on we see it as  
16 enhancements. Yes.

17 COMMISSIONER APOSTOLAKIS: As you know there are many  
18 decisions that are made regarding changes to the licensing bases of existing  
19 plants that come under the umbrella of risk-informed initiatives. The Commission  
20 has safety calls, of course. And one of the metrics that we are using when we  
21 make such decisions for changes is the early release -- the probability in a year  
22 that we will have a large release early from the containment or through the  
23 atmosphere; the so-called LERF. Now LERF -- now, for new reactors we drop  
24 the "E" and now we are looking at the LRF: large release frequency. And I  
25 believe, in fact more than I believe I know, that LERF is calculated for an

1 individual unit, the release and then it has to meet a certain goal.

2           And like the Fukushima, though, shouldn't we revisit this and  
3 maybe stop talking about just early releases, because Fukushima shows that you  
4 can have a long-term release, a late release. And also consider all the units at  
5 the site, and how much they contribute to the release. And to include spent-fuel  
6 pools. In other words, what I'm saying is the large-release frequency should be a  
7 characteristic of the site, not of individual units of the site, including the spent-fuel  
8 pools. Is that a crazy idea? Is that something that the task force may give us  
9 some options to think about it?

10           MR. MILLER: I think, to answer your question, as I mentioned  
11 earlier, one of the insights that we did get as a result of Fukushima was, you  
12 have to consider, take a step a back and consider, what would happen if you had  
13 multiple units affected by some beyond the design basis event. So with regards  
14 to our insights I think we're trying to formulate where we go with that. And so I  
15 think it would be premature -- I don't think your idea is a crazy idea, but I don't  
16 think I'm prepared to be able to give you a specific answer to that.

17           COMMISSIONER APOSTOLAKIS: I don't think it's crazy, either.

18           MR. MILLER: Well yeah, but you need to think about it. You need  
19 to think about what it is, yeah.

20           COMMISSIONER APOSTOLAKIS: Yeah, sure. Oh no, that's all  
21 I'm saying.

22           MR. MILLER: Yeah, yeah.

23           COMMISSIONER APOSTOLAKIS: I'm not asking you to give me  
24 an answer right now.

25           MR. BORCHARDT: I think the previous Commissions have

1 addressed the issue. We now have the experience of Fukushima. Clearly I  
2 would see this as likely an issue that we're going to bring back to the  
3 Commission either as part of the short, the near-term or the longer-term review  
4 activities. I mean, it's an obvious question but very broad policy implications.

5 COMMISSIONER APOSTOLAKIS: Yes, it does. Now, Charlie,  
6 you structured a lot of your presentation around defense-in-depth.

7 MR. MILLER: Yes.

8 COMMISSIONER APOSTOLAKIS: Which I think is appropriate. It  
9 is the cornerstone of our safety philosophy, so you're talking about prevention,  
10 mitigation, emergency planning and so on. But it seems to me that under  
11 defense-in-depth we can do a lot of things to integrate, for example, some of the  
12 SAMGs and so on that you mentioned, but right now are not integrated, to  
13 understand better the possible accident sequences, maybe to go beyond the  
14 eight or 16 hours that we go to now for station blackouts -- in other words, to  
15 answer a lot of "what if" questions by developing a so-called Level 3 PRA risk  
16 assessment. And there has been general reluctance to do that over the years  
17 even though the first one was done by The Reactor Safety Study in 1975. So  
18 would your task force explore the benefits, perhaps, of having a site-specific  
19 Level 3 PRA and how that would help achieve some of the goals that you think  
20 should be achieved?

21 MR. MILLER: We've already had some discussions about that,  
22 about how risk assessments and PRAs can help better inform us. So I can tell  
23 you that we're looking at that. Where we'll come out with that, we'll report on in a  
24 future meeting. But it is a topic that we've talked about and what the merits of it  
25 are; what goes into doing that; the complications of doing something like that

1 from not just an analytical perspective but from a time perspective; and then what  
2 insights that you get from that that would be useful to both the industry and the  
3 regulator in enhancing safety or letting us know where we stand with regard to  
4 safety. But I, myself, am not a PRA expert so I'll need to continue to go back and  
5 pulse the team about that in formulating our views.

6 MR. BORCHARDT: I don't want to let Charlie off the hook for all  
7 the difficult questions, but this is another one where I would expect the near-term  
8 task force to look at the issue, identify some of the key questions and not be able  
9 to resolve it finally. I think this is maybe something that's going to take more  
10 thorough discussion and review than the limited time period we're giving this task  
11 force. But they would identify it as a topic that would go into the longer-term  
12 review, which we would have, under my current thinking right now, a specific task  
13 force that might look at the use of PRAs and the current regulatory scheme on  
14 how -- which ones are required for which plants, those kinds of questions.

15 COMMISSIONER APOSTOLAKIS: Well, that's all I'm asking. I  
16 mean, you didn't mention the acronym at all so I figured somebody had to.

17 [laughter]

18 MR. MILLER: I'm surprised it was you, Commissioner.

19 [laughter]

20 COMMISSIONER APOSTOLAKIS: I know you were. I know you  
21 were. I will note, though, that both the licensees and our staff really appreciate  
22 Level 1 PRAs, the internal PRAs. They were useful, they were using them, and it  
23 seems to me that now Fukushima is saying Level 3 may be -- can have the same  
24 utilization. But I'll wait to see what words of wisdom you will come up with. One  
25 last question, Mr. Chairman. I'm really bothered by this separation between

1 design basis and beyond-design basis events. I appreciate the need for a design  
2 basis. The licensees know what they have to do, right? We impose all sorts of  
3 conditions; this particular pump must deliver this flow rate under these conditions,  
4 and then we go and inspect. We are asking them to test it and tell us what they  
5 find, all that stuff.

6           And then you have beyond-design basis events. I went back and  
7 looked at the station blackout rule. Well, that's paradise. Tell us how you would  
8 do it and tell us how you would handle the station blackout. Tell us what kind of  
9 frequency or loss of off-site power you assumed. Tell us how much time do you  
10 think it will take to restore it, and tell us what you did about it. Well, the licensee  
11 has tremendous freedom to do all these things, maybe supported by some  
12 statistical analysis, and then they will say, well we went to Sears and bought a  
13 portable diesel and everybody says we're happy. I'm over-simplifying.

14           CHAIRMAN JACZKO: You're also not getting to a question.

15           [laughter]

16           COMMISSIONER APOSTOLAKIS: It's getting there. It's getting  
17 there. The question -- and then we don't do anything after that as far as I  
18 understand. We don't inspect. In fact, today in Energy Daily there was a  
19 statement from INPO that they looked and maybe some of the equipment was  
20 not available, as Bill said earlier. Can we keep doing that? Can we keep saying,  
21 oh these are beyond-design basis events therefore we don't get involved or we  
22 are happy that the industry responded?

23           We look at it once and that's it. In the future it's up to them. I am  
24 really bothered by that idea, although I do appreciate the value of having the  
25 distinction between design basis and beyond-design basis events. So any

1 advice that the task force can give us, I would at least appreciate, as to how to  
2 handle that. Make sure that what they told us -- not that they are bad people, but  
3 I mean, you know, it's an industrial facility, things happen, you know. So to give  
4 that, for us to get that warm feeling that, yes indeed, all the stuff that they said is  
5 available 10 years down the line.

6 MR. BORCHARDT: It's a constant challenge that we have to deal  
7 with. There's a balance, and what comes to mind as I was listening to you are  
8 the principles of good regulation; the talk about having clear regulations. And I  
9 think that's one of the founding principles that why we have a design basis: that  
10 there's a clear identification of what is required to protect public health and  
11 safety. That's our mission and our objective. Beyond that adds margin, but it's  
12 not the same kind of regulatory pedigree as things that are within design basis. I  
13 think it's an issue Commissions have struggled with since the first day of the  
14 NRC.

15 COMMISSIONER APOSTOLAKIS: Thank you, Mr. Chairman.

16 CHAIRMAN JACZKO: Commissioner Magwood.

17 COMMISSIONER MAGWOOD: Thank you. Before I ask my  
18 questions I have a couple of personal observations I'd like to share. One was --  
19 not long after Fukushima I was talking with a friend of mine who has nothing to  
20 do with the nuclear business, knows nothing about it, doesn't particularly care for  
21 it quite frankly, and while we were talking about this I was trying to reassure him  
22 about the safety of U.S. plants and the high levels of training of the personnel at  
23 nuclear power plants.

24 He challenged me with a comment that went something like, you  
25 know, if you're in the middle of a situation where people are dying all around you

1 because of some large event and things are blowing up and people are  
2 panicking, how do you know these people in these control rooms don't just  
3 simply get into a car and get as far away from this thing as you possibly can?  
4 How do you know these people will stay and do their jobs? How do you really  
5 know? And I talked with him about it, and I talked about the training and  
6 everything, and I don't think I entirely convinced him, but I tried to reassure him  
7 that we train, and we know the people, and know the jobs, and they've done it for  
8 a long time.

9           But something occurred to me recently. I visited several licensee  
10 facilities over the last couple months and at a recent one sort of brought  
11 something to mind that I'd thought I'd share that might mean something to some  
12 people and it may not to others. But, as I was talking and I was asking about, I  
13 was asking some of the people that I've met at the plants, you know, the  
14 managers and the operators about something about their background, and I  
15 realized that a very, very large percentage of the people I talked to were trained  
16 in the U.S. Navy and that they were former sailors; submariners, you know,  
17 surface ships, people who had that background shared with our Commissioner  
18 Ostendorff; people who had, you know, put their lives on the line in the service of  
19 the country. And I haven't gotten back to my friend yet to tell him about this. I  
20 don't know if it will impress him or not but it impressed me. And gave me sort of  
21 a personal level of comfort that when I tell people that these people will stay and  
22 do the jobs that I think there's good evidence to support that.

23           So another observation; Charlie, I appreciate you mentioning KI,  
24 because I was actually quite disturbed to see the stories in the media. After  
25 Fukushima, people in the United States running out and buying potassium iodide,

1 and some of them apparently did take some of it, and they're very concerned  
2 about that. There were -- I think we -- I think the government did what it could to  
3 get the word out on this, but there were other groups as well. I just wanted to  
4 highlight that. The Health Physics Society, I thought, also put some information  
5 about KI that's very good. Physicians for Social Responsibility, on their Web site,  
6 actually had a nice story about what KI really should be used for and why people  
7 should not run out and start taking it. So even beyond the government there are  
8 other organizations out there that did the right thing and made the right kinds of  
9 decisions and I wanted to sort of highlight that and congratulate them for that  
10 effort.

11           Just a few questions. We've had this conversation this morning  
12 about the post-9/11 modifications we've made, what we call B.5.b. And I wanted  
13 to see -- what is your understanding, and maybe this is more for Bill and Marty  
14 than for the task force, but what's your understanding about what our level of  
15 assurance is about the availability and operability of before we got to the  
16 Fukushima, just sort of as we've gone over the last few years, of this equipment?  
17 I mean, what did we do when this equipment was installed to assure ourselves  
18 that it was the right equipment and it could do what the licensees were saying it  
19 could do? Because, as you've pointed out, this is a voluntary effort. We have  
20 made a lot of references to it. What's --

21           CHAIRMAN JACZKO: It's not a voluntary effort.

22           COMMISSIONER MAGWOOD: I'm sorry, the implementation, the  
23 specific implementation, was, well --

24           MR. MILLER: The implementation -- the industry had guidelines  
25 that were developed and the NRC endorsed those guidelines for the

1 implementation to meet our regulations. That's all.

2 COMMISSIONER MAGWOOD: Right.

3 MR. VIRGILIO: But to ensure that the regulations were in fact met  
4 we conducted inspections and it became part of our tri-annual fire protection  
5 inspections to go in and sample. Sample is, I think, the operative word here. So  
6 now with the TI we're going in and we're doing a very more -- a more systematic  
7 look at the equipment, the procedures, the training, et cetera, et cetera, to make  
8 sure that everything is in place. We're also going out with a bulletin, or the  
9 bulletin has in fact been issued. And that bulletin will, in fact, ask for information  
10 in 30 days and then another set of more detailed information within 60 days to  
11 provide us the highest degree of assurance that that equipment is in fact  
12 operable, and that the operators are capable of, in fact, implementing the  
13 strategies that they've laid out for responding to large fires and explosions.

14 COMMISSIONER MAGWOOD: I appreciate the task force asking  
15 for the bulletin because I think that in the TI I had some questions, and as I  
16 mentioned, I visited several licensee facilities. When I ask them about the  
17 inspection that actually took place in response to the TI, it seemed that the actual  
18 work of showing inspectors that the equipment was available and would work as  
19 advertised, there were -- it was implemented in somewhat different ways,  
20 depending on which licensee you talked to. Some of them seemed to go through  
21 a lot of effort to sort of lay things out and actually move hoses around to show  
22 that hoses would reach where they said. Others did more of a walk down.  
23 What's your understanding about what we got back from the TI. What's the level  
24 of confidence that you got from that, when you look at, as you look at the results?

25 MR. VIRGILIO: I think -- well -- this -- let me start out by saying

1 that, at this point in time, it's our understanding that whatever's been found has  
2 been corrected. And I haven't said that thus far, and I think that's an important  
3 statement, that if there were equipment inoperable, if there were deficient  
4 procedures, it's my understanding that those issues have, in fact, at this point,  
5 been resolved.

6 That said, we're still going out and we're asking for the confirmation  
7 via the bulletin to ensure that is, in fact, the case. Because we tend to do -- all of  
8 our inspection activities are, in fact, samples. We don't go out and do everything,  
9 every piece. We rely on the licensees, or direct the licensees, to take those  
10 actions when we have those doubts. And so that's really what the bulletin does  
11 for us. It ensures that every piece is, in fact, walked down. The licensees have  
12 to respond to us, and they're held accountable to those responses.

13 COMMISSIONER MAGWOOD: And when you say, you know, I  
14 want to sort of focus on the walk down part, when you say "walk down," what do  
15 you expect the licensees to do at this part of the walk down? Just to --

16 MR. VIRGILIO: To make sure that if there's a hose coupling, and a  
17 hose that they made up, and that's part of the problems that we have: to make  
18 sure that all the procedures and strategies they have are actually implementable,  
19 that there's not some piece of equipment blocking access to a pump or a valve,  
20 or something that needs to be operated, as part of the strategy that they lay out.

21 COMMISSIONER MAGWOOD: Do you expect them to unfurl the  
22 whole hose and show that it can go from wherever it's supposed to go to a spent  
23 fuel pool --

24 MR. VIRGILIO: I think that depends. I don't know that I would go  
25 that far, but the hose would have to be there. They'd have to have assurance of

1 the integrity of that hose, and that the couplings would in fact fit up, that the  
2 length would be the right length.

3 MR. BORCHARDT: I'd just add one additional topic because it  
4 relates to the task force and the follow-up to Fukushima, is that you could comply  
5 with the current regulatory requirements, and it might not be really what you want  
6 to have as the plant condition, as a result of flooding. We're going to learn things  
7 from review of the Fukushima event, and then look at 50.54-H, HH, which is the  
8 B.5.b requirements in the regulations, now through a different lens. And that may  
9 inform us to want to pursue a different regulatory approach, or make a  
10 modification to the current regulatory requirements. And that's part of what'll  
11 come out of the lessons learned.

12 MR. MILLER: Yes. If I could augment that, Commissioner. One of  
13 the things that, really, the task force has got an insight about is that equipment  
14 those procedures were put in place for a specific type of event. But we also  
15 recognize that they could have the benefit if they're capable of being utilized for  
16 dealing with events other than what they were intended for. But, given that they  
17 were intended for a certain type of event, as Bill said, there may need to be some  
18 thought with regard to how they might be augmented, positioned, things like that,  
19 to better be able to deal with a broad spectrum of events.

20 So try to take the maximum benefit from our Fukushima lessons  
21 learned of what's in place already, and is there any expansion of that needed to  
22 deal with a broader state of events without having to -- and consider issues like  
23 multiple units, and things like that.

24 COMMISSIONER MAGWOOD: We've made -- I think you made  
25 the comment, Charlie, early on, that part of the guidance that you received for the

1 task force was that the task force should be operating independent of any of the  
2 industry activities that are --

3 MR. MILLER: Yes.

4 COMMISSIONER MAGWOOD: -- going on. And as we've  
5 observed, the industry activities that are underway through NEI and INPO are  
6 very beneficial, and good things to be doing. But one thing that occurred to me  
7 as I talked to licensees, is that there are, there's a lot of energy among the  
8 individual plants to think about things they might make specific changes, they  
9 might pursue. And I see that as a very positive energy, very good that they're  
10 thinking about this. Do you have any thoughts for, as this process goes forward,  
11 how best to harness that, not so much the industry-wide efforts, but really the  
12 individual plant managers and operators, they're giving good thought to how they  
13 might respond to these sorts of events?

14 MR. MILLER: I guess, from our perspective, first, we're very happy  
15 that they're giving good thoughts to these types of events. It's good, you know,  
16 the primary responsibility for safety does fall on the licensees. Okay? So the  
17 fact that you're doing that is a very good thing. But independent of that, I believe  
18 that, you know, our task force, with what we come up with, with  
19 recommendations, should be done independent of that. And if some of our  
20 recommendations had been taken care of by some of the things that they're  
21 doing, that's not a bad thing.

22 But then the question becomes, you know, what, if any, regulatory  
23 footprint we may want to put upon that. But I think that -- I think it's a good thing.  
24 And I'm encouraged by the fact that they're not just sitting back, waiting for what  
25 the NRC might do or not do. I think that the insights that they gained from

1 Fukushima are helping them inform their decisions in that also. We're trying to  
2 stay back as the regulator and say, "Hey, as a task force, what do we think?"  
3 And then you can look at the two and see how they marry up, and if anything  
4 from our perspective needs to be augmented.

5 COMMISSIONER MAGWOOD: Bill, do you have any --

6 MR. BORCHARDT: Just that, one of the unique things about the  
7 U.S. nuclear industry is the way that they share operating experience and  
8 approaches to resolve problems. We don't try to get into the middle of that. We  
9 view that as a positive activity. We will deal with the industry in a generic manner  
10 as we come up with our inspection guidance or the criteria that we're going to  
11 use to verify compliance with a regulatory requirement, and we'll deal with them  
12 at that stage. But we don't try to facilitate that information sharing. There's other  
13 industry groups that play that role. We think they do that well. But we don't need  
14 to be in the middle of that.

15 COMMISSIONER MAGWOOD: Okay. Thank you. Thank you,  
16 Chairman.

17 CHAIRMAN JACZKO: Commissioner Ostendorff?

18 COMMISSIONER OSTENDORFF: Thank you, Mr. Chairman. I  
19 want to join my colleagues in adding my thanks for Dr. Miller's leadership here of  
20 this effort, the people sitting behind you and your team, and also the very deep  
21 bench of the NRC staff who are supporting. I've been very impressed. And  
22 when I've talked externally as my other colleagues have, we've been very proud  
23 of the competency, professionalism, and commitment of the NRC people working  
24 on this, and so I want to join others and thanking you Charlie.

25 Bill, I'm going to start out with a question for you, a very high level.

1 I can remember, you sat there, March 21, when we had our Commission  
2 meeting, and talking about, you know, the way ahead. And the Chairman had  
3 drafted a COM and we had commented on it, and the Commission unanimously  
4 approved this COM to move forward with the task force. And now that you've  
5 had, maybe, seven weeks or so have passed, or close to eight weeks have  
6 passed since that task force kicked off, and I'm mindful of your comment, March  
7 21, that said, you know, after Three Mile Island, it went in too many different  
8 directions, the efforts. And it was too dispersed and somewhat diluted in some  
9 respects.

10           Given where we are today, here, May 12, do you feel like the -- is  
11 the task force charter, is the task force direction from the Commission, is it where  
12 it needs to be? Or are there any other changes need to occur, here? Are you  
13 comfortable with what the current scope is?

14           MR. BORCHARDT: Yeah, I'm very comfortable with the activities  
15 of this task force. I think it's going about its work in a very deliberate and  
16 thoughtful manner, and that was one of the concerns coming out of Three Mile  
17 Island: it was a little too reactionary, a little quick, in some respects. So I think  
18 it's, we have set up a process that will give serious consideration to a number of  
19 topics. The ones that warrant more work in the future are likely to be passed to  
20 more detailed, issue-specific task forces that, you know, I think will operate under  
21 the guidance of a steering committee, agency-wide steering committee, but then  
22 will also have the ability to have a more thorough engagement of other  
23 stakeholders as we come up with the individual, specific task forces.

24           So I think it will enhance the communication and the participation of  
25 other stakeholders by the time we get to the final regulatory analysis. One of the

1 things I place the most value in having people of the quality that are on this task  
2 force was to have the ability to step outside of their normal jobs, because they're  
3 doing this full-time, and really challenge ourselves: Is there something we need  
4 to do right away to ensure the safety of the U.S. fleet?

5 We made that judgment the day of the tsunami, and we make it  
6 every single day, but it's really valuable to me, and I'm sure, to the Commission,  
7 as well, to have the kind of experts dedicated, focused on that caution, as part of  
8 this task force. I think we're getting great benefit out of that.

9 COMMISSIONER OSTENDORFF: Thank you, Bill. Marty, I'm  
10 going to give you a question here. And somewhat, again, of a high level. One of  
11 Charlie's slides, I think 11-14 had made reference to pre-Fukushima NRC  
12 regulatory efforts, GI-199, with respect to seismic reviews. We've had the dam  
13 failure research efforts and a lot of -- Brian Sheron's group's worked on that.  
14 There's decades of NRC research activities, regulatory rulemaking activities, et  
15 cetera, et cetera, that all preceded Fukushima. And I'm mindful of the challenge  
16 that exists, even pre-Fukushima, of trying to communicate to the public: This is  
17 what we, as a regulator, do.

18 And I think we all can recall back to April 2010, with the Gulf of  
19 Mexico oil rig explosion, where people trying to figure out what is MMS, Minerals  
20 Management Service, and how is that part of the Department of the Interior?  
21 What do they do vis-a-vis leasing, what do they do with respect to the Coast  
22 Guard?

23 So I think we're all mindful of the challenge of communicating to the  
24 public what our regulations are about and how we do business, even pre-  
25 Fukushima. And that effort is certainly magnified with respect to the Fukushima

1 event. Do you have any comments or thoughts on how best to communicate  
2 externally to, not just to the normal stakeholders, but to the average American  
3 citizen who, maybe, before March 11 wasn't that focused on these kinds of  
4 issues?

5 MR. VIRGILIO: In working through individual issues, and I think  
6 you cited a couple of them, like GI-191, where we're looking at seismic activity,  
7 what we're trying to do as we continue to move forward, because we're not  
8 stopping those events, or those issues, what we're trying to do is build into each  
9 issue a little communications plan that explains how Fukushima fits into that  
10 activity. We continue to go out and, I think our generic letter on GI-191 is a really  
11 good example, where we've continued to press on, but included within that, an  
12 acknowledgment of the issues in Fukushima, and that we are, in fact, looking at  
13 them.

14 I haven't thought about the issue, the broader issue you raised: Do  
15 we need an agency-wide communications plan? We're using the blog; we're  
16 using a number of different individual activities to try to communicate about  
17 Fukushima. We've got -- we've established a SharePoint site, a place where  
18 somebody can go to get all of the information that we have. If you're a member  
19 of the staff and you've been asked to make a presentation somewhere, we've  
20 provided a standard set of slides and communications tools.

21 So I think there is a variety of things that we're doing today to make  
22 sure that we're communicating clearly, effectively, consistently, about what the  
23 agency is doing with respect to our follow-up to this accident.

24 COMMISSIONER OSTENDORFF: Okay, thank you. Charlie, I'm  
25 going to turn to you, here. I've done a little studying before I came down here,

1 and I have not, you know, full disclosure, prior to this week, really looked at the  
2 procedures a licensee would have to handle some of these issues. And so my  
3 reactor assistant, Mike Franovich, helped me go through the severe accident  
4 management guideline procedure for primary containment venting for one of our  
5 BWR facilities.

6 I saw a chance, as a former operator of plants, of submarine plants,  
7 to kind of have some feel for going through operating or casualty procedures,  
8 and I went through containment venting under conditions of extreme damage.  
9 This was the extreme damage mitigation guide for one of the procedures, one of  
10 the plants.

11 And I was very pleased, I'm not going to mention what plant it is,  
12 but to see pictures in there that had: this is where this valve is located, this is  
13 where, you know, you operate this particular switch, et cetera, that would help an  
14 operator in a casualty situation go through this. And then I went through and  
15 looked at the spent fuel pool make-up spray and refuel floor enhanced ventilation  
16 under conditions of extreme damage to one of our plants.

17 And so I was very pleased to see the existence of detailed, robust  
18 procedures, with pictures that were operator-friendly, et cetera. And now I'm kind  
19 of turning to a point that Commissioner Magwood was raising in his questions  
20 about, well, can we really make these things operable under difficult, stressful  
21 conditions? I know I'm dating myself, but 1974, when I was fighting fires at the  
22 D.C. trainer, Philadelphia Naval Shipyard, I got, you know, the hair singed off my  
23 eyebrows, and my hands were burned from fighting an actual, you know, oil fire,  
24 with a whole bunch of other guys on hoses, and so forth, and that was a real  
25 wake-up call for me to go fight a real fire under stressful conditions.

1           And so I'm just curious, and I don't have a lot of time to discuss this,  
2 but I think it's important that the task force provides some assessment to the  
3 Commission about the operator readiness to actually deal with casualty  
4 procedures, mitigation guidelines, et cetera, under stressful conditions, and for us  
5 to have, and this goes back to Commissioner Magwood's question on what was a  
6 walk down of equipment. It's more than just seeing what the equipment is, and is  
7 it there, but can people actually utilize it when they have to.

8           So, can you comment quickly on how the task force might look at  
9 this ability of operators to respond under these challenging conditions?

10           MR. MILLER: Yeah, well, first of all, we're not looking at it on a  
11 plant-by-plant basis.

12           COMMISSIONER OSTENDORFF: I understand.

13           MR. MILLER: But we are trying to look at it holistically, and we  
14 spent a lot of time thinking about that. And if I could -- I can tell you we're looking  
15 at the things that you talked about. But let me augment that a little bit, about how  
16 our thinking's going.

17           Those procedures may be very adequate in and of themselves.  
18 But as I talked about, while we're trying to take a look at, can we better integrate  
19 the EOPs, the SAMGs, and the EDMGs, into a framework that fits together, we're  
20 trying to look at that aspect of it also. It's great to have the procedures in place.  
21 How much training is done on it? How much physical practice is done on it?  
22 How much can you realistically do?

23           On some things, you can go farther than others. If you're not in an  
24 emergency situation, you're not going to vent the containment, just for practice.  
25 But there's other things, you know, Commissioner Magwood talked about staging

1 of equipment and hoses, and things like that. Does training include more than  
2 just sitting around a table doing tabletops? Because I think, as you know from  
3 your experience, a certain amount of actually practicing certain things helps,  
4 keeps it fresh in people's minds, it's important.

5           So how much do you need to do that? That's what we're debating  
6 right now in formulating a recommendation. What's a reasonable thing to do?  
7 How do you go about doing that? How can it benefit your readiness?

8           COMMISSIONER OSTENDORFF: That's a very important query.  
9 Thank you, Mr. Chairman.

10           CHAIRMAN JACZKO: I wanted to follow a bit on the comments  
11 that Commissioner Apostolakis made, in particular the distinction with design  
12 basis, beyond design basis. I think as you talked about the integration, perhaps,  
13 of severe accident, the extended damage mitigation guidelines, all of these  
14 different procedures that deal with, ostensibly, some type of event, whether it's  
15 beyond design basis, design basis event, or not.

16           It seems that there's a natural kind of, perhaps, need to bring those  
17 things together. And I'm wondering, again, to the extent that you're looking at  
18 these things, are you similarly looking about a way to bring together all events  
19 that, perhaps, gets beyond the traditional definitions of design basis and beyond  
20 design basis? Because I have to admit, I tend to struggle with what is in what  
21 category, and what, you know -- I think if you look at the hydrogen combustion  
22 requirements, most of those fall as beyond design basis events, but they are  
23 requirements in our Regs, therefore have the same kind of force as other  
24 requirements. So is there any thought to, you know, kind of redefining this whole  
25 idea of design basis, beyond design basis? And does the distinction really mean

1 anything anymore?

2 MR. MILLER: I mean, I think it's fair to say that we have given this  
3 a lot of thought. One of the things that we did reflect on, as you mentioned,  
4 Chairman, is that our -- we do have regulations that take us beyond design basis.  
5 And so what we're trying to take a step back and saying is: Are the regulations  
6 sufficient? Are there things within our regulations that could be enhanced? And  
7 that's where I think I get to the integration of the procedures that maybe better do  
8 it.

9 Let me try a specific example and see if it helps, because I always  
10 think better with specific examples. If you're the operator in the control room  
11 while that event's going on, your focus is on trying to achieve success. That's  
12 your primary focus. If this doesn't work, what do I need to do next to achieve  
13 success? Well, if you look back to the case of Fukushima, you know, was any,  
14 we don't know, but was anything being done to recognize that if you didn't  
15 achieve success, what should be your next step?

16 And that's where you really get into your mitigation thinking, so  
17 where should that onus be? Should it be on the control room operator at the  
18 moment that they're doing what they're doing? Should other resources be  
19 brought to bear; they can sit back and say that if we don't achieve success, we  
20 ought to be thinking about what we need to be doing for mitigation next, whether  
21 that means you start staging equipment, whether that means you start bringing  
22 resources to bear.

23 And, again, I'm giving you raw thinking that this is the kind of thing  
24 we're thinking through, is to --

25 CHAIRMAN JACZKO: And I think that, and the operator is not

1 sitting there, saying, well this is a design-basis event or beyond design-basis  
2 event.

3 MR. MILLER: The operators --

4 CHAIRMAN JACZKO: They're responding to information.

5 MR. MILLER: The operators, right. They're very highly trained.  
6 They're very highly trained, and obviously in that kind of a situation, they're under  
7 a lot of pressure and they've got to make a lot of decisions. And so I think, again,  
8 they're not thinking of it, but for example, this is where we got into our thinking  
9 with regard to where the command-and-control is, and where the command-and-  
10 control is with regard to the operators. Should others be thinking about it? If you  
11 look at the case of Fukushima, you had what some would call delay in  
12 determining whether seawater should be brought in to start flooding things.  
13 Who's thinking ahead about that when you're in a crisis? So what we're talking  
14 about here is having integrated crisis management so that you're trying to think  
15 ahead, and the more that you can do and the faster you can do it, in many cases  
16 while it's under mitigation it can prevent the next step from happening. And so  
17 that's the kind of thing we're looking at with regard to that. And of course, we're  
18 not precluding whether or not we need to make any regulatory changes in there,  
19 but we simply haven't gelled our recommendations yet.

20 CHAIRMAN JACZKO: Well, I appreciate that, and it's almost as  
21 you talked about, the thinking that I was doing here while the meeting was going  
22 on is that from a design perspective, that there probably is a similar -- it's more of  
23 a graceful transition from design-basis to beyond design-basis events. That  
24 there are events -- we treat events with varying degrees of regulatory  
25 requirement. The RECCS systems are required to be able to deal with a double-

1 ended guillotine, large break LOCA. Other types of events, the station blackout  
2 was more of a one-time analysis and a requirement to have a coping strategy,  
3 but not necessarily an ongoing review process. So just as we look at this, again,  
4 some of these concepts may be outdated in a way, but it's more of a smooth  
5 scale as you go to these different types of events.

6 MR. BORCHARDT: Chairman, I struggle, though, with the idea.  
7 Maybe I'm just slow.

8 CHAIRMAN JACZKO: And I could be slow too.

9 MR. BORCHARDT: But I think the concept of design basis adds a  
10 degree of regulatory stability that's very much needed. To have -- it serves as a  
11 starting point to begin the regulatory discussion. It doesn't undo the value of  
12 equipment that's there to respond to things beyond the design basis. There are  
13 regulatory requirements that go beyond the design basis, and there's functional  
14 equipment that PRAs take advantage of that's not even a regulatory requirement  
15 that you can take credit for. I mean, and the equipment is well maintained. But  
16 having a clear, defined regulatory basis in this era, when we're trying to come up  
17 with standardized plants, even, would just go in the opposite direction in my  
18 mind. It would never really be sure what the regulatory basis is at any one plant  
19 if we didn't have a clear basis. We went through a long, very difficult program I  
20 think starting in the mid-'80s to reconstitute the design basis, because it was not  
21 being maintained in a regulatory space in the kind of way that supported effective  
22 regulation and even operation.

23 CHAIRMAN JACZKO: I appreciate that, and I'm not suggesting we  
24 get rid of design-basis idea, but I'm not sure that that's the end of the  
25 conversation. Clearly, as I said and you said, we have those things that are

1 regulatory requirements for beyond design-basis events, and I'm not necessarily  
2 sure what that means sometimes. What matters is it's a regulatory requirement  
3 versus something which is not a regulatory requirement, which is a voluntary  
4 initiative; the SAMGs versus the extended-damage mitigation. But there's a  
5 requirement to have extended-damage mitigation guidelines which deal with  
6 beyond design-basis events, as opposed to the SAMGs which is not even a  
7 regulatory requirement to deal with beyond design-basis events. So I'm not sure  
8 that we're making these distinctions in the right way. What matters to me is more  
9 what our regulatory requirements are and what problems are they addressing,  
10 and what challenges are they solving. I think design-basis effort has been a  
11 useful tool, but clearly there are things beyond that, and perhaps a more graceful  
12 degradation than it appears. But that's perhaps more of a philosophical question  
13 anyway.

14           One specific question I wanted to address and touch on, and see if  
15 the task force is looking at this at all: If you look at Fukushima – and one of the  
16 consequences for sure, and in particular as you get into a phenomena of the  
17 larger extended release, assuming after two weeks, three weeks, two months,  
18 whatever the time frame is, you've taken the appropriate steps to evacuate, to  
19 relocate a population, given whatever the dose levels may be, at that point you  
20 begin to deal more with consequences that are in a cost-basis or a  
21 contamination-basis. If there continues to be a release for another six months,  
22 let's say, in Fukushima, there will be an impact on the mitigation and the cleanup,  
23 not necessarily a health and safety impact for the population, because they've  
24 been relocated. How are we taking that into consideration, and to what extent  
25 does that factor into our determinations of whether or not something should be

1 considered an enhancement to safety? Do you need a back-fit test? Those  
2 kinds of things -- is that considered in our reg. analysis or not? Like, ultimately,  
3 the cost of cleanup, at a point in which you're no longer dealing with the potential  
4 for public-health consequences.

5 MR. MILLER: Yeah, I would say to some degree, but I'm not sure  
6 that it would go to the extent that you're thinking. I think our goals and our  
7 thinking are always: What do we need to do to have sufficient confidence that  
8 we won't get to that? Prevention is the top level, and then if you need to mitigate,  
9 what do you need to mitigate so that you don't get to that? But with the  
10 recognition that if you did get there, yeah, there would be consequences of that  
11 nature. But I don't think we've looked at it from what I would call the outside-in,  
12 that way. I think we try to look at it from the inside out, and making sure we've  
13 done everything that we're comfortable with doing that we won't get there. Marty,  
14 and I mean there have been a lot of discussions over the years about that: How  
15 do you factor the cost of the cleanup in? I know that's a big discussion with  
16 regard to sources and financial aspects of it, with regard to Price Anderson, and  
17 things like that.

18 CHAIRMAN JACZKO: Well, it's certainly -- again, as we look at  
19 these issues, I know our focus, I mean, we talk about public health and safety as  
20 our focus, and we talk about these events in the context of addressing those  
21 concerns first and foremost, but there certainly is that additional piece that can  
22 have an impact. Again, and in particular as we're looking at our analysis to see  
23 whether a particular safety enhancement, you know, we talk about safety  
24 enhancements, but there are things that could be done to reduce the likelihood of  
25 an accident that ultimately would have an impact on that economic consequence,

1 which, certainly as I think we're seeing in Japan, can be quite significant, and  
2 may have an impact ultimately on the decision-making. And again, it perhaps  
3 gets to the issues of looking at level-three PRAs and including in those analyses  
4 a look at the full breadth of consequences beyond just some of the health  
5 consequences.

6 Oh, good. I'm glad. That's why I said it. But again, I think it's just  
7 something as we go forward that I'll certainly be keeping a look at. Because we  
8 can have an event in which there's no public-health consequences, if the right  
9 mitigative actions are taken with emergency response. But that can still be a  
10 very significant event from the standpoint of economic cleanup and those kinds  
11 of consequences. And again, that is maybe not necessarily the traditional way  
12 that we've approached issues, but they do have real impacts and real  
13 consequences. And that's something that we'll look at, but with that, I would offer  
14 any other questions or comments that my colleagues want to make?

15 COMMISSIONER MAGWOOD: Just for a quick question. Hope  
16 the answer isn't too long. You've mentioned your interest in looking at  
17 command-and-control.

18 MR. MILLER: Yes.

19 COMMISSIONER MAGWOOD: What's our current regulatory  
20 footprint in command-and-control?

21 MR. MILLER: Well, I think that our regulatory footprint has put a lot  
22 of onus and responsibilities on the control-room operators, that they have the  
23 authorities to take the actions that they need to take, while they are on shift, and  
24 they have a lot of authorities in that regard to make the decisions that need to get  
25 made. What I was referring to is when you get into a situation that would be

1 proceeding, if unattended, to what happened at Fukushima, where does that  
2 command -- who's thinking about, you have a control-room operator that's  
3 focused on his unit if it's a multi-unit site, is there somebody thinking if all the  
4 units are affected because of some extraordinary event that's well beyond the  
5 design-basis from natural phenomena where the priorities should be? Where  
6 should we put priorities with regard to mitigation, or putting our resources, or  
7 calling for offsite resources? That's the kind of way we're approaching in a  
8 command-and-control. It's not questioning the command-and-control we've got  
9 within the United States today. I think we're comfortable that our control-room  
10 operators have those authorities.

11 MR. VIRGILIO: Commissioner, looking beyond the control room, if  
12 you think about our emergency-preparedness requirements and emergency-  
13 preparedness exercises, that's where you test the command-and-control all the  
14 way through, the whole sequence.

15 COMMISSIONER MAGWOOD: Well, I guess what I'm really  
16 thinking about is in the case of, if you'll excuse the expression, beyond design-  
17 basis event and you're into SAMG and beyond territory, do we have any  
18 regulatory footprint in the way decisions are made when you get into that regime,  
19 when you're thinking about whether you're flooding reactor vessels, whether  
20 you're -- I mean, any number of actions that might be taken?

21 MR. MILLER: Again, for things like SAMGs that were voluntary,  
22 that's part of what we're trying to determine through the temporary instruction.  
23 What are the licensees --

24 COMMISSIONER MAGWOOD: So the regulatory footprint really  
25 kind of comes to an end at that juncture.

1           MR. MILLER: Or for SAMGs, it's a voluntary effort, yes. It's not  
2 part of our regulatory oversight.

3           CHAIRMAN JACZKO: But I would -- and just my thought, too, as  
4 you're asking that. We do have, in an emergency situation, authorities to order  
5 actions that would be necessary to deal with the crisis, whether it's in our  
6 regulatory requirement or not. We do have that kind of a --

7           COMMISSIONER MAGWOOD: Yeah we do, but I think the issue  
8 for me becomes, because if you wait for the NRC to make the decision it might  
9 be too late.

10          CHAIRMAN JACZKO: Right.

11          COMMISSIONER MAGWOOD: You need someone at the plant  
12 making those calls. Now, as I've talked to licensees about this, they assure me  
13 that the plant manager is the guy who will make that decision, but it's the sort of  
14 thing I think the task force ought to give some thought to, is to whether we need  
15 to become more involved in that.

16          MR. MILLER: We're looking at that.

17          CHAIRMAN JACZKO: All right. Any other comments or  
18 questions? Commissioner Apostolakis.

19          COMMISSIONER APOSTOLAKIS: Well, just one comment. One  
20 of the concepts that I'm sure prior Commissions have struggled with, but I'm a  
21 new Commissioner, I guess. This idea of voluntary versus non-voluntary, really, I  
22 can see the value of encouraging the industry to do things on a voluntary basis,  
23 but at the same time, I have this nagging feeling that maybe we're not intervening  
24 too much. And I don't know, I mean, a lot of the decisions seem to be based on  
25 legal grounds rather than what nature is going to do, and I don't know about this

1 voluntary thing. I mean, all the risk informed initiatives are voluntary, until they  
2 are not. Like the ROP. I don't know whether you can call it now a voluntary  
3 initiative, so that's another concept –

4 CHAIRMAN JACZKO: Is it a voluntary initiative?

5 COMMISSIONER APOSTOLAKIS: Yeah, everybody's doing it. So  
6 that's another concept that I'm struggling with, and again, if you gentlemen can  
7 offer some advice maybe in the long-term task force report, I would greatly  
8 appreciate it. Thank you.

9 CHAIRMAN JACZKO: Well, I'll just close with that. I think that this  
10 is, I mean, we haven't really touched on the issue at all, but a lot of this, well,  
11 maybe I shouldn't say a lot of it, but some of the voluntary versus non-voluntary  
12 gets to the back-fit, and we haven't touched on the back-fit. And fundamentally,  
13 that sometimes presents a hindrance to our ability to impose requirements. And I  
14 certainly think that that's something that, as we look at this, we have to take  
15 seriously. Is that preventing the right kinds of activities from being implemented  
16 because we're not, and in some of these issues are very complicated, trying to  
17 go through and demonstrate a back-fit and do the analysis? And this is part of  
18 my question about looking at consequences in a different way. If we're  
19 monetizing the economic cleanup of an accident versus dose savings when  
20 you've taken into consideration an evacuation or whatever may go into an  
21 analysis, you may be skewing those results to miss an important savings or an  
22 important impact from the regulations and the requirements. But it is certainly a  
23 good point, and I think this has been a very good discussion that we've all had.

24 And I look forward to an update in about 30 days with your  
25 continued progress, and I certainly would echo the comments of my colleagues

1 on the Commission with the A-team that's been assembled and the tremendous  
2 work you've done so far in what is really a tremendously short period of time.  
3 And clearly, a lot of thought has been given to some very serious issues, and I  
4 would just stress Bill's point that doing this in a very systematic way is going to  
5 be important so that we have a good, clear understanding of what issues need to  
6 be addressed and why as we go forward. With that, we're adjourned. Thank  
7 you.

8 [Whereupon, the proceedings were concluded]

IN RESPONSE, PLEASE  
REFER TO: M110512

May 23, 2011

MEMORANDUM TO: R. W. Borchardt  
Executive Director for Operations

FROM: Annette Vietti-Cook, Secretary */RA/*

SUBJECT: STAFF REQUIREMENTS – BRIEFING ON THE PROGRESS OF  
THE TASK FORCE REVIEW OF NRC PROCESSES AND  
REGULATIONS FOLLOWING THE EVENTS IN JAPAN, 9:30  
A.M., THURSDAY, MAY 12, 2011, COMMISSIONERS'  
CONFERENCE ROOM, ONE WHITE FLINT NORTH,  
ROCKVILLE, MARYLAND (OPEN TO PUBLIC ATTENDANCE)

The Commission was briefed by the NRC staff on the status of the NRC response to events in Japan and the status of the task force reviewing the NRC processes and regulations following the events in Japan.

There were no requirements identified for staff action.

cc: Chairman Jaczko  
Commissioner Svinicki  
Commissioner Apostolakis  
Commissioner Magwood  
Commissioner Ostendorff  
OGC  
CFO  
OCA  
OIG  
OPA  
Office Directors, Regions, ACRS, ASLBP (via E-Mail)  
PDR

## SCHEDULING NOTE

**Title:** BRIEFING ON THE PROGRESS OF THE TASK FORCE REVIEW OF NRC PROCESSES AND REGULATIONS FOLLOWING THE EVENTS IN JAPAN (Public)

**Purpose:** To provide the Commission a 60-day status report on the task force's review of NRC processes and regulations and identify issues for agency action, if any.

**Scheduled:** June 15, 2011  
9:30 am

**Duration:** Approx. 2 hours

**Location:** Commissioners' Conference Room, 1<sup>st</sup> floor OWFN

**Participants:** Presentation

**NRC Staff Panel** 50 mins.\*

**Bill Borchardt**, Executive Director for Operations

**Marty Virgilio**, Deputy Executive Director for Reactor and Preparedness Programs

**Charlie Miller**, Director, Office of Federal and State Materials and Environmental Management Programs and Chair of the Task Force

[Note: The other task force members will be seated in the well.]

Topic: 60-day status of the task force review

**Commission Q & A** 50 mins.

**Discussion – Wrap-up** 5 mins.

\*For presentation only and does not include time for Commission Q & A's.



# **Briefing on the Progress of the Task Force Review of NRC Processes and Regulations Following the Events in Japan**

**Bill Borchardt  
Executive Director for Operations  
June 15, 2011**

# **Agenda**

- **Actions to Date**  
**Martin Virgilio**
- **Task Force Activities**  
**Dr. Charles Miller**

## **Actions to Date**

- **Results of Temporary Instructions (TIs)**
- **Bulletin 2011-01, “Mitigating Strategies”**
- **Continued international interactions**

# **Task Force Activities 60-Day Update**

**Dr. Charles L. Miller, Lead  
NRC Task Force**

# **Task Force Actions Since Last Meeting**

- **Continued task force discussions with NRC staff on technical topics**
- **Site visits**
- **Developing background and evaluation of focus areas**
- **Reviewing results of TIs**
- **Reviewing input from various stakeholders**

# Areas of Focus

- **Using defense-in-depth approach**
  - **Protection from natural phenomena**
  - **Mitigation for long-term station blackout (SBO)**
  - **Emergency preparedness (EP)**
- **NRC programs**

# Themes

- **Protection of equipment from the appropriate external hazards is a key foundation of safety**
- **Mitigation equipment and strategies that prevent core or spent fuel damage provide additional defense-in-depth**

## **Themes (Cont'd)**

- **EP provides further defense-in-depth by minimizing public dose should radiological releases occur**
- **Principles of Good Regulation promote a consistent, coherent, and reliable regulatory framework**

# **Protecting Safety Equipment From Natural Phenomena**

- **Protection of equipment from the appropriate external hazards is a key foundation of safety**
- **Rules and guidance have evolved**
  - **State of knowledge of hazards**
  - **State of the art of analysis methods**

# **Protection From Natural Phenomena (Cont'd)**

- **Plants have different licensing bases and associated safety margins**
- **Regulatory initiatives to address vulnerabilities**
  - **Plant specific actions have enhanced margins without necessarily changing the design basis external hazards**

# **Mitigating Long-Term Station Blackout**

- **Mitigation equipment and strategies that prevent core or spent fuel damage provide additional defense-in-depth**
- **Long-term SBO**
  - **Requires multiple concurrent equipment failures**
  - **Can result from beyond design basis external events**

# **Coping with SBO**

- **Current requirements do not address common cause failure of all onsite and offsite AC power sources and distribution**
- **Current coping requirement assumes near-term restoration of AC power**

## **10 CFR 50.54(hh)(2)**

- **10 CFR 50.54(hh)(2) requires mitigation capability for large fires and explosions**
- **Capability could be useful for other events such as long-term SBO, if available**

# **Availability of 10 CFR 50.54(hh)(2) Equipment**

- **NRC inspections revealed deficiencies in:**
  - **Maintenance/availability of equipment**
  - **Procedures**
  - **Training**
- **Equipment may not be protected for other initiating events**

# **Severe Accident Management Guidelines (SAMGs)**

- **SAMGs address plant response during a severe accident to:**
  - **Terminate core damage progression**
  - **Maintain containment integrity**
  - **Minimize radioactive releases**
- **Spent fuel cooling not included**
- **SAMGs were implemented as a voluntary initiative in the 1990s**

# **Status of SAMGs**

- **NRC inspection:**
  - **Confirmed that every site has SAMGs**
  - **Revealed inconsistent implementation**
    - **Procedure availability and control**
    - **Plant configuration control**
    - **Training and exercises**

# Hardened Vents

- **Provided to protect BWR Mark I containments from overpressure during a severe accident**
- **Implemented at all Mark I plants following Generic Letter 89-16**
- **Not included in regulations**
- **Plant-specific designs varied**

# **Emergency Preparedness**

- **EP provides further defense-in-depth by minimizing public dose should radiological releases occur**
- **Existing EP requirements focus on single-unit events**
  - **Staffing, facilities, equipment, dose projection capability**

# **Emergency Preparedness (Cont'd)**

- **Challenges during long-term SBO**
  - **Emergency notification**
  - **Communication**
  - **Data transmission**
- **Public and decision maker knowledge of radiation safety principles**

# **NRC Programs**

- **Principles of Good Regulation promote a consistent, coherent, and reliable regulatory framework**
- **Past agency decisions for beyond design basis events have led to variability in licensee and NRC programs**

## **NRC Programs (Cont'd)**

- **Regulatory analysis guidelines do not provide sufficient clarity for balancing cost/benefit and defense-in-depth considerations**
- **Voluntary initiatives have limited regulatory treatment**

# **Next Steps**

- **Near-term task force will recommend actions and topics for longer-term review**
- **Task force report will be provided to Commission in July in a notation vote paper**
- **July 19, 2011 Commission meeting**

# **Longer-Term Review Approach**

- **Longer-term task force to be chartered**
- **Will address areas identified by near-term task force**
- **Applicability of lessons to other licensed facilities**
- **Engage internal and external stakeholders**

# **Acronym List**

- **AC – Alternating Current**
- **BWR – Boiling Water Reactor**
- **EP – Emergency Preparedness**
- **NRC – Nuclear Regulatory Commission**

## **Acronym List (Cont'd)**

- **SAMG – Severe Accident Management Guideline**
- **SBO – Station Blackout**
- **TI – Temporary Instruction**

UNITED STATES OF AMERICA  
U.S. NUCLEAR REGULATORY COMMISSION

BRIEFING ON THE PROGRESS OF THE TASK FORCE  
REVIEW OF NRC PROCESSES AND REGULATIONS  
FOLLOWING THE EVENTS IN JAPAN

JUNE 15, 2011

9:30 A.M.

TRANSCRIPT OF PROCEEDINGS

Public Meeting

Before the U.S. Nuclear Regulatory Commission:

Gregory B. Jaczko, Chairman

Kristine L. Svinicki, Commissioner

George Apostolakis, Commissioner

William D. Magwood, IV, Commissioner

William C. Ostendorff, Commissioner

## APPEARANCES

## NRC Staff:

Bill Borchardt,  
Executive Director for Operations

Marty Virgilio,  
Deputy Executive Director for Reactor and Preparedness  
Programs

Charlie Miller,  
Director, Office of Federal and State Materials and  
Environmental Management Programs and Chair of the Task  
Force

## 1 PROCEEDINGS

2 CHAIRMAN JACZKO: Well, good morning, everyone. The  
3 Commission will meet today to discuss the safety review that the agency  
4 launched in response to the events in Japan. This is the second in a series of  
5 three public meetings which we will hold, each one being held essentially 30  
6 days from the time, 30 day intervals from the time of the start of the task force  
7 work, and so we anticipate in about a month from now having the final meeting  
8 and hearing the final report from the task force.

9 I think these meetings are a very good opportunity for the public to  
10 have an understanding of the progress and the issues that are being identified by  
11 the task force, and of course to update and keep the Commission informed of the  
12 task force progress.

13 During today's meeting, the staff will provide an update on the  
14 status of events in Japan, review actions that the NRC's already taken, and  
15 provide an overview of their progress in conducting the 90-day near term review.  
16 Although it is still too early to discuss possible recommendations today, I  
17 anticipate we'll focus on the task force's findings so far. And, as I said, the third  
18 and final of these meetings will happen next month, and we'll have, then, the final  
19 work of the task force, which I know they're working very hard on getting it to us  
20 in that timeframe.

21 Ultimately, then, this final report will pave the way for the longer  
22 term component of our safety review, which we expect to be completed about six  
23 months after it begins. As I've said before, I believe it's important that our safety  
24 review proceeds in a very systematic and methodical way, but with the  
25 appropriate sense of urgency, given the important safety issues that are being

1 examined.

2                 So I want to thank the staff for all of their work so far to produce the  
3 content for this meeting, and obviously for the final report, which I know will be  
4 forthcoming. I'd offer my colleagues any comments they would like to make.  
5 Commissioner Svinicki.

6                 COMMISSIONER SVINICKI: Thank you, Mr. Chairman. I'd just  
7 like to join you in acknowledging the staff's hard work. We'll hear from the task  
8 force lead today, but many dozens of NRC staff are supporting the task force in  
9 their work. And also, I know that many of our technical staff are remaining  
10 cognizant of emerging developments so that if the agency were to need to act in  
11 the nearer term, that will be brought to light as well. So I thank all of the staff for  
12 their dedication to this. Thank you.

13                 CHAIRMAN JACZKO: Commissioner Magwood.

14                 COMMISSIONER MAGWOOD: Just very briefly, I also want to add  
15 my thanks to Charlie and his team, and the others who have supported this task  
16 force. Very, very important that we go through this carefully, but as quickly as  
17 possible, as the Chairman indicated. Also wanted to pass my thanks to the staff  
18 that continue to support the people in Japan and their effort to recover from this  
19 terrible incident.

20                 I do have great confidence that the Japanese will recover from this.  
21 They're doing a great job recovering already, and much infrastructure already has  
22 been rebuilt in rapid fashion. So I look forward to working with our Japanese  
23 colleagues to help them in their efforts, but also look forward to working with all of  
24 you to make sure that we're prepared for anything that may happen in the future.  
25 in the United States. Thank you.

1 CHAIRMAN JACZKO: Commissioner Ostendorff?

2 COMMISSIONER OSTENDORFF: I'd just like to add my thanks to  
3 that of my colleagues to the task force, as well as the entire NRC staff.

4 CHAIRMAN JACZKO: With that, I turn it over to you, Bill.

5 MR. BORCHARDT: Okay, thank you. Good morning. Before we  
6 get into the discussion of the task force activities, Marty and I are going to give a  
7 brief update of activities in Japan and then the other activities going on within the  
8 NRC related to the follow-up to the events of Fukushima.

9 The conditions of Fukushima continue to improve. Over the last  
10 month, conditions of the reactor and the spent fuel pools, I would describe as  
11 being relatively static. And while full stability might be several months away, I  
12 think very good progress is being made. There's been notable progress over the  
13 last month in implementing the road map that has been put together by TEPCO  
14 and the government of Japan. For example, the recirculation cooling has been  
15 reestablished for Unit 2's spent fuel pool and the Units 1 and 3 pools have been  
16 switched to a normal injection path. Additionally, a ventilation system was  
17 installed in Unit 1 that has improved the environmental conditions in the reactor  
18 building.

19 By the end of the month, TEPCO should have a new water  
20 treatment system in place to process the significant amount of radioactive water  
21 that has accumulated on-site. Additionally, efforts are underway to reinforce the  
22 Unit 4 reactor building and the spent fuel pool. However, this progress is not  
23 without some new and emerging challenges.

24 Events like last week's temporary loss of power to the Unit 1 and  
25 Unit 2 control room and the recent heavy rains on-site pose new hurdles that

1 need to continuously be overcome. We have repeatedly witnessed the ability to  
2 adapt to these challenges and to overcome them, so these are not major  
3 setbacks, but just an additional complication, and an issue that needs to be  
4 addressed.

5 Over the last month, new indications and evidence have continued  
6 to enlighten our understanding of what really happened following the events on  
7 March 11. Early in the event, the staff was concerned that the Unit 4 spent fuel  
8 pool had become dry, resulting in the potential for a large radioactive release.  
9 And the latest information that we have, including recent video and water  
10 samples from the Unit 4 spent fuel pool indicates that the pool -- it's unlikely that  
11 the pool ever went completely dry. The staff welcomes this as very good news,  
12 as it's one indication that the event may not have been as serious as previously  
13 believed for Unit 4.

14 Early last week, the government of Japan released its IAEA report  
15 on the event. The report indicates that all three reactors, the cores, to some  
16 degree, are ex-vessel. The NRC staff has contemplated this scenario for some  
17 time, due to the duration of each of the reactors went without core cooling.  
18 However, it's still too early to tell, and we don't have specific evidence to show  
19 the exact condition, and how much of any of the cores went ex-vessel in those  
20 three units. And it's important to realize that, as more and more new information  
21 comes available, and I think this will continue for months to come, our  
22 understanding of the specific events and what actions need to be taken will be  
23 further refined.

24 Go to slide two, which shows the agenda for today's briefing. So,  
25 as I said, Marty's going to talk about some actions that we've taken to date, and

1 then Charlie Miller will discuss the specific activities associated with the task  
2 force review. I'll turn it over to Marty.

3 MR. VIRGILIO: Thank you, Bill. Good morning. As Bill indicated,  
4 what I want to do is provide you a little bit of an update to some of the activities  
5 we've undertaken since the last Commission meeting. If you recall, at the last  
6 meeting we talked about some temporary instructions, two temporary instructions  
7 that we had asked our Regional staff to follow up on. The first one we issued  
8 toward the end of March, March 23, which was Temporary Instruction 183. And  
9 that one focused on station blackout, 50.54(hh), which is large fires and  
10 explosions, and it also focused on external events.

11 What we learned from the issuance and conduct of our inspection  
12 activities, were there were deficiencies that we identified that could have caused  
13 any single strategy to fail. However, when you think about how these strategies  
14 are designed, no function was lost, and so that would have resulted in damage to  
15 either the fuel or the containment.

16 More specifically, if you look at what we found with respect to  
17 licensees' ability to mitigate a station blackout condition, there were a few cases  
18 where there were procedural and training deficiencies. When we looked at the  
19 capability of licensees to mitigate large fires and explosions, that 50.54(hh),  
20 some equipment, mainly pumps, were not operable when they tested, or they  
21 lacked test acceptance criteria. Some equipment was actually missing from the  
22 locations, or dedicated to other activities. And in some cases, plant modifications  
23 had rendered the strategies that were developed at the time unworkable. And  
24 when you looked at the external events and internal events of fires, floods,  
25 earthquakes portion of that Temporary Instruction, we found some equipment,

1 mainly pumps, wouldn't operate when tested, some discrepancies were identified  
2 with respect to barriers and penetration seals, and some equipment that was  
3 there to mitigate fires and station blackouts were stored in areas that were not  
4 necessarily seismically qualified or hardened against flooding.

5           The second Temporary Instruction, 184, which we issued toward  
6 the end of April, was focused on severe accident management guidelines. Recall  
7 that these guidelines were a voluntary industry initiative that was implemented in  
8 the 1990 timeframe. What we found from the review or inspections around that  
9 TI was that some of the procedures were neither available in all of the expected  
10 locations, some of the procedures appeared to be updated, but there wasn't a  
11 systematic process for ensuring they were updated periodically, and that, while  
12 personnel appeared to be properly trained, there wasn't systematic exercises at  
13 all facilities for these procedures.

14           All of this information is loaded on our website and available for the  
15 public to see. You can identify by plant which plant had one of these deficiencies  
16 identified. But again, on the whole, when you look at how this has all been  
17 developed, with strategies upon strategies that ensure functions are protected,  
18 we didn't find any cases where the, ultimately, the function could not be  
19 performed.

20           So much for the TIs. The next issue I wanted to talk about was the  
21 bulletin that we issued back on May 11, just the day before the last Commission  
22 meeting. That bulletin was focused on mitigating strategies and we issued that  
23 bulletin in order to make sure that we had the information we needed to assess  
24 the licensees' position with respect to these issues on mitigating strategies.

25           We just now have received our 30 day report. Recall, that bulletin

1 was divided into two pieces. Information we wanted immediately was an  
2 understanding of whether the equipment necessary to execute the strategies  
3 was, in fact, available, and then whether the strategies were, in fact, executable.  
4 And so far we've finished, I think, reviewing about 75 percent of the responses to  
5 the 30 day report. And we haven't seen any case where the equipment was not  
6 available or the strategy was not implementable.

7 Now, the 60 day report information will be coming to us later in,  
8 well, in mid-July, and that will provide information on maintenance testing,  
9 configuration control, and we'll take all of that information and fold that into our  
10 longer term review effort.

11 Moving on from the bulletin, we continue to support a number of  
12 international activities and interactions. If you look back last week, there was the  
13 G8 Summit, the G20 Ministerial Meeting, the NEA Forum, where we had a  
14 number of staff participating. We did participate on IAEA's fact finding mission to  
15 Japan. And we'll be participating in the upcoming, next week's IAEA ministerial  
16 meeting on the Fukushima events.

17 Looking ahead, there'll be a number of meetings in the fall,  
18 including the IAEA General Conference, the Nuclear Safety Convention  
19 Extraordinary Meeting, and a number of other forums where we'll be interacting  
20 with our international colleagues to make sure that we're sharing information  
21 around this event.

22 As Bill mentioned, last week the government of Japan issued its  
23 preliminary accident report to the IAEA, and that report provides, I think, a good  
24 summary of the sequence of events and some lessons learned. We currently  
25 have that report under review. Our initial assessment of that report is it is

1 consistent with our understanding of the events that transpired at Fukushima  
2 Daiichi following the March 11 earthquake and tsunami, and that, based on our  
3 preliminary review, it doesn't cause us to say that we need to take any additional  
4 actions beyond the TIs and the bulletins that I spoke about. And we'll do a more  
5 thorough review; what we want to do is make sure that we're positioned for the  
6 upcoming ministerial meeting at the IAEA to have more facts and more insights  
7 with respect to our review of that document.

8           Finally, what I want to do is recognize that the nuclear industry  
9 developed their strategic plan for following up to the Fukushima events. They  
10 developed that strategic plan and established a steering committee consisting of  
11 representatives from EPRI, IAEA, NEI, and others. And we'll continue to monitor  
12 those activities and continue to consider their input, along with the input of all the  
13 stakeholders, as we move forward in the longer term effort. That's all I wanted to  
14 say in terms of the background, and let me now turn it over to Charlie Miller.

15           MR. MILLER: Thank you, Marty. Good morning. The task force is  
16 making significant progress, and we've begun drafting our report. For today's  
17 presentation, it will not include every topic that we're looking at that might be  
18 included in a report, but rather I want to focus today on some key themes and  
19 some facts that support those themes. If I could please have slide five.

20           Since our last Commission meeting, the task force has been active  
21 in a number of efforts. We continue to receive excellent support from the  
22 headquarters and Regional staffs. We've had the benefit of additional briefings  
23 from agency experts on technical topics of interest. We've also received  
24 additional information and insights from our site team in Japan and our team here  
25 in headquarters that's supporting that activity.

1           Members of the task force visited two operating reactors and were  
2 able to make some observations from those visits. These observations were  
3 done; we observed some of the SAMG inspections that our inspectors were  
4 performing. We had the opportunity to meet with some corporate, and site staff,  
5 and NRC inspectors to explore various issues. Some of these include hardened  
6 wetwell vent design and operation for Mark 1 containment venting on the  
7 deployment of the B.5.b equipment at the sites and strategies for dealing with  
8 extreme flooding events.

9           We're building the background and evaluations to support the  
10 formulation of the task force recommendations. We're also evaluating  
11 inspections and the results of those inspections for insights to be factored into  
12 our report, and formulating our recommendations. Lastly, we're reviewing and  
13 evaluating input from staff members and maintaining awareness of information  
14 and developments for other domestic and international sources.

15           Slide six, please. As discussed in our May Commission meeting,  
16 the task force is following a systematic and methodical approach. It's consistent  
17 with defense-in-depth philosophy, and the task force is focusing on protection,  
18 mitigation, and emergency preparedness based on the insights from the  
19 Fukushima event. We're evaluating NRC programs for potential enhancements  
20 with the exception of incident response. NSIR is evaluating incident response as  
21 part of the line organization's responsibilities. In keeping with these areas of  
22 focus, the task force has developed four themes for today's presentation.

23           May I have slide seven, please. The following four themes  
24 represent ideals relative to the application of defense-in-depth philosophy and  
25 regulatory framework. I'll touch briefly on each of these themes, and then, in the

1 following slides, I'll discuss facts regarding our current regulatory approach that  
2 are related to those themes in the context of the Fukushima event.

3 The first theme is that protection of equipment from the appropriate  
4 external hazards is a key foundation of safety. Second theme is that mitigation  
5 equipment and strategies that prevent core or spent fuel pool damage provide  
6 additional defense-in-depth. Next slide, please. Our third theme is that  
7 emergency preparedness provides further defense-in-depth by minimizing public  
8 dose should radiological releases occur. And finally, the NRC's principles of good  
9 regulation promote consistent, coherent, and reliable regulatory framework.

10 Slide nine, please. Now I'll expand on each of these themes by  
11 providing some related facts, beginning with protection of safety equipment from  
12 natural phenomena. Over time, the state of knowledge of natural phenomena  
13 and the state of the art of hazard analysis methodologies and tools have evolved.  
14 The NRC's rules and guidance regarding analysis of external hazards and  
15 definition of design bases for external hazards has evolved as well.  
16 For example, the staff issued Regulatory Guide 1.60, "Design Response  
17 Spectra," in 1973 to provide guidance on establishing safe shutdown of design  
18 bases earthquakes for nuclear power plants. Regulatory Guide 1.92, which is  
19 entitled, "Combining Modal Responses and Spatial Components in Seismic  
20 Response Analysis," was issued in 1974 and updated in 1976. Reg. Guide  
21 1.100, "Seismic Qualification of Electrical and Mechanical Equipment for Nuclear  
22 Power Plants," was issued in 1976 and revised in 1977 and 1988.

23 Current operating plants, including some that were licensed before  
24 any of these guides were issued, as well as many licensed over the period that  
25 these guides were being developed and revised. Most of these guides have

1 been further revised in the last few years to prepare for the licensing of the next  
2 generation of reactors.

3 Slide 10, please. Due to the evolving nature of NRC's  
4 requirements, plants have different licensing bases and associated safety  
5 margins depending upon their time of licensing. Over time, the NRC has  
6 implemented several regulatory initiatives that have resulted in plant-specific  
7 actions to address external hazard vulnerabilities. For example, going back into  
8 1977, the systematic evaluation program was initiated. And it was there to  
9 address a number of topics, including seismic events, floods, high winds, and  
10 tornadoes. The program included several plants that were licensed before a  
11 comprehensive set of licensing criteria, that being the general design criteria, had  
12 been developed or finalized. Vulnerabilities from external hazards were also  
13 addressed by generic safety issues like unresolved safety issue USI A46  
14 regarding seismic qualification of mechanical and electrical equipment in the  
15 1980s. And the individual plant examination program and both the IPE and the  
16 IPEEE, which was geared at external events, which was a program, it was in the  
17 early 90s.

18 Plant-specific actions were taken to address the vulnerabilities  
19 identified by these regulatory initiatives, resulting in increased safety margins.  
20 However, the resolution did not necessarily involve any update of the facilities'  
21 design basis external hazard. For example, the resolution of USI A46 resulted in  
22 modifications to seismically qualify equipment needed to bring the plant to a hot  
23 shutdown. Accident mitigation equipment was not included. This was  
24 determined to be a reasonable and cost-effective approach to ensuring the intent  
25 and general design criteria, too, was met, in lieu of requiring plants to meet the

1 criteria for protection from natural phenomena that was applied to newer plants.

2           Next slide, please. Theme two is that mitigation for long-term  
3 station blackout provides additional defense-in-depth. For station blackout to  
4 occur there must be multiple concurrent failures, including loss of multiple  
5 independent off-site power sources and redundant safety related on-site  
6 emergency generators. Beyond design basis external events, while low  
7 likelihood, have the potential to introduce common cause failures of AC power  
8 resulting in long-term station blackout.

9           Slide 12, please. Our current station blackout requirements do not  
10 address common cause failure of all on-site and off-site AC power sources and  
11 distributions. What I mean here is that the current station blackout rule handles  
12 off-site and on-site power availability independently. Regulatory Guide 1.155  
13 contemplates the loss of power from grid failures and severe accident events  
14 such as snow, high winds, but it does not contemplate the loss of off-site power  
15 due to widespread natural phenomena, such as earthquakes or floods, that could  
16 impact both on-site and off-site power.

17           As a result, the regulatory guide assumes that the event causing  
18 the off-site power disturbance does not impact on-site power sources, and  
19 therefore, the availability of on-site power is based on historical reliability of the  
20 emergency diesel generators to start and perform their safety function when  
21 called upon. The current coping requirements are based on redundancy, and the  
22 reliability of on-site power, and the time to restore off-site power. The United  
23 States reactor coping times range between four and eight hours, which really  
24 assume a near-term restoration of AC power. In the case of an extreme external  
25 event, it might take days to restore AC power, as was the case at Fukushima.

1 Slide 13, please. Mitigation equipment required by 10 CFR  
2 50.54(hh)(2), or the so-called B.5.b equipment, was required for long-term station  
3 blackout caused by a large area of the plant due to explosion or fire. If available,  
4 the B.5.b equipment and the mitigating strategies may provide additional margin  
5 and capability for long-term station blackout caused by other types of initiating  
6 events.

7 Slide 14, please. There are several factors affecting availability of  
8 the B.5.b equipment to mitigate a long-term station blackout caused by beyond  
9 design basis natural phenomena. Recent NRC inspections identified deficiencies  
10 at some plants in meeting current requirements. Marty touched on some of  
11 these. These include things like maintenance and availability of the required  
12 equipment, procedures and training for implementing extensive damage  
13 mitigation strategies. B.5.b equipment and strategies were put in place after  
14 September 11 to address large fire and explosions, as I mentioned.

15 As a result, the current requirements do not cover some elements  
16 of the Fukushima scenario, nor were they designed to do so. Licensees were not  
17 required to protect B.5.b equipment from natural phenomena; they were required  
18 to store equipment at a safe distance from the fire or blast. These locations may  
19 not be protected from flooding or seismic events. Licensees were also not  
20 required to have sufficient resources, staff, or equipment, for some aspects of a  
21 multi-unit event response.

22 Slide 15, please. If an event progresses towards a severe  
23 accident, severe accident management guidelines provide symptom-based  
24 guidance for the technical support center as supported by the plant operators to  
25 take actions to stabilize and recover from the accident. SAMGs, as they're

1 known, provide guidance to prevent or terminate core damage progression,  
2 maintain containment integrity, and minimize radioactive releases. They do not  
3 address spent fuel pool cooling. SAMGs were implemented in the 1990s as a  
4 voluntary initiative in response to SECY-88-012, and were not included in NRC's  
5 regulations.

6 Slide 16, please. Recent NRC inspections confirm that every site  
7 has established SAMGs. However, as a voluntary initiative, SAMGs did not get  
8 rigorous oversight by many licensees. This was confirmed by our inspection  
9 results. Inspections reveal inconsistent implementation of the SAMGs amongst  
10 licensees. Some of the issues identified concerned availability of SAMGs in a  
11 control room and a tech support center, inclusion of the SAMGs in licensees'  
12 configuration control and change management programs, and the degree to  
13 which licensees conduct training and exercises of SAMGs.

14 Example of specific inspection results were the following. And  
15 these are just a few illustrative examples. In some cases, the SAMGs were  
16 based on the revision zero of the generic SAMGs, and have not been updated to  
17 reflect the current revisions of the generic SAMGs. Some emergency response  
18 officers hadn't been trained, or allowed their SAMG qualifications to lapse.  
19 SAMGs refer to equipment in some cases that was no longer required to be  
20 functional.

21 Slide 17, please. Let me touch on hardened vents. To address  
22 concerns identified in Generic Letter 89-16 regarding containment over pressure  
23 during a severe accident, all Mark 1 BWR plants installed hardened wetwell vents  
24 and are part of the SAMG strategies. The hardened wetwell vents are not  
25 required by regulation, but they are described in the final safety analysis reports.

1 The NRC performed initial inspections, and they have been covered, in some  
2 cases, through inspection samples at some sites. However, there is not a  
3 specific inspection program requirement to inspect hardened vents.

4 Implementation followed BWR Owner's Group generic design  
5 criteria for hardened wetwell vents. Each licensee installed a specific  
6 configuration, and the designs vary in several aspects amongst the plants in  
7 some cases. Some examples, the number and location of the valves; the valve  
8 design and the means of opening the valves in the long-term station blackout  
9 scenario; accessibility of valves for manual operation; inclusion of rupture discs in  
10 the vent line or not. Connections to standby gas treatment systems, and  
11 connections between units. The BWR Owner's Group design criteria are based  
12 on loss of decay heat removal event, and were not specifically designed for  
13 operation during a long-term station blackout. Therefore, depending on the  
14 plant-specific design, it may be a challenge to open the vent path in scenario like  
15 the Fukushima accident. Next slide, please.

16 A third theme I'd like to discuss today is that emergency  
17 preparedness provides further defense-in-depth by minimizing public dose,  
18 should radiological releases occur. Existing EP requirements generally do not  
19 consider multiunit events. Staffing, facilities, equipment, and dose projection  
20 models are primarily based on a single unit event. Slide 19, please.

21 Additional Fukushima insights relate to emergency preparedness  
22 challenges during long-term station blackout. The station blackout could affect  
23 emergency notifications, such as alerting the public in an emergency on-site,  
24 communications capability on-site, and between a licensee and the government  
25 decision makers, and data transmission of plant status information to the NRC

1 and to the state responders. Fukushima highlighted information flow to decision  
2 makers is absolutely critical. Lastly, it is important that the public and the  
3 decision makers are informed about radiation safety principles to ensure that  
4 appropriate and prudent actions are taken to minimize the dose to the public, and  
5 this includes the appropriate use of potassium iodide. Slide 20, please.

6           Now, I'd like to shift gears a little bit and touch on NRC programs as  
7 my final theme today. The NRC's principles of good regulation promote a  
8 consistent, coherent, and reliable regulatory framework. The NRC has addressed  
9 emergent issues over time by adding specific requirements and endorsing  
10 voluntary initiatives. This has resulted in variability in the implementation. Both  
11 licensee and NRC programs depending upon the associated regulatory  
12 requirement. For example, emergency operating procedures, which are covered  
13 by NRC regulations, are included in operator licensing, while SAMG's are not  
14 required and are not included. Also, quality assurance and reliability assurance  
15 programs are not applied consistently to equipment installed to mitigate beyond  
16 design basis events, such as B.5.b equipment and alternate AC power sources.  
17 Slide 21.

18           With regard to our regulatory analysis guidelines, in evaluating  
19 potential new requirements, the staff tends to lean more toward the quantitative  
20 cost benefit aspects of the regulatory analysis guidelines rather than the  
21 qualitative defense-in-depth considerations. This can result in more weight to  
22 protection strategies, and less balanced approach to defense-in-depth. NRC  
23 treatment of voluntary initiatives, I'd like to touch on that, if I could. NRC  
24 regulatory treatment of voluntary initiatives is limited. For example, SAMGs are

1 not included in the routine inspections, as I'd mentioned, and SAMGs are not  
2 typically included in training for NRC inspectors. Slide 22, please.

3 I'll conclude my presentation today with an overview of our next  
4 steps. As was mentioned in the Chairman's opening remarks, we are going to  
5 formulate our recommendations for near and longer-term actions and propose  
6 topics for the longer-term review. In July, we'll have our report finalized and brief  
7 the Commission on July 19 of our report's findings and recommendations. Now,  
8 I'd like to turn the presentation back to Bill Borchardt, who's going to cover the  
9 staff plans for the longer term review.

10 MR. BORCHARDT: Thank you, Charlie. If you can go to the next  
11 slide, please. I just want to spend a moment talking about the activities related to  
12 the long-term review. We're in the process now of developing a charter, which  
13 will give direction to the staff on how to move forward with that activity. Clearly,  
14 one of the activities we're going to be doing is building upon the work of Charlie  
15 and his task force. They won't -- as hard as they're working; they're not going to  
16 solve every problem. They won't have all the information they need to make  
17 every conclusion and recommendation. The current thinking on how we're going  
18 to manage this activity is to form a steering committee that will be made up of a  
19 number of senior office directors from across the agency that will then provide  
20 oversight of line function activities, both related to the actions, which come from  
21 the short-term review and then also the conduct of specific topics, task groups,  
22 that will be formed to address individual technical issues. The steering  
23 committee will also provide strategic oversight of the implementation of the  
24 follow-on activities that come from both the short-term and the long-term reviews.

1                   Another notable difference between the long-term review and the  
2 activities Charlie talked about is that we're going to look at all of the lessons  
3 learned to evaluate applicability to other NRC licensed facilities. So, it'll go  
4 beyond just the power reactor community. We'll also evaluate issues identified  
5 by the near-term task force, as requiring additional review to resolve gaps in the  
6 current state of knowledge or the sequence of events based upon what we know  
7 now, as well as those that require interaction with a broader range of  
8 stakeholders.

9                   And then, finally, perhaps the most significant difference between  
10 this review and how we envision the long-term review is the breadth of  
11 stakeholder involvement in the long-term review. We expect to have, take  
12 advantage of much more open series of public meetings, involvement of the  
13 fullest range of stakeholders that we can have participate so that we can build  
14 the broadest base of understanding and come up with the best recommendations  
15 possible. That completes the staff's presentation.

16                   CHAIRMAN JACZKO: Well, thank you Bill, and Charlie, and Marty,  
17 for your presentation. We'll start questions and comments with Commissioner  
18 Svinicki.

19                   COMMISSIONER SVINICKI: Thank you to each of you for your  
20 presentations. I would like to start by returning to the very substantive report  
21 issued by the government of Japan. Marty, I think that you made some reference  
22 to this. It is an extensive document, but you've provided some preliminary  
23 reactions. First of all, that, in terms of the report's discussion of a high level  
24 chronology of events that there was nothing in there that particularly was  
25 surprising or inconsistent with the staff's understanding. But, the report also

1 identifies some initial lessons learned, I believe, in five categories. I don't know  
2 how much time the NRC staff has had to look at those, but are there any of the  
3 preliminary lessons learned that, given differences between perhaps Japan's  
4 regulatory approach and ours, or operational differences, would be areas that  
5 you could immediately say are not directly applicable here, or that we wouldn't  
6 need to probe deeply? And when I ask that, I'm thinking kind of specifically  
7 about emergency preparedness in the United States. Of course, we have a well-  
8 designed -- between FEMA and NRC and states and local governments, that's  
9 pretty well established. Is there, are there translatable lessons learned there?  
10 And I, and, again, I kind of look at emergency preparedness as an area where I  
11 think there might be differences between Japan and the US. But, in that area or  
12 other areas, are there differences between what Japan would identify as lessons  
13 learned and the areas that we need to look at as the U.S. regulator?

14 MR. VIRGILIO: The short answer is you're probably right, but it's  
15 too soon to tell. What's been challenging about the report is it lays out the  
16 sequence of events, and then it lays out the recommended corrective actions.  
17 And there's -- we're struggling to understand, and it may be just the way the  
18 report's constructed, what were the, you know, what were the rationale, if you  
19 will, for the recommendations? You go from the sequence to the  
20 recommendations, but you struggle with that center piece. And that's extremely  
21 important to understand, well, why do you jump to the recommendations that are  
22 there? And that's the part that we're trying to really analyze right now. So, that's  
23 why I say it's a little soon to tell.

24 COMMISSIONER SVINICKI: And I appreciate your mentioning  
25 that. I think there is a lot of complexity, not only for Japan to conduct that step in

1 building off of the chronology to the lessons learned or recommendations. I think  
2 that perhaps even becomes more challenging as regulators around the world in  
3 other countries want to look at any needed steps that they may need to take as  
4 regulators, because, again, we have this translation from a different system, a  
5 different regulatory system, a different, perhaps, approaches to operating these  
6 facilities. So, I appreciate that you're mentioning that the staff is attempting to  
7 understand how one has a, is rooted in the other, and I think that will be a real  
8 challenge, not only for Japan, but for all regulators, as they go to build that  
9 particular step.

10           And, Marty, I wanted to follow up with you, and I had asked you in  
11 the previous Commission meeting, you mentioned, again, today, that incident  
12 response lessons learned for the NRC is separate from Charlie's task force. It's  
13 an NSIR led activity. You were not able, in our last meeting, to give me some  
14 sense of the timeframe for that. Is that better formed now? Can you now tell me  
15 in what form and by what time NSIR will conduct that review?

16           MR. VIRGILIO: Yes. It is being conducted in parallel, and we, our  
17 current plan is to have that completed about the same time that Charlie  
18 completes the task force report in mid-July. It will probably take us a little bit  
19 longer to finish the documentation, so I expect that Charlie's paper to you on July  
20 12 will actually lead the NSIR effort. Now, we also understand that there's a  
21 broader industry, inter-agency effort that's about to be launched as well, which  
22 we will be participating in. But we still haven't received the letter that kicks that  
23 off. But, we also expect that to be ongoing. So, that will be yet another piece to  
24 the puzzle.

1                   COMMISSIONER SVINICKI: Thank you. Charlie, your slides, I  
2 think it was 9 and 10, but principally on slide 10, there's a discussion that I'm not  
3 sure I understand the overall message that you're presenting on, and it has to do  
4 with the fact that some of our requirements, and, I think, guidance, have built up  
5 over time, and therefore, there's an acknowledgement in your slide that reactor  
6 licensees in the United States have different safety margins and different  
7 licensing bases. And I think I understand that as a practical matter. That makes  
8 a lot of sense to me. I'm not sure what you're indicating, in terms of the task  
9 force's review, because on its face, I would look at it and say, well, if plants have  
10 different safety margins, it may be that beyond the margin that we require, a plant  
11 may have additional margin. And, in most cases, I would think a safety regulator  
12 would say, "Well, it's good," if they desire to have additional margin beyond what  
13 we require. Can you give me a better sense of, on those two slides, what are  
14 you trying to indicate? Is there some vulnerability inherent in the fact that there's  
15 different safety margins?

16                   MR. MILLER: Well, I, Commissioner, the point that we were trying  
17 to make there is, if you try to look at a continuous theme throughout, the plants in  
18 the United States, as they have in all countries, have evolved over time, and if  
19 you look back to the beginnings of the implementation of our requirements and  
20 plants that were licensed before all of our current requirements were in place or  
21 our guidance was in place, a lot of what was done in the licensing process at that  
22 time was really being done as these things were being developed. So, plants got  
23 licensed to whatever was available at the time, with regard to regulatory  
24 guidance. And, as the state of the knowledge improved, as the state of the  
25 knowledge of the hazards has improved over time, as methods to evaluate those

1 things have improved, our knowledge has evolved over time. And, so, we just  
2 wanted to point out to the fact that various vintage plants, based upon what the  
3 knowledge was at the time, were licensed to those things. The design basis for  
4 those plants were set at the time that they were licensed. And, it's variable  
5 across the spectrum of the plants, depending upon their vintage. Also, we  
6 wanted to point out, also, through these slides, that as time went on, on specific  
7 cases where we identified something, we would go back and, if appropriate, have  
8 plants add features or add procedures or whatever was needed. But what didn't,  
9 was no requirement for plants to go back and have to, basically, go back and  
10 reestablish a design basis that's with current standards, or the hazards that go  
11 without it.

12 COMMISSIONER SVINICKI: And I know --

13 MR. MILLER: And they're licensed to the knowledge of the time.

14 COMMISSIONER SVINICKI: And I know some of the  
15 awkwardness of the meeting today is that you're not in a position to talk --

16 MR. MILLER: Yeah.

17 COMMISSIONER SVINICKI: -- about your recommendations --

18 MR. MILLER: Right.

19 COMMISSIONER SVINICKI: -- even though as a task force you'd  
20 begun to formulate those. So, I'll be sensitive to that and simply say that, where,  
21 in your response I think you could quickly find yourself swimming in the waters of  
22 backfit and other issues. So, I look forward to your report. I think these are very  
23 complex issues, and your response has given me a sense that what I thought  
24 you might have been signaling, you were signaling that that is something that the

1 task force is having to confront. And so, I appreciate that. And I won't press for  
2 any further details about it.

3 MR. MILLER: And we are confronting it. And I think the point we're  
4 trying to make is that we're having confronted that as a reflection, as an insight,  
5 we have to formulate what, if any, recommendations that come out of that. And  
6 so, it is an awkward time, because I don't want to lean so forward and give you a  
7 recommendation that isn't fully vetted, and that's what we're trying to do. We  
8 want to make it that the task force gives fully thought-out recommendations as  
9 we go along.

10 COMMISSIONER SVINICKI: Okay, and I appreciate that --

11 MR. BORCHARDT: Commissioner, if I could also emphasize just  
12 one point that as a fundamental basis of our inspection program, that the  
13 inspectors have reinforced to them continuously that their job is to inspect  
14 against the regulatory and the licensing basis of the plants. So that, although  
15 there's a number of voluntary initiatives, some of which Charlie's talking about on  
16 this topic, that the inspections staff doesn't inspect against that. That's not a  
17 legal requirement, and so we do not have the same kind of regulatory oversight  
18 on those enhancements that, you know, part of what Charlie's talking about, in  
19 response to your question.

20 COMMISSIONER SVINICKI: And I think the agency has  
21 acknowledged that, and, again, making public the results of the temporary  
22 instructions and other things. I think that we're trying to communicate that as  
23 best we can to the public in announcing those results. Bill, I would just close with  
24 you, you addressed the longer-term review and the approach there, and the  
25 question I would have, it's my understanding from those who, perhaps had first-

1 hand experience with the regulatory response to Three Mile Island, is that many  
2 of the actions that were identified immediately following the event were ultimately  
3 found to be perhaps not merited or maybe even not well-rooted in the events of  
4 Three Mile Island. Given that there is so much emergent information that I think  
5 will continue to come forward over, again, to be honest about it, over the years, I  
6 think, which is the nature of nuclear events, how do we avoid repeating that  
7 same history here in terms of Fukushima lessons learned?

8 MR. BORCHARDT: I think the key is having the broadest possible  
9 stakeholder involvement in the development of the recommendations. As we  
10 gather the information, we'll share it widely. They'll have public meetings or  
11 some form where all the stakeholders can participate, so that no one group of  
12 stakeholders, including ourselves, get into, on a path, the way we have our minds  
13 set on taking a certain approach and ignoring other perspectives and other  
14 evidence. And, I think today's NRC is much different than it was in 1980, as far  
15 as stakeholder involvement and public outreach. So, I think that will be the key  
16 factor. I think there's many different ways that we can accomplish that  
17 stakeholder involvement, and that's one of the details that we need to figure out.  
18 But the basic principle, I think, is essential.

19 COMMISSIONER SVINICKI: Okay. Thank you. Thank you again.

20 CHAIRMAN JACZKO: Commissioner Apostolakis?

21 COMMISSIONER APOSTOLAKIS: Thank you, Mr. Chairman. I'd  
22 like to start, also, by thanking you for the work you are doing for the agency. I  
23 noticed, Charlie, that you didn't say anything about organizational issues that  
24 arose from the incident at Fukushima. The Japanese report to the IAEA does  
25 mention that there were issues with the roles and responsibilities between

1 national and local authorities, that kind of government. Is it because this is part  
2 of this other incident response review, or is it part of your task force?

3 MR. MILLER: Well, I -- it's probably some part of both.

4 COMMISSIONER APOSTOLAKIS: Some what?

5 MR. MILLER: It's probably some part of both, okay. The task force  
6 is looking at it from emergency planning perspective, and, of course, the incident  
7 response, basically, if you really look at that, it's implementing the emergency  
8 planning perspectives and requirements that have been put in place. And one of  
9 the big differences, I think Commissioner Svinicki touched on it, was the fact that  
10 in the United States, we have a very structured approach that has been  
11 developed over time for that, and not only by the NRC but by FEMA and the  
12 states, with regard to that decision-making.

13 COMMISSIONER APOSTOLAKIS: So you didn't say anything  
14 about it because you feel there is nothing for us to learn from Fukushima?

15 MR. MILLER: No.

16 MR. BORCHARDT: I wouldn't go that far. I think it's, you know, we  
17 didn't have the results of this report when we started the short-term task force. I  
18 think, as we develop these task forces under the long-term review that we'll have  
19 to decide whether or not, what I might call the organizational structure and  
20 relationship issues that are raised in the report from Japan, deserved our own  
21 analysis. I think it's, it could have been within the short-term review, but the  
22 timing wasn't right. We didn't identify it ourselves, so it didn't make it into the  
23 topics that Charlie's being asked to address. I don't expect it to be addressed by  
24 the NSIR review.

25 COMMISSIONER APOSTOLAKIS: Okay.

1 MR. BORCHARDT: So, I think if it does get reviewed, it'll be in the  
2 long-term.

3 COMMISSIONER APOSTOLAKIS: Okay. So it's something that is  
4 going to -- work somewhere?

5 MR. BORCHARDT: We certainly haven't closed the door to it.

6 COMMISSIONER APOSTOLAKIS: Okay. Regarding station  
7 blackout, you mentioned, Charlie, and we had the whole meeting here a couple  
8 of months ago, on station blackout, that the current coping requirement assumes  
9 near-term restoration of AC power. And there are also a few other things  
10 regarding SBO. Well, I'm wondering whether there is a lesson there for us. Why  
11 are we still assuming this? I mean, we have had blackouts in this country that  
12 lasted longer than eight hours. And, also, the other question of common cause  
13 failure of on-site and off-site power, yeah. Is there any lesson there? I mean, is  
14 our analytical capability limited that we cannot figure out those things? Why is  
15 there an issue, or, is it a cultural issue of how we approach things? And we say,  
16 "Oh, yeah, this is so unlikely, we're not going to deal with it." I'm a little perplexed  
17 why we're having in the books analysis of this type when, you know, we have  
18 made a big deal about common cause failures in the past. We have had  
19 evidence that blackouts last longer than, well, in that case, of course, it was off-  
20 site power, longer than eight hours. Why do we still assume things like that are  
21 now, in retrospect, unrealistic? And is there anything that we can learn from it?

22 MR. MILLER: Clearly, I think, based upon what the task force is  
23 looking at, there's things that we can learn from it, okay? But, if you go back in at  
24 least our review of the issue, as a task force, and, of course, we're just one  
25 group, the point that I was trying to make today was that if you look at station

1 blackout and the coping times, and you look at in the light of Fukushima, for  
2 example, we haven't really looked at it or thought about it from the context in the  
3 past that you could have an external event that would give you a common cause  
4 failure of both on-site and off-site emergency power. We dealt with it a little bit, I  
5 use the term stovepipe, okay. From the perspective of on-site, it was diesel  
6 generator reliability. Lots went into that with regard to the Reg Guide of how to  
7 figure out what that was. For off-site, it was pretty much focused on extreme,  
8 some extreme weather events. But, I think that there was a combination of  
9 thinking that went into that that those coping times that went in there, there was  
10 confidence that power of some sort would be restored within that time frame.  
11 And, I think the insight that at least the task force has at this point in time, is that  
12 Fukushima has shown that if you did get a very low probability, however, external  
13 event of that magnitude that did cause a common-cause failure of both, that  
14 restoration, you know, that the station blackout period could be a lot longer.  
15 So, what we're trying to do is to take that knowledge and figure out what is an  
16 appropriate recommendation to make as a result of that. So, from that  
17 perspective, I would say yes. I think the task force feels that there is a lesson  
18 learned, it's just formulating the right recommendation for where we go forward  
19 with that.

20 COMMISSIONER APOSTOLAKIS: If I may come back --

21 MR. MILLER: Okay.

22 COMMISSIONER APOSTOLAKIS: I do appreciate that --

23 MR. MILLER: Yeah, no, you asked --

24 COMMISSIONER APOSTOLAKIS: -- this happened at Fukushima,  
25 we're going to learn from it --

1 MR. MILLER: Yeah, yeah.

2 COMMISSIONER APOSTOLAKIS: -- but I'm trying to figure out  
3 whether there is another lesson regarding --

4 MR. MILLER: Okay.

5 COMMISSIONER APOSTOLAKIS: -- our own way of doing  
6 business, and why we, I mean --

7 MR. MILLER: I guess I respond to that from this perspective, and I  
8 don't mean to sound defensive on the part of the staff, but I mean, the staff  
9 prides itself in being a learning organization, and, at any given time, you know,  
10 our knowledge and the way we focus on things is based upon, you know, our  
11 thinking at the time. But our regulatory history has shown us over time that  
12 things come up that we didn't think about or didn't focus on that cause us to have  
13 to take a step back and take a look at it and say, "Well, what does this mean, and  
14 how do we have to go forward from this?" And I think that that's what we  
15 consistently challenge our self to do. We're not always omniscient. I don't think  
16 there's anything with regard to our culture that causes that to be the problem.  
17 But, I think if you go back and you look at it, and, at least, from my perspective,  
18 when I've gone back and looked at some of these things, I sort of say, "Well, I  
19 can see how the staff thought that way at the time, given what the state of  
20 knowledge is." And then the state of knowledge evolves over time. You kind of  
21 take a step back and scratch your head, and you say, "Gee, did we really cover  
22 the bases?" And I think that's what we're trying to do now with the insights. And  
23 that's going to go on for the perpetuity, as I see it, with regard to this industry and  
24 our regulations of it. There's always going to be insights that are going to be  
25 developed over time that cause us to have to do that.

1                   COMMISSIONER APOSTOLAKIS: Now, another keyword in all  
2 this discussion is the word "voluntary," and we've found problems with equipment  
3 and so on. And we keep emphasizing that these are beyond design basis  
4 events, voluntary, and so on. And so, I'm wondering what does voluntary mean?  
5 Does it mean, for example, in SAMGs, that the industry came to us and said,  
6 "Hey, NRC, you haven't thought about this, but we thought about this, and we  
7 need some guidelines during severe accidents, and we are volunteering to  
8 develop SAMGs." Is that what voluntary means, or does it mean the regulator is  
9 thinking about, he's thinking about doing something so the licensees come back  
10 and say, "Well, wait a minute now. We are volunteering to do something about  
11 it." I think there's a big difference between the two. So, which one is it?

12                   MR. MILLER: Okay. I'm going to give you the task force's  
13 perspective, okay? Others may disagree with what that means. We have spent  
14 a lot of time as a task force discussing voluntary and what it means and what it  
15 doesn't mean. Part of what we were trying to get through in my presentation  
16 today was, have requirements, have things that the NRC puts in place and  
17 regulates, and then you have a family of things that the industry has done on a  
18 voluntary basis. In some cases, I determined, you know, if we go back and look  
19 at the history of that, I really think it's related to issues that the NRC has  
20 discovered -- come upon. And then in looking at what would be the best way to  
21 implement the resolution of that, in some cases, it was through promulgation of  
22 requirements, additional requirements. In some cases, it was done through what  
23 I refer to as quasi-voluntary efforts, where we might issue generic  
24 communications that would strongly encourage the industry to take some action

1 or else, okay? And in those cases, the industry has taken up those actions and  
2 implemented things.

3           The hardened vents, for example, for Mark I containments was an  
4 example of such a thing. And then you have things like the SAMGs, where it was  
5 identified, I think, through our regulatory development and history that there was  
6 an issue here for severe accidents. And, in cases like that, the industry has to  
7 come to the NRC, and said, "We will take this on. We want to develop the  
8 procedures. We want to develop the guidelines." And the NRC has accepted  
9 that as an approach. I think that the point that we were trying to make today as a  
10 task force, the insights that we got from the inspections that were done are when  
11 it's done as a purely voluntary initiative, where the industry comes to us and  
12 says, "Let us take that on," and the NRC has no regulatory oversight of that,  
13 because of the nature of that voluntary effort, that the pedigree of it and the  
14 continued attention to it isn't what it is in cases where there is regulatory  
15 oversight. And in many cases, that is just an insight that we've gained over time,  
16 and that's why the task force wanted the SAMG inspections. They weren't  
17 inspections for any regulatory compliance; it was purely an information gathering,  
18 to say what's the state of affairs?

19           And so we found some things, as Marty talked about, with the B.5.b  
20 stuff, which was a requirement, and then if you segue way to the SAMGs, we  
21 found some additional insights. And I think the industry has come to those same  
22 conclusions also. So it's the nature of things, and it is an insight, and I think we  
23 looked at it and said, well, gee, these things are important, and here's the facts.  
24 And that's what I'm trying to present today: the facts as we've developed them

1 so far. I don't know if that answers your question, but that's the way the task  
2 force is looking at this.

3 COMMISSIONER APOSTOLAKIS: Thank you, Mr. Chairman.

4 CHAIRMAN JACZKO: Commissioner Magwood.

5 COMMISSIONER MAGWOOD: Good morning again. Bill, I'd like  
6 to sort of, maybe perhaps start, a little bit of a deep breath for a moment,  
7 and just sort of take a step back. We've said clearly on multiple  
8 occasions, U.S. plants are safe. And I wonder if you could characterize  
9 how you view the effort that we have underway with this task force and  
10 with the longer term review, and how the public should view the safety of  
11 U.S. plants as we go through this exercise. Because obviously as we go  
12 through these, we go through the TIs to look at, we do the inspections, we  
13 are finding things that, while we were not completely happy with, we want  
14 people to fix some things. But how should the public look at this? How  
15 should they think about the safety of the U.S. plants as this activity goes  
16 forward?

17 MR. BORCHARDT: Well, thank you, Commissioner. Based  
18 upon all the results that we have seen, that includes the results of these  
19 temporary inspections, the results of the ongoing regulatory oversight that  
20 the inspection staff in the Regions carry out every single day, we still have  
21 high confidence that the plants are safe to operate.

22 Probably the most important concept is this idea about defense-in-  
23 depth. And that is the idea that a plant can operate with a violation of technical  
24 specifications at any one time, with a piece of equipment being out of service,  
25 with not having all of the suggestions or requirements in the various things that

1 were evaluated as part of the temporary instructions. Perhaps they are not in  
2 perfect working order, but that, as Marty mentioned, the function, the important  
3 function of keeping the core cool, responding to events, mitigating events, would  
4 still be accomplished despite the occasional problems that have been identified.  
5 And then, of course, the corrective action programs that are very robust, in my  
6 view, and are in place, address the discrepancies as they're identified.  
7 So, I think the public should recognize that we're looking hard, we're identifying  
8 issues. That's what we ought to do, that's a good news story for us, that we're  
9 finding problems and they are getting fixed. I think it's also important to  
10 recognize the industry is doing the same thing, and that no one's being  
11 complacent throughout this entire process.

12           COMMISSIONER MAGWOOD: Excellent. Thank you very much.  
13 When you look at the chain of events in Japan, which, as we've already  
14 discussed this morning, we are still trying to understand all the sequences and  
15 what exactly happened, and I think, as Commissioner Svinicki mentioned, it may  
16 be years before we really understand every aspect of this.

17           However, I think it's clear, and I should credit Commissioner  
18 Svinicki, I had a conversation with her earlier this week that sort of prompted this  
19 thought, that there's a lot of information that we're going to be able to obtain from  
20 understanding this accident. And it's not just information that will turn into  
21 regulatory actions through the processes we've discussed; it's information that  
22 will help us understand the behavior of the systems under very stressful  
23 conditions, you know, conditions where cooling is not available; where there is  
24 core melt, where there are releases. And as we understand that, how do we take  
25 that information and incorporate it into our understanding of how these systems

1 behave as we go forward to the longer term future? Do you have some thoughts  
2 about how the --

3 MR. BORCHARDT: Well, I'm quite confident there's going to be an  
4 international collaborative cooperation on taking all of this data, because all of  
5 the codes that are used by the various regulatory agencies are -- almost all of  
6 them are shared now. And there are cooperative agreements between our Office  
7 of Regulatory Research and their counterparts around the world that will take  
8 advantage of the data from a real world event to validate or to refine and improve  
9 the codes that we use to do analyses of core performance or radiological  
10 releases. So I think this is one of those activities that organizations such as the  
11 CSNI at the NEA will be focusing on for many years into the future.

12 COMMISSIONER MAGWOOD: Marty?

13 MR. VIRGILIO: Just to put a finer point on what Bill said,  
14 domestically we're about to sign an MOU with DOE to do just that: to take the  
15 data that we have and the data that we will obtain over the course of the next  
16 year or several years to advance our codes.

17 COMMISSIONER MAGWOOD: Excellent. I'm very happy to hear  
18 that. The -- you know, one of the things that has popped up in the, I think  
19 particularly in the Japanese media from time to time, has been stories about  
20 equipment failures resulting from the earthquake at Fukushima. You heard  
21 stories about failures with the vents, stories about cooling system piping  
22 cracking. Do you have any further insight to that? Anymore understanding about  
23 any of that at this point?

24 MR. VIRGILIO: The little bit that we get, bits and pieces, and I  
25 expect that we'll hear even more as the IAEA mission team rolls its report out.

1 But I think that the situation in Unit 1 was a lot worse than we had originally  
2 anticipated with respect to the complete loss of onsite and power, including both  
3 AC and DC, where it appears that it wasn't as bad in Units 2 and 3. That's a  
4 fairly new insight that we've picked up just within the last few days. The  
5 operation of the isolation condenser in Unit 1, which was on and off, on and off,  
6 also contributed, I think, to the, I think, maybe the more prompt or faster core  
7 degradation in Unit 1 than the other two units.

8 So, as Bill pointed out, as we've all talked about, more information  
9 is becoming available about the event, the sequence of the events, the  
10 equipment performance, as they gain access to the facilities.

11 MR. BORCHARDT: You know, I think it's really important that we,  
12 while we want to make progress and we want to move forward, that we're also  
13 patient to make sure we have the best information that we need to make a  
14 regulatory decision that's going to last for many, many years. And we need not  
15 just the plant condition, the equipment condition inside the plants, which we don't  
16 have an accurate understanding of, but I think we also need an understanding of  
17 what the operators were able to and not able to do, what they intended to do. So  
18 there's an extensive amount of interviews I would think would be very useful to  
19 have, from the people that were onsite, as they tried to conduct certain  
20 operations. Marty mentioned isolation condenser operations in Unit 1.  
21 Operators, you know, may or may not have tried to take certain actions at various  
22 times, and to understand what they did, when they did it, needs to be integrated  
23 with the physical condition that we identify once inspections are finally able to be  
24 conducted.

25 COMMISSIONER MAGWOOD: Thank you. Charlie, one item I

1 don't think I've heard you talk very much about has been the issue of estimating  
2 natural phenomena, that you have to postulate in order to have the design basis.  
3 One of the items that has come up, again, largely in Japanese media, has been  
4 the question about whether the size of the tsunami, the size of the earthquake,  
5 the position of the earthquake were correctly estimated. Have you given any  
6 thought, has the task force given any thought to that and projected it to our  
7 system? Are there any lessons learned for us in estimating these natural  
8 phenomena? Any lessons learned from that standpoint that you can identify at  
9 this point?

10 MR. MILLER: One of the points I was trying to make in my  
11 presentation, and maybe I didn't make it clear, is that if you look at the history of  
12 how we've gone back and had plants enhance their capability to deal with  
13 seismic issues or flooding issues, or whatever, is we really didn't go back and  
14 say, in any case, "You've got to, at some periodicity, reevaluate the hazard." Of  
15 course, that was a big issue as it played out some in Japan. So the hazard that  
16 was the foundation of that, that created the design basis in many cases for these  
17 plants, while it may have remained the same with regard to the design basis, I  
18 think facilities have tried to look at other considerations, and so has the NRC.

19 So, for example, I mean, if you look at, with regard to earthquakes,  
20 for example, and as knowledge has evolved over time with regard to  
21 earthquakes, and the analytical capability to figure out what the magnitude of the  
22 earthquakes might be, and the knowledge. We've had programs that the  
23 licensees have had to implement with regard to making the seismic capability of  
24 the plants more robust, but that wasn't necessarily done based upon going back  
25 and saying: reestablish what the hazard is, and then have to go do that.

1                   And so from that perspective, I think that something that the task  
2 force has come to understand, it's a question of, okay, now, from that, what if  
3 anything does the task force recommend as a reasonable response from a  
4 lessons learned perspective with regard to a recommendation? The state of  
5 knowledge constantly evolves for the tools that are available to evaluate these  
6 things, and that's part of what I was getting at with the licensing basis being  
7 different. Plants that were licensed and designed in the 1960s or in the early  
8 1970s, the state of knowledge of how to predict those hazards is different than  
9 what it is today. The state of knowledge is much better today.  
10 But what we have done as a regulator over that time is we have built a lot of  
11 conservatisms into the design of the plants so that there would be additional  
12 protection against that. So balancing those two and trying to figure out what the  
13 appropriate recommendation would be for the future is our challenge. And we  
14 will formulate and crystallize that with regard to a recommendation by the time  
15 we deliver the final report in 30 days.

16                   COMMISSIONER MAGWOOD: Thank you very much. Just have  
17 one quick question for Marty, just to close. You mentioned that, in reviewing the  
18 SAMGs, that we -- you listed a variety of deficiencies. Have -- did the licensees  
19 take action to address all those deficiencies? Did they recognize them as  
20 deficiencies?

21                   MR. VIRGILIO: Either they have corrected them or they're in the  
22 corrective action program. Yes.

23                   COMMISSIONER MAGWOOD: Thank you very much.

24                   CHAIRMAN JACZKO: Commissioner Ostendorff?

25                   COMMISSIONER OSTENDORFF: Thank you, Mr. Chairman. I

1 add my thanks to my colleagues to you and your team here, and this very helpful  
2 briefing. I want to ask this of Bill, but please engage, Marty, Charlie, as I know  
3 you will. I had a chance to review, I didn't study in detail but did review the  
4 Japanese report to the IAEA and looked at their different recommendations, their  
5 28 lessons learned and so forth, and didn't necessarily see anything there that  
6 was a big surprise to me, personally. Your task force has a much more in-depth  
7 knowledge, but I didn't see any things that were big surprises. I guess I have  
8 some, my concern, but a question about, philosophically, how the task force  
9 looks at the Japanese event, and how do we -- and I'll use an example: NRC has  
10 a history of using the philosophy of defense-in-depth. Let's just take the defense-  
11 in-depth as maybe the cornerstone for this question.

12           From your experiences in communications over the last three  
13 months with your international counterparts, and you've had a lot of those  
14 communications, I know, do you see any big philosophical difference between  
15 how the NRC is approaching Fukushima and how other countries with developed  
16 nuclear power programs are? Or with respect to how the IAEA, or NEA, or fill in  
17 the blank, other agencies, such that when we go down this path, I think  
18 Commissioner Magwood was kind of hitting on this a little bit as well, do we have  
19 an approach that is able to be communicated to the public in a commonsense  
20 fashion? So I would be interested in any thoughts you have. And that's kind of a  
21 broad question, but I'd appreciate hearing from you on it.

22           MR. BORCHARDT: Well, I think that there's a general similarity in  
23 the approach that the other international regulators are using as they evaluate  
24 the lessons learned. There's certainly very good coordination and  
25 communication. There was recently a meeting, as part of the Nuclear Energy

1 Agency that spent a day, very senior regulators, focusing on that topic. There is  
2 going to be a meeting called by Director General Amano next week in Vienna,  
3 which will include all of the nuclear power countries, as well as all the other  
4 member states of the IAEA that'll be able to participate, as well as a little over a  
5 year from now, there's going to be a special meeting of the Convention on  
6 Nuclear Safety that will focus exclusively on the lessons learned from  
7 Fukushima.

8 I believe by that time there will be good consensus on what the  
9 lessons are to be learned. How they are applied in each of the different  
10 regulatory schemes will be obviously different. I mean, there are some  
11 differences, well-known differences, between the U.S. approach and those  
12 approaches used by many other regulatory agencies around the rest of the  
13 world. The backfit rule being one of the specific examples of a process that the  
14 NRC uses that is not universally used. I mean, there's similar programs, to my  
15 understanding, in some other countries, but that is a noteworthy difference. The  
16 idea of periodic safety reviews, a 10-year review that's done in the majority of  
17 other nuclear power countries which is not done here, we go more for the  
18 continuous oversight and updating of requirements as required, is another.

19 So -- but those aren't new. We had discussions of those during the  
20 recent IRRS mission that was conducted here at NRC, so I don't see anything  
21 strikingly different or new that's a new revelation that causes any new  
22 uncertainty.

23 COMMISSIONER OSTENDORFF: Charlie, do you want to add  
24 anything to that?

25 MR. MILLER: Yes. This is Charlie's opinion, so I'll keep it at that.

1 In going back and looking at some of the international efforts, you know, the task  
2 force has tried to take a look at that, you've got the European stress test, you've  
3 got -- the Brits have put out a report on some of the things they're looking at. I  
4 think, from our perspective, the one difference that we have seen in the approach  
5 has been if you look, for example, at the European stress test, it was a detailed  
6 list of questions that were sent to the licensee to perform an evaluation, and the  
7 licensees would submit that to the regulator. And then there was going to be this  
8 evaluation of that. Seems to include having countries that are not the country  
9 where the plant is help look at what the results of that are.

10 I think the big difference, I think, on our side, has been that in the  
11 United States, the NRC has set upon having a task force to independently look at  
12 that right from the beginning, and try to pass some judgments, while our industry,  
13 in a parallel effort, is doing what they're doing with regard to some of the similar  
14 activities. So it'll be interesting to follow, as that plays out, how the information  
15 that's provided to the regulators in the European countries manifests itself into  
16 some of those things that Bill talked about.

17 COMMISSIONER OSTENDORFF: You have something, I'm sorry.

18 MR. VIRGILIO: I would just add that, if it's done right, the IAEA is  
19 about the change the IRRS process to conduct, as part of the missions, an  
20 evaluation of each country's response to the events at Fukushima. Bill will be  
21 able to test that in South Korea, I'll be able to test that in Canada over the next  
22 several months. And that is a process that might help us understand the  
23 adequacy, although everybody's taking different approaches. At the end of the  
24 day, can we say that, as a peer review service, that the approach that has been  
25 taken by any individual country is adequate.

1                   COMMISSIONER OSTENDORFF: I'm going to shift gears a little  
2 bit. I just wanted to quickly refer to questions raised by two of my colleagues so  
3 far. I think Commissioner Apostolakis' comments on the questions of voluntary  
4 initiatives is a very appropriate one, and one that I think we'll be looking at very  
5 carefully based on your recommendation, so I just wanted to echo, I had a  
6 question along the same lines as my colleague here. I think Commissioner  
7 Svinicki's comments with respect to your slide 10 on the different licensing bases  
8 that have evolved over a period of time, and what the task force range of options  
9 might be with respect to how to approach that in a thoughtful way. I'm not asking  
10 you a question on that, but I did want to emphasize I'm also interested in that  
11 piece, because I know it's a tough problem.

12                   Last week, I had a chance to go out with one of my staff members  
13 and visit an older BWR Mark I, and I went through and did not do a complete  
14 review, but did a walkthrough sample of the TI-183, 184 inspections with two  
15 residents. And I found that to be a very useful exercise in the plant to do that,  
16 and, Marty, I noted that -- and I had a chance to review the inspection results of  
17 that facility ahead of time so I could understand, you know, how do you get to this  
18 vent valve to operate it? Does it require a ladder? Can you get there with  
19 installed equipment? What do you do under cases of reduced lighting capability  
20 if you have loss of power? What do you do if you have X number of feet of water  
21 there that you have to wade through? So, I thought those kind of things in a  
22 hands-on approach was very helpful to raise my own level of knowledge. And I'm  
23 just -- I'm saying that from a standpoint, I think, talking to residents -- I've done  
24 this at two plants, one more detailed than the other. I think those inspections, my  
25 feedback to you, that those inspections, I think, have been very helpful, and I

1 think that's good to have that as a baseline to help inform the task force reviews.

2 I also note that some of those in the group here that have naval  
3 reactors experience where the best you can ever get is no deficiencies noted on  
4 an inspection finding, but there's also an element that an above average nuclear  
5 propulsion plant operating evaluation still has deficiencies in there. So, it might  
6 be determined to be an above average plant with 20 deficiencies noted during a  
7 casualty drill. So, I'll bring that up in trying to communicate -- this goes back to  
8 Commissioner Magwood's point -- how do you reconcile in the communications  
9 way, where we have these things in the areas of improvement, these things that  
10 could be done better with the notion that, I think Marty said, we've not found any  
11 cases where the function could not be performed. So, I think that  
12 communications piece that my colleague raised is really important.

13 And my last comment, and this is just, you know, individual  
14 Commissioner speaking on those. I'm looking forward to the report next month  
15 from the task force, and I just suggest that, I think we've had some discussions in  
16 the periodics, Marty, on this topic, for the Commission to act upon near-term  
17 recommendations, and I'm not prejudging on what any of those may be or if there  
18 are going to be some. I'm assuming there may be some there. But I think it  
19 would be very helpful when those near-term recommendations come up that the  
20 Commission also have some perspective, some situational awareness of what  
21 may be on the plate for the longer-term task force, so that there's a holistic  
22 integrated decision-making environment for the Commission to consider, to the  
23 extent that we have information. There will areas that will not certainly be ripe,  
24 but at least understanding somewhat about the longer-term review, I think, will  
25 help the Commission make decisions for the nearer term review. Thank you, Mr.

1 Chairman.

2 CHAIRMAN JACZKO: Thank you. I wanted to go back, Charlie, I  
3 think, to your comment about the differences in margin. And really, perhaps, I  
4 mean, it's an inconsistency in design basis, I guess, in a way. Maybe I would  
5 capture what you were saying. Is the task force looking at all about this in the  
6 context of relicensing? And obviously, at license extension time, we have an  
7 opportunity, although the Commission's not availed itself of that opportunity to, in  
8 a sense, re-baseline everybody's design bases, really, or licensing bases, I  
9 guess, at that point, so that everybody, you know, at that point kind of has a  
10 consistent understanding and a basis for what is the definition of safety, what is  
11 the definition of external hazards, what are the analysis that we should be looking  
12 at? Is the task force looking into that at all as a possible way to address this?

13 MR. MILLER: We haven't specifically looked at it in the perspective  
14 of whether it would be needed at the license renewal. We haven't got that  
15 specific. But what we're trying to really evaluate, Chairman, is what does that  
16 mean, okay? The plants are of different vintage. We believe that the plants are  
17 operated safely, okay. But it's like any technology. A newer version of it's  
18 probably going to have more features to it than an older version of it. So we want  
19 to make sure that we're comfortable that the things that we learn can be applied  
20 to the whole fleet of plants that are out there, as well as the future plants in a  
21 logical and methodical way so that we're comfortable that any vulnerabilities that  
22 might be assessed or gaps that are assessed are addressed. And that would  
23 probably be in a different way. I mean, we have a recognition you can't go back  
24 and rebuild the plant, okay. And so, there are some things being done.

25 But if you listen a lot to what we talked about today, there are a lot

1 of things out there that has been put in over time, some required, some  
2 voluntary. And I think one of our biggest principles in looking at this stuff is that  
3 for those things that are there, we want to make sure that it's going to be reliable  
4 and work when called upon because if it is, we have a lot of features here that  
5 can be called upon. And then, looking at from a learned organization, are there  
6 additional things that the task force would recommend that need to be done over  
7 that within reason. But we haven't been so specific to say, "Well, these things  
8 should be part of license renewal or not."

9 CHAIRMAN JACZKO: Well, thanks. I appreciate that answer.

10 MR. MILLER: Yeah.

11 CHAIRMAN JACZKO: Turning to a different topic, I think, Bill, you  
12 touched on the fact that, you know, understanding what the operators did and  
13 when they -- how they reacted while the equipment performed, that these are  
14 important issues. How do we reconcile that? I don't want to say reconcile, but  
15 how do we go about doing our job if the only way we're really figuring out if things  
16 work is when we have an accident to figure out whether things work the way we  
17 thought they were going to work? I mean, what are we doing to ensure that it  
18 doesn't come down to needing to have an accident to know how equipment is  
19 going to perform in adverse situations? I mean, it struck me a little bit as you  
20 said that, that these are things, in principle, we think we know. I mean, where is  
21 the gap in knowledge that tells us right now we don't know how a particular piece  
22 of equipment is going to operate in a seismic event or, you know, in this kind of  
23 environment?

24 MR. BORCHARDT: Well, I think on a practical matter, it gets done  
25 as the plant continuously reassesses its design basis. And, I mean, design basis

1 really outside of the way the regulator speaks of the design basis. But when they  
2 are continuously making plant modifications, either because a piece of  
3 equipment needs to be replaced, because it's obsolete, or it's worn out, and  
4 when they go through that work, they'll have to go look at, you know, the  
5 structural integrity of the piping. And then, they'll have to look at whether or not  
6 it's seismically qualified. And system engineers that are at each of these plants,  
7 or at least in each of the operators organizations go about their job. They're  
8 continuously challenging and reassessing the design of the system, which  
9 includes environmental qualifications. And so there's very many aspects of this  
10 that are ongoing.

11 Behind that, we have the NRC inspection program, which the, you  
12 know, the inspection staff will look at plant conditions, and they'll do detailed, you  
13 know, vertical slice reviews of safety importance systems and look at things like  
14 EQ. So, I mean, that's the way that it's currently done. When you get into the  
15 events like Fukushima of having multiple initiating events, that is -- like we  
16 mentioned, that goes beyond what we routinely look at and that would require --  
17 to go in that direction, I think would require a Commission decision to go beyond  
18 the current licensing basis and the current regulatory structure. If we were to go  
19 and change the requirements of license renewal that we have just talked about  
20 might require a change to Part 54 because right now, it's looking at aging  
21 management and passive structures. If the idea was to do something different,  
22 that would clearly be a major policy decision of the Commission to change.

23 CHAIRMAN JACZKO: Well, thanks. Well, I, you know, I think as  
24 we look at this event and, I mean, it is interesting if we, you know, we put it in  
25 context. And we've done a lot of work over the years to establish programs, and

1 systems, and equipment, and organizations, and training to ultimately I think  
2 reduce the likelihood of seeing an event like this. And I think, you know, my  
3 reaction and what I seem to see in a lot of people in this industry is that this is a  
4 reflection on the fact that -- or it's been a moment of reflection because I think  
5 deep down, there was a belief that you would never see an event like this, that it  
6 just simply we had done everything to basically take this type of event completely  
7 off the table. And, obviously, we haven't, which, you know, and then I think as  
8 Commissioner Apostolakis was kind of perhaps hinting at this, if you just go back  
9 to the station blackout issue, you know, we still are saying 48 hours coping time,  
10 you know in the face of pretty clear and obvious evidence that that's not  
11 sufficient, and that evidence has been there prior to Fukushima-Daiichi.

12           So, you know, I mean, I think that there, you know, there is still  
13 probably something fundamental about how we're looking at these issues. I  
14 mean, you can trace, you know, much of what happened at Daiichi was not new.  
15 I mean, none of these things were unknown phenomenon. Seismic risk is a well-  
16 known risk. Station blackout, extended station blackout is well-known hazard.  
17 And we have, over the years, done things maybe halfway and maybe not all of  
18 the way to try and address these things.

19           So, I, you know, I hope, as we go forward, we'll do this in the way  
20 that, you know, does make these things ultimately successful for the long-term,  
21 and really get to a place in which we can really rule out these kinds of things from  
22 happening. And I mean, of course, you can never rule out everything, but, so, I --  
23 it's just that I think it's certainly an important lesson, and it is an event that I think  
24 will teach us a lot.

1 I wanted to get to a specific question. We have in, and I think we  
2 may have touched on this at the last meeting, but one of the issues that, to me, I  
3 think we haven't talked about too much, but is really the different nature of this  
4 event. We've historically looked at things from the standpoint of, I mean, our  
5 basic risk metrics for core damage frequency, protect the core, you can't have a  
6 release unless you have core damage. If you have core damage, then you have  
7 additional contingencies on whether or not you've got to release. And we've  
8 generally looked at that in terms of concept of a large, early release as the type  
9 of metric that we use, at least for the existing fleet.

10 This was a very different event. I mean, it's an event with a long-  
11 term release, and that long-term release can be significant over an accumulated  
12 period of time. But our infrastructure is built around shorter-term releases, no  
13 matter what. I mean, I think the PAGs are all based on a 48 hour dose analysis  
14 for short-term protective actions.

15 Here, we may have had doses that exceed several rem, but not in a  
16 48 hour period, but in a two week or three week period. So, to what extent, and  
17 maybe this is a question for you, Charlie, are we looking at that kind of  
18 fundamental aspect of just our basic metrics for looking at events and looking at  
19 how we're measuring safety in a way, you know, that idea of maybe perhaps a  
20 longer term mid-level release type of event, and how that can be affected, or how  
21 a population can be affected from that versus just a short-term large release, or,  
22 you know, in a core damage type of event?

23 MR. MILLER: The way that the task force is looking at that is we're  
24 trying to take a step back and say, "What do we need to do to make sure we're

1 protected against that so it doesn't happen?"

2 CHAIRMAN JACZKO: Yeah.

3 MR. MILLER: Looking at what happened in Japan, I mean, I think  
4 what we looked at from this perspective, we don't want to get to the point where  
5 there's a long-term release. So, how are our, you know, how are, how do we  
6 regulate? How are our current fleet of plants built? How are they operating? Is  
7 there enough there that we're comfortable that that won't happen? If not, what  
8 are the recommendations that we would make? We're fairly comfortable that we  
9 have a pretty robust regulatory system and industry in the United States. But  
10 further improvements potentially could get made, and we're trying to look at it  
11 from that perspective. So, that's where we're really focusing initially on  
12 protection.

13 Then, I'm looking at it from a mitigation perspective. Let's say  
14 you're wrong, okay. We want to make sure that there's enough thinking in there  
15 ahead of time that there's procedures, there's knowledge, there's training in  
16 place so that mitigating strategies can be plied and at a very timely manner to  
17 minimize the consequences of the events so that you don't get a long-term  
18 release, or that you can manage it, okay. If you protect containment integrity, or  
19 if you have appropriate methods that control releases, well, then, you're going to  
20 mitigate the consequences so that you don't get a long-term release. We would  
21 not want to put ourselves in a situation in this country that ended up there, so  
22 that's the way that we're trying to look at it as a task force.

23 CHAIRMAN JACZKO: All right. Well, I appreciate your comments  
24 and all of your comments. And, obviously, the questions and thoughts of the  
25 Commission. This is a very challenging task they have in front of you, and I

1 appreciate your efforts so far. And we'll look forward to meeting in the next, Bill,  
2 did you want to say something?

3 MR. BORCHARDT: If I could.

4 CHAIRMAN JACZKO: Sure.

5 MR. BORCHARDT: The next Commission meeting is in mid-July.  
6 As Marty alluded to, I'm going to be heading up the IAEA effort in South Korea  
7 during that time period. So, I just, with your indulgence, wanted to take a  
8 moment to thank the task force personally, but specifically Charlie Miller, who  
9 was a week or two away from retirement when I caught him in the hallway and  
10 asked him to head up this task force. And, he didn't hesitate after I released his  
11 arm from behind his back.

12 CHAIRMAN JACZKO: And it was intact at the time.

13 MR. BORCHARDT: And I can't thank him enough for making the  
14 personal sacrifice and delaying his retirement and doing this very important task.  
15 So, thank you very much, Charlie.

16 MR. MILLER: Thank you.

17 CHAIRMAN JACZKO: Well, thank you, Charlie, and we'll perhaps  
18 have an opportunity in July to say some more things. But, again, I want to thank  
19 everybody on the team for their work so far. This is a challenging task, and 90  
20 days may seem like a lot of time to us, but as we wait patiently to see what  
21 you've done, but I suspect to all of you, it's about a millisecond. So, we look  
22 forward to the next meeting and getting the report and hearing your  
23 recommendations. Thank you

24 [Whereupon, the proceedings were concluded]



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Contact NEI's media relations staff at 202.739.8000 during business hours or 703.644.8805 after hours and weekends.

## U.S. Nuclear Industry Unveils New Structure to Integrate Response to Fukushima Accident

*WASHINGTON, D.C., June 9, 2011*—The U.S. nuclear energy industry announced today that it has created a leadership structure among major electric sector organizations to integrate and coordinate the nuclear industry's ongoing response to the Fukushima Daiichi accident that followed Japan's March 11 earthquake and tsunami.



Supported by senior electric utility executives and reactor vendors, the Nuclear Energy Institute, the Institute of Nuclear Power Operations and the Electric Power Research Institute work through a new Fukushima Response Steering Committee to coordinate and oversee response activities. These activities will be implemented through seven "building blocks"—temporary organizations created to develop and execute action plans in specified areas of focus.

Two key goals that drove the design of this "joint leadership model" are to ensure that no gaps exist in response activities and that there is not a duplication of effort among the organizations and companies that comprise the industry, said Tony Pietrangelo, NEI's senior vice president and chief nuclear officer. Pietrangelo unveiled the structure at a news conference here today with Charles Pardee, who chairs the Fukushima Response Steering Committee. Pardee is the chief operating officer for Exelon Generation Co.

"The nuclear energy industry's top priority is safety. We recognize that to maintain the highest standard of safety and security to ensure top performance at every U.S. nuclear energy facility, we must continually evolve and improve standards of practice, and adapt to events and new information that affect or have the potential to affect our industry," Pietrangelo said.

"Our industry is committed to ensuring safety at American reactors, which is why it's imperative that we continue to support the recovery efforts at Fukushima Daiichi and monitor events in Japan given the long-term impacts moving forward."

-more-

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## **Industry Unveils Joint Structure for U.S. Response to Fukushima**

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The seven building blocks, each of which has a designated lead organization, such as NEI or INPO, are:

1. Maintain focus on excellence in existing plant performance.
2. Develop and issue lessons learned from Fukushima events.
3. Improve the effectiveness of U.S. industry response capability to global nuclear events
4. Develop and implement a strategic communications plan.
5. Develop and implement the industry's regulatory response.
6. Participate and coordinate with international organizations.
7. Provide technical support and R&D coordination.

The framework is delineated in a report entitled, "The Way Forward: U.S. Industry Leadership in Response to the Accidents at the Fukushima Daiichi Nuclear Power Plant." The document states, "A comprehensive investigation of the events at Fukushima Daiichi will take considerable time. Yet there is also a need to act in a deliberate, decisive manner. The industry's response is structured to ensure that emergency response strategies are updated based on new information and insights learned during subsequent event review."

"The leadership of the U.S. commercial nuclear industry is dedicated to gaining a deep understanding of the events at Fukushima Daiichi and to taking the necessary actions to improve safety and emergency preparedness at America's nuclear energy facilities," Pardee said. "An important and integral aspect of the industry's response is the awareness and involvement of the industry's many stakeholders, including industry vendors, architect-engineering companies, industry owners' groups and national consensus nuclear standards organizations. This will ensure that the interests of each stakeholder group are considered."

Technical areas that will be the areas of focus under the response effort include: the nuclear workforce; total loss of on-site and off-site AC power; the severe accident management guidelines that the industry established voluntarily in the early 1990s to provide another layer of protection above and beyond federal regulatory requirements; used fuel pool cooling; and proactive strategies for containment structures.

U.S. nuclear power plants operating in 31 states reliably supply low-carbon electricity to one of every five U.S. homes and businesses.

###

*The Nuclear Energy Institute is the nuclear energy industry's policy organization. This news release and additional information about nuclear energy are available at [www.nei.org](http://www.nei.org).*

## **Fukushima Response Steering Committee Charter**

The U.S. nuclear industry has formed a Fukushima Response Steering Committee to coordinate the industry's overall response to the accident at Japan's Fukushima Daiichi nuclear plant. The steering committee is comprised of the chairpersons of the principal advisory groups to the industry associations (EPRI, INPO and NEI) a representative cross section of chief nuclear officers and executives from EPRI, INPO and NEI.

### Members

- Chip Pardee, Chief Operating Officer, Exelon Generation Company, NEI NSIAC Chair, Fukushima Response Steering Committee Chairman
- Randy Edington, Executive Vice President and Chief Nuclear Officer, Arizona Public Service Company, INPO EAG Chair
- Maria Korsnick, Chief Nuclear Officer and Chief Operating Officer, Constellation Energy Nuclear Group, EPRI NPC Chair
- John Herron, President, Chief Executive Officer and Chief Nuclear Officer, Entergy Nuclear
- Ed Halpin, President and Chief Executive Officer, STP Nuclear Operating Company
- Dave Heacock, President and Chief Nuclear Officer, Dominion Nuclear
- Dennis Koehl, Vice President and Chief Nuclear Officer, Xcel Energy
- Mike Pacilio, Chief Nuclear Officer, Exelon Corporation
- Bill Webster, Senior Vice President, Industry Evaluations, INPO
- Rick Purcell, Senior Vice President, Industry Performance Improvement, INPO
- Neil Wilmshurst, Vice President and Chief Nuclear Officer, EPRI
- Tony Pietrangelo, Senior Vice President and Chief Nuclear Officer, NEI

### The steering committee is chartered to:

1. Develop a strategic plan that articulates the strategic goals, structure and process for defining the industry's overall response to Fukushima;
2. Ensure that identified issues are appropriately coordinated between industry organizations and that lead and supporting roles are established; and
3. Monitor the status of action plans on key issues to ensure priorities and schedules are consistent with the strategic plan and that the overall impact on operating plants is balanced and appropriate to the industry's prime focus, excellence in safe operations.

### Notes:

1. The development and management of actions plans for identified issues will be implemented under the purview and governance of the lead industry organization.

2. The formation of this steering committee shall in no way diminish the independent roles of the industry support groups as they take the actions necessary to fulfill their missions.
3. The steering committee chairman will assess the continued need for the steering committee at the conclusion of 2011, and every six months thereafter. A report will be made to the leadership of INPO, EPRI and NEI.



U.S. Industry Leadership in  
Response to Events at the  
Fukushima Daiichi Nuclear  
Power Plant



June 8, 2011

FK 2334 of 2833

## 1. EXECUTIVE SUMMARY

The earthquake and tsunami in Japan on March 11, 2011 and subsequent nuclear accident at Tokyo Electric Power Co.'s Fukushima Daiichi nuclear power plant have resulted in worldwide attention toward nuclear energy safety. The leadership of the U.S. commercial nuclear industry is dedicated to gaining a deep understanding of the events at Fukushima Daiichi and to taking the necessary actions to improve safety and emergency preparedness at America's nuclear energy facilities.

The Electric Power Research Institute (EPRI), Institute of Nuclear Power Operations (INPO), and Nuclear Energy Institute (NEI), in conjunction with senior utility executives, have created a joint leadership model to integrate and coordinate the U.S. nuclear industry's response to events at the Fukushima Daiichi nuclear energy facility. This will ensure that lessons learned are identified and well understood, and that response actions are effectively coordinated and implemented throughout the industry. This must be accomplished while electric companies continue to ensure that the safe and reliable operation of commercial reactors is our highest priority. This effort will not diminish the independent roles of the industry support groups, such as the role of INPO to promote the highest levels of safety in U.S. commercial reactors, as actions are taken to fulfill their missions.

An important and integral aspect of the industry's response is the awareness and involvement of the industry's many stakeholders, including industry vendors, architect-engineering companies, industry owners' groups and national consensus nuclear standards organizations. This will ensure that the interests of each stakeholder group are considered, understood and communicated to the public and policymakers.

A comprehensive investigation of the events at Fukushima Daiichi will take considerable time. Yet, there is also a need to act in a deliberate and decisive manner. Recognizing this, America's nuclear energy industry is taking action based on a preliminary understanding of the events. The industry's response is structured to ensure that emergency response strategies are updated based on new information and insights learned during subsequent event reviews.

Separately, the U.S. Nuclear Regulatory Commission (NRC) is conducting an independent assessment and will consider actions to ensure that its regulations reflect lessons learned from the Fukushima events. The industry's response will ensure that the NRC and industry remain informed of each other's respective activities so that any new regulatory requirements are implemented in the most efficient and effective manner.

This strategic overview describes how the industry will approach this challenge and is intended to serve as a reference point for the future. It articulates strategic goals and key stakeholders for the industry's integrated response. In addition, this overview describes the respective roles and coordination of industry organizations in managing the discrete elements of a comprehensive U.S. industry response plan.

## 2. STRATEGIC GOALS

The primary objective is to improve nuclear safety by learning and applying the lessons from the Fukushima Daiichi nuclear accident. In response, the U.S. nuclear industry has established the following strategic goals to maintain, and where necessary, provide added defense in depth for critical safety functions, such as reactor core cooling, spent fuel storage pool cooling and containment integrity:

1. The nuclear workforce remains focused on safety and operational excellence at all plants, particularly in light of the increased work that the response to the Fukushima event will represent.
2. Timelines for emergency response capability to ensure continued core cooling, containment integrity and spent fuel storage pool cooling are synchronized to preclude fuel damage following station blackout.
3. The U.S. nuclear industry is capable of responding effectively to any significant event in the U.S. with the response being scalable to support an international event, as appropriate.
4. Severe accident management guidelines, security response strategies (B.5.b), and external event response plans are effectively integrated to ensure nuclear energy facilities are capable of a symptom-based response to events that could impact multiple reactors at a single site.
5. Margins for protection from external events are sufficient based on the latest hazards analyses and historical data.
6. Spent fuel pool cooling and makeup functions are fully protective during periods of high heat load in the spent fuel pool and during extended station blackout conditions.
7. Primary containment protective strategies can effectively manage and mitigate post-accident conditions, including elevated pressure and hydrogen concentrations.

### 3. GUIDING PRINCIPLES

To achieve our strategic goals, the industry has established principles to guide the development of its response actions. These principles will be used to guide the resolution of issues and plant improvements and will ensure that a consistent expectation is established for incorporating lessons into the operations at each site. The strategic response actions will be designed to:

1. Ensure equipment and guidance, enhanced as appropriate, result in improvements in response effectiveness.
2. Address guidance, equipment and training to ensure long-term viability of safety improvements.
3. Develop response strategies that are performance-based, risk-informed and account for unique site characteristics.
4. Maintain a strong interface with federal regulators to ensure regulatory actions are consistent with safety significance and that compliance can be achieved in an efficient manner.
5. Coordinate with federal, state and local government and their emergency response organizations on industry actions to improve overall emergency response effectiveness.
6. Communicate aggressively the forthright approach the U.S. industry is taking to implement the lessons from the Fukushima Daiichi accident.

## 4. STAKEHOLDERS AND DESIRED OUTCOMES

The industry's strategic goals will be achieved by proactively engaging a variety of stakeholders.

### General Public

The industry will ensure that the general public is well-informed of the collective approach in response to the Fukushima accidents. Special attention will be paid to engaging stakeholders (residents, elected officials and other stakeholders) immediately surrounding nuclear energy facilities to maintain confidence in their plant's continued safe operations and ability to protect public health and safety.

### Employees

The industry will provide information to its employees to understand the operating experience from Fukushima as part of their training to execute their jobs with excellence and be advocates for nuclear safety.

### Emergency Response Organizations

The industry will continue to communicate and cooperate with federal, state and local emergency response organizations and government entities to ensure that emergency response plans reflect the lessons learned from the Fukushima Strategic Response Plan. These organizations include, but are not limited to, state and local police; fire officials; health officials/paramedics; federal, state and local governments; and transportation companies. Interactions will be focused on increasing confidence in the industry's and local government emergency preparedness programs.

### Industry

Utilities, industry vendors and owners groups, architect-engineers, manufacturers and companies and organizations involved in the nuclear fuel cycle, working as a collective worldwide industry, will continue to strive for operational excellence. These actions and goals will continue the ongoing contribution to the legacy of safe, reliable, environmentally responsible production of electricity at nuclear energy facilities. The industry will work with all interested parties to ensure the benefits of nuclear energy for future generations.

### Regulators

The industry will maintain relationships with federal and state regulators to ensure the industry participates in the regulatory process and can effectively implement any regulatory changes.

### Technical Partners

The industry will continue to collaborate with technical associations and organizations to ensure information is disseminated and understood by all interested parties so that the benefits and positions of nuclear energy are appreciated and support the industry's long-term objectives.

#### **Policymakers and Opinion Leaders**

The industry will proactively communicate lessons learned and industry actions such that policy and opinion leaders at the local, state and national level recognize the proactive, unwavering industry response to the Fukushima accident. The industry will continue to focus on improving confidence in the safety of U.S. nuclear energy facilities and assuring support for industry legislative proposals and programs that enhance safety.

#### **International Community**

The U.S. nuclear industry will interact with international nuclear energy companies and organizations to compile and assess recommendations and actions for applicability to U.S. facilities and to make the international industry aware of U.S. improvements.

## 5. LEADERSHIP MODEL OVERVIEW

The nuclear industry has successfully demonstrated the ability to identify and manage the response to various issues in a coordinated manner. Under normal circumstances, the structures are in place to successfully coordinate the response to significant issues among key industry groups. For the response to the Fukushima event, however, there is a need for a greater level of coordination with the number and complexity of potential issues that are identified by each of the key industry groups. As a result, we have developed a coordinating framework for the development and execution of actions in response to the lessons of the Fukushima event.

The leadership model is based on the following elements:

- **Organization** – clear division of responsibilities among the involved parties. An industry steering committee will provide strategic direction and oversight. Ownership for analysis and execution will be organized around the industry's seven building blocks based on the type of issue being addressed.
- **Event Response Process** – each industry organization (*see chart on page 9*) is responsible for identifying issues, plant and process improvements, and regulatory reviews of the Fukushima events. Issue descriptions, including action plans and recommendations, will be developed to implement improvements. The steering committee will approve the actions and designate an industry organization and building block to lead and implement the action to resolution.
- **Issue Action Plans** – action plans with schedules and resource management tools will be developed and executed for each issue within its assigned building block.
- **Strategic Response Plan** – all issues assigned to the seven building blocks constitute the nuclear industry's response. The action plans will be summarized by building block to form the strategic response plan.
- **Execution Oversight and Status Tracking** – each industry organization and its building block(s) will regularly report the status of all issues to the steering committee.

### Building Blocks

The leadership model is organized around seven areas called building blocks. Building blocks are temporary organizations created to develop and execute action plans for issues assigned to them by the steering committee. Building blocks led by an individual assigned by the industry organization will consist of assigned managers and designated personnel from the industry organizations, utilities, and suppliers. Building block oversight is provided by the steering committee, lead industry organization, and the assigned steering committee sponsor.

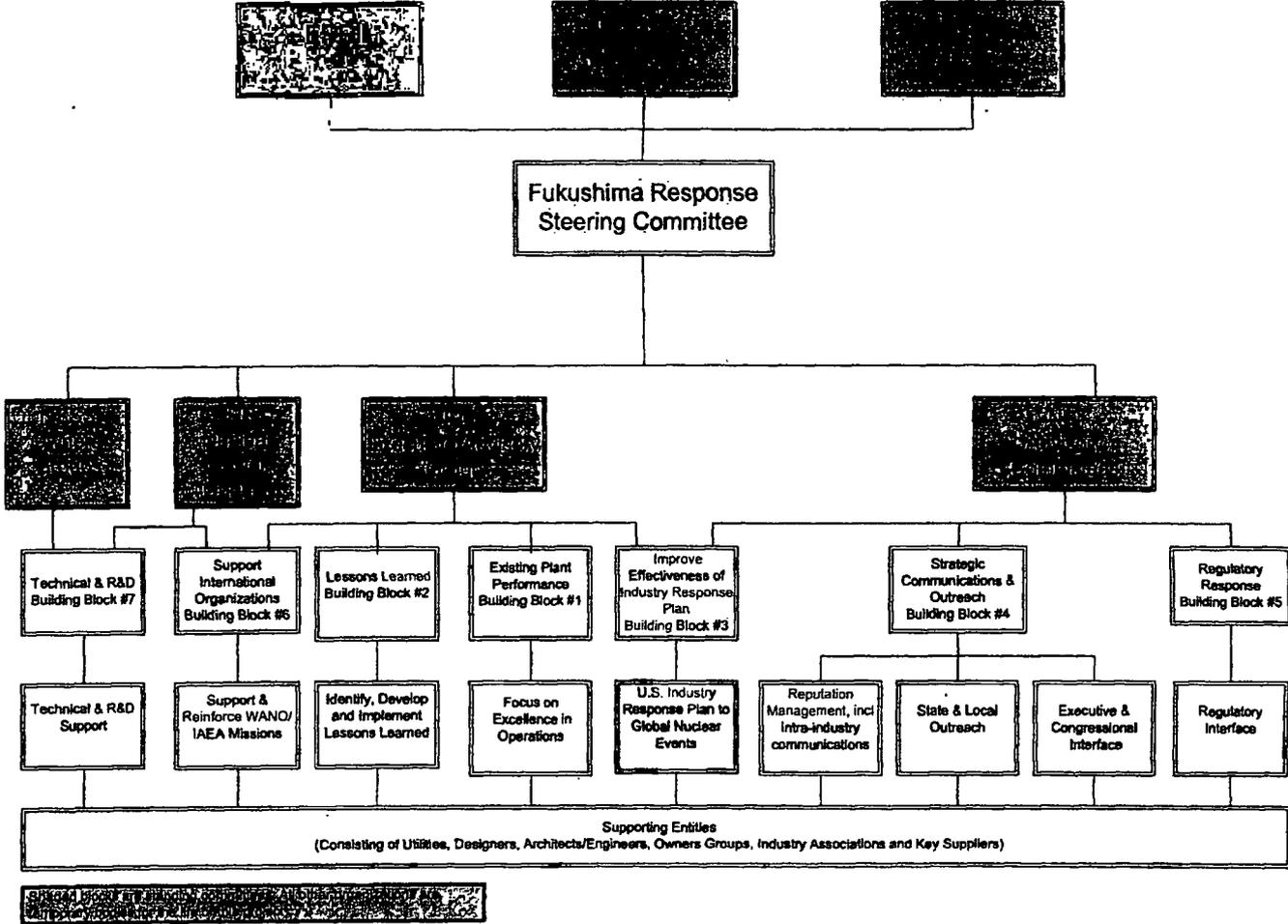
The seven building blocks along with the lead organization(s) and focus are identified below:

1. **Maintain Focus on Excellence in Existing Plant Performance (INPO):** focus on continued performance improvement of U.S. reactors.
2. **Develop and Issue Lessons Learned from the Fukushima Events (INPO):** focus on comprehensive analysis of the Fukushima event and that lessons learned are applied to the U.S. nuclear industry and shared with the World Association of Nuclear Operators (WANO).
3. **Improve the Effectiveness of U.S. Industry Response Capability to Global Nuclear Events (INPO/NEI):** focus on identified lessons learned from the U.S. industry response to the Fukushima event, allowing for more effective integrated response to future events.
4. **Develop and Implement a Strategic Communications Plan (NEI):** focus on managing the industry's strategic communications and outreach campaigns to recover policymaker and public support for nuclear energy.
5. **Develop and Implement the Industry's Regulatory Response (NEI):** focus on managing the industry's regulatory interactions and resolution of applicable industry regulatory issues from the incident.
6. **Participate and Coordinate with International Organizations (INPO/EPRI):** focus on ensuring the results from international investigations are captured and effectively used to inform actions with the other building blocks.
7. **Provide Technical Support and R&D Coordination (EPRI/NSSS Owners' Groups):** focus on existing technical solutions and research and development activities and deliverables necessary to address recommended actions of this plan.

Each building block will be supported by nuclear and, in specific instances, non-nuclear industry organizations and companies, where specific technical, operational or other expertise is required.

## 6. LEADERSHIP RESPONSE ORGANIZATION AND BUILDING BLOCKS

The leadership model structure involves many industry participants and is outlined below:



IN RESPONSE, PLEASE  
REFER TO: M110615

June 21, 2011

MEMORANDUM TO: R. W. Borchardt  
Executive Director for Operations

FROM: Andrew L. Bates, Acting Secretary */RA/*

SUBJECT: STAFF REQUIREMENTS – BRIEFING ON THE PROGRESS OF  
THE TASK FORCE REVIEW OF NRC PROCESSES AND  
REGULATIONS FOLLOWING THE EVENTS IN JAPAN, 9:30  
A.M., WEDNESDAY, JUNE 15, 2011, COMMISSIONERS'  
CONFERENCE ROOM, ONE WHITE FLINT NORTH,  
ROCKVILLE, MARYLAND (OPEN TO PUBLIC ATTENDANCE)

The Commission was briefed by the NRC staff on the status of the NRC response to events in Japan and the status of the task force reviewing the NRC processes and regulations following the events in Japan.

There were no requirements identified for staff action.

cc: Chairman Jaczko  
Commissioner Svinicki  
Commissioner Apostolakis  
Commissioner Magwood  
Commissioner Ostendorff  
OGC  
CFO  
OCA  
OIG  
OPA  
Office Directors, Regions, ACRS, ASLBP (via E-Mail)  
PDR

## SCHEDULING NOTE

**Title:** BRIEFING ON THE TASK FORCE REVIEW OF NRC PROCESSES AND REGULATIONS FOLLOWING THE EVENTS IN JAPAN (Public)

**Purpose:** To provide the Commission a summary of the task force's review and recommendations, if any, for changes to NRC processes and regulations.

**Scheduled:** July 19, 2011  
9:30 am

**Duration:** Approx. 2 hours

**Location:** Commissioners' Conference Room, 1<sup>st</sup> floor OWFN

**Participants:** Presentation

**NRC Staff Panel** 50 mins.\*

**Marty Virgilio**, Acting Executive Director for Operations

**Task Force Members:**

**Charlie Miller**, Director, Office of Federal and State Materials and Environmental Management Programs and Chair of the Task Force

**Gary Holahan**, Deputy Director, Office of New Reactors

**Dan Dorman**, Deputy Director, Office of Nuclear Material Safety and Safeguards

**Amy Cabbage**, Team Leader, ESBWR Design-Center Team, NRO

**Nathan Sanfilippo**, Executive Technical Assistant, OEDO

Topic: Summary of the task force's review and recommendations, if any.

**Commission Q & A** 50 mins.

**Discussion – Wrap-up** 5 mins.

\*For presentation only and does not include time for Commission Q & A's.



# **Briefing on the Results of the Task Force Review of NRC Processes and Regulations Following the Events in Japan**

**Martin Virgilio**  
**Deputy Executive Director for**  
**Operations**  
**July 19, 2011**

# **Agenda**

- **Introduction**  
**Martin Virgilio**
- **Near-Term Task Force Results**  
**Dr. Charles Miller**
- **Longer-Term Review**  
**Martin Virgilio**

# **Task Force**

- **Leader**
  - **Dr. Charles Miller**
- **Members**
  - **Amy Cubbage**
  - **Dan Dorman**
  - **Jack Grobe**
  - **Gary Holahan**
  - **Nathan Sanfilippo**
- **Administrative Support**
  - **Cynthia Davidson**

# **Task Force Results**

**Dr. Charles L. Miller, Lead  
NRC Near-Term Task Force**

# **Current U.S. Plant Safety**

- **Similar sequence of events in the U.S. is unlikely**
- **Existing mitigation measures could reduce the likelihood of core damage and radiological releases**
- **No imminent risk from continued operation and licensing activities**

# **Task Force Conclusions**

- **A more balanced application of defense-in-depth supported by risk insights would provide:**
  - **Coherent regulatory framework**
  - **Systematic approach to low likelihood, high consequence events**
  - **Basis for redefining the level of protection regarded as adequate**

# Focus Areas

- **Regulatory framework**
- **Defense-in-depth philosophy**
  - **Protection from natural phenomena**
  - **Mitigation for long-term station blackout (SBO)**
  - **Emergency preparedness (EP)**
- **NRC programs**

# **Recommendations**

- **12 overarching recommendations**
- **Detailed recommendations support implementation**
  - **Policy statement**
  - **Rulemakings**
  - **Orders**
  - **Staff actions**
  - **Long-term evaluation**

# **Regulatory Framework Theme**

**Principles of Good Regulation  
promote a consistent, coherent,  
and reliable regulatory framework**

# **Regulatory Framework**

## **Recommendation 1**

**Establish a logical, systematic, and coherent regulatory framework for adequate protection that appropriately balances defense-in-depth and risk considerations**

# **Protection Theme**

**Protection of equipment from the appropriate external hazards is a key foundation of safety**

# **Protection**

## **Recommendation 2**

**Require licensees to reevaluate and upgrade as necessary the design-basis seismic and flooding protection of structures, systems and components**

# **Protection (Cont'd)**

## **Recommendation 3**

**Evaluate potential enhancements to the capability to prevent or mitigate seismically induced fires and [internal] floods, as part of the NRC's longer-term review**

# **Mitigation Theme**

**Mitigation equipment and strategies that prevent core or spent fuel damage provide additional defense-in-depth**

# **Mitigation**

## **Recommendation 4**

**Strengthen SBO mitigation capability for design-basis and beyond-design-basis external events**

# **Mitigation (Cont'd)**

## **Recommendation 5**

**Require reliable hardened vent designs in BWR facilities with Mark I and Mark II containments**

# **Mitigation (Cont'd)**

## **Recommendation 6**

**Identify insights about hydrogen control and mitigation inside containment or in other buildings, as part of the NRC's longer-term review**

# **Mitigation (Cont'd)**

## **Recommendation 7**

**Enhance spent fuel pool makeup capability and instrumentation**

# **Mitigation (Cont'd)**

## **Recommendation 8**

### **Strengthen and integrate onsite emergency response capabilities**

- Emergency operating procedures**
- Severe accident management guidelines**
- Extensive damage mitigation guidelines**

# **Emergency Preparedness Theme**

**EP provides further defense-in-  
depth by minimizing public dose  
should radiological releases occur**

# **Emergency Preparedness**

## **Recommendation 9**

**Require that facility emergency plans address prolonged SBO and multiunit events**

# **Emergency Preparedness (Cont'd)**

## **Recommendation 10**

**Pursue additional EP topics related to multiunit events and prolonged SBO, as part of the NRC's longer-term review**

# **Emergency Preparedness (Cont'd)**

## **Recommendation 11**

**Pursue EP topics related to decisionmaking, radiation monitoring, and public education, as part of the NRC's longer-term review**

# **NRC Programs**

## **Recommendation 12**

- **Strengthen regulatory oversight of licensee safety performance by focusing more attention on defense-in-depth requirements**

# **New Reactor Design Certification Reviews**

- **AP1000 amendment and ESBWR**
  - **Proceed with design certification (DC) rulemaking**
  - **Combined license (COL) licensees confirm recommendations 4 and 7 (SBO and spent fuel pool)**
- **ABWR renewal, EPR, and APWR**
  - **Apply recommendations 4 and 7 before DC rulemaking**

# **New Reactor Combined License Reviews**

- **South Texas Project**
  - **Complete ABWR DC amendment rulemaking**
  - **Implement recommendations 4 and 7 during COL review before licensing**
- **All near-term COLs**
  - **Implement recommendations 8 and 9 (emergency procedures, EP) before operation**

# **Operating License Reviews**

- **Watts Bar 2 and Bellefonte 1 operating license applications**
  - **Implement recommendations 2 (seismic and flooding design basis), 4, 7, 8, and 9 before issuing the operating license**

# **Longer-Term Review Approach**

- **Longer-term review will address:**
  - **Continued review of Fukushima accident**
  - **Areas for study identified by the near-term Task Force report**
  - **Applicability of Fukushima insights to other licensed facilities**
  - **Implementation of near-term actions**

# **Longer-Term Review Approach (Cont'd)**

- **Engage stakeholders**
  - **Federal, state, and local partners**
  - **Internal**
  - **External**
- **July 28, 2011 public meeting**

# Acronym List

- **BWR – Boiling Water Reactor**
- **COL – Combined License**
- **DC – Design Certification**
- **EP – Emergency Preparedness**
- **NRC – Nuclear Regulatory Commission**
- **SBO – Station Blackout**

UNITED STATES OF AMERICA  
U.S. NUCLEAR REGULATORY COMMISSION

BRIEFING ON THE TASK FORCE REVIEW OF NRC  
PROCESSES AND REGULATIONS FOLLOWING THE  
EVENTS IN JAPAN

July 19, 2011

9:30 A.M.

TRANSCRIPT OF PROCEEDINGS

Public Meeting

Before the U.S. Nuclear Regulatory Commission:

Gregory B. Jaczko, Chairman

Kristine L. Svinicki, Commissioner

George Apostolakis, Commissioner

William D. Magwood, IV, Commissioner

William C. Ostendorff, Commissioner

## APPEARANCES

### NRC Staff:

Marty Virgilio  
Acting Executive Director for Operations

### Task Force Members:

Charlie Miller  
Director, Office of Federal and State Materials and  
Environmental Management Programs and Chair of the task  
force

Gary Holahan  
Deputy Director, Office of New Reactors

Dan Dorman  
Deputy Director, Office of Nuclear Material Safety and  
Safeguards

Amy Cabbage  
Team Leader, ESBWR Design-Center Team, NRO

Nathan Sanfilippo  
Executive Technical Assistant, OEDO

## 1 PROCEEDINGS

2 CHAIRMAN JACZKO: Good morning everyone. The Commission  
3 meets today to discuss the Japan task force's near term report and  
4 recommendations. I first want to thank Charlie Miller and the other members of  
5 the task force for all their work in conducting the 90 day near-term review. I think  
6 everyone is here with the exception of Jack Grobe, who had a previous  
7 commitment but so our thanks to all of you for your efforts and your work on this.  
8 The report's analysis and recommendations reflect your expertise, experience  
9 and commitment to nuclear safety. I also want to acknowledge the many other  
10 NRC staff members who supported their efforts in conducting this review, as well  
11 as the Federal Emergency Management Agency, The Institute for Nuclear Power  
12 Operations, and other groups and individuals who shared their views with the  
13 task force.

14 In laying out a regulatory framework for the 21st century, the  
15 Commission's task force developed a comprehensive set of 12 recommendations  
16 they believe are needed to strengthen nuclear safety. These recommendations,  
17 many with both short- and long-term elements range in areas from loss of  
18 electrical power to earthquakes, flooding, spent fuel pools, venting, and  
19 emergency preparedness.

20 Throughout the report, the task force emphasizes that effective  
21 NRC action is essential in addressing these challenges, and that voluntary  
22 industry initiatives are ultimately no substitute for strong and effective NRC  
23 oversight.

24 We are in a very good position today to be able to move forward  
25 quickly and effectively, because of the task force's outstanding work. The task

1 force clearly has done its part in helping us to better understand what nuclear  
2 safety requires in a post-Fukushima world. Now it's time for my Commission  
3 colleagues and me to do our part to systematically and methodically review each  
4 of these recommendations in a public and transparent way.

5           These meetings -- well, the meeting that we're having today and the  
6 meetings that we have had up to this point, I think have provided a very good  
7 opportunity for the public to understand the approach in the decisions that the  
8 task force would reach. And I think, what I've seen, certainly follows very closely  
9 from what I've seen them do as we've had the briefings and the meetings and  
10 ultimately what came out in the report.

11           I do think it's important that as we go forward we find a way to get  
12 additional stakeholder feedback, and I think we can do that in a reasonable  
13 period of time. And as I've said, I think that's something we can do in 90 days.  
14 There are many people both inside and outside the agency I think can contribute  
15 to this dialogue. That includes of course, the NRC's own experienced and expert  
16 staff, public interest groups committed to nuclear safety and environmental  
17 protection, and of course the industry leaders who ultimately bear the prime  
18 responsibility for ensuring that an accident like Fukushima never occurs in the  
19 United States. I believe today's meeting on the task force's report will be among  
20 the most important at the NRC in recent years. These safety issues are simply  
21 that important.

22           So with that I would offer my colleagues an opportunity to make  
23 comments. Commissioner Svinicki?

24           COMMISSIONER SVINICKI: Thank you, Mr. Chairman. As you've  
25 described the members of the near-term task force have covered tremendous

1 ground in the short three months provided to them. I want to thank each of you  
2 individually and collectively for your efforts.

3           After a more extensive examination than earlier NRC post-  
4 Fukushima efforts we're able to undertake, the task force concluded that a  
5 sequence of events like the Fukushima accident is unlikely to occur in the United  
6 States and that continued operation and continued licensing activities do not  
7 pose an imminent risk to public health and safety.

8           In addition to providing this safety reassurance to the Commission  
9 and the public, the task force's work conducted with some urgency, given their  
10 mission of finding any near-term deficiencies or reconfirming the safety of  
11 continued operation, now allows the NRC the opportunity to proceed with a  
12 systematic and methodical review of lessons learned that the Commission  
13 directed at the outset.

14           Moreover, the agency is now in a position to conduct the fulsome  
15 stakeholder engagement and review by the Advisory Committee on Reactor  
16 Safeguards, which the Commission, in my view, only reluctantly excused the  
17 near-term task force from undertaken, given the urgency of the task force's work.

18           An executive order issued just last week by President Obama on  
19 the topic of regulation and independent regulatory agencies reminds us that wise  
20 regulatory decisions depend on public participation and on careful analysis of the  
21 likely consequences of regulation. In that vein, the delivery of the near-term task  
22 force report is not the final step in the process of learning from the events at  
23 Fukushima. It is an important but early step.

24           Now the conclusions drawn by the six individual members of the  
25 near-term task force will be open to challenge by our many stakeholders and

1 tested by the scrutiny of a wider body of experts prior to final Commission action.  
2 We begin this scrutiny with our discussions here today. I look forward to your  
3 presentations and gain I thank each of you for your dedication. Thank you, Mr.  
4 Chairman.

5 CHAIRMAN JACZKO: Thank you. Commissioner Apostolakis?

6 COMMISSIONER APOSTOLAKIS: Thank you. I would also like to  
7 congratulate the task force for doing a great job in such a short period of time. I  
8 really enjoyed reading the report. I appreciated that in each part you had a  
9 section reviewing the relevant regulations and then offering the task force's  
10 evaluation of the issue and then proceeding with a recommendation. I thought it  
11 was a great report and I'm looking forward to interacting with you later today.  
12 Thank you.

13 CHAIRMAN JACZKO: Commissioner Magwood?

14 COMMISSIONER MAGWOOD: Thank you, Mr. Chairman. Well  
15 first, lady and gentlemen, thank you very much. The work you've done here has  
16 been very important and it's work that the Commission is taking very, very  
17 seriously as you can tell. You know, it's now been over four months since the  
18 natural disaster that created so much death and destruction in Japan. And over  
19 those four months, the world has learned to pronounce the word "Fukushima  
20 Daiichi" correctly.

21 Now while our friends in Japan still wrestle with this aftermath of the  
22 crisis, they've come a long way towards stabilizing the situation. And there are  
23 many heroes in Japan that have made that possible. And speaking of heroes,  
24 my warmest congratulations to the Nadeshiko's who won on Sunday.  
25 Congratulations.

1           Today, as instructed by the Commission, a task force we chartered to  
2 quickly identify the lessons learned from Fukushima, is before us to discuss the  
3 findings. The task force found that much is right with the operation and  
4 regulation of U.S. nuclear power plants. The task force found that our plants are  
5 safe and will remain safe under even difficult circumstances brought on by  
6 natural disasters. But the task force also found there's room for improvement.

7           The recommendations of the task force are both intriguing and  
8 challenging. And the Commission, the staff, and many stakeholders must  
9 engage and assess what the task force had to say.

10           We have the responsibility to consider these recommendations in a  
11 quick but comprehensive and holistic fashion. We also have the responsibility to  
12 hear and understand the thoughts and conclusions of experts outside this  
13 agency, many of whom have worked diligently over the last several months to  
14 consider the lessons of Fukushima. We may not agree with everything they  
15 suggest, but it would be arrogant of us not to listen to them very closely, very  
16 carefully.

17           This work should be our highest priority and I think this a message  
18 that I'd like to give to the staff as a whole. This should be our highest priority, to  
19 get this work done, to assess the task force's recommendations, to listen to our  
20 stakeholders. I look forward to working with my colleagues on the Commission  
21 and with the staff to make this possible. And I look forward to working with  
22 everyone. Thank you. Thank you, Mr. Chairman.

23           CHAIRMAN JACZKO: Commissioner Ostendorff?

24           COMMISSIONER OSTENDORFF: Thank you, Mr. Chairman. I  
25 want to echo my colleagues' comments and thank the task force. Your

1 recommendations, due diligence, thoughtfulness and the flat out hard work is  
2 evident in your work product, and we are grateful for that. Dr. Miller, we  
3 appreciate very much you're having changed your retirement plans to lead this  
4 key effort. We are very grateful for your efforts here.

5           The NRC's next steps following this task force report issuance are  
6 clearly, and I echo Commissioner Magwood's comments, the most important  
7 thing before the Commission, before the agency. And I join with my colleagues  
8 in being committed to work towards getting swift but thoughtful and careful  
9 resolution of these issues.

10           I echo the observations of the task force that the NRC's current  
11 regulatory approach has served the Commission and the public well. And the  
12 continued operation and the continued licensing activities do not pose an  
13 imminent risk to public health and safety.

14           While I fully support the thoughtful consideration of any potential  
15 safety enhancements in a systematic and holistic manner, I personally do not  
16 believe that our existing regulatory framework is broken. Further it is my belief  
17 the Commission must carry out its policy-making going forward with full  
18 awareness in understanding the views of our stakeholders. As echoed by my  
19 colleagues here today, that includes the NRC senior staff. In this regard,  
20 Commissioner Magwood and I issued a COM dated June 23rd of 2011, that  
21 brought forward a proposal for engaging stakeholders in the longer term review  
22 regarding events in Japan. This proposal's been approved by the Commission  
23 and we're currently finalizing the direction to the staff on what it means.

24           I look forward to hearing your briefing today and to engaging you in  
25 questions and answers. Thank you. Thank you, Mr. Chairman.

1                   CHAIRMAN JACZKO: Well I think it's good to start off the meeting,  
2 I think you heard very clearly from the Commission that -- very appreciative of the  
3 work that you've done and obviously the Commission has an interest in hearing  
4 from others as we look at deliberating and ultimately making decisions on this,  
5 but certainly, I'll speak personally, that I think this is a very good starting point for  
6 us to begin that discussion and if not, ultimately the end point that we come to as  
7 well. So, with that, I'll turn it over to Marty and begin.

8                   MARTY VIRGILIO: All right. Thank you. Good morning Chairman.  
9 Good morning Commissioners. We're here today to provide us -- provide you a  
10 briefing on the results of the task force that was established -- conduct a near-  
11 term review of the Fukushima accident. Today Dr. Miller, who will for the rest of  
12 this meeting probably be known as "Charlie," and Charlie's task force, he led this  
13 effort and will provide the Commission with the overview of the findings and  
14 recommendations. After we hear from Charlie, I'll discuss briefly next steps.

15                   If we go to slide three, this may in fact be Charlie's last opportunity  
16 to present before the Commission as well. So not only did he delay his  
17 retirement, but he's here today and will have served out a few additional  
18 responsibilities and then be on to his next assignment, which I think involves golf  
19 and a few other things.

20 [laughter]

21                   MARTY VIRGILIO: Charlie directed this task force. He stepped  
22 away from his day job, which is the Director of the Office of Federal and State  
23 Materials and Environmental Programs, and he was supported by several other  
24 task force members: Amy Cabbage, who is from our Office of New Reactors;  
25 Gary Holahan, who is from our Office of New Reactors; and then we have Dan

1 Dorman, who is from our Office of Nuclear Material Safety and Safeguards;  
2 Nathan Sanfilippo, who is currently serving in the Office of the Executive Director  
3 for Operations; Jack Grobe, who you mentioned is not available with us today.  
4 Jack is on vacation in Maine. I understand his son is getting married this week.  
5 And Cynthia Davidson, who's up in the booth today with us. She supported the  
6 team and she's supporting us today with the slides.

7           The task force also received support from many staff members.  
8 They had at their disposal all of our experts and I know that they drew on those  
9 experts in developing the information that helped them form their findings,  
10 conclusions and recommendations. Before I turn this over to Charlie, I would like  
11 to join the Chairman and all of you in expressing my thanks to Charlie and the  
12 task force for the job that they did. A job well done. So with that, Charlie, thank  
13 you.

14           CHARLIE MILLER: Thank you. Good morning. Before I begin my  
15 presentation, I too want to give some thanks to folks. I know we've covered the  
16 fact that many have joined in providing us insights with regard to our efforts, but I  
17 just want to say, and I think reiterate what I've said in previous Commission  
18 meetings, that the staff, the technical staff of the offices was at our disposal. Any  
19 time we needed information, that information was provided timely whether it be  
20 information as provided from historical documents, whether it be briefings to us,  
21 whether it's providing their personal insights as to what they feel we should  
22 consider. So I'm indebted to them. I'm indebted to the staff from NRR,  
23 Research, New Reactors, NMSS, our Regional staff, our team in Japan and the  
24 team that we have here supporting the team in Japan. With that said, there's  
25 also those that work behind the scenes to make this happen, and that's our

1 support organizations. The efforts that we got from graphics, the reproduction  
2 folks and the typical editors were key to us producing the report that we did. We  
3 couldn't have done it without their help in a very short time. So I'm indebted to  
4 them. The task force is indebted to them. And with that, I'll begin my  
5 presentation. May I have slide five, please?

6           As some of the Commissioners have mentioned, the task force has  
7 concluded that a similar sequence of events is unlikely to occur in the United  
8 States. The existing mitigation measures at U.S. plants could reduce the  
9 likelihood of core damage and radiological release if available. On this basis, the  
10 task force concludes that there's no imminent risk for continued operation and  
11 licensing activities. However, the task force has recommended safety  
12 enhancements including three interim measures warranting implementation in  
13 the next several months. May I have slide six, please?

14           The task force appreciates that an accident involving core damage  
15 and uncontrolled release of radioactive material to the environment, even one  
16 without significant health consequences, is inherently unacceptable. The task  
17 force also recognizes that there likely will be more than 100 nuclear power plants  
18 operating throughout the United States for decades to come. The task force  
19 developed this recommendation in full recognition of this environment. On this  
20 basis, the task force concludes that enhancements to safety are warranted in the  
21 near-term. We conclude that a more balanced application of defense-in-depth  
22 supported by risk insights would provide both a coherent regulatory framework  
23 and a systematic approach for the agency to address low-likelihood, high-  
24 consequence events. This concept is the basis for redefining the level of  
25 protection regarded as adequate and provides the foundation for the task force's

1 recommendations. May I have the next slide, please?

2           The task force conducted a systematic and methodical review of  
3 the insights from Fukushima in the time that we had allotted. Our report and our  
4 recommendations are structured around the focus areas of regulatory framework,  
5 defense-in-depth as it's applied to protection from natural phenomena, mitigation  
6 of prolonged station blackout events, and emergency preparedness. And lastly  
7 the task force evaluated NRC programs. Next slide, please.

8           The task force report presents twelve over-arching  
9 recommendations, and I will discuss each of these in detail during my  
10 presentation this morning. The task force report also includes a number of  
11 detailed recommendations that provide an overall implementation strategy. The  
12 detailed recommendations are grouped into five categories: a policy statement,  
13 rulemakings, orders, staff actions and long-term evaluation topics. Recognizing  
14 that rulemaking and subsequent implementation typically takes several years to  
15 accomplish, the task force recommends interim actions to be implemented in the  
16 near term. Three of the recommended orders are intended to provide those  
17 interim practical safety enhancements for protection, mitigation and  
18 preparedness while the rulemaking activities are conducted. In these cases the  
19 task force envisions that orders could be issued and implemented in a matter of  
20 months.

21           From our perspective, work should begin in the near term on other  
22 orders, but the task force recognizes that they could take a longer time to  
23 implement. The long-term evaluation topics are those topics where sufficient  
24 information was not available for the near-term task force to make specific  
25 recommendations. Next slide, please.

1           During our last Commission meeting I presented four themes.  
2 Today I'll go back to each of those themes and provide our recommendations  
3 stemming from each theme. The first theme is regarding the NRC's regulatory  
4 framework. The principles of good regulation promote a consistent, coherent and  
5 reliable regulatory framework. Next slide, please.

6           Recommendation 1: the task force has concluded that existing  
7 regulatory approach does not apply defense-in-depth and risk insights  
8 consistently. This has resulted in a patch work approach to addressing emerging  
9 issues. Beyond-design-basis events and severe accident issues have  
10 sometimes been addressed with new requirements such as station blackout rule,  
11 and in other cases have been addressed by voluntary industry initiatives such as  
12 the severe accident management guidelines, which were not included in NRC  
13 requirements. We recommend that the Commission establish a logical,  
14 systematic and coherent regulatory framework for adequate protection. That  
15 framework should appropriately balance defense-in-depth and risk  
16 considerations. This regulatory framework would serve all stakeholders well. It  
17 would facilitate staff and Commission decision-making. It would provide  
18 transparency and clarity for public stakeholders, and it would provide stability and  
19 predictably for industry's business decisions on meeting regulatory requirements.  
20 Next slide, please.

21           The second theme is related to protection of equipment from  
22 natural phenomena. Protection of important plant equipment from the  
23 appropriate external hazards is a key foundation to safety. Next slide.  
24 Recommendation 2: it is evident from our evaluation of the Fukushima event that  
25 it is essential for nuclear plants to be protected against the appropriate design-

1 basis external events. Design-basis external hazards were established during  
2 the construction permit phase for U.S. operating plants, and they are not typically  
3 revisited through the life of the plant. For many plants, this was completed in the  
4 1960s. The last construction permit for an operating U.S. plant was issued in  
5 1978. Since that time there have been significant advancements in the state of  
6 knowledge and the state of analysis methods per seismic and flooding hazards:

7           Through the years various NRC programs have been initiated to  
8 evaluate the risk from external hazards. Most notably the Individual Plant  
9 Evaluation, otherwise known as the IPE, and the Individual Plant Evaluation of  
10 External Events, otherwise known as the IPEEE. Through the IPEEE and other  
11 efforts, some actions were taken to address plant vulnerabilities that were  
12 identified, however, the hazards were not comprehensively reevaluated for all  
13 sites and the design-basis was not necessarily updated. State of knowledge of  
14 seismic and flooding hazards has evolved to the point that it is appropriate for  
15 licensees to reevaluate the designs of existing nuclear plants to ensure that the  
16 structures, systems, and components important to safety will withstand such  
17 events without the loss of capability to perform their intended safety function. On  
18 this basis the task force recommends that the Commission require licensees to  
19 reevaluate the design-basis seismic and flooding hazards and as necessary  
20 upgrade the protection of plant structures, systems, and components. The task  
21 force recognizes that recommended reanalysis and potential modifications take  
22 time to implement. Therefore, as an interim action, the task force recommends  
23 seismic and flooding protection walk-downs be completed over the next several  
24 months to identify and address plant specific vulnerabilities and verify the  
25 adequacy of monitoring and maintenance for protection features such as

1 watertight barriers and seals. Slide please.

2 Recommendation 3: the task force also evaluated potential concurrent,  
3 related external events. Seismic events have the potential to cause internal  
4 floods and fires. The staff evaluated seismically induced fires and floods as part  
5 of the IPEEE effort. In that light, Fukushima accident and other recent  
6 experience with the 2007 earthquake that affected the Kashiwazaki Nuclear Plant  
7 in Japan, the task force concludes that these topics warrant additional evaluation  
8 and consideration. Therefore the task force recommends that the staff evaluate  
9 potential enhancements to the capability to prevent or mitigate seismically  
10 induced fires and internal floods as part of the long-term review. Slide 14 please.

11 The next theme is that mitigation, equipment, and strategies  
12 provide additional defense-in-depth. Consistent with this theme, the task force  
13 has developed *recommendations covering several aspects of mitigation*. These  
14 include prolonged station blackout, containment over pressure, hydrogen control,  
15 spent fuel pool cooling, and on-site emergency response capabilities. I will now  
16 discuss our recommendations in each of these areas. Next slide please.

17 Recommendation 4: a prolonged station blackout could result from beyond  
18 design-basis external event or multiple concurrent equipment failures. The task  
19 force recommends a comprehensive and integrated approach to mitigating  
20 prolonged station blackout scenarios. This approach would provide  
21 uninterrupted core and spent fuel cooling and provide integrity of the reactor  
22 coolant system and containment as needed. The approach is divided into three  
23 phases; an eight-hour minimum coping phase, a 72-hour extended coping phase,  
24 and off-site support phase. The first phase is an eight-hour minimum coping  
25 duration. The strategy during this phase relies on permanently installed

1 equipment that is protected from natural phenomena including beyond design-  
2 basis flooding with minimal need for operator action. This strategy enables  
3 operators to focus efforts on restoring AC power and deploy equipment used for  
4 extended coping capability. The next phase is a 72-hour extended coping phase.  
5 During this phase the same safety functions are provided as the initial eight-hour  
6 coping phase. Reasonable operator actions can be relied upon and on-site  
7 portable equipment may be used in addition to permanently installed equipment.  
8 The 72-hour duration allows time for effective acquisition, transportation,  
9 installation, and the use of pre-planned and pre-staged off-site resources.

10           During the third phase, pre-planned and pre-staged off-site  
11 resources are used to provide continued achievement of the goals of core and  
12 spent fuel cooling, and reactor coolant system and primary containment integrity.  
13 Again, the task force recognizes that rulemaking and implementation will take  
14 time to complete. Therefore, we recommend interim measures be implemented  
15 within several months to enhance existing mitigation capabilities provided under  
16 50.54(hh). The task force recommends that licensees reasonably protect  
17 mitigation equipment from external hazards and provide sufficient capacity to  
18 mitigate multi-unit events. Next slide please.

19           Recommendation 5: as discussed during our last Commission  
20 meeting, all boiling water reactors with Mark I containments installed hardened  
21 wetwell vents in response to Generic Letter 89-16. The wetwell vents are  
22 intended to ensure containment integrity is maintained by preventing containment  
23 overpressure. Each licensee installed a plant specific configuration and the  
24 designs vary in several aspects including capability of opening during prolonged  
25 station blackout event. The task force recommends that Mark I wetwell vents be

1 a requirement and that the wetwell vent designs be enhanced to provide  
2 capability to open and reclose as needed during prolonged station blackout  
3 scenarios. Eight boiling water reactor units in the United States have Mark II  
4 containment designs. Three of these units have installed hardened vents and  
5 the remaining five units at three sites have not installed hardened vents. The  
6 Mark II containment is approximately 25 percent larger than the Mark I  
7 containment. It can be reasonably concluded that Mark II containments, under  
8 similar circumstances as Fukushima Daiichi Units 1, 2, and 3, would have  
9 suffered similar consequences. Therefore the task force recommends that  
10 reliable hardened vents be required for all BWRs with Mark II containments. The  
11 task force also recommends that the staff reevaluate other containment designs  
12 as part of the long-term review to ensure that hardened vents are not necessary  
13 to mitigate beyond design-basis accidents. Next slide please.

14 Recommendation 6: the next mitigation topic is hydrogen control.  
15 It is important to note that Recommendation 4, regarding enhanced mitigation of  
16 prolonged station blackout would if implemented reduce the likelihood of core  
17 damage and hydrogen production. Recommendation 4 also includes provisions  
18 for back-up power, for hydrogen igniters and BWR Mark III, and PWR ice  
19 condenser containment designs. In addition, while primarily aimed at  
20 containment overpressure prevention, Recommendation 5, for enhanced wetwell  
21 vents for Mark I and Mark II containments, would provide a reliable means for  
22 venting hydrogen to the atmosphere. These steps would greatly reduce the  
23 likelihood of hydrogen explosions from a severe accident. Sufficient information  
24 is not yet available for the task force to reasonably formulate any further specific  
25 recommendations related to combustible gas control. Therefore, the task force

1 recommends that the staff identify insights from hydrogen control and mitigation  
2 in primary containment and other buildings as part of the longer-term review.

3 Slide please.

4                   Recommendation 7: complete understanding of the detailed  
5 sequence of events and the condition of spent fuel pools will not fully be  
6 developed for some time. However, the task force had sufficient information to  
7 form our recommendations in this area. The task force concluded that the two  
8 most important insights from the Fukushima accident related to spent fuel pool  
9 safety relate to (1) the instrumentation to provide information about the condition  
10 of the pool and the spent fuel, and (2) the plant's capability for spent fuel pool  
11 cooling. The task force recommendations address both of these insights. First,  
12 the task force recommends that spent fuel pool instrumentation be required to  
13 provide reliable information on the conditions in the spent fuel pool. Second, the  
14 task force recommends a requirement for spent fuel makeup to have safety  
15 related AC power that is controlled under a technical specification. And lastly the  
16 task force recommends a requirement for a seismically qualified flow path to  
17 spray water into the spent fuel pools including an easily accessible connection to  
18 supply the water from outside the building. Next slide please.

19                   Recommendation 8: the last recommendation for enhanced  
20 mitigation capability is in the area of on-site emergency response. This includes  
21 emergency operating procedures, severe accident management guidelines, and  
22 extensive damage mitigation guidelines that are required under 50.54(hh). The  
23 task force recommends that on-site emergency response capabilities be  
24 strengthened and integrated for a seamless response to severe accidents. This  
25 includes several components. EOPs and EDMGs are currently required. The

1 SAMGs are a voluntary industry initiative. The SAMGs are an important  
2 component of accident mitigation. The task force concludes that an expansion of  
3 the regulatory requirements to include SAMGs is warranted to strengthen the  
4 mitigation layer of defense and depth.

5           The task force also concludes that integrating the EOPs, SAMGs,  
6 and EDMGs, and including them as a reference in the Plant Technical  
7 Specifications, would further clarify authority, streamline decision-making, and  
8 prevent potential delays in taking important emergency actions. Lastly the task  
9 force concludes, that the NRC should require more formal, rigorous, and frequent  
10 training of reactor operators and other on-site emergency response staff on  
11 realistic accident scenarios with realistic conditions. Effectiveness of on-site  
12 emergency actions is a very important part of the overall safety of nuclear power  
13 plants. The task force believes that the NRC should strengthen the current  
14 system substantially by implementing these measures. Slide 20 please.

15           The fourth and final theme is that emergency preparedness  
16 provides further defense-in-depth by minimizing public dose should radiological  
17 releases occur. The task force examined how the insights from the accident at  
18 Fukushima might inform both on-site and off-site emergency planning in the U.S.  
19 Slide. Recommendation 9: while the task force believes that the emergency  
20 planning basis in the United States provides radiological protection to members  
21 of the public, the task force identified two aspects of the Fukushima accident that  
22 warrant additional consideration in the United States. These two aspects are  
23 emergency preparedness for prolonged station blackout events and emergency  
24 preparedness for multiple unit events. The complications of a prolonged station  
25 blackout would affect communications capabilities such as power supplies for

1 wireless and satellite telephones, the ability for a licensee to transmit data to the  
2 NRC via the Emergency Response Data System, and backup power supplies to  
3 emergency preparedness facilities such as the Technical Support Center. The  
4 complications of an accident affecting multiple units at the same site would  
5 challenge EP from the perspective of insuring adequate staffing capable of  
6 responding to multiple accidents, the capability to perform dose assessment for  
7 simultaneous releases, and the size of EP facilities and the quantities of  
8 equipment. Enhanced training and exercises would be needed for prolonged  
9 station blackout and multi-unit emergencies. Again, the task force recognizes  
10 that rulemaking implementation will take time to complete, therefore we  
11 recommend the interim measures be implemented within several months. Next  
12 slide.

13                   Recommendation 10: in addition, the specific items regarding  
14 prolonged station blackout and multi-unit events in Recommendation 9, the task  
15 force identified three additional topics for longer-term review. First, the task force  
16 recommends that the staff analyze current protective equipment requirements for  
17 emergency responders and guidance based upon the insights from the accident  
18 at Fukushima. Second, the task force recommends the staff evaluate the  
19 commanding control structure and the qualifications of decision makers to ensure  
20 the proper level of authority and oversight exists in the correct facility for a long-  
21 term station blackout or multi-unit accidents, or both. For example, concepts  
22 such as whether a decision-making authority is in the correct location within the  
23 facility, whether the currently licensed operators need to be integral part of the  
24 emergency response organization outside the control room, that is the TSC, and  
25 whether licensee emergency directors should have formal license qualification for

1 severe accident management. Finally, the task force recommends that the staff  
2 evaluate additional ERDS enhancements such as the alternate methods via  
3 satellite for example to transmit ERDS data that do not rely on hardwired  
4 infrastructure that could be unavailable during a severe natural disaster, and  
5 whether ERDS should be required to transmit continuously so that no operator  
6 action is needed during an emergency.

7           Recommendation 11: the accident at Fukushima also provided  
8 insights on a number of other EP topics. The task force has identified four areas  
9 it recommends for longer-term review. First, the staff should study whether  
10 enhanced on-site emergency response resources are necessary to support the  
11 effective implementation of licensees' emergency plans, including the ability to  
12 deliver the equipment to the site under conditions involving significant natural  
13 events or degradation of off-site infrastructure or competing priorities for  
14 response resources could delay or prevent the arrival of off-site aid. Second, the  
15 staff should work with FEMA, the states, and other external stakeholders to  
16 evaluate the insights from implementation of EP at Fukushima to identify  
17 potential enhancements to U.S. decision-making framework including the  
18 concepts of recovery and reentry. Finally, the staff should conduct training in  
19 coordination with the appropriate federal partners on radiation, radiation safety,  
20 and the appropriate use of potassium iodide in the local community around each  
21 nuclear plant. Next slide please.

22           Recommendation 12: regarding reactor protection and mitigation  
23 systems, a fundamental characteristic of the reactor oversight process is that  
24 inspection activities or samples are selected for relative risk significance of the  
25 activity or equipment being examined based on its effect on core damage

1 frequency. Further the NRC evaluates inspection findings in these areas and  
2 uses the significance determination process to determine significance based on  
3 risk. The ROP's reliance on risk undervalues the safety benefit of defense-in-  
4 depth and consequently reduces the level of NRC resources focused on  
5 inspecting defense-in-depth characteristics that contribute to safety. In addition,  
6 the reactor oversight process does not consider the industry's voluntary safety  
7 enhancements. Consequently, the staff devotes limited or no inspection effort to  
8 voluntary initiatives such as the implementation and adequacy of SAMGs.

9           Finally, the structure of risk based inspection program under the  
10 ROP focuses on licensee compliance with regulations and requirements and  
11 leaves very limited opportunity for inspection staff to evaluate the adequacy of  
12 the licensing basis at a given facility. The task force concluded that  
13 enhancements for inspection program would improve its focus on safety. The  
14 task force recommends that the NRC strengthen regulatory oversight of licensee  
15 safety performance by balancing emphasis on defense-in-depth requirements  
16 consistent with recommended defense-in-depth framework. The task force  
17 recommends expanding the scope of the annual reactor oversight process self-  
18 assessment and biannual reactor oversight process realignment to more fully  
19 include defense-in-depth considerations and enhancing NRC staff training on  
20 severe accidents, including training of resident inspectors on SAMGs. Next slide.

21           Let me turn now to the New Reactor Design Certification Reviews.  
22 In our report the task force proposed an implementation strategy for new  
23 reactors. The two designs currently in the certification rulemaking process, that  
24 is the AP1000 and the ESBWR, have passive safety systems. By nature of their  
25 passive safety designs an inherent 72-hour coping capability for the core

1 containment and spent fuel pool cooling with no operator action required, the  
2 ESBWR and the AP1000 designs have many of the design features and  
3 attributes necessary to address the task force recommendations. The task force  
4 supports completing those design certification rulemaking activities without delay.  
5 The task force suggested that licensees referencing the AP1000 and ESBWR  
6 could confirm that these designs meet the intent of Recommendations 4 and 7  
7 regarding station blackout and spent fuel pool safety after licensing but before  
8 operation. For new reactor designs without passive safety features, namely the  
9 ABWR design certification renewal application, and the EPR and APWR design  
10 certification applications, the task force recommends that the staff apply  
11 Recommendations 4 and 7 prior to certification. Next slide please.

12                   For the South Texas Project combined license application, the task  
13 force recommends that the Commission proceed with rulemaking for the ABWR  
14 design certification amendment, however the task force recommends that the  
15 applicant address Recommendations 4 and 7 prior to licensing. For all near-term  
16 combined license applications under review, the task force suggests that  
17 Recommendations 8 and 9, regarding emergency procedures and emergency  
18 preparedness be implemented after licensing but before plant operation. The  
19 task force notes that the combined operating license and early sight permit  
20 reviews have adequately addressed Recommendation 2.1, regarding design-  
21 basis external hazards in the context of updating the state-of-the-art and  
22 regulatory guidance used by the staff in its reviews. Next slide.

23                   For the expected Watts Bar 2 and Bellefonte Units 1 and 2  
24 operating license applications, the task force proposes that Recommendation  
25 2.1, regarding seismic and flooding design-basis be addressed before licensing,

1 in addition to Recommendations, 4, 7, 8, and 9. In conclusion, the task force  
2 found there's no imminent risk from continued operation and licensing activities.  
3 However, the task force identified a number of recommendations to clarify our  
4 regulatory framework, enhance safety with interim actions to be completed over  
5 the next several months, initiate rulemaking and additional orders to further  
6 enhance safety, and lastly, the task force provided recommendations for long-  
7 term evaluations. The task force recognizes that what we've recommended here  
8 is a lot to chew on, and we also recognize there are various expert and technical  
9 reviews, but the task force is very sound in our agreement on proposing these  
10 recommendations for your consideration and getting input to help you make your  
11 decisions. And with that I'd like to turn the presentation back to Marty for the  
12 long-term review.

13 MARTY VIRGILIO: Thank you Charlie. The Commission also  
14 directed the staff to conduct a longer-term review of the events that occurred at  
15 Fukushima and this longer-term review is essentially a continuation of the work  
16 that the near-term task force has started. The long-term review will address  
17 issues that the near-term task force wasn't able to address in part because of the  
18 information that was available. In some cases, we just don't have sufficient  
19 information to understand the detailed sequence of events, and some of the other  
20 issues. So we'll deal with that. Also, as Charlie mentioned, the long-term task  
21 force will have to address some of the issues that he has placed on the table, for  
22 example, the issue of seismic flooding and fires. That's an issue that we'll  
23 address in the longer-term. Furthermore, the near-term task force was limited in  
24 scope. We focused on the operating reactors and the facilities that are under  
25 licensing review today. So as part of the longer-term effort, we will look at our

1 materials licensees, non-power reactors, non-operating reactors, et cetera. On  
2 slide 29, just back to the near-term review for a moment. The near-term task  
3 force was specifically directed to maintain its independence, and as such the  
4 team did not have extensive interaction with stakeholders. So, as part of  
5 responding to the near-term task force recommendations, the NRC will provide  
6 an opportunity for external stakeholder input, stakeholders from industry, federal,  
7 state, local stakeholders, and the public. Our interactions as we envision them  
8 will be primarily through public meetings, but we also envision solicitation in the  
9 Federal Register to obtain comments.

10           We're currently planning a meeting on the 28<sup>th</sup>; this will be, of July.  
11 This will be a public meeting where the task force will once again have an  
12 opportunity to provide an overview of their findings, conclusions, and  
13 recommendations. And this meeting will allow the audience an opportunity to  
14 seek clarification from the task force if there're any issues that they don't  
15 understand. These meetings will be transcribed. We'll also have them webcast  
16 and teleconferenced as well. In closing, I just want to once again, express my  
17 appreciation and the appreciation of the EDO's Office and the staff for all the  
18 effort put in by this near-term task force, and at this point now we look forward to  
19 your questions. Thank you very much.

20           CHAIRMAN JACZKO: Well thank you Marty and Charlie, thank  
21 you for your very thoughtful presentation and all the members of your team.  
22 We'll start our questions with Commissioner Magwood.

23           COMMISSIONER MAGWOOD: Thank you, Mr. Chairman. It's  
24 kind of hard to know how to proceed with this. I have so many questions; we  
25 could sit here all day [laughs].

1                   CHAIRMAN JACZKO: We can do that if you'd like.

2                   COMMISSIONER MAGWOOD: Oh, that's okay. I have a plane to  
3 catch later. But you know, let me just first skim a few things and that should  
4 probably keep this relatively short. First, Charlie, I guess this is the last chance,  
5 we'll have a chance to meet across the table this way and again, you know thank  
6 you for leading the task force and thank you for your long service with NRC and  
7 the government. It's been quite a career. One question, it sort of popped up  
8 quite recently actually was related to KI. The Commission received a letter,  
9 actually quite recently that highlighted some concerns about the level of detail  
10 that the task force put into this. And actually the letter is a public letter from Peter  
11 Crane who's a well-known observer of the NRC, asks a series of questions about  
12 what actually happened in Japan with KI. What kind of radiation does this to  
13 thyroid received by Japanese citizens especially children, and what distance is  
14 from reactors? What does this suggest about the need for KI beyond the 10 mile  
15 radius in which NRC now offers it? And he goes on to say these are all  
16 questions that can be answered into a greater or lesser extent by any informed  
17 citizen who reads newspapers and has access to a computer but anyone who's  
18 only source of information is the NRC Task Force, which was in theory  
19 addressing such issues, would be out of luck.

20                   I wanted to give you a chance to react to that, but also give us  
21 some ideas as to what kind of discussion, because the task force's comments on  
22 KI were relatively limited. And this is an issue that's important to a lot of people.  
23 What kind of discussion did you have with the task force and did you have any?  
24 What kind of interaction did you have with the staff on that?

25                   CHARLIE MILLER: Thank you Commissioner, let me start, but one

1 of the things I want to be able to do today is for the last three months I've been  
2 doing all the talking and I'd like to let the task force members have an opportunity  
3 today to give you some of their individual insights on issues. I guess first we had  
4 a lot of discussion about KI and I think one of the things that we took away was  
5 that administration of potassium iodide is something that has to be carefully  
6 done, okay. We're not -- we had no medical doctors on the task force, and the  
7 administration of potassium iodide does require the insights from the medical  
8 community. And so, if you go back to the days right after Fukushima, there were  
9 even some that were recommending that residents on the West Coast of the  
10 United States start taking potassium iodide. So, that raised some concerns and I  
11 think our biggest result from our discussions was this is something that needs to  
12 be evaluated again in the longer-term. I think that the agency has looked at this  
13 in a lot of detail over a number of years, and I think that with regard to potassium  
14 iodide, I think it is a tool to protect the thyroid in appropriate situations.

15 Sometimes it gets confused that it's the magic radiation pill, that's going to  
16 protect you against everything. It's not. With regard to what was going on some  
17 in Japan, Dan was there for a period of time on-site, so I would ask him to have  
18 any insights and Nathan is our Emergency Preparedness Expert on the task  
19 force. I'd like to allow them to make any comments that they choose to make.

20 DAN DORMAN: I think during the period that I was in Japan,  
21 during the second and third weeks after the accident, there was a lot of  
22 discussion of KI and there was a regular stream of American citizens coming to  
23 the Embassy to receive distribution of KI, but at no time was there a  
24 recommendation to American citizens to administer KI. There was some  
25 anecdotal information that there were differing views within the international

1 community within, in Tokyo on the administration. So I think there will be a lot  
2 information forthcoming on what was done to administer KI or distribute KI in  
3 Japan. I think in our discussions, as Charlie indicated, we also were cognizant of  
4 the discussions that were occurring in the same time in the United States about  
5 administration of KI on the West Coast. And I think where we ended up as a task  
6 force was in Recommendation 11, where we recommended further long-term  
7 review of KI issues and particularly a public education component of that.

8           NATHAN SANFILIPPO: And just to -- I had a couple extra points  
9 as Dan mentioned, we haven't had a lot of official information with respect to  
10 results of protective actions in Japan. There's been a lot of different media  
11 reports and whatnot, but we're sure that the effects of the evacuations, the  
12 sheltering, other protective actions will be studied in much more detail by the  
13 Japanese government. So, of course in the United States, KI is much more than  
14 just an NRC issue. It spans a lot of federal agencies and you know I think there  
15 is a lot of recognition amongst the task force that any areas that would involve  
16 significant interagency coordination would need to be studied in the longer-term.  
17 So there wasn't any more specific recommendation other than to maintain  
18 awareness of protective actions that were taken in Japan and see what insights  
19 we can gain from them as well as doing more public education as Dan mentioned  
20 but I think that's really where we limited our discussion with respect to KI  
21 because there wasn't any revelation that really indicated that there was  
22 something that needed more urgent action in the U.S.

23           COMMISSIONER MAGWOOD: I appreciate that. You know KI I  
24 think is going to be interesting because it's that kind of good analog for many  
25 issues here because unlike some things that have I think occurred with this

1 incident, it is an area where I think we can take direct scientific outcomes and  
2 sort of re-inform the regulatory process. And let me, and again if you feel like  
3 you want to pass this off to someone else Charlie, feel free. But you know when  
4 I look at many of the task force recommendations there really, while they're  
5 insights that were gained from looking, observing what occurred at Fukushima,  
6 they aren't necessarily in my view, and just give your response to this, they're not  
7 necessarily in my view specific technical conclusions that were reached about  
8 things that took place in Japan and therefore need to be fixed in the United  
9 States because we have exactly the same problem. That's not the theme I got  
10 from reading the report. The theme I got really was we've gained insights from  
11 the overall incident and we've gone back, we've looked at our regulatory  
12 infrastructure and have decided there's some things we can do better. Is that a  
13 fair characterization?

14 CHARLIE MILLER: Let anyone speak for themselves but from my  
15 perspective I think there were some things in our recommendations we felt were  
16 a direct insight from what happened in Japan. But it is fair to say that we looked  
17 at what happened in Japan and it caused us to take a step back and say, "Well  
18 are there other ways that you could end up with the same outcome?" For  
19 example, flooding as you see is a central theme to our recommendations. So  
20 although the event in Japan was caused by you know by a major earthquake  
21 followed by a tsunami, there's other ways that flooding can occur and you want to  
22 make sure regardless of the way that the water gets in there it's going to cause  
23 the same effect if you're equipment is not protected against it. So we tried to use  
24 the insights that we got from that directly and say, can we tie it back to what the  
25 outcome was in Japan to say are there issues with regard to U.S. plants that

1 need to be looked at and addressed?

2 COMMISSIONER MAGWOOD: I didn't know if anyone else was  
3 going to comment on that but -- Gary.

4 GARY HOLAHAN: I would just add that the task force was very  
5 cognizant of the fact that we were really responsible for developing  
6 recommendations for the U.S. We're not making judgments about you know  
7 recommendations for the Japanese and how they should deal with the  
8 Fukushima event, nor are we dealing with an event within the U.S. Obviously  
9 we're extrapolating, we're trying to learn from what happened in a different  
10 situation, how those insights and those facts might apply in the U.S. So you  
11 know even though a tsunami is unlikely in the U.S, that doesn't mean that we  
12 can't learn something about flooding. So we try to extrapolate from the  
13 information at Fukushima.

14 COMMISSIONER MAGWOOD: Well let's sort of pursue that a bit.  
15 What did you learn about flooding that you didn't know before, from looking at  
16 Fukushima.

17 GARY HOLAHAN: I think we learned that it can affect a plant very  
18 extensively; even minor flooding is not limited to one area of the plant. It can  
19 take out multiple pieces of equipment across a broad area of the plant, and it's  
20 important to protect plants in that way.

21 COMMISSIONER MAGWOOD: Didn't we already know that?

22 GARY HOLAHAN: Well, it's not evident that we actually dealt with  
23 it in such a way that in general the approach to flooding is establish a maximum  
24 flooding level, and then put a bunch of equipment above that level. And I think  
25 the insight from Fukushima is if you're wrong, or if you have a flood that is above

1 what you thought was the maximum flooding level, it doesn't just affect one part  
2 of the plant, it could affect multiple parts of the plant. It obviously, in Fukushima,  
3 in both Units 1 through 4, and 5 and 6, which got substantially less flooding, there  
4 was a very extensive loss of AC power. And it's quite difficult to protect electrical  
5 power once flooding starts.

6 COMMISSIONER MAGWOOD: I appreciate that, my time is up,  
7 but I just would make an observation, I think this is one where I'd look forward to  
8 talking with certain members of the task force, and I know Charlie you're  
9 escaping to go golfing but you'll leave Gary behind to clean up the mess. But  
10 you know one of the conversations I look forward to having with you and with the  
11 staff and with the stakeholders is really the focus on that question of, what is the  
12 new knowledge? Because I think that speaks very clearly to what I think is  
13 perhaps the most important aspect of the report which is, how to redefine  
14 inadequate protection. And I think that's the conversation that we'll have to  
15 engage over the next several weeks and months. So with that, once again, I  
16 thank all of you for what you've accomplished and thank you Mr. Chairman.

17 CHAIRMAN JACZKO: Commissioner Ostendorff.

18 COMMISSIONER OSTENDORFF: Thank you Mr. Chairman.  
19 Again, my thanks. The report was well written, well organized, while I may have  
20 maybe some different viewpoints from the task force on a couple of issues, I'm  
21 going to try to better understand some of those in questions. I thought the  
22 framework in which you approached laying this out for us was extraordinarily  
23 helpful. Charlie, let me ask you a couple of questions. I'll ask you to be the  
24 quarterback, pass it to the right team member to answer. One of the things I  
25 found really useful was the section that begins on page 15, "Regulatory

1 Framework for the 21<sup>st</sup> Century.” Not having been a long-term NRC employee, I  
2 found that historical perspective as to what happened the last few decades, how  
3 regulations evolved, what was done when, response to TMI, Davis-Besse, 9-11,  
4 etcetera, that approach was very, very insightful, and I can understand why you  
5 had perhaps drawn the conclusion and you use the phrase “patchwork” to  
6 describe the regulatory framework. I may not use that framework to describe it  
7 but I understand and appreciate where you’re coming from. I guess a high level  
8 question that I do have is, when you looked at the recommendations for  
9 rulemaking and orders that are contained in your report, did you provide those  
10 through the architecture of our existing regulatory framework or through the  
11 architecture of your future vision of what the framework might look like if  
12 Recommendation 1 were enacted?

13 CHARLIE MILLER: Okay. Thank you. Well, I’ll ask Gary to  
14 address that.

15 GARY HOLAHAN: I think we developed all the recommendations  
16 both the short and long with the same concept in mind, and that being that  
17 protection from events beyond the traditional design-basis are important and I  
18 think you know both the short-term and the long-term recommendations are  
19 really framed to be consistent with the recommended framework. That’s not to  
20 say that without that framework you couldn’t come to a conclusion that some of  
21 those elements were appropriate, but the package was put together consistent  
22 with the framework that says, you know, be careful about the initiating events and  
23 with defense-in-depth in mind you ought to protect just in case you didn’t get the  
24 design-basis right or if you’re unlucky enough that something beyond the design-  
25 basis should occur.

1                   COMMISSIONER OSTENDORFF: Well, let me put a finer point on  
2 that. If Recommendation 1 were not accepted by the Commission, I'm just  
3 asking this as a hypothetical but I think this architecture for what framework we're  
4 looking at is absolutely critical for us to make informed decisions. If  
5 Recommendation 1 were not enacted, would that change how you look at any of  
6 your recommendations for rulemaking or orders?

7                   GARY HOLAHAN: Yes, I think it does. I think that the framework  
8 sets out a vision in which all the plants would be tested against the same level of  
9 safety. Without that framework if you used the existing approach which treats  
10 some things that are requirements, some things as not. I think you would be led  
11 to the conclusion that not all plants would have -- would be subject to all of these  
12 recommendations, but I think many of the older plants which probably have less  
13 robust flooding and seismic and other features. I think you would be led to do  
14 this -- do different things on some plants versus other plants. So part of the  
15 concept of the framework is to say, here's an opportunity for the Commission to  
16 articulate what it expects as a level of safety and then test all the plants against  
17 that same standard.

18                  COMMISSIONER OSTENDORFF: Okay. That's very helpful Gary,  
19 thank you. Kind of following on that same notion about the regulatory tools, I  
20 appreciated the clarity with which the task force specified near-term, longer-term,  
21 rulemaking, orders, staff actions. I thought that was very helpful. With respect to  
22 the rulemaking and order recommendations, were there any other regulatory  
23 tools that you looked at or considered in your deliberations? Bulletins, Request  
24 for Information, I'm just, whoever?

25                  GARY HOLAHAN: Let me try that. I think we looked at orders and

1 rulemaking because those are the most formal parts of NRC's regulatory actions.  
2 I think we look at bulletins and generic letters as really as requests for  
3 information and I think we were looking for something that would have the  
4 Commission establish expectations of safety. And I think it's pretty clear in the  
5 report that we found much more comfort in things that were required than those  
6 that were voluntary. And that Requests for Information, either through a generic  
7 letter or a bulletin, is leading more towards voluntary activities than necessarily  
8 the requirements of rules or orders. You know orders are kind of frightening  
9 thought, it sounds like an immediate thing, but in fact we saw that as virtually the  
10 only tool to fill in between now and perhaps five or six years from now.

11           COMMISSIONER OSTENDORFF: Let me explore a different  
12 notion here. Thank you Gary, that's very helpful. And that deals with a topic that  
13 Commissioner Magwood raised in his questions and is associated with the level  
14 of information that you had available, and I would just, I've been very impressed  
15 with the scope and breadth of your report in a 90-day time period from an event  
16 for which there's still probably an evolution of information in areas A, B, and C.  
17 And I think you did a nice job in the report of parsing out what are those things  
18 you had sufficient understanding of to make some kind of a judgment to those  
19 that required a longer-term review. But there's one that I maybe wanted to ask  
20 just for context and that deals with the recommendation for an order on reliable  
21 hardened vents for Mark I and Mark II BWRs. Last week I had a chance to ask  
22 INPO, did INPO feel like they had a sufficient level of understanding of the  
23 sequence of events and the modes of failure at Fukushima in order to come to  
24 some conclusion as to what the appropriate path forward was? And as I  
25 understood it INPO's response to me was that they still had some questions

1 about what was, what happened in that area. And I'd be curious as to anybody,  
2 Dan, if that's your point. You know your assessment. I know that on page 40 of  
3 your report, it says that "it is unclear whether the operators were ever successful  
4 in venting the containment in Unit 1, 2, or 3." The bottom of page 40, I'm just  
5 curious as to the level of knowledge.

6 DAN DORMAN: There's a couple of aspects for Fukushima that go  
7 into the question of the hardened vent, and part of that is captured in our  
8 recommendation related to decision-making in the context of Severe Accident  
9 Management Guidelines. But more to the technical aspect of the vent itself,  
10 there was certainly some indication that they had some difficulties on several of  
11 the units in venting the containments that were attributable likely to a number of  
12 factors that relate to prolonged station blackout and the conditions that they were  
13 operating in. So we looked at the -- at Mark I vents in the United States, and we  
14 looked at several of the plants that have the Mark I, the hardened vents and  
15 looked at them with a view toward the ability of the operators to conduct that  
16 operation during a long-term station blackout. So we're looking at the mode of  
17 power for the valves that would be need, the availability of ruptured discs to  
18 facilitate the venting process, and where those valves were located in the facility  
19 in terms of the ability of the operator if they needed to operate them locally during  
20 a prolonged station blackout to get to that location and conduct the operation  
21 needed. And in fact there are some cases where, because the vent is part of the  
22 containment boundary, there are measures in place to prevent inadvertent  
23 venting during normal operation that contribute to the challenges that operators  
24 would experience in operating the vents. So we had some insights from  
25 Fukushima, I think sufficient to support our look at specific details of designs in

1 the United States that raise questions in our mind of the ability of the operators to  
2 effectively perform that operation, specifically in the prolonged station blackout  
3 circumstances.

4           COMMISSIONER OSTENDORFF: Thank you. I'm going to ask  
5 one quick question and then I'll wrap up here. The areas of spent fuel pool  
6 safety; page 44 of the report is a very nice discussion. We received a number of  
7 letters from members of Congress asking us to look at the accelerated  
8 movement of the spent fuel from the pool to dry cask. I did not note that you had  
9 a recommendation or finding in here that we needed to do that. Could somebody  
10 comment on that aspect?

11           CHARLIE MILLER: I'll start and let the others jump in. You're  
12 correct, you don't see a specific recommendation to take it out or not take it out.  
13 What you saw was -- the way we approached it was recognizing that before you  
14 can take fuel out of a pool it has to be at least five years old. By that time we call  
15 it, for lack of a better word, cold fuel. So the amount of heat that's being  
16 generated is a very small fraction of what originally was. So when we tried to  
17 look at it holistically with regard to the pool, what's the best way we can protect  
18 the pools. So the recommendations that we made, we feel would enhance spent  
19 fuel pool safety more than simply taking old fuel out of the pool. It would provide  
20 knowledge of what the levels were in the pool. It would provide the capability to  
21 keep the pool cooled. Should you get in a situation due to some external event  
22 where the possible integrity of the pool was challenged, you'd have the spray  
23 capability to be able to continue to provide some cooling and be able to mitigate  
24 any consequences of any radiological releases. So that's the way we  
25 approached it. Water in the pool is good, you keep the fuel covered, the fuel was

1 meant to be cooled by water, and we think that that is the prudent measure that  
2 we should have taken. And I'll offer for anybody else to amplify on that.

3           NATHAN SANFILIPPO: I would just add that in the early days of  
4 the event, there was a lot of uncertainty as far as what was actually going on in  
5 that Unit 4 spent fuel pool, and a lot of the calls to move fuel out of the pool I  
6 think were generated out of the thought that that pool had completely drained.  
7 And since had indications from the Japanese government that that may not be  
8 the case, and there's still significant uncertainty as far as what really happened,  
9 hence our recommendation on better instrumentation in the pool to help have  
10 some indication of the status of the pool. And then with respect to what -- you  
11 know the hydrogen generation, when you know there was a lot of discussion  
12 about well did the Unit 4 reactor building explode due to hydrogen generation  
13 from fuel from the spent fuel pool being uncovered versus coming from one of  
14 the other units? That is still uncertain but as those uncertainties rose and this  
15 was a situation where there was, we didn't have specific finite concrete  
16 information to make a final judgment, it supports exactly the discussion that  
17 Charlie said that there was no overwhelming evidence that the fuel would be  
18 safer outside of the pool than in it.

19           COMMISSIONER OSTENDORFF: Thank you. Thank you Mr.  
20 Chairman.

21           CHAIRMAN JACZKO: Commissioner Svinicki.

22           COMMISSIONER SVINICKI: Thank you all again for your work  
23 and I -- my two colleagues who asked you questions before me have covered  
24 some of the same issues that I was going to raise, but as usual they've done it in  
25 a much more sophisticated nature. And so I'm sitting here, I'm listening carefully,

1 I've read your report, and I generally would come to a meeting like this, I would  
2 have thought last night and I would have had some questions that I knew I was  
3 answer -- ask you today, but I specifically came today wanting to listen because  
4 what I wanted to do was to test. Well you've probably heard this saying, "There's  
5 what you wrote, and then there's what I think I read." So, I wanted to test some  
6 of that today, obviously you looked at a lot of things in a hundred or so pages you  
7 tried to put down on a consensus basis what you concluded.

8           So I'll start out I guess with really the most basic reaction that I had,  
9 and you did cover this again today. You talk about the fact that a similar  
10 sequence of events is unlikely, and Charlie you've talked about tsunamis versus  
11 floods. You've gone on as a task force to say that even though that's unlikely in  
12 the U.S. we have mitigation measures that would further reduce the effect of  
13 something like that, even if it occurred with its low likelihood. And you go on to  
14 conclude that there is not an imminent risk from both continued operation and  
15 licensing activities, and so that sounds you know very reassuring.

16           That sounds like something that you read and you're reassured by,  
17 but then I get to Recommendation 1, and there's been some talk, both of my  
18 colleagues have asked you about the philosophy behind Recommendation 1,  
19 and when I read Recommendation 1 what it -- how I interpret is even though the  
20 task force has offered these assurances when you get to Recommendation 1 the  
21 notion there is that fundamentally what has been encompassed by adequate  
22 protection has been not sufficient and needs to be expanded.

23           So, it seems like on the one hand there's that reassurance, on the  
24 other hand it's a bit of, concluding slide says it's a clarification of a regulatory  
25 framework. I think that that's a real change to our regulatory framework. So is

1 there something I'm missing between those two pieces and could you, again with  
2 an opportunity to maybe speak more conversationally about it, can you help me  
3 understand what that means?

4 GARY HOLAHAN: Sure, let me try. I think you're right that there is  
5 more than clarification involved. That in fact we're calling, or recommending to  
6 the Commission that it establish, in some sense, a different line for what is  
7 adequate, an adequate level of protection. I think the word clarification refers to  
8 the fact that we would hope that the recommended framework would be more  
9 clear than our -- than the way historically accidents beyond the design-basis  
10 have been dealt with. I think for quite a long time -- decades, it has been difficult  
11 for the staff and for the Commission, and frankly for the industry, to deal with  
12 situations beyond the design-basis. And they've been dealt with on a case by  
13 case basis and sometimes voluntary, sometimes they're requirements, and I  
14 think part of the insights from the Fukushima event that led us to say we really  
15 ought to deal with the framework, is we found so many cases in which  
16 equipment, for example, from 50.54(hh) for security reasons that could be useful  
17 in an event such as Fukushima, but that having approached that issue as a  
18 security matter didn't lead to protecting that equipment from flooding for example.

19 So where you see it could be quite useful and in fact provide  
20 enhanced protection, public health and safety, it might not be available during  
21 any specific event. It might not be in a location that was protected from flooding  
22 or wind or seismic and the insight that we drew from that is, if you make these  
23 decisions in a more holistic way, more cognizant of you know, what kind of  
24 protections are you trying to foster, then perhaps you can do them in a more  
25 useful way. And so, it probably would have been quite easy to provide 50.54(hh)

1 equipment we call, in effect the guidelines to go along with them, that would  
2 protect it from flooding. We just didn't think of it at the time. We were thinking  
3 about what should we do about security, and terrorist events, and airplane  
4 crashes, and fires, and we moved ahead in that way. And so for some plants  
5 they're probably very well protected against flooding and others not so well,  
6 because simply it wasn't brought out. And I think, what we're suggesting is that  
7 maybe if we can, if we could find a framework that helps us think about those  
8 things in advance we'll have a more holistic and coherent system. I think that's  
9 the connection between Fukushima and framework.

10 COMMISSIONER SVINICKI: Well, I guess I would say on the  
11 patchwork, I think probably the regulatory framework for all regulations in the  
12 United States have grown up over time. The Telecommunications Act dates  
13 back to 1934, and the FCC has probably made a lot of changes over time. I  
14 didn't serve on the Commission immediately after 9-11 but my sense is that the  
15 regulatory choices made then were conscious. I think we put in place  
16 requirements for B5B and they have a certain regulatory treatment that I think  
17 was very conscious and so I think what I interpret is the task force is saying, in  
18 light of Fukushima, and I'm not sure that I see this connection, but I think this is  
19 what you paused it, is in light of Fukushima whatever treatment was given to  
20 some of these activities as beyond design-basis events as you suggest that that  
21 be relooked at and again I think it's a very substantive pivot and a lot more than a  
22 clarification.

23 DAN DORMAN: If I can make two points on this, you mentioned  
24 the 9-11, that was an instance where there was an event that did not impact the  
25 nuclear industry, and did not pose an imminent threat to the nuclear industry, but

1 the Commission decided to increase requirements for both design-basis aspects  
2 of security and beyond design-basis aspects of security and did it under  
3 adequate protection. As we look back over other decisions, such as the SAMGs  
4 as a voluntary initiative, the hardened vents as a, I think Charlie's characterized it  
5 as a quasi-voluntary initiative, because we asked them to do it in a generic letter,  
6 and they all did it but there was an implied, we'll look at possible requirements if  
7 you don't.

8           And so I think there's -- what we found is as the agency looks at  
9 these low probability, high consequence events and considered them within the  
10 context of the decision points that are provided by the Commission to the staff in  
11 the backfit rule, there's the cost benefit aspect where we have in the regulatory  
12 analysis guidelines nearly 50 pages of guidance to the staff, a wealth of  
13 experience in applying that guidance and that decision-making criterion. But as  
14 we look at things like the 9-11 decisions, we found very little guidance to the staff  
15 in how to prepare a recommendation to those criterion to the Commission. As  
16 we looked at the regulatory framework that we had, we talked in the first meeting  
17 that we had with you two months ago about the things that we were looking at in  
18 the framework that we had to work with that was not there after Three-Mile  
19 Island.

20           One of the areas that we looked at was the safety goal policy  
21 statement, and we drew this notion of defense-in-depth and the balanced  
22 approach to defense-in-depth, and particularly the protection mitigation and  
23 emergency preparedness aspects in part from the safety goal policy statement,  
24 we found it also to be consistent with the draft IAEA Safety Guide and so we took  
25 that, built on that concept. What we found going forward is that as the staff looks

1 at situations in the future with very robust guidance on cost benefit, very limited  
2 guidance on adequate protection, we found that for the staff in preparing  
3 recommendations to the Commission we could that in a more consistent and  
4 coherent manner if we had guidance in this area. That would also, we believe,  
5 provide greater clarity to the public in understanding why we're making  
6 recommendations and ultimately improve stability of regulation for the industry  
7 and what they could anticipate from the Commission.

8           COMMISSIONER SVINICKI: Could I just -- it sounds like this may  
9 have been perhaps your portion of the report because you've mentioned a  
10 couple of things that this is I have my well-thumbed dog-eared copy of the report,  
11 as do many of my colleagues on this side of the table, but you provided me now  
12 an opportunity to ask you about this particular sentence which I think, I found the  
13 most surprising maybe of anything in the report. But it says the "ROP's reliance  
14 on risk undervalues the safety benefit of defense-in-depth and consequently  
15 reduces the level of NRC resources focused on inspecting defense-in-depth  
16 characteristics that contribute to safety." On one level I can interpret this and  
17 say, yes I understand the facts are that because the NRC has gone to those  
18 areas where we assessed there to be the greatest risk and said, let's keep risk  
19 manageable or reduce risk in those areas. On the other hand I could look at it  
20 more sensationally and say, that it you know seems to be almost a repudiation of  
21 the multi-decadal pursuit of risk informed regulation in this agency. Can you give  
22 me any sense in a very short answer of, did you intend to just say that that's  
23 been misguided for the last two decades?

24           DAN DORMAN: I greatly appreciate the opportunity to address  
25 that. I think the suggestion that the task force is making here is for a very

1 focused and narrow adjustment to the reactor oversight process. We think that  
2 the focus on the risk informed aspects and the most risk significant aspects in our  
3 oversight process was a significant enhancement to our oversight process and  
4 should remain the principal focus of what we do.

5           As we asked the staff to go out and gather information on the  
6 implementation of the severe accident management guidelines, what we found  
7 was since those guidelines were implemented in the early to mid-90s, there has  
8 been no NRC oversight of those activities, and we found the agency in response  
9 to Fukushima pointing to those as an important distinctive as to why we'd be  
10 better prepared for such an event. We particularly -- I think as we look as the  
11 balanced approach to defense-in-depth and the recommendation that we draw  
12 those -- that voluntary initiative into the regulatory requirements, that we were to  
13 include having the reactor oversight process folks in their periodic review of the  
14 allocation of inspection resources to include a small portion of the inspection  
15 resources at the mitigation and emergency preparedness -- emergency  
16 preparedness is already well addressed in the ROP, but really the mitigation of  
17 the low frequency, high consequence events as a relatively, small piece, but a  
18 piece which we viewed that it was not well represented at this point that that  
19 would be a consideration that they should include in their annual reviews of the  
20 allocation of inspection resources. We're not looking for a significant shift, I think.

21           CHARLIE MILLER: Commissioner, if I could just augment since  
22 we're having a dialogue about this, and I think I can freely say this -- some have  
23 read that chapter and, kind of, say, "Well, gee, this task goes off, and they come  
24 up with these ideas." One of the things I want to really emphasize is that the  
25 people at this table are part of where we are today. We're not sitting out on the

1 outside second guessing as to where the agency got today because we were  
2 part of the people who were involved in making those decisions as to where we  
3 got today. And, I think from our prospective we're looking to the future to say,  
4 "Gee, what can we look back on about how we want and how we were involved  
5 in making some of these decisions and how can it go forward in a better way in  
6 the future?" That said, too, I think there's an interpretation, sometimes, in  
7 reading what we've said that this just means more, more, more, more, more, and  
8 it doesn't necessarily mean that. We're looking for framework so that the  
9 decision-making process has a little more structure to it, and it's a level playing  
10 field and some instances, it could provide for the fact that there's areas of our  
11 regulations that we would back off of. So, that's, sort of, what we had in mind as  
12 we looked each other in the eyes and tried to take this apart and formulate our  
13 recommendation.

14 GARY HOLAHAN: Thank you for raising this point, because I think  
15 a number of people have misinterpreted, at least parts of their report, to be  
16 contrary to a risk-informed approach. The section you were looking at is --  
17 relates to the ROP and I think it was at least our intent that what we're saying  
18 about the ROP is it should be consistent with oversight associated for the  
19 framework that is suggested in the front-end. And the framework that's  
20 suggested, certainly, is a risk formed framework, in fact, as Charlie mentioned, I  
21 think, you know part of the difficulty over the past, either in making and  
22 addressing new issues that are beyond design-basis are, in fact, trying to move  
23 issues out of the design-basis, such as -- it's hard for me to get through a whole  
24 meeting without talking about ECCS 50.46a --

25 CHAIRMAN JACZKO: --the last time you are invited to a meeting,

1 Gary.

2 [laughter]

3 GARY HOLAHAN: And part of the difficulty in deciding that the  
4 Commission might not require a, you know, full break of the reactor coolant  
5 system piping, as part of its design-basis is to say well, "If it's not in the design-  
6 basis, where would it go? How would we deal with it?" And, I think that has  
7 been a difficult issue for a decade, and part of the idea of the framework is to  
8 say, "There is a place and there is a way to deal with things that are beyond  
9 design-basis." And which, in fact, you can tell we don't like that terminology,  
10 "beyond-design-basis," but it's a way of taking, perhaps, overly-conservative  
11 things in a design-basis, without giving up, entirely, and taking things that are not  
12 fully dealt with within the design-basis and giving them an appropriate home, as  
13 well. And, I think, what we're suggesting, without assigning frequency numbers  
14 to the cutoff between the design-basis and beyond design-basis because I think  
15 that is something that does involve a lot of stakeholder input, is bringing clarity to  
16 that idea would, in fact -- I think, clarify what design-basis events and design-  
17 basis protections are and what is appropriate to be done beyond that?

18 COMMISSIONER SVINICKI: Thank you. And I went way over my  
19 time. Thank you for that indulgence.

20 CHAIRMAN JACZKO: Well, we don't want you to go over your time  
21 so -- it was good -- it was a good discussion. Commissioner Apostolakis?

22 COMMISSIONER APOSTOLAKIS: Thank you, Mr. Chairman.  
23 Well, I will start with a comment and then, maybe, invite you to comment on my  
24 comment. And, we've heard a lot that what happened in Japan was beyond  
25 design-basis. Some people are saying that what happened was the unthinkable

1 and that we have to think about the unthinkable as we regulate nuclear power.  
2 There is growing evidence that it was not unthinkable at all. That it was, indeed,  
3 beyond design-basis event in Japan, but the design-basis was not good enough.  
4 The Japanese, themselves, in a report to the IAEA, say that the assumption of  
5 and preparedness for an onslaught of an enormous tsunami were not sufficient.  
6 There is -- there were articles in the New York Times last March 26 and Wall  
7 Street Journal this month on the 12, where experts are saying that the historical  
8 evidence regarding tsunamis was not part of the calculations that led to their  
9 design-basis, so, it's not unthinkable, then.

10 I recently received the probabilistic analysis of the sequence that  
11 included the historical evidence of tsunamis, and it turns out that what happened  
12 there would have had a frequency of about one in a thousand years, and  
13 everybody around this table knows that this would be completely unacceptable to  
14 any regulator or industry representative. So, it's not really -- we shouldn't be  
15 talking about the unthinkable, the design-basis had problems, and I'm wondering,  
16 now, if that is true -- and I'm sure the more we learn about the event and the  
17 more reports are produced and evaluations, eventually, we'll know to what extent  
18 the design-basis was defective. Would that change any of your  
19 recommendations, if indeed the design-basis in Japan was not good enough?

20

21 AMY CUBBAGE: That, in fact, supports our recommendation.  
22 The task force feels very strongly about our recommendation regarding re-  
23 evaluating the design-basis for external events in the U.S. We need to make  
24 sure that we don't have vulnerabilities like that.

25 COMMISSIONER APOSTOLAKIS: I think, your Recommendation

1 2 is along these lines. I would generalize it, and say that we should go beyond  
2 flooding and seismic. We should rethink the design-basis and, maybe, every  
3 now and then, look at the latest information and state of the art and have some  
4 sort of mechanism to revisit. But the other recommendations that were made  
5 under the assumption that we had a major beyond design-basis event, would  
6 those be affected at all by this observation?

7           AMY CUBBAGE: No, the foundation is making sure that you have  
8 the design-basis event, correctly. In the case of flooding, that would be ensuring  
9 that you have evaluated the appropriate flooding sources and design your plan  
10 appropriately, and, then, in light of the effect that we mentioned in the report of a  
11 cliff-edge effect, that if you've gotten the design-basis wrong, just a small  
12 increase in the flooding level could have catastrophic consequences and that  
13 leads to the recommendations to have enhanced mitigation.

14           COMMISSIONER APOSTOLAKIS: Thank you. My second  
15 observation is that there is a discussion in the report that I find very peculiar. As  
16 you said, repeatedly, defense-in-depth is very important. And you used the  
17 broad framework of defense-in-depth to structure your report, which is the three  
18 major elements: Prevention, mitigation, emergency planning. So, on Page 22 --  
19 well, you don't have to go there, but you're saying that PRAs Level 1 and 2 would  
20 be useful in dealing with the first two elements of defense-in-depth, but, then, you  
21 do something that I find very peculiar. You're saying we don't recommend,  
22 including Level 3 PRAs. Now, in my mind, that says that maybe the third  
23 element of defense-in-depth doesn't deserve the same detailed analysis as the  
24 first two.

25           And, the other thing that is really peculiar is that this is the only

1 place in the report where you are recommending against using the method. I  
2 didn't see anything anywhere else saying, "Boy, in thermal hydraulics, don't use  
3 this correlation, or in materials science, don't do that." So, I'm wondering why  
4 this approach was singled out to not be recommended.

5 CHARLIE MILLER: I'm going to ask Gary to answer that, but  
6 before I do, I'm going to share a little bit of our internal discussions, and when we  
7 formulated this, we said, "We bet Commissioner Apostolakis asks us this  
8 question."

9 [laughter]

10 CHARLIE MILLER: But I don't know -- visionaries of this case or  
11 not, but I think we're prepared to answer that question. I'll ask Gary to address it.

12 COMMISSIONER APOSTOLAKIS: I suspected it would be Gary.

13 [laughter]

14 GARY HOLAHAN: Well, I think this is in the report because, in fact,  
15 the issue was raised by the Commission at one of our earlier meetings that  
16 caused the task force to think about land contamination and about Level 3 PRA,  
17 which is calculation of health effects, and, I mean, that's what led us -- it wasn't  
18 really the experience of Fukushima that led us to put it in the report. It was, in  
19 fact, the Commission's interest in the subject, so we felt obliged to explore to a  
20 certain extent, and you see the result of that discussion.

21 I think what we're saying is not that health effects and land  
22 contamination are not important issues, but that the Level 3 PRA is quite a  
23 complicated way of calculating those things. So, we do calculate health effects in  
24 our regulatory scheme, but it's done in quite a simple way, more like Algebra  
25 than probabilistic analysis, and it seems that that is an adequate way of dealing

1 with issues. In fact, preventing core damage, preventing the release of radiation  
2 is, probably, the best, most effective, and the simplest concept for preventing off-  
3 site doses and land contamination, and that's the area that we focused on.

4 COMMISSIONER APOSTOLAKIS: Well, let me make one  
5 comment on this. Level 3 PRA doesn't, necessarily, have to mean that you're  
6 calculating health effects, but you are recommending somewhere that we should  
7 look at multiunit sites, which have not done so far. And, now, the moment you  
8 say that, you know, you may have a release from Unit 1 and certain weather  
9 patterns and, then, maybe, Unit 2 undergoes another release, sometime later,  
10 where their pattern has changed, and, so on, it seems to me by going to a Level  
11 3 or Level 3 minus, you can do a systematic evaluation of these things. It is  
12 complicated, but the problem is complicated.

13 You, also, mention somewhere else that we have to make sure that  
14 the various groups that would be involved should communicate with each other  
15 well, and so on. So, all this stuff, it seems to me, can be evaluated in a  
16 systematical and methodical way doing a Level 3 PRA without, necessarily,  
17 ending up with deaths or cancers. You can stop a little before that. So, that's my  
18 prospective on this, and, as you know, the Commission has a meeting later this  
19 month on this issue.

20 And, finally, I want to make another comment. I believe, that on  
21 your Page 25, you're perpetuating a misunderstanding and misperception.  
22 Defense-in-depth is a major theme throughout the report. So, you're offering --  
23 you're opening up -- well, the title of the chapter is Safety Through Defense-In-  
24 Depth, and you are giving what I think is a great definition of defense-in-depth.  
25 You're saying that, "No single layer is exclusively relied on to protect the public

1 and the environment." I think that's great. That's really what defense-in-depth is  
2 all about. Unfortunately, though, you also say, that, "The key to a defense-in-  
3 depth approach is creating multiple independent and redundant layers of  
4 defense." I think they're neither independent, nor redundant. You want to  
5 minimize the degree of dependence, but, certainly, the containment failure  
6 depends on what accidents; how the core melted. Certainly, the effectiveness of  
7 emergency planning depends on how the containment failed, and when.

8           Now, with respect to redundancy, redundancy means that I can  
9 take one of these layers and remove it and I can still do my job. Well, then you  
10 will have a problem with adequate protection. If I move the containment, I don't  
11 think very many people would think that we have adequate protection. So, the  
12 reason why I'm saying that is because it has come up in other context, as well,  
13 and it has been used as a major argument against doing something or for doing  
14 something. So, it's just a comment, if you want to comment that's fine, but I  
15 really think your second part that says, "We don't want to rely a on single layer of  
16 defense." I think this is the heart of defense-in-depth. This is really the definition.

17           GARY HOLAHAN: In our defense I would say that –

18           CHAIRMAN JACZKO: -- in-depth --

19 [laughter]

20           GARY HOLAHAN: I think the report acknowledges that defense-in-  
21 depth is a philosophy, perhaps not subject to a perfect single definition, and it is  
22 depending upon the circumstances. I think it's something that you recognize, but  
23 every time you write down something that looks like a definition, it is, obviously,  
24 subject to some criticism.

25           COMMISSIONER APOSTOLAKIS: And with this valiant attempt to

1 defend defense -- I turn it back to you Mr. Chairman.

2 [laughter]

3 CHAIRMAN JACZKO: Well, and I remind my colleagues that  
4 philosophies are difficult, but I think the Greeks gave us a lot of what we know  
5 and understand for philosophy, so Commissioner Apostolakis has a good  
6 pedigree on that topic.

7 I wanted to turn to the issue of -- the extended design-basis. As  
8 you look at the framework that the task force laid out -- which I think is a very  
9 good framework. I remember when we were working on the aircraft impact rule  
10 meetings with Gary -- probably shouldn't say I had these meetings, but a couple  
11 times he came to my office, and I was trying to understand what we meant when  
12 we said, "The aircraft impact rule was a beyond-design-basis event." And I kept  
13 coming back to, "I don't care what we particularly call it, I want it to be a  
14 regulatory requirement." And, we called it a Beyond-Design-Basis Regulatory  
15 Requirement, I think as the task force report lays out -- this is the only time I  
16 think the words, "Beyond Design Basis," appears anywhere in our regulations.

17 So, I think it captured very well this idea that, you know -- I think  
18 this concept of a patchwork that we have done things in different ways and  
19 solved different problems, perhaps, without an overarching concept, and, you  
20 know, I heard the words, "patchwork," and I didn't see it in a negative way, I saw  
21 it in a positive. I mean, quilts are patchwork. It doesn't necessarily mean they  
22 don't keep you warm, but the pattern may not always look the most pleasing in  
23 that, as you add on to that quilt, you may not, you know -- if you don't have a  
24 good pattern, you may not get the nicest quilt in the end. But, I think this idea is  
25 very intriguing about a design-basis and an extended beyond -- extended design-

1 basis as the committee -- the task force laid out.

2           One of the key features of it, as I understand it -- and maybe you  
3 can help clarify this -- is that there would be some level of quality standards that  
4 go with these events, which what I took from the report is that those are absent  
5 right now, or at least there's no clear, kind of, unified principal of what that is.  
6 Clearly, for design-basis events, we look to Appendix B for our quality assurance  
7 requirements. So, did the task force give specific thought to what those quality  
8 requirement or quality standards would be? Would they be Appendix B type  
9 standards or something less than Appendix B -- or I don't even know what that  
10 means, but somehow different.

11           DAN DORMAN: I think in looking at the various pieces of the  
12 patchwork, if you will, some of them have no explicit quality requirements. Some,  
13 for example, the Regulatory Guide on station blackout includes some quality  
14 standards. Our expectation would be that it would be likely something less than  
15 Appendix B, but that in developing such a framework that the Commission and  
16 the staff would look at, what are the critical elements of a quality program that  
17 would support the critical attributes of the extended design-basis requirements?  
18 So, it would be something that would need further development.

19           GARY HOLAHAN: I think that's fair characterization. The task  
20 force recognized that it would be good to have a standard. It probably would be  
21 a lower standard than the current Appendix B, some appropriate standard. I  
22 think it's probably beyond the task force's scope to go any deeper than that.  
23 There are other examples where a standard was chosen for a given issue, and it  
24 would be pieces of Appendix B, choose the reporting requirement that are  
25 corrective action requirement. Those are the most relevant and most important,

1 so those should be applied to this new issue.

2           So, I would imagine it would be some selected elements of  
3 Appendix B, plus it could have elements of programs like a commercial-grade  
4 dedication that's currently used for pieces of equipment in plants. So, I think it  
5 would put together from -- I don't think it would be invented entirely new, but I  
6 think it could be put together from some existing pieces of various programs.

7           CHAIRMAN JACZKO: Well I think that that's helpful, and I think  
8 that helps give a good understanding for what this idea of extended design-basis  
9 means. I mean, in the end, in some extent it's embodied by what are the quality  
10 standards for what we do in that space, and the overarching concepts for what  
11 licensees have to be responsible for.

12           I wanted to touch on the issue of voluntary initiatives a little bit. I  
13 know this was an important theme throughout was that you seemed to have  
14 found in cases voluntary initiatives didn't necessarily provide the firm kind of  
15 regulatory approach that we'd like to see. And one area, in particular, I think  
16 where this comes up clear, you have specific recommendations, I think, with  
17 regard to emergency procedures about taking all those emergency procedures  
18 and making them in a more coherent way, and that pulls in some voluntary  
19 initiatives.

20           But, one of the other areas where I think this issue came up and  
21 was touched on in the presentation, is in the issue of the ROP and inspections,  
22 and you made a comment that, you know, clearly, we don't inspect voluntary  
23 initiatives. So, I wasn't sure what you were trying to say. Was that more a  
24 statement that we should as some part as a measure of defense-in-depth, do  
25 some small sample of inspections of the voluntary initiatives or that we should

1 look to those voluntary initiatives that should, in fact, be requirements and make  
2 them requirements and, then, they would be captured in the inspection program?  
3 I wasn't quite sure how to interpret that.

4 DAN DORMAN: We had a lot of discussion around this. I think --  
5 first off, let me emphasize a point that I think we included in here that the task  
6 force found an appropriate place in the regulatory framework for voluntary  
7 initiatives. We think voluntary industry initiatives can be important in enhancing  
8 safety. We were looking at -- the SAMGs is the example we keep coming back  
9 to, but as something that we appear to be relying on in the context of the  
10 Fukushima accident -- and I think where we ended up was that there are some  
11 limited set of voluntary initiatives that in the framework we described, we would  
12 recommend be included as requirements, and that -- but that when you bring  
13 those in and look at them in the current framework of the ROP, that a risk focus  
14 will not bring you to any baseline oversight of those activities, and so that's where  
15 we have the Recommendation 12 that -- in the ROP assessment, annually, they  
16 would look at some small piece of that to look at this defensive-in-depth aspect,  
17 but that voluntary initiatives -- the things that truly are even outside this  
18 framework that we've proposed as appropriate voluntary initiatives are things that  
19 are generally not suitable to inspection oversight because there's not a  
20 requirement against which to inspect, so that becomes more challenging.

21 CHAIRMAN JACZKO: Thanks. That helps clarify and I appreciate  
22 that. On that topic too, as I've read this discussion of the ROP, what it struck me  
23 was in a way, perhaps, what I was hearing was that the ROP is maybe too -- a  
24 little bit moved too far in the spectrum to risk-based, and not staying true to the  
25 risk-informed. You know, I think as I always think, about the difference between

1 risk-based and risk-informed, to some extent, it's the addition of defense-in-depth  
2 versus these other things that takes you from being strictly risk based. Looking  
3 at the risk numbers, which comes out of the significance determination process,  
4 primarily, in some cases, our color finding, so it's that element then, ultimately, of  
5 the defense-in-depth and that brings up us a little bit back more toward the risk-  
6 informed.

7           The issue of station blackout obviously is a theme that's woven  
8 throughout, I think, a lot of the recommendations. Clearly there are specific  
9 recommendations on that. One, in that turns -- one that is a rulemaking, which I  
10 think is really the appropriate approach for that. It's a comprehensive issue that  
11 needs that process to get through, but then there's an order in that section, as  
12 well, to deal with the mitigation, so that you've got that interim step. But then it's  
13 woven throughout. It's the basis in many ways for the spent-fuel pool  
14 recommendations, the ability to maintain instrumentation in the event of a station  
15 blackout. So, would I be incorrect in kind of assuming in some ways that that's a,  
16 kind of -- almost a cross-cutting theme as to the importance of station blackout,  
17 or does the task force think about that or talk about that at all?

18           DAN DORMAN: I think in the way that we look at events at its  
19 heart, Fukushima is a prolonged station blackout. And therefore the insights that  
20 generally draw from that event as it progressed have a nexus back to a  
21 prolonged station blackout. And as we looked at the mitigation element of the  
22 defense-in-depth framework that we suggest, the -- when we look at our existing  
23 requirements for the ability to deal with station blackout, it's a very limited  
24 duration. And so that brings us to the specific recommendation relative to station  
25 blackout, but also then, that's why you see that theme popping up.

1 CHAIRMAN JACZKO: Amy, did you want to – you were nodding  
2 your head --

3 AMY CUBBAGE: No. I was just nodding. Yeah, it goes in through  
4 the themes of the venting, the spent-fuel pool, and it's an EP. It's throughout the  
5 report.

6 CHAIRMAN JACZKO: Oh, I appreciate that, and I think that's  
7 certainly -- and I think if I look at the -- I think the Commission was on the same  
8 page as you all, because that was the one area where we really had a  
9 substantive, in-depth meeting on a specific topic prior to the task force report  
10 being completed, so, it was good to see that alignment.

11 Well again, I'm --

12 CHARLIE MILLER: Chairman, can I make a comment on the  
13 station blackout?

14 CHAIRMAN JACZKO: Sure.

15 CHARLIE MILLER: You know, the one thing that I want to make  
16 clear here, is that one of the big insights we got from Fukushima in taking a step  
17 back and looking at it in the context of an external event that's of a magnitude,  
18 that it can cause a common cause failure both offsite and onsite power.  
19 Historically, we haven't looked at it from that prospective. We've looked at it with  
20 regard to, you can lose offsite power and then station blackout is looked at from  
21 the diesel generator reliability prospective, but in Fukushima's case, the event  
22 took out both. And that caused us to take a step back, and that was central to  
23 our looking at this as a theme throughout our report.

24 CHAIRMAN JACZKO: Great, I appreciate that, and I think the one  
25 interesting point, too, is I think that as we look at some of the risk calculations,

1 the risk models, this does so up prolong station blackout it's not a -- it's not news,  
2 so to speak, that this would be a situation in which you would have a very  
3 challenging situation, so clearly, that's what played out in what we saw. Well, I'm  
4 out of my time, and again I appreciate all of your work in presenting the task  
5 force and working on the task force and presenting it to us. I certainly encourage  
6 my colleagues who are on the Commission to work through these  
7 recommendations in an expedient manner. I've put out a marker of 90 days.  
8 We've asked you to do your work in 90 days. I think the Commission can do its  
9 work in 90 days, and I look forward to perhaps other meetings where we can  
10 explore some of these issues in more depth. I think there certainly have been  
11 some here that you've seen interest from the Commission on, and we could get  
12 some stakeholder comments, so -- but, again, I want to appreciate -- thank you  
13 for all your hard work and appreciate the work that you've done and a very  
14 interesting meeting. Thank you.

15 [Whereupon, the proceedings were concluded]

July 29, 2011

IN RESPONSE, PLEASE  
REFER TO: M110719

MEMORANDUM TO: R. W. Borchardt  
Executive Director for Operations

FROM: Annette Vietti-Cook, Secretary */RA/*

SUBJECT: STAFF REQUIREMENTS – BRIEFING ON THE TASK FORCE  
REVIEW OF NRC PROCESSES AND REGULATIONS  
FOLLOWING THE EVENTS IN JAPAN, 9:30 A.M., TUESDAY,  
JULY 19, 2011, COMMISSIONERS' CONFERENCE ROOM, ONE  
WHITE FLINT NORTH, ROCKVILLE, MARYLAND (OPEN TO  
PUBLIC ATTENDANCE)

The Commission was briefed by the NRC staff on the results of the task force review of the NRC processes and regulations following the events in Japan, including conclusions, recommendations, and the approach to the longer-term review.

There were no requirements identified for staff action.

Commission direction to the staff will be provided in the staff requirements memorandum (SRM) issued in response to SECY-11-0093 – Near-Term Report and Recommendations for Agency Actions Following the Events in Japan.

cc: Chairman Jaczko  
Commissioner Svinicki  
Commissioner Apostolakis  
Commissioner Magwood  
Commissioner Ostendorff  
OGC  
CFO  
OCA  
OIG  
OPA  
Office Directors, Regions, ACRS, ASLBP (via E-Mail)  
PDR

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**Timothy Greten**, FEMA, Deputy Director, Technological Hazards Division 5 mins.\*  
[Federal agency input on Recommendation 9 related to offsite resources  
and communications]

Topic: Input on potential short-term actions related to Ensuring Protection,  
Enhancing Mitigation, and Emergency Preparedness that should be implemented  
in light of the events associated with Fukushima.

**Commission Q & A** 50 mins.

**Break** 5 mins.

**NRC Staff Panel** 45 mins.

**Bill Borchardt**, Executive Director for Operations

**Marty Virgilio**, Deputy Executive Director for Reactor and Preparedness Programs and  
Long-Term Steering Committee Chair

**Eric Leeds**, Director, Office of Nuclear Reactor Regulation

**Jim Wiggins**, Director, Office of Nuclear Security and Incident Response

(Other steering committee members will be seated in the well.)

Topic: Staff recommendations for short-term actions related to Ensuring  
Protection, Enhancing Mitigation, and Emergency Preparedness that should be  
implemented based on the recommendations of the NTTF and input derived from  
stakeholder input.

**Commission Q & A** 50 mins.

**Discussion – Wrap-up** 5 mins.

\*For presentation only and does not include time for Commission Q & As

**Comments on the Japan  
Near-Term Task Force Report**

**William Leith**

**Senior Advisor for Earthquake  
and Geologic Hazards**

**U.S. Geological Survey**

**Reston, Virginia**

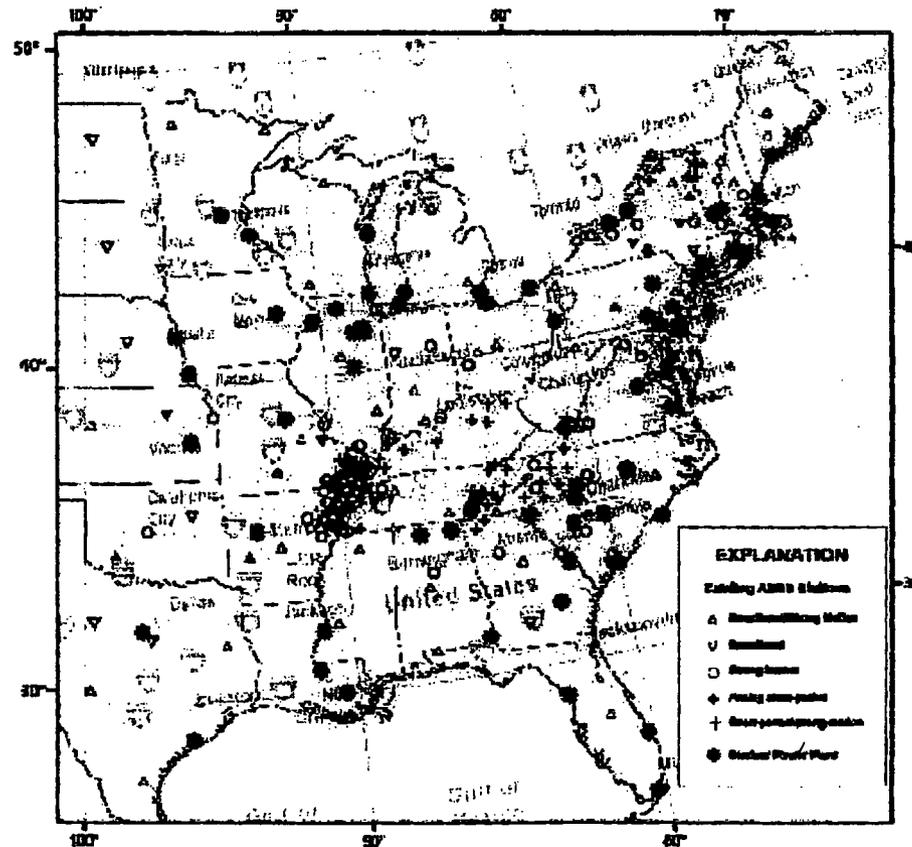
# **USGS-NRC Collaboration**

- **Seismic hazard analyses for new license applications**
- ***ShakeCast* alerting for ground motion at U.S. nuclear plants**
- **Evaluation of seismic monitoring needs in the East**
- **Research on ground motion**
- **Tsunami hazard assessment**



Prepared under United States Nuclear Regulatory Commission-United States Geological Survey Interagency Agreement JCN-N6184—Assessment of the Current State of the Advanced National Seismic System

## Improved Earthquake Monitoring in the Central and Eastern United States in Support of Seismic Assessments for Critical Facilities



Open-File Report 2011-1101 U.S. Geological Survey

# Evaluation of Tsunami Sources with the Potential to Impact the U.S. Atlantic and Gulf Coasts

An Updated Report to the Nuclear Regulatory Commission

By Atlantic and Gulf of Mexico Tsunami Hazard Assessment Group

Rev. Aug. 2008



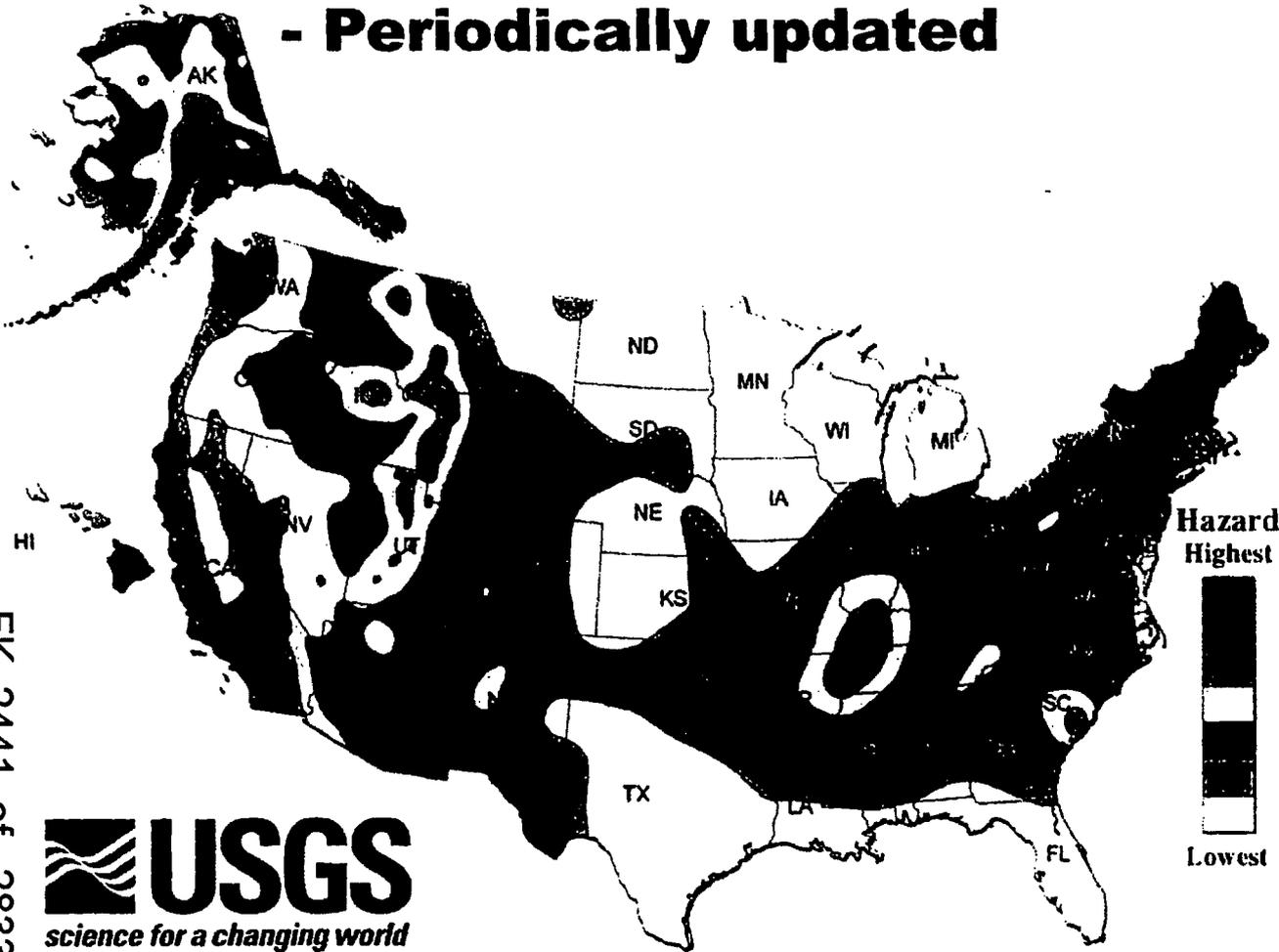
# **USGS Approach to Earthquake Hazards**

- **Earthquake hazards are periodically reevaluated as new data become available and new research improves ground motion models**
- **National Seismic Hazard Maps are updated every 6 years**

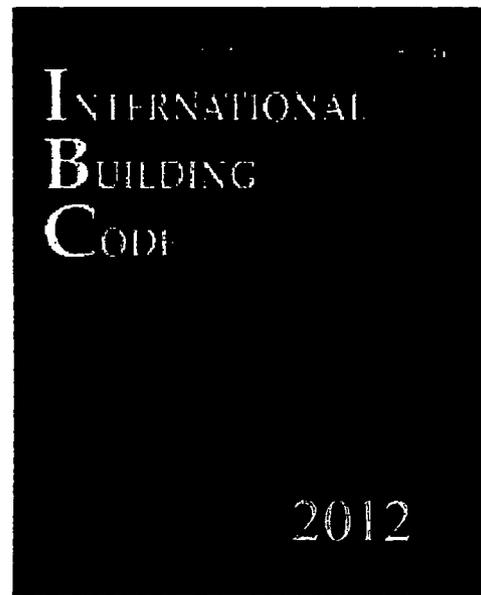
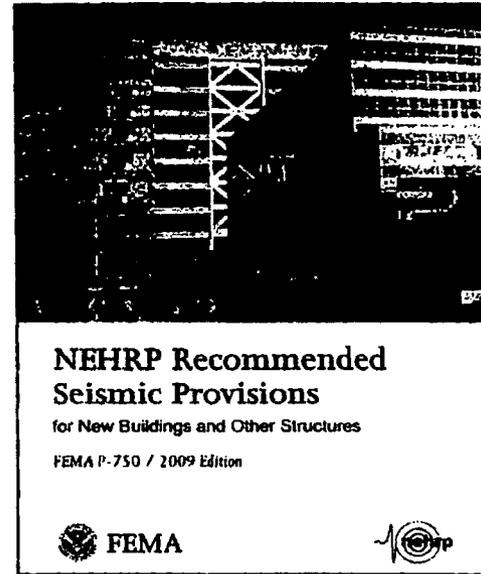
# National Seismic Hazard Maps

- Basis for U.S. Building Codes

- Periodically updated



U.S. Geological Survey



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# **Comments on NTTF Rec. 2.1**

**Much has been learned since the plants were licensed and the hazard estimates have changed significantly in some places (including the Virginia seismic zone)**

# **Comments on NTTF Rec. 2.1**

- **The approach used in the original hazard assessments at nuclear plants was deterministic**
- **Both the USGS and NRC now use similar probabilistic methods**

# **Comments on NTTF Rec. 2.1**

**NRC and USGS have worked together on:**

- **implementing the USGS model in the NRC (used for the GI-199 screening) and**
- **the new CEUS SSC model, now being finalized**

## **Comments on NTTF Rec. 2.2**

- **Can be achieved and makes sense. It would bring NRC in-line with other agencies**
- **USGS and NRC/RES staff have already talked about how to coordinate assessment efforts**

# **Comments on NTTF Rec. 2.2**

## **By comparison:**

- **USGS updates the US hazard maps every 6 years to support the building code (via NIST)**
- **DOE has a 10 year review cycle**

# **Outdated Instrumentation**

- **Virginia quake is your alert**
- **Modern instrumentation in the plants could provide both NPP operators and NRC staff with the data they need to rapidly determine appropriate post-earthquake actions**

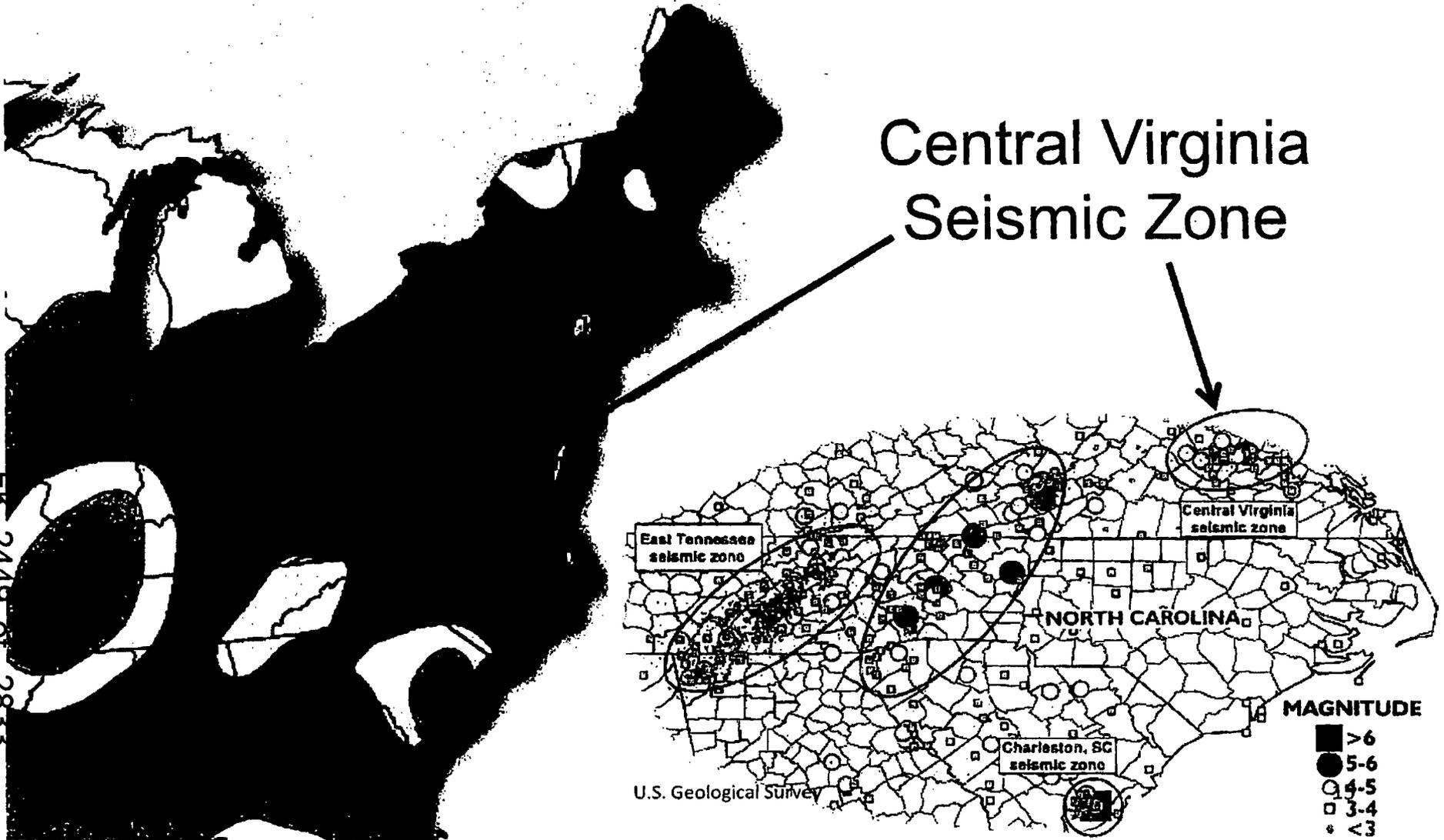
# **The Virginia Earthquake**

- **Largest in Virginia in 114 yr.**
- **Occurred in mapped zone of moderate seismic hazard**
- **No USGS-supported regional seismic network**
- **Estimated acceleration at North Anna NPP of 0.26g**

# USGS National Seismic Hazard Map

## Central Virginia Seismic Zone

FK 2449 of 2833



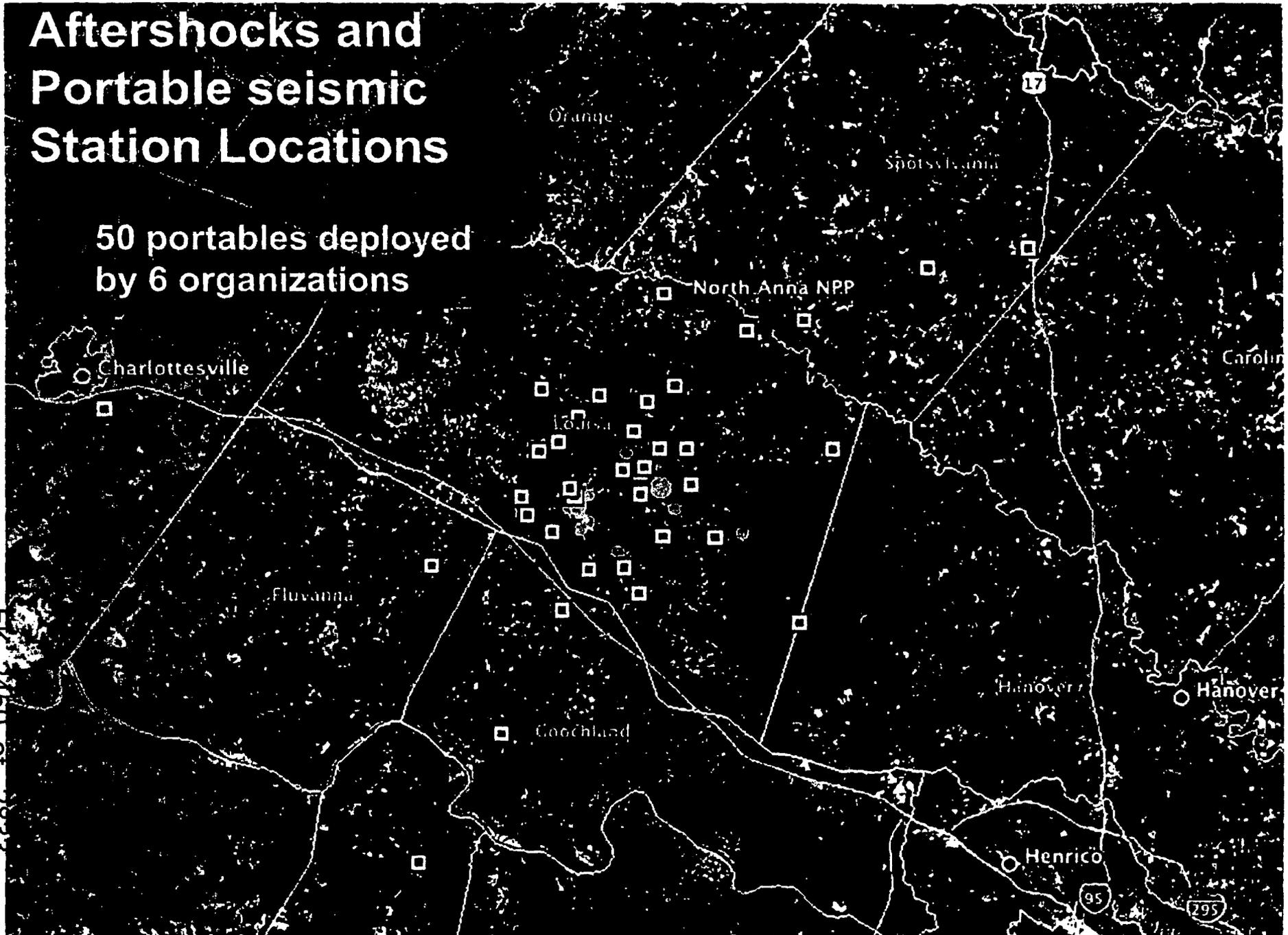
U.S. Geological Survey

MAGNITUDE

- > 6
- 5-6
- 4-5
- 3-4
- 2-3
- △ 1-2

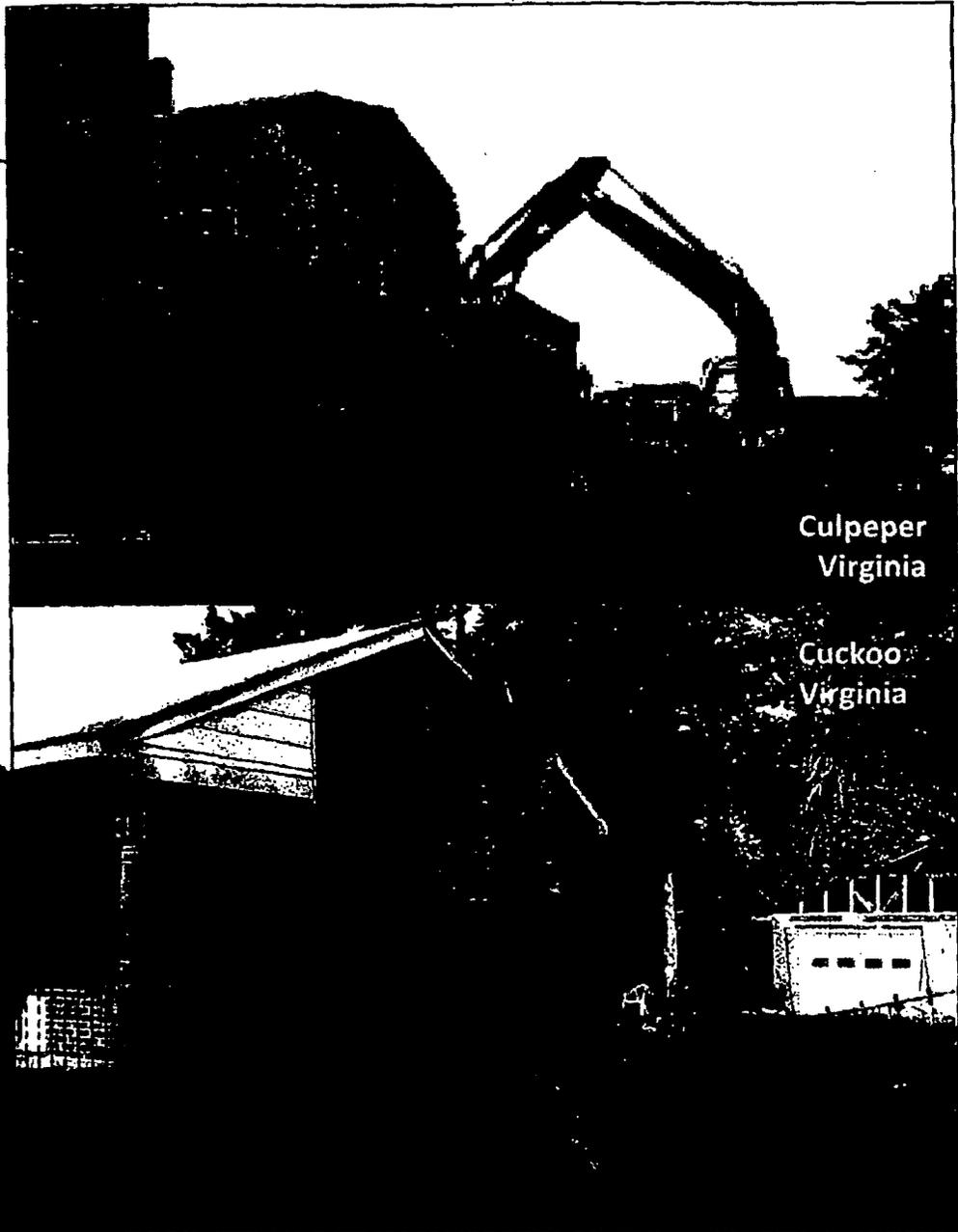
# Aftershocks and Portable seismic Station Locations

50 portables deployed by 6 organizations



FK 2450 of 2833

# Damage in Epicentral Area





# **Large central and eastern U.S. earthquakes are rare... ...but their impacts can be large**

- **Active faults largely hidden**
- **Radiated energies are high**
- **Seismic waves travel long distances**
- **Thick soils can amplify ground motions**
- **Soils are prone to liquefaction**
- **Structures and lifelines older, less seismically resistant**
- **Communities are relatively unprepared**

# Sources of more information

- **USGS earthquake information:**
  - *<http://earthquake.usgs.gov>*
- **Key documents:**
  - **Fact Sheet: *Earthquakes In and Near the Northeastern United States, 1638-1998.***
  - **Handbook: *Putting Down Roots in Earthquake Country***

# Acronyms

<b>COL</b>	<b>Combined operating license</b>
<b>DBE</b>	<b>Design basis earthquake (a.k.a SSE)</b>
<b>GI-199</b>	<b>Generic Issue 199</b>
<b>GMPE</b>	<b>Ground motion prediction equation</b>
<b>NPP</b>	<b>nuclear power plant</b>
<b>NRO</b>	<b>Office of New Reactors (cliff's group)</b>
<b>NTTF</b>	<b>Japan Near Term Task Force</b>
<b>OBE</b>	<b>Operating Basis Earthquake ground motion</b>
<b>RES</b>	<b>Office of Research</b>
<b>RG</b>	<b>Regulatory guide (RG 1.208 = guide on PSHA)</b>
<b>SSCs</b>	<b>Structures, systems, and components</b>
<b>SSC</b>	<b>Seismic Source Characterization</b>
<b>SSE</b>	<b>Safe shutdown earthquake ground motion</b>

# **Industry Recommendations on Near-Term Actions in Response to Fukushima**

Charles Pardee

Chairman, Industry Fukushima Response  
Steering Committee

# Industry Actions Since March 11

- Verified measures to manage extreme events
- Increased operator awareness and safety margins for spent fuel cooling and makeup
- Evaluating the extension of coping durations for extended loss of AC power
- Developing detailed timeline of Fukushima event
- Developed governance, goals and principles to guide industry response

## 2. Seismic and Flooding Design Bases

- Walk down seismic and flooding protection against current design basis requirements (2.3)
  - Develop procedures & acceptance criteria
  - Obtain NRC concurrence
  - Report results to NRC
- Use Generic Issue 199 as a model for potential updates to plant design bases (2.1)
  - Establish protocol for evaluating new and significant information on seismic and flooding

## 4. Extended Loss of AC Power

- Pursue an Advanced Notice of Proposed Rulemaking (ANPR) to revise §50.63 (4.1)
- Assure sufficient equipment is available to meet §50.54 (hh)(2) requirements for a multi-unit event (4.2)
  - Protect portable equipment from external events using appropriate commercial standards

## 5. Hardened Vents

- Assure adequate accessibility, and the ability to operate, BWR Mk 1 hardened vent valves assuming no AC power
- Report results to NRC and implement any warranted improvements

## 7. Spent Fuel Pools

- Assure ability to monitor spent fuel pool level and temperature remotely assuming extended loss of AC power
  - Provide diverse power supply for monitoring
  - Safety-related power supply would not have changed situation at Fukushima

## 8. EOPs, SAMGs and EDMGs

- Assure appropriate training on SAMGs and EDMGs
  - Operators and Emergency Response Personnel
- Standard should be one of familiarity, not proficiency, commensurate with the likelihood of events
- Integration of procedures and guidelines is a longer-term activity

# General Recommendations

## Going Forward

- Must maintain current plant focus on safety and reliability
- Post-Fukushima actions must be integrated and prioritized with other important actions
- Given diversity of plant designs, locations and threats, implementation should be flexible, risk-informed and performance-based
- Continue to develop lessons-learned from Fukushima

***RESPONSE TO TASK FORCE  
RECOMMENDATIONS***

**September 14, 2011**

**Thomas B. Cochran, Ph.D.**

**Consulting Senior Scientist**

**Nuclear Program**

**Natural Resources Defense Council  
(NRDC)**

# Recommendations 2.1 and 2.3 – Seismic/Flooding

NTTF's recommended reevaluation:

- is limited to seismic and floods, but should include all significant contributors to core damage frequency (from PSAs/SAMAs/PRAAs), e.g., including:
  - internal and external fires
  - high winds and tornados
  - ice and storms
  - nearby facility and transportation accidents
- should address adequacy of existing siting criteria
- is overly reliant on licensee self-assessment
  - fails to insure that NRC establish/approve the inspection/evaluation criteria and methods for the reevaluations and walkdowns
- is overly reliant on existing design basis:
  - will have limited value until gap in seismic protections for new vs. existing plants is resolved (GI-199)

## **Recommendation 2 (cont.)**

- The NRC Staff recommendations attempt to resolve some 2.1 and 2.3 issues related to the evaluation process and criteria.
- It would be preferable had the Staff recommended that once the above clarifications are addressed that the licensee be ordered to conduct the necessary walkdowns and appropriate reevaluations.

## **Recommendation 4 – SBO Coping**

- Should include immediate extension of SBO coping capability to 8 hours given the 4.1 rulemaking will eventually require it.
  - Current regulations leave gap allowing a possible 2-hour coping time!
- Commission action should also ensure that both emergency on-site and off-site equipment be subject to the same maintenance, availability, training and inspection rules as apply to SSCs.

## Recommendation 5 – Hardened Vents

- NRDC supports the NTTF recommendation, with the clear caveat that we do not believe that inclusion of “reliable” hardened venting of older BWR Mark I and II reactors *alone* is sufficient to render these obsolete designs adequately safe given the risk they pose to dense surrounding urban populations numbering, in some cases, in the several millions.
- The NRC Staff delay in addressing BWR Mark II reactors is unnecessary.
  - NTTF: “because Mark II containment designs are only slightly larger in volume... it can be reasonably concluded that a Mark II under similar circumstances would have similar consequences”

## Recommendation 7 – Spent Fuel Safety

- The staff's omission of all SFP-related recommendations is objectionable.
- While heat load varies with time, we disagree with Task Force's claim that increased pool loads do not contribute to cooling issues:
  - The ability of the water in the pool to dissipate heat and resist boiling is proportional to its volume relative to the volume of spent fuel; these are adversely affected by the amount of spent fuel packed into the pool

## Recommendation 7 (cont.)

- In the event of an accident or sabotage the source term for the spread of radioactive material is directly related to the amount of spent fuel in the pool.
  - Attention needs to be given to pool unloading and ways to reduce the hazards associated with spent fuel pools through accelerated dry cask storage.

## Recommendation 8 – Emergency Response

- While agreeing with the NTTF recommended orders, NRDC believes that its primary orientation toward rationalizing paperwork and “guidance” does not go nearly far enough in ensuring that the NRC actually *accomplishes* its mission of *ensuring* that on-site emergency response capabilities *are adequate* to the task of protecting plant staff and the public and remain so on any given day decades into the future. We would prefer to see a much more hands on role by the NRC in establishing hard and fast performance criteria for emergency response capabilities and realistic methods for verifying on a recurring basis that licensees are able to meet them.

## **Recommendation 8 (cont.)**

- NRDC disagrees with the NRC Staff recommendation to discard the orders and issue an advanced notice of proposed rulemaking.
- NRDC has already initiated a rulemaking for NTTF Recommendation 8.4
- The Staff recommendation makes the NTTF recommendation more vague.

## **Recommendation 9 – EP Enhancements**

- **NRDC agrees with NTTF recommendation**
  - These regulatory gaps are obvious in their importance following Fukushima and never should have been allowed to evolve in the first place
- **NRDC disagrees with NRC Staff recommendation to issue a request for information. The licensees can handle the NTTF's recommended order.**

## Recommendation 9 (cont.)

- Our concern with the treatment of emergency planning issues in the NNTF Report, and by NRC generally, is that risk reduction assessments are based on a cost–benefit analysis whereby the cost of a mitigation alternative is compared to the discounted mean of the collective dose (assessed at \$2,000/person-rem) and economic damage consequences after being weighted by core damage (and wind direction) frequency. No further consideration is given to limiting collective dose and economic impacts of lower-frequency high-consequence events, such as that which occurred at Fukushima, by requiring that reactors not be located in areas of high population density and high economic activity.

**UCS Perspective on the  
Japan Task Force Report  
Short-Term Actions**

**September 14, 2011**

**Dr. Edwin S. Lyman**

**Senior Scientist**

**Union of Concerned Scientists**

# General Comments

- **UCS endorses the need for swift and comprehensive action by the NRC to identify and eliminate safety vulnerabilities that have been highlighted by Fukushima**
- **Should be part of a larger review of the adequacy of safety margins and other defense-in-depth measures**

# Orders

- **Orders are appropriate where swift action is warranted; the process for implementing them should be transparent**
  - **Should be as clear and specific as possible when issued**

# **How not to issue orders**

- **NRC should avoid repeating the experience of the B.5.b order**
  - **Issued February 25, 2002**
  - **Final guidance not endorsed until December 22, 2006**
  - **Inspections not completed until December 2008**
  - **Open issues remained even in 2009**
- **Due in part to NRC-NEI disputes hidden from the public**

## **Recommendation 2**

- **UCS agrees that near-term action is needed to define the current seismic and flooding risk profile and to address vulnerabilities**
- **GI-199 data, North Anna, Ft. Calhoun underscore concern**
- **Draft GL could provide a good evaluation basis, but timelines are too long and SMA/SPRA option could confuse the public**

## **Recommendation 4**

- **UCS supports general framework for extended SBO mitigation but the ultimate level of protection will depend on resolution of many issues**
  - **Reliability and availability standards for coping equipment/procedures**
  - **Asserted seismic margins need to be demonstrated**
- **Credit should be given for B.5.b measures in severe accident scenarios only if they can be shown to work**

# **Hydrogen control in SBOs**

- **The NRC should act immediately to require reliable backup power for hydrogen igniters at ice condensers and Mark IIIs to prevent containment rupture under SBO conditions**
- **In fact, in 2006 the Commission directed the staff to “promptly proceed to require” these measures. It never happened and they remain voluntary commitments. Why?**

## **Recommendation 5**

- **UCS supports requirements for reliable hardened wetwell vents for Mark I and Mark II BWRs**
  - **Operability under a range of severe accident conditions must be demonstrated**
- **No need to wait for final Fukushima vent analyses to proceed**

# **Recommendation 7**

- **UCS supports prompt action to address the safety issues posed by overstuffed spent fuel pools**
- **The staff does not provide adequate justification for deferring action on important Task Force recommendations such as requiring reliable pool instrumentation**
- **Rulemaking to require accelerated transfer of spent fuel to dry casks should be a near-term action**

## **Recommendation 8**

- **Strengthening and integration of EOPs, SAMGs, EDMGs are overdue**
- **Proposed requirements that EDMG procedures be developed and integrated into plant procedures were opposed by NEI and omitted in the final 50.54(hh) rule and guidance**
- **10/2006 letters: staff expectation that licensees would integrate B.5.b into procedures for effective use in nonsecurity-initiated events**

## **Recommendation 8**

- **“The implementing procedures for B.5.b ... are not linked to the EOPs... B.5.b procedures are similar to fire safe-shutdown procedures in that they are stand alone and if you try to run them concurrently there may be conflicts ...” --- e-mail from Christopher Cahill, RI, 6/11/10**

## **Recommendation 9**

- **UCS agrees with all Task Force recommendations for emergency planning enhancements but believes the Task Force defense of the 10-mile EPZ is premature**
  - **Fukushima experience needs to be fully assessed**

# Acronyms

- **EDMGs: Extensive Damage Mitigation Guidelines**
- **EOPs: Emergency Operating Procedures**
- **EPZ: Emergency Planning Zone**
- **GI: Generic Issue**
- **GL: Generic Letter**
- **NEI: Nuclear Energy Institute**

## **Acronyms (cont.)**

- **SAMGs: Severe Accident Mitigation Guidelines**
- **SBO: Station Blackout**
- **SMA: Seismic Margin Assessment**
- **SPRA: Seismic Probabilistic Risk Assessment**
- **UCS: Union of Concerned Scientists**

**Industry Perspective on  
Near-Term Task Force  
Recommendation #9 – Enhancing  
Emergency Preparedness**

Susan Perkins-Grew  
Director, Emergency Preparedness  
NEI

## **Recommendation #9 - EP**

- Existing EP technical basis is valid; effective in protecting public health and safety
- Industry performing reviews; determining actions
- On-shift staffing analysis for multi-unit event
  - Need additional criteria and instructions
  - Must consider progress on other actions
  - Request extension to effective date (or implementation) of staffing analysis rule change

# Recommendation #9 - EP

- Upgrading power supplies to communications equipment
  - Staff engagement with stakeholders:
    - Technical bases, acceptance criteria, implementation schedule
- Other proposed actions in Recommendation #9
  - Rulemaking vs. guidance

# Summary

- Many EP changes already in process
- Need to consider cumulative impact
- Industry encourages the same stakeholder engagement as used in recent EP Rulemaking
- General agreement on need to move forward
- Priorities and schedules must remain in the context of enhancements and prioritized appropriately

Patrick Mulligan, Manager  
NJ DEP Bureau of Nuclear Engineering

and

CRCPD's Committee on Emergency Response  
Planning, Chair (HS/ER-5)



# Communication

- DHS National Emergency Communications Plan (NECP)
- Statewide Communications Interoperability Plans (SCIP)
- Army National Guard agreements



# Communication

- NRC rulemaking enhancements on emergency preparedness
- DHS REP Program Manual Revision
- Licensee and State have sufficient redundant and diverse communications to communicate



# Near-Term Task Force EP Recommendations

- Determine and Implement the required staff to fill all necessary positions for response to a multi-unit event.
- Provide a means to power communications equipment needed to communicate onsite and offsite during a prolonged SBO.
- Order licensees to complete the ERDS modernization initiative by June 2012 to ensure multi-unit site monitoring capability.



# Additional Comments

- Dose Assessment: RASCAL cannot model multiple unit/multiple spent fuel pool accidents
- Information Sharing: NRC/State Memorandum of Understanding under the Regional State Liaison Program
- Public Inquiries to State Programs during Fukushima



# Information Sharing

- Timely, accurate, and consistent information
- Coordinated clear key messages put an event and any associated impacts into perspective for the public.
- Dispels rumors and misperceptions and helps reassure the public





# **Briefing on the Japan Near Term Task Force Report – Short-Term Actions**

**R. William Borchardt**

**Executive Director for Operations**

**September 14, 2011**

# **Staff Review of Near-Term Task Force (NTTF) Recommendations**

**Martin Virgilio**

**Deputy Executive Director for  
Reactor and Preparedness  
Programs**

# **Agenda**

- **Staff Review of NTTF Recommendations**
- **Staff Recommendations**

# **NTTF Conclusions**

- **No imminent risk from continued operation and licensing activities**
- **NTTF report provided 12 overarching recommendations addressing principles of defense-in-depth, protection, mitigation and emergency preparedness**

# **Status of SRM-SECY-11-0093**

- **Required four Notation Vote Papers on NTTF report:**
  - **Proposed Charter (complete)**
  - **Staff recommendations (complete)**
  - **Prioritization (due October 3)**
  - **Recommendation 1 (due within 18 months)**

# **Staff Review of NTTF Recommendations**

- **Commission paper (SECY-11-0124) contains staff's assessment of the NTTF recommendations that can and, in the staff's judgment, should be initiated, in part or in whole, without delay**

# **Staff Recommendations**

- **Greatest potential for safety improvement**
- **Near-term efforts, which could be started without delay**
- **Measured approach**

# **Staff Recommendations**

- **Seismic and flood walkdowns (2.3)**
- **Seismic and flood hazard reevaluations (2.1)**
- **Station Blackout (SBO) (4.1)**
- **50.54(hh)(2) equipment (4.2)**

## **Staff Recommendations (cont'd)**

- **Reliable hardened vent for Mark I containments (5.1)**
- **Strengthening on-site emergency response capabilities (8)**
- **Emergency preparedness (9.3)**

# **External Stakeholder Feedback**

- **August 31, 2011 public meeting discussed six recommendations**
  - **Conceptual agreement**
  - **Stakeholders desire involvement**
  - **Concerns with implementation pace and regulatory vehicle**

# **Regulatory Vehicles**

- **Orders**
  - **New requirements**
  - **Redefine level of protection regarded as adequate**
  - **Stakeholder engagement**

# **Regulatory Vehicles (cont'd)**

- **Requests for Information (RFI) pursuant to 10 CFR 50.54(f)**
  - **Specific information needs from licensees**
  - **Licensees report actions taken**
  - **Informs regulatory action**
- **Rulemaking**

# **Seismic and Flood Hazard Walkdowns (2.3)**

- **RFI pursuant to 50.54(f)**
  - **Methodology and criteria for walkdowns**
  - **Perform walkdowns to identify and address plant-specific vulnerabilities**
  - **Inform the NRC of the results and planned or taken actions**

# **Seismic and Flood Hazard Reevaluations (2.1)**

- **Stakeholder interaction to develop the technical basis and acceptance criteria**
- **RFI pursuant to 50.54(f)**
- **Determine appropriate regulatory action**

## **SBO (4.1)**

- **Engage stakeholders in support of rulemaking activities to enhance the capability to maintain safety through a prolonged SBO**
- **Development of the regulatory basis, a proposed rule and implementing guidance**

## **50.54(hh)(2) Equipment (4.2)**

- **Order**

- **Reasonable protection of 50.54(hh)(2) equipment from the effects of external events, and to establish and maintain sufficient capacity to mitigate multi-unit events**
- **Stakeholder interactions to identify acceptance criteria**

# **Reliable Hardened Vents for Mark I Containments (5.1)**

- **Order**
  - **Take action to ensure reliable hardened wetwell vents**
  - **Interactions with stakeholders to develop the technical bases and acceptance criteria**

# **Strengthening On-site Emergency Response Capabilities (8)**

- **Advanced notice of proposed rulemaking**
  - **Methodology to integrate onsite emergency response processes, procedures, training and exercises**
  - **Interact with stakeholders to modify the emergency operating procedure generic technical guidelines**

# **Emergency Preparedness Regulatory Actions (9.3)**

- **RFI pursuant to 10 CFR 50.54(f)**
  - **Perform a staffing study**
  - **Evaluate enhancements for licensee communications during SBO**
  - **Inform the NRC of the results and planned or taken actions**
- **Evaluate licensee responses and take appropriate regulatory action**

# **Next Steps**

- **Notation vote paper due October 3, 2011**
  - **Reflect regulatory actions**
  - **Implementation challenges**
  - **Technical and regulatory basis**
  - **Additional recommendations**
  - **Schedule and milestones for stakeholder engagement and Advisory Committee on Reactor Safeguards review**

# Acronyms

- **NTTF – Near-Term Task Force**
- **SBO – Station Blackout**
- **RFI – Request for Information**

UNITED STATES OF AMERICA  
U.S. NUCLEAR REGULATORY COMMISSION

WORK ORDER 64  
BRIEFING ON THE JAPAN NEAR TERM TASK FORCE  
REPORT  
SHORT-TERM ACTIONS

SEPTEMBER 14, 2011

9:00 A.M.

TRANSCRIPT OF PROCEEDINGS

Public Meeting

Before the U.S. Nuclear Regulatory Commission:

Gregory B. Jaczko, Chairman

Kristine L. Svinicki, Commissioner

George Apostolakis, Commissioner

William D. Magwood, IV, Commissioner

William C. Ostendorff, Commissioner

## APPEARANCES

## ACRS Members:

William Leith  
Earthquake Hazards Program Coordinator,  
U. S. Geological Survey

Charles Pardee  
Chairman, Industry Fukushima Response Steering  
Committee and Chief Operating Officer, Exelon Generation

Thomas Cochran, Consulting Senior Scientist, Nuclear  
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Ed Lyman, Senior Staff Scientist  
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Patrick Mulligan  
State of New Jersey and Federal Radiological Preparedness  
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Timothy Greten, FEMA, Deputy Director, Technological  
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Programs and Long-Term Steering Committee Chair

Eric Leeds  
Director, Office of Nuclear Reactor Regulation

Jim Wiggins, Director, Office of Nuclear Security and  
Incident Response

## 1 PROCEEDINGS

2 CHAIRMAN JACZKO: Good morning everyone. We meet today to  
3 discuss the Japan Near Term Task Force report and staff's short term  
4 assessment of that report. We have a lot to cover today so I probably won't  
5 make much in the way of comments. I just ask people to stick to their five  
6 minutes so we can make sure everybody gets through and then we make sure  
7 the Commission has ample time for questions and answers.

8 I'd ask if my colleagues have any questions or comments they'd like  
9 to begin with. Okay. We'll start with -- who are we starting with. We're going to  
10 start with Bill -- how do you say your last name?

11 WILLIAM LEITH: Leith.

12 CHAIRMAN JACZKO: Leith, who is the Earthquake Hazards  
13 Program coordinator at the U.S. Geological Survey.

14 WILLIAM LEITH: Is this on?

15 CHAIRMAN JACZKO: If the red button is on then it's on.

16 WILLIAM LEITH: Thank you for inviting me to participate in this  
17 review. The materials that I've provided to you are background in case you have  
18 questions or the basis for further discussion. I won't be showing any slides.  
19 First, let me emphasize the strong collaboration between the USGS and the NRC  
20 Office of Research and the Office of New Reactors, through which we have  
21 multiple projects at several USGS science centers. At the USGS we participate  
22 in combined operating license reviews on seismological and geological topics for  
23 the Office of New Reactors. We conduct research on eastern U.S. earthquakes  
24 and participate in working groups to evaluate ground motion data. We provide  
25 alerts of strong ground shaking at nuclear plants in the United States and

1 worldwide, through a system called Shake Casts. And we have recently  
2 evaluated tsunami hazards in the Atlantic and Gulf coasts and earthquake  
3 monitoring needs in the eastern U.S., in support of nuclear plant safety.

4 I've been asked to comment on Recommendation 2. USGS agrees  
5 with Recommendation 2, and I offer the following explanations. First, regarding  
6 Recommendation 2.1: both the USGS and NRC researchers determine  
7 earthquake hazards using probabilistic seismic hazard analysis, or PSHA. The  
8 framework of PSHA allows us to incorporate new information, such as the recent  
9 Virginia earthquake, in a coherent, structured, reproducible, and transparent  
10 fashion. The deterministic method and for the Appendix A, for existing nuclear  
11 power plants, is much more ad hoc, in terms of how new information is  
12 incorporated. So, Recommendation 2.1 should be undertaken using modern  
13 PSHA approaches, and I believe that this work could be done in the very near-  
14 term.

15 NRC and USGS have been working together on implementing the  
16 USGS model within the NRC process, that's used for a Generic Issue 199  
17 screening, that project that is performing evaluations of hazard and risk of  
18 existing nuclear power plants, and also, on the new Seismic Source  
19 Characterization Model for the central and eastern U.S., which is being finalized  
20 now.

21 Second, regarding Recommendation 2.2, at the USGS, we update  
22 our national seismic hazard maps every six years. These are the basis for  
23 modern earthquake resistant building codes at critical facilities, other than  
24 nuclear power plants, such as large dams. Periodic updates or reassessments  
25 are required ever seven to 12 years for both earthquake and flood hazards.

1 Such requirements are placed by, for example, the Army Corps of Engineers and  
2 the Bureau of Reclamation. Recommendation 2.2 is, therefore, consistent with  
3 the requirements for other non-nuclear, critical facilities, and would keep  
4 earthquake hazard assessments for nuclear plants in sync with current  
5 knowledge.

6 I should also remark on the issue of outdated seismic  
7 instrumentation at many nuclear power plants. The lack of modern  
8 instrumentation not only hinders the quick, well-informed decision making on the  
9 part of the licensee and by the NRC, but it severely limits an engineer's ability to  
10 understand the response of plant structures, systems, and components to strong  
11 ground motion. For example, to understand the input ground motions to the dry  
12 stores cask facility at the North Anna Nuclear Power Plant on August 23rd.  
13 Modern, digital instrumentation is reliable and relatively inexpensive. Since the  
14 operating base's earthquake and the state shutdown earthquake are defined as  
15 free-field motions, every plant should, at a minimum, have a modern, digital free-  
16 field instrument with automated processing.

17 In conclusion, I view these recommendations of the Near Term  
18 Task Force as simply best practices to update seismic hazard analyses to reflect  
19 current knowledge and to update seismic instrumentation to take advantage of  
20 current capabilities, given the Commission's Defense-in-Depth philosophy, to  
21 adopt current best practices simply fully justified. Thank you.

22 CHAIRMAN JACZKO: Thank you. We'll turn to Chip Pardee, who  
23 is wearing many hats .

24 CHARLES PARDEE: Good morning. The hat I have on this  
25 morning Mr. Chairman, is that representing the industry for Recommendations 2,

1 4, 5, 7, 8, and 9. And actually, we are introducing some discussion in the spent  
2 fuel pools that is somewhat distinct from the recommendations that the staff has  
3 provided you folks.

4           The industry that I am representing includes the owner-operators of  
5 the -- of the nuclear commercial generating stations here in the United States,  
6 the Institute of Nuclear Power Operations, the Electric Power Research Institute,  
7 the Nuclear Energy Institute, the significant design manufacturing and  
8 engineering corporations here in the United States, such as General Electric,  
9 Westinghouse, Areva, and others, as well as the owners groups for the various  
10 operating units that we have today; so a broad and diverse group of people.

11 That organization, at large, had people in Japan during the event. And some of  
12 our member companies had workers at Fukushima Dai-ichi during the event. We  
13 very quickly, after the event, dispatched teams to Japan for the purposes of both  
14 support to the Japanese companies that were involved, as well as for gathering  
15 our owned Lessons Learned, contemplating the analysis that would have to be  
16 done, post-event, to search for Lessons Learned that would be applicable here.

17           Very rapidly after the event, we stood up the Fukushima Response  
18 Steering Committee. I was designed as chair, we issued the Way Forward  
19 document. We've been in to talk to staff and the Commission about the Way  
20 Forward document, which establishes our goals and the governance for that.  
21 And so my comments today will largely be reflective of our activities to date,  
22 where we think we have short-term priorities to stick with today's agenda, and  
23 spend a little time comparing and contrasting the staff recommendations versus  
24 what the industry has determined would be the best expenditure of our resource,  
25 in the short-term, to improve our safety posture.

1           The industry has a lot of experience from learning from events such  
2 as Fukushima Dai-ichi. Here in the United States, we of course have the Three  
3 Mile Island accident. A great deal of learning's from the Chernobyl accident.  
4 We've had a number of externally imposed challenges to our nuclear plants over  
5 the decades, such as Hurricane Andrew, Hurricane Katrina. Issues with the  
6 space program have caused us to reflect on our command and control structures  
7 and our operator training programs, and such. We have Lessons Learned from  
8 the Deep Water Horizon accident in the Gulf of Mexico of -- a relatively recent  
9 history. So, we are well-positioned to learn from lessons, both within our industry  
10 and without, and to take decisive actions. And I think what I'll talk about briefly  
11 today is a reflection of those actions.

12           In my materials, I do not intend to go page-by-page, line-by-line, I  
13 think, with the time constraints, the introductory comments, time is best served  
14 setting the stage rather than getting into the specifics. And I'll be prepared to  
15 answer your questions when we get into the question and answer period. I  
16 would like to say that the industry largely agrees with the recommendations the  
17 staff is providing you. There's a great deal of alignment with what we think the  
18 priorities are and our capabilities to undertake this work quickly. There a few  
19 exceptions, which I'll point out. But I do not wish the time spent on the  
20 exceptions to cloud the general agreement that we have with the -- with the staff  
21 and their recommendations.

22           I think the closest analogue that we have to this from the industry's  
23 perspective is the events post-9/11. And I think it is self-explanatory why we  
24 would use that as a principal analogue as we do these evaluations. There are  
25 some differences that I'd like to point out that have colored our response thus far.

1 One: The events of 9/11, by and large by the industry, were not contemplated.  
2 We had never really thought about the use of large aircraft as a weapon. And  
3 the other significant difference is unlike the events of 9/11, where our activities at  
4 the generating stations largely reflected on security, perimeter security, our  
5 posture with regard to information flow and such, the learning's from Fukushima  
6 will very clearly land principally on operations and operations engineering. And  
7 we have a considerable concern with distracting the operators and the operating  
8 engineering organizations from their principal mission, and that is running these  
9 power plants as safely as we possibly can.

10 That's not to say that there aren't learnings that should be  
11 incorporated, but unlike the events of 9/11, we could clearly and easily overload  
12 our operations staff, for example, in the analysis of these events. And we think,  
13 in balance, that would be a net loss to our safety posture. So, we think that it's  
14 very important to have this very deliberative process upfront to make sure we  
15 don't overload operations.

16 I'll now quickly go through my comments and I am mindful of the  
17 time here, Mr. Chairman.

18 CHAIRMAN JACZKO: [inaudible]

19 CHARLES PARDEE: Okay, very quickly. And I don't know if you  
20 were able to follow along. I presume that you are. On the page regarding the  
21 industry actions we do think it's very important that NRC and other stakeholders  
22 spend time comparing timelines on a fact basis of our understanding the events  
23 in Japan, based on what we have learned because, as you know, the information  
24 has been somewhat slow in coming here from Japan. And our analysis is  
25 ongoing.

1 All right. Number two, the seismic Recommendation 2. The  
2 seismic and flooding design basis, we are largely in agreement. I think our one  
3 caution would be that in order to incorporate the GI-199 process to the deliberate  
4 evaluation of seismic risk, we need to make sure we have realistic time frames;  
5 there are very limited resources for experts in seismic hazard analysis, as Mr.  
6 Leith described, and it would be very difficult for us to do that at all operating  
7 units, in a short timeframe, within a year or so. With that said, we think we can  
8 do that at.

9 CHAIRMAN JACZKO: Has to -- we've got all the information here,  
10 but we do -- we do need to move on. If I give you --

11 CHARLES PARDEE: Okay. Your choice.

12 CHAIRMAN JACZKO: -- extra five minutes, then I've got to give  
13 everybody an extra five minutes, and that's an extra 30 minutes. So -- but we  
14 have all the stuff here, so the Commission has all of it to look at, and I'm sure  
15 there'll be an opportunity to flesh it out in questions. Mr. Cochran?

16 THOMAS COCHRAN: [unintelligible] this is a tall order for me.  
17 But --

18 CHAIRMAN JACZKO: You're under the same restrictions as Chip  
19 was. So --

20 THOMAS COCHRAN: [unintelligible]. Well, I'll just go through my  
21 slides fairly quickly. The problem with Recommendation 2.1, and 2.3 -- or one of  
22 the problems is I don't think they go far enough. I mean, this is a -- this was a  
23 statistical event --

24 ANNETTE VIETTI-COOK: Closer to the mic.

25 THOMAS COCHRAN: And I think you ought to look at this as a

1 statistical event -- in Japan -- and really apply what you're trying to do, with  
2 respect to seismic and flooding across the board, to all of the significant  
3 contributors to core damage frequency. Because we now know that, at least on  
4 a worldwide basis, that core damage frequency is higher -- much higher than  
5 what it should be. And I think you need to broaden your scope on this one.

6           The staff attempts to resolve some of the issues related to  
7 processing criteria, but they didn't drop the order at the end. So, and I don't think  
8 that was a good recommendation. On SBO coping, I think you should bite the  
9 bullet and just order the licensees to provide eight hour coping. I mean, it's going  
10 -- it's going to happen in the rulemaking. You know what the problem is. You  
11 don't have to fool around with a bunch of rulemaking. The order -- these guys  
12 are running nuclear reactors. You ought to be able to order them to provide eight  
13 hour coping and expect them to provide eight hour coping. If they can't do that,  
14 they shouldn't be running nuclear reactors.

15           Hardened vents: We were troubled by the fact that the staff had  
16 backed off on the task force recommendation with respect to Mark IIs. And  
17 they've asked for another 45-days to analyze the situation with -- which I think  
18 doesn't speak well for the staff if they don't understand the Mark IIs already going  
19 into this process. Again, we know the problem. We ought to simply order the  
20 hardened vents on the Mark IIs.

21           We were troubled by the complete omission of Recommendation 7  
22 in the staff review. We think that's uncalled for. We think you should get on --  
23 this is not a necessarily near-term issue, but you should get on with moving the  
24 spent fuel into dry casks. The National Academy of Sciences recommended that  
25 you study this issue on a plant-by-plant basis and you apparently have not done

1 so.

2           Emergency response: You know, this is, again, an effort to  
3 coordinate the various guidances that they operate under. And again, you know,  
4 if you're the commanding officer and you want somebody to clean up the  
5 management, you order them to clean up the management. And you don't  
6 expect them to come back and ask for, you know, more information and et  
7 cetera, et cetera. I mean, these are operators of nuclear plants. They ought to  
8 operate like commanders of nuclear submarines. And you ought to be able to tell  
9 them what needs to be done and expect them to do it. And I think the staff gets  
10 confused between when it's appropriate to get involved in a detailed rulemaking  
11 and when it's appropriate to tell somebody to do something, to improve the safety  
12 of the reactors now. And you're seeing that in the positions taken by the staff as  
13 a whole, versus the positions taken by the task force. I think the task force  
14 operates more like a Navy chain-of-command or even was expected just to  
15 operate like a Navy chain-of-command. The staff expects us to operate like the  
16 Congressional Research Service.

17           On Recommendation 9, we agree with this recommendation. We  
18 don't agree with the staff recommendation to issue a request for information  
19 along the same lines. Our concern with 9, just to close, is that the way you treat  
20 severe accidents is through -- in terms of risk reduction assessment, is through a  
21 cost-benefit analysis. And where you're discounting collective dose and  
22 economic damage and weighing it by core damage frequency and wind direction  
23 frequency. And at the end of the day, you don't take additional requirements to  
24 ensure that you are not operating these plants in heavily populated areas or  
25 areas where you could have very severe economic damage. And it's because

1 you've averaged everything out and you're only looking at the averages rather  
2 than the distribution of the effects that may occur.

3 CHAIRMAN JACZKO: All right. I ask you -- I have to ask you to  
4 wrap up there.

5 THOMAS COCHRAN: I'm finished.

6 CHAIRMAN JACZKO: Okay. Great. Thanks. Now, I'll turn to Ed  
7 Lyman. He's the senior staff scientist at Union of Concerned Scientists.

8 ED LYMAN: Good morning. And behalf of the UCS, we appreciate  
9 the opportunity to present our comments on these very important issues.  
10 Overall, UCS strongly endorses the need for swift and comprehensive action by  
11 the NRC to identify and eliminate the safety vulnerabilities that have been  
12 highlighted by Fukushima, but also by other outstanding issues associated with  
13 decline in safety margin Defense-in-Depth across the board.

14 I'd like to comment on the issue of orders. We do believe that  
15 orders are appropriate in many of the circumstances that have been outlined by  
16 the task force, but there's some issues that have to be considered. I've been  
17 looking at the history of the implementation of the B.5.b orders. And there is  
18 some information that's come out into the public that the process which concerns  
19 us. Those orders were issued February 25th, 2002, but the final guidance for  
20 actually how to comply with them was not endorsed until well over four years  
21 later. And then inspections, based on that guidance, weren't completed for  
22 another two years, and even after that, there were still open issues.

23 From the publicly available history, it looks like this was largely due  
24 to Nuclear Energy Institute and the industry disputing the language in the orders,  
25 quibbling with the definitions of concepts like what is readily available equipment

1 and what isn't, disputing what parts of the orders were actually legally binding.  
2 All of that happened under -- behind closed doors because the B.5.b was a  
3 security-related issued. We think if that process had been out in the open that  
4 the industry would not have been able to stonewall as much as they have. And  
5 we do not -- we hope that we -- there's not going to be a repetition of that process  
6 in trying to implement the orders associated with the post-Fukushima actions.  
7 So, you need to be as clear as possible in specifying language of the initial  
8 orders, so that there is no dispute about what the language means. And that  
9 kind of game-playing can't go on.

10           So, in detail, with regards to some of the recommendations, with  
11 regard to 2, we certainly agree that the actions needed to address the current  
12 seismic and flooding risk profiles. We think, again, some of the information that's  
13 come out since Fukushima through FOIAs shown that there does not appear to  
14 be any margin with regards to seismic or flooding risk from any plants, according  
15 to the data that's been disclosed. And that contradicts what the NRC's public  
16 statements have been about the availability of ample margin for all our plants.

17           The draft generic letter could provide a good evaluation basis, at  
18 least for the seismic risk. But we're concerned with the time lines; one to two  
19 years are too long, and also the fact that the industry will still have the option of  
20 doing seismic margin analysis versus a seismic PRA could confuse the public  
21 because it wouldn't be one consistent basis.

22           We understand that there are resource issues, but that will have to  
23 be worked out so you have the most effective, and efficient, and timely way to  
24 resolve those issues.

25           On 4, I'd like to highlight, again, our concern about the B.5.b

1 measures. Credit should not be given to any B.5.b measure for a use for which it  
2 was not originally approved, that is, to deal with loss of large areas of the plant  
3 due to explosions and fires unless you can actually show that that equipment will  
4 be available and that it can be used. And again, information that's come out  
5 through the Freedom of Information Act requests have shown that the staff --  
6 there had been disputes over the nature of the B.5.b measures, even after they  
7 were approved by staff and whether they could actually be effective under real-  
8 world scenarios.

9           In addition, all SBO-related measures, we think it could be ordered  
10 very quickly would be the requirement for reliable backup power for hydrogen  
11 igniters and the ice condensers in the Mark IIIs. This is a long standing issue.  
12 I've spoken to the Commission several times on this issue over the last decade.  
13 And again, the Freedom of Information Act request data has shown that this  
14 issue was actually worked behind the scenes for a long time. The Commission  
15 actually did order the industry to do this and it never happened. It still remains a  
16 voluntary measure, and we wonder why.

17           Again, on Recommendation 7, we don't think that the staff has  
18 provided adequate justification for why all spent fuel issues should be deferred.  
19 And we think that there are subsets that could be addressed and should be  
20 addressed more quickly.

21           On Recommendation 8, the integrations of EOPs with SAMGs and  
22 EDMGs is long overdue. And the, again, the history that was studied showed  
23 that it was an explicit choice by the industry not to -- or to fight the NRC on  
24 whether EDMG procedures should actually be formally integrated with the other  
25 plans. The final rule on 50.54(hh) eliminated requirements to actually have

1 procedures in favor of what's called guidance and strategies that I think led to this  
2 very mushy, general set of plans that we have no confidence can actually work  
3 under a severe accident or a severe terrorist scenario.

4 So, I'll stop there. I just want to conclude that the flexibility is not  
5 always a good thing. If -- if the plans are too general -- because you want to be  
6 flexible -- that actually when you have to deal with the details in an urgent basis,  
7 that they're not going to work. So, in lieu of flexibility, you need to define a set of  
8 rough scenarios and actually work them through, from beginning to end, to make  
9 sure they work. Thank you.

10 CHAIRMAN JACZKO: Thank you. I will now to Sue Perkins-Grew,  
11 who is the Director of Emergency Preparedness at NEI.

12 SUE PERKINS-GREW: Thank you, Mr. Chairman. Good morning,  
13 Commissioners. To amplify Chip's remarks, industry's multiple reviews of the  
14 Fukushima event -- accident -- also includes analysis by the industry's  
15 emergency preparedness leadership. Our assessment of the events in Japan  
16 lead us to agree with the task force position that the existing emergency planning  
17 technical basis remains valid, and that existing emergency preparedness  
18 programs are effective in protecting public health and safety.

19 Recommendation 9 identifies a variety of proposed actions to  
20 enhance responses to an event with wide-area damage and effecting multiple  
21 units at a site, including prolonged loss of off-site power. It is important to keep  
22 in mind that these are enhancements too, and not the correction of deficiencies  
23 with the existing regulations and programs. Any new requirements to enhance  
24 response should be integrated to existing programs in a manner that does not  
25 distract from the capability and readiness to respond to more likely events.

1 As discussed in the SECY-11-0124 that we released earlier this week, the first  
2 near-term recommendation would require licensees to perform a study to  
3 determine required staff to fill positions to respond to a multi-unit event. This  
4 would be in addition to the EP rule change that requires a comprehensive  
5 analysis of on-shift staffing. In the SECY, the staff also recommends that  
6 licensees also perform an additional multi-unit staffing analysis, in conjunction  
7 with implementation of this current EP rule change.

8 A staffing analysis for an event that affects multiple units will require  
9 the creation of additional criteria and instructions. This includes defining the  
10 event characteristics, the simultaneous occurrences, the timing of the responses,  
11 and the coping strategies. These criteria should also be informed by any other  
12 changes being contemplated in the other areas, such as the integration of EOPs,  
13 and the severe accident management guidelines.

14 Sufficient time needs to be allotted for the staff and the stakeholder  
15 engagement to support the development of the analysis criteria and instructions,  
16 and also to revise the associated methodology. If the recommendation to  
17 perform the additional staffing study is approved, then the effective date of the  
18 ERO staffing analysis rule change should be extended by at least six months to  
19 accommodate this process.

20 The second EP near-term recommendation discussed in the SECY  
21 concerns evaluating enhancements to power sources for communications  
22 equipment. Industry is, again, prepared to engage with all stakeholders to inform  
23 the technical bases, the acceptance criteria, and implementation schedule for  
24 this enhanced capability.

25 With respect to moving forward to the other recommendations that

1 are listed in the Recommendation 9 in the task force report, we believe that the  
2 following items should be accomplished through rulemaking: licensed operators  
3 being assigned to facilities outside the control room, new drill and exercise  
4 requirements, and upgrading the emergency response facilities to improve  
5 response for a multiple unit event. Rulemaking in these areas would provide the  
6 necessary regulatory structure and promote consistent implementation and  
7 predictable inspection.

8           Development of the revised regulatory and industry guidance  
9 should be sufficient to address the other recommended enhancements, which  
10 would include the multiple unit dose assessment capability and command and  
11 control structure.

12           It should be recognized that the regulatory changes already in  
13 progress are having a significant, cumulative impact on licensee resources.  
14 Licensees will be implementing many required changes to emergency  
15 preparedness programs over the next few years. Key drivers to these changes  
16 include the new EP rule and the associated guidance, supplement 4 to NUREG  
17 0654 -- excuse me, supplement 3 to NUREG 0654, and the cyber security rule.  
18 In addition, licensees will be assisting their off-site response organization  
19 partners with implementation of the new requirements promulgated by the  
20 revised FEMA REP program manual.

21           The scope and number of the new requirements are quite  
22 challenging; requires significant change management, and implementation on a  
23 project scale. And of course, implementation of these changes must be done  
24 while maintaining proper focus on existing program performance. A noted  
25 strength of the recent EP rulemaking process was the staff's willingness to see

1 comments on all draft materials from affected stakeholders. The quality of the  
2 final product was significantly improved by the evaluation and incorporation of  
3 these comments. We encourage that the staff will again seek stakeholder input  
4 as they navigate through the near-term and long-term recommendations.

5 In summary, the industry finds the proposed actions outlined in  
6 Recommendation 9 would indeed enhance emergency response capabilities.  
7 Because they are enhancements to existing emergency preparedness programs,  
8 they should be prioritized in the manner that is reasonable with due consideration  
9 of the cumulative impact of the implementation requirements of the new EP rule  
10 and the associated guidance, as well as the FEMA REP program manual. That  
11 concludes my prepared remarks and thank you for this opportunity.

12 CHAIRMAN JACZKO: Thank you. I will now turn to Patrick  
13 Mulligan, who is with the State of New Jersey and the Federal Radiological  
14 Preparedness Coordinator Committee.

15 PAT MULLIGAN: Thank you, Mr. Chairman. Good morning,  
16 Commissioners. I wanted to first take the opportunity to thank you for the  
17 invitation to participate in this panel discussion. And also, for the work that you  
18 and your staff have completed thus far on this very important topic.

19 Today, I'm going to talk about NRC staff recommendations for  
20 emergency preparedness and more specifically, about offsite resources and  
21 communication.

22 The DHS, in cooperation with state government, had been working  
23 diligently on the National Emergency Communications Plan for some time. All 50  
24 states and six U.S. territories have developed state-wide communication,  
25 interoperability plans that identified near and long-term initiatives for improving

1 communication and for enhancing communication networks. These initiatives  
2 provide a mechanism to evaluate new technologies and their applicability to state  
3 and local response organizations. Further, many state governments have  
4 agreements in place to tap into their resources of the Army National Guard, who  
5 can provide portable and easily deployable satellite communications, if  
6 necessary.

7 NRC rulemaking enhancements to emergency preparedness and  
8 FEMA guidance updates will require additional investigation into backup alert and  
9 notification systems for nuclear power plant accidents. These requirements will  
10 provide another means to enhance effective communication with the public under  
11 adverse conditions.

12 In light of the ongoing efforts at the federal and state level to  
13 evaluate communication strategies and implement new technologies, I agree with  
14 the assessment of NRC staff that there are sufficient redundant and diverse  
15 communication methods with NRC and state and local governments.

16 The document staff assessment of Near Term Task Force  
17 recommendation identifies three areas within emergency preparedness for  
18 immediate action. They deal with staffing necessary to fill all positions during a  
19 multi-unit event, backup power for communications equipment during a  
20 prolonged station blackout, and having licensees modernize the ERDS initiative  
21 by June 2012 to ensure multi-unit site monitoring capability. Each of the  
22 identified areas for immediate action are critical to enhancing response  
23 capabilities in light of the events in Fukushima. I agree with the  
24 recommendation of the staff to move forward with these initiatives in order to  
25 identify gaps that could impede effective response effort, and take immediate

1 actions to close those gaps. I do want to take a few minutes to highlight some of  
2 the issues identified in the task force report that were not recommended for near-  
3 term action, and perhaps raise some additional concerns that we're not included  
4 in the report, but certainly need more attention in the near term.

5 First, the task force highlighted the shortcomings of those  
6 assessment models to evaluate accident sequences from multiple reactor sites,  
7 and or multiple spent fuel pools. While this is not identified in the near-term  
8 recommendations for immediate actions, it is certainly a critical component for  
9 the evaluation and assessment of catastrophic accidents involving multiple  
10 source term contributors. I believe it is critical then for NRC to move forward  
11 quickly to address that those assessment shortfalls are identified during the  
12 event. This is particularly important in light of the fact that public protective  
13 actions in Japan were issued based on results from the dose assessment model  
14 that cannot evaluate multiple reactors, spent-fuel accidents with any degree of  
15 accuracy. I would recommend that work on developing appropriate dose  
16 assessment tools begin immediately.

17 I would remiss if I did not speak about major shortcomings in  
18 coordination and information sharing between Federal and states during the  
19 Fukushima incident. The NRC Task Force is focused on hardware and  
20 infrastructure necessary for effective communication. What is equally, if not  
21 more important, is the timeliness, frequency, content, and targeted recipients of  
22 the communication. To my knowledge, the only Federal agency that engaged  
23 constructively and responsibly to state concerns and questions was the CDC,  
24 and that avenue still took some time to establish.

25 As I'm sure you're aware, the NRC has a formal memorandum of

1 understanding with the states to provide information on incidents involving  
2 radiological releases to the regional state liaison officer programs. The NRC did  
3 not honor that agreement during this event. At the state level there were  
4 hundreds of public inquiries as to what effect the accident would have on state  
5 residents from the public health perspective. Lacking any real data points,  
6 source term, or modeling projections, it was difficult to speak with any certainty  
7 and answer the public's questions and concerns. Granted, from the technical  
8 perspective, we could all agree that based upon historical information, the  
9 release of radiation would have no impact on public health and safety within U.S.  
10 borders.

11           At the same time, from a purely scientific and technical perspective,  
12 we had no hard data to support our statements, which places us in a very  
13 vulnerable position. The need for timely, accurate, and consistent information  
14 was clear key messages about the significance, or non-significance of an  
15 unintended radioactive release can help NRC and the states put an event and  
16 any associated impacts into perspective for the public. Timely, accurate, and  
17 clear communications dispels rumors and misconceptions, and helps reassure  
18 the public that the event is being handled properly. Data and information  
19 sharing, and the development of consistent public information must be improved.

20           Once again, I thank for you for the opportunity to share my  
21 comments with you, and I'd be happy to answer any questions after the  
22 presentation.

23           CHAIRMAN JACZKO: Thank you. Finally, we'll turn to Timothy --  
24 how do you say your last name?

25           TIMOTHY GRETEN: -- Greten.

1                   CHAIRMAN JACZKO: -- Greten, who is the deputy director of  
2 Technological Hazards Division at FEMA. Mr. Greten?

3                   TIMOTHY GRETEN: Thanks for the opportunity to talk to you all  
4 this morning. Echoing some of the things that Sue and Pat said, the  
5 Commission's recommendations, I think, from FEMA's perspective, are going  
6 down the right track. Anything we can do to build on the already robust program  
7 we have to mitigate on-site risk can only help make sure there is not a problem in  
8 the off-site realm. That said, there's other things going on in the world right now  
9 that I want to make sure the Commission is aware of. Contextually, as you  
10 implement stuff out of this report, there is the Emergency Preparedness Rule  
11 Package that you all voted on, on August 30th, there's changes being made to  
12 those rules, to supplement 3, to supplement 4, of NUREG 0654, to the rep.  
13 program manual, the most significant changes to that in the last 30 years. It's  
14 been done in concert with NRC, the Federal family, and state and local  
15 stakeholders, industry stakeholders all across America.

16                   In addition to that, especially in the wake of Deep Water Horizon  
17 last summer, the National Security staff brought together all the federal agencies  
18 and asked us to work through problems during SOEPL 10, a nuclear power  
19 plant exercise. And coming out of that, we know that there were improvements  
20 that needed to be made to communications plans, to pre-scripted messaging  
21 plans, cleanup re-entry standards, making sure that guidance was clearer, the  
22 issues with KI, potassium iodide, and other different sticky policy issues that we  
23 need better guidance on. Fukushima was really just another layer of things that  
24 we could do -- learn from if you will -- based on changes that were already under  
25 way. As Pat mentioned from Fukushima, from that situation, there were definitely

1 communications issues. Part of the problem was that it was viewed as an  
2 overseas issue, as opposed to a domestic nuclear issue. At FEMA, we're trying  
3 to learn lessons but also make sure we learn the right lessons.

4           Unlike the Japanese situation, there was a lack of data coming  
5 over, I mean the Japanese prime minister was asking the head of the Tokyo  
6 Power Authority, "what the heck is going on here?" except in stronger language.  
7 Here, I think the NRC might almost suffer from the reverse problem if there was  
8 an incident here. The sheer volume of information coming into your command  
9 center, and parsing through that, and making sure it's properly distributed. Some  
10 of the different recommendations in here, for instance, improving your ERDS  
11 system. Obviously, the more reliable that communication system is, the better,  
12 but this isn't just a rules and tools issue, it's also practicing and making sure that  
13 staff is familiar with taking that information and parsing it up, not just to, say,  
14 communities that might be affected in a nuclear power plant accident, but to the  
15 world writ large.

16           Some other issues that really weren't addressed in here, but are  
17 contextual in nature: FEMA's been talking lately about the "whole community"  
18 idea. That is, that if you had a significant natural disaster -- picture New Madrid  
19 earthquake -- the sheer volume of the disaster would mean that it would take a  
20 long time for emergency resources to get to some place. You know, 72 hours  
21 you might be on your own. I know that the NRC makes sure that industry, and  
22 industry made sure on their own, that they have significant secondary and tertiary  
23 capabilities to be isolated for some period of time, but we also realize that, as a  
24 nation, there would need to be government resources brought to bear to help out,  
25 say, a power plant that was in distress. If you have things that are needed to

1 help a power plant in distress; you know, supplemental generators, or batteries  
2 or fuel. All of that stuff is heavy and may need to be moved over a long distance  
3 if there was an emergency, over roads that were jacked up by an earthquake,  
4 and it's something that NRC and industry can't solve themselves. It's a larger  
5 Federal-state problem to transport those kinds of resources.

6 Other changes that I know have been discussed here: There's  
7 obviously robust models for modeling what would happen if a single nuclear  
8 reactor was having issues and releasing radioactive material. I know that  
9 additional thought needs to go into multiple unit failure scenarios. If you have  
10 several reactors going haywire at once, what does the modeling look like for  
11 that?

12 There is a robust set of guidance out there already, be it the  
13 National Response Framework, the nuc rad annex to the National Response  
14 Network, the NIN system, et cetera. While guidance changes are good things,  
15 it's also making sure we do a better job of exercising under our current guidance,  
16 and on those lines, FEMA is making sure that we are re-doubling our efforts to  
17 rope in on the FEMA Response and Recovery folks, who actually have roles on  
18 the ground, making sure that our exercises are even more realistic in concert  
19 with NRC and the other members of the federal family, and our state and local  
20 compatriots, and industry folks.

21 We continue to look to Fukushima for lessons we can learn, not just  
22 about the actual radiation issues associated with the nuclear power plant, but the  
23 larger issues associated with the tsunami and how all of these different disasters  
24 interacted with each other. I agree with what many folks here have said today,  
25 that is that we have a good system in place. There's obviously always room to

1 learn lessons, and because we have a system in place, we've already put a lot of  
2 time and effort into figuring out, we want to make sure that, we make sure we're  
3 solving a problem before we take actions. We think this through. We have that  
4 luxury because we do have a good system in place already, and also understand  
5 that when these systems are put into place, changes are put into place, no  
6 matter when the decision is made, it will take time for certain changes to be  
7 made. For instance, in the updated rep program manual, and guidance that  
8 NRC has, hostile action-based exercises in nuclear power plant sites,  
9 everybody's already done a drill. Every single site in America has already done a  
10 drill, but coming up in the guidance is going to be supplemental information on  
11 how to improve plans, and those plans are going to be exercised as part of the  
12 FEMA-NRC bi-annual exercise program, but it's going to take time to make sure  
13 those plans are updated, and the state and local budget resources are properly  
14 re-allocated to cover those changes and stuff. So, just understand, even with  
15 folks moving ahead and trying to expedite matters, some of those changes will  
16 take time.

17 Thank you very much for the opportunity to talk to you all this  
18 morning.

19 CHAIRMAN JACZKO: Well thank you, and thanks everyone for  
20 their presentations. I have a couple of questions. I wanted to start, Chip, with  
21 you. You talked about the need to prioritize, and I think this is an important issue  
22 and one of the things as I look at it, is I hear the talk and discussion about  
23 prioritization, generally it seems to be confined within prioritizing all of the things  
24 we'll do with Fukushima, but if you were to take a look more broadly, and this is  
25 an issue for us as well as for the industry about all the other things that are going

1 on. You know, if you look at plants, some plants are pursuing power uprates,  
2 license renewals. Where do you see these changes fitting into kind of the broad  
3 spectrum of things that is going on in the industry?

4 I mean, should we put a moratorium on power uprates right now?  
5 Should we get Fukushima changes done before that, maybe not with license  
6 renewal, but with power, that kind of thing. Do you have a sense of that?

7 CHARLES PARDEE: I think, one, your reflection is correct, that we  
8 do have a concern with prioritization, and I think simply stated, we don't think that  
9 these should in any fashion be a blanket substitution of priorities for efforts that  
10 were underway. Either things like power uprates or license renewals, or other  
11 activities that were also in flight regarding other substantive regulatory changes  
12 that had been deemed necessary to improve our safety posture. So we think  
13 that these need to be examined. Some of them do in fact warrant short-term  
14 action. The industry acknowledges that. We've started on short-term action, but  
15 that's not to say that they should have some artificially elevated priorities simply  
16 because they happened at Fukushima. I think they do require some careful  
17 analysis and such, so --

18 CHAIRMAN JACZKO: Are there criteria that we could apply to  
19 figure out where these fit in, relative to everything else that's going on?

20 CHARLES PARDEE: I think there are priorities, Mr. Chairman, and  
21 I think it's important to start with what will be the attended resources for each of  
22 these. In some cases, there may not be a conflict in resources or in skill sets or  
23 such, in which case, we should be able to pursue them in parallel. In other  
24 examples, and I'll use operator training as perhaps one of the more obvious  
25 ones, one of the recommendations coming from the industry and from the task

1 force in the staff in their subsequent review, has been to re-examine training of  
2 operators on severe accident management guidelines – the beyond-design  
3 bases accidents and events and such. We agree, however, that should be  
4 carefully prioritized with our current operator training programs, because we think  
5 the unintended consequence of simply substituting one for the other would be  
6 detrimental to our safety posture. So, I think we are able to prioritize based on  
7 available resources, based on the safety significance of the deltas between our  
8 current posture and what we have learned from Japan, and I think in fact, we  
9 have begun that. I am not, at this point prepared to rattle off my top 10, but with  
10 just a little bit of thought, I'm sure that we could do that.

11 THOMAS COCHRAN: Mr. Chairman, I disagree with Mr. Pardee.

12 CHAIRMAN JACZKO: Well, Mr. Cochran, I was about to ask you  
13 the same question. You jumped in there before I got a chance to ask that. So,  
14 well let me ask you the same thing. To you, is there a sense of where we would  
15 fit these in with kind of the spectrum of all the activities that are going on, and I  
16 think as I asked Mr. Pardee, is there, are there criteria we should be looking at to  
17 help us figure out where we put this, relative all the other things that are going  
18 on?

19 THOMAS COCHRAN: First thing you should do is suspend the  
20 power uprates and the license extensions. I think it's really pretty outrageous  
21 that you have outstanding issues related to hydrogen generation. You have a  
22 rulemaking you haven't -- it's been on your docket since 2009, related to  
23 hydrogen generation and a LOCA, and the commission is merely going along  
24 giving out power uprates when, if this rulemaking proves to be correct, the  
25 recommendation, you would de-rate many of these plants rather than uprate

1 them, and you have outstanding Fukushima issues related to hydrogen  
2 production. You shouldn't be doing power uprates. Same with regard to license  
3 extensions and BWR Mark I and II's.

4           So, with respect to the orders, the orders are things that ought to be  
5 done promptly, and they should take precedent. Chip Pardee is not running a  
6 boy's school, and we're not sitting here, trying to figure out a new syllabus for  
7 teaching math. You ought to treat this like he's running ships or nuclear power  
8 plants. There was a submarine tender earlier this year that ran into a buoy going  
9 back to port. The commanding officer was removed from his command. You  
10 don't treat these reactors like you should treat them. You ought to order these  
11 people to do what's necessary to make these reactors safe and expect that they  
12 get done, and I fully expect Mr. Pardee would be able to staff it out and get it  
13 done, and if he doesn't have the manpower to do it, he can hire more people to  
14 do these chores, and that goes for the NRC staff as well. If you don't have the  
15 manpower, you ought to be charging these guys more money, or hire a bigger  
16 staff and get these jobs done.

17           CHAIRMAN JACZKO: Thanks. The, Mr. Leith, I'll turn to you, you  
18 touched on some issues with instrumentation. I think one of the things we saw in  
19 the, not in Fukushima, but here in the, I don't what we've called the East Coast  
20 earthquake -

21           WILLIAM LEITH: The Virginia earthquake?

22           CHAIRMAN JACZKO: -- I know it hasn't gotten a name yet, but  
23 there seem to be some, to my surprise, some challenges with instrumentation  
24 and the level of modernity of the instrumentation we have for seismic monitoring  
25 at plants in the Central and Eastern United States. Do you have thoughts on

1 that, and what kinds of modern instrumentation is out there that could give us  
2 more real-time information about the spectral characteristics of the earthquakes  
3 that we see and are seeing in more real-time?

4 WILLIAM LEITH: I do. And you heard my concerns about the  
5 accuracy. I guess I would put it in terms of timeliness and accuracy. I oversee  
6 the National Seismic Network and 14 regional seismic networks, and if two or  
7 three weeks after an earthquake I didn't have accurate readings on the ground  
8 motion from that earthquake, I don't think I would have my job. The second  
9 concern I have -- firstly, let me go back to the timeliness. The information that I  
10 have, which is secondhand, on the instrumentation that the North Anna Nuclear  
11 Power Plant is that it's an older system from the 1970's, and it's probably not  
12 accurate within 10 percent, maybe not within 20 percent. So, modern systems  
13 can certainly provide much faster information, much more accurate information  
14 than these older systems that are in many of the nuclear power plants in the  
15 Eastern U.S.

16 A second concern is that the NRC doesn't have an independent  
17 source other than the licensee itself. I would make an analogy to, let's say the  
18 state trooper being reliant upon the driver for assessing the speed of the vehicle,  
19 and that speedometer not being required to be inspected during a normal  
20 inspection. So having an accurate and independent source would be to the  
21 benefit of the NRC in trying to determine what actions should be taken following  
22 a significant ground-shaking earthquake.

23 CHAIRMAN JACZKO: Okay that's -- we don't have too much time,  
24 I want to move onto another topic. I appreciate your thoughts on that. Dr.  
25 Lyman, I wanted to ask you -- I know you have a strong emphasis on us doing

1 some or most, if not all of the work through orders, and with maybe a more  
2 transparent process than we used with the 9/11 orders, and some of that was a  
3 result of the fact that these were, in some cases, classified or safeguarded  
4 discussions, but, if we were to go to the route of rules, one of the issues the  
5 Commission would have to analyze, and I'll get some thoughts from the staff on  
6 this later is: Do we proceed with these as adequate protection rules, or not as  
7 adequate protection rules, and pursue them more in the backfit space. Do you  
8 have thoughts on how, if we were to pursue them as rules or other regulatory  
9 tools, which would be the appropriate approach for those

10 ED LYMAN: Thanks. I guess this does go to the task force for --

11 CHAIRMAN JACZKO: I'm actually trying to answer in a fairly short  
12 time.

13 ED LYMAN: Yeah, yeah. The first recommendation, which was  
14 the framework and whether the boundary between design bases and beyond  
15 design bases is in the right place. You know, we think, this is a hard question to  
16 answer.

17 CHAIRMAN JACZKO: You got five seconds.

18 ED LYMAN: Right.

19 [laughter]

20 We think that the definition of that adequate protection really needs  
21 to be expanded to encompass a wider range of severe accidents that is currently  
22 the case.

23 CHAIRMAN JACZKO: Okay. Thanks. Well, I appreciate your  
24 answers. We'll turn to Commissioner Apostolakis.

25 COMMISSIONER APOSTOLAKIS: Thank you, Mr. Chairman. Mr.

1 Leith, you talked about the probabilistic seismic hazard analysis and then you  
2 said that you also have a methodology for assessing tsunami risk you mentioned  
3 something about tsunamis.

4 WILLIAM LEITH: We have evaluated tsunami hazard along the  
5 East Coast and the Gulf of Mexico.

6 COMMISSIONER APOSTOLAKIS: Is it also probabilistic?

7 WILLIAM LEITH: Yes, it is.

8 COMMISSIONER APOSTOLAKIS: Have you had the chance to  
9 look at the Fukushima Tsunami Evaluation, I mean what they had done before,  
10 what maybe the probability of that event was?

11 WILLIAM LEITH: The Japanese have looked at -- the Japanese  
12 have a very deep record of historical earthquakes and tsunami over hundreds of  
13 years, and they had looked at that record to assess the potential for these great  
14 earthquakes, these magnitude 8 earthquakes along the coast. And they had not  
15 considered the possibility that essentially multiple segments of the plate  
16 boundary would break at the same time. And, so, in determining their tsunami  
17 mitigation plan, they had judged that -- they hadn't assessed that there could be  
18 as large a tsunami as was produced by this earthquake.

19 COMMISSIONER APOSTOLAKIS: Was that because of the state  
20 of the art, or they made a mistake?

21 WILLIAM LEITH: Both of those things. The state of the art was  
22 that they had information on historical earthquakes that they used. They didn't  
23 go back into what we call the paleoseismic, the geological record of historical  
24 tsunamis. And, in fact, they had found evidence about a year before of a  
25 magnitude 9 earthquake producing tsunami. Only problem is that it was 1,100

1 years ago. And that hadn't been then incorporated within that year back into their  
2 tsunami risk mitigation plan.

3 COMMISSIONER APOSTOLAKIS: Thank you. I have a more  
4 general question here. I, even today in Energy Daily, there is a related article. I  
5 find it a little perplexing that some people are using the Fukushima accident to  
6 attack risk assessment as if what happened there is the fault of somebody doing  
7 the risk assessment and dismissing the issue. Although, I think we got a very  
8 good answer from Mr. Leith just now. You -- and another thing, the reason why  
9 it's perplexing is because the station blackout sequence, its significance, was  
10 identified by risk assessments, and it led to 50.63 rule that the Commission  
11 promulgated. So, I don't know. I mean, especially Mr. Lyman and Mr. Cochran,  
12 do you think that using risk assessment weakens the regulations, that it's not  
13 something we should be doing, and we should go to deterministic methods, even  
14 though Mr. Leith said that the best way to assess seismic risk these days is using  
15 probabilistic methods? I think that's what you said. I'm sorry.

16 [laughter]

17 WILLIAM LEITH: That is what I said, and that is for the majority of  
18 reactors, which are in the Central and Eastern U.S. where we don't have enough  
19 information on the actual sources of large earthquakes.

20 COMMISSIONER APOSTOLAKIS: So, I did not misinterpret that  
21 what you said.

22 ED LYMAN: Yeah. Well, if I can start, I think, in our view, the area  
23 where this highlights the weaknesses of risk assessment is the fact that seismic  
24 risks were not being consistently treated in risk-informed decision-making before  
25 this happened. We had a meeting here last year on risk-informed regulation,

1 and, you know, it came up that, first of all, not every plant had a seismic PRA. It  
2 was being applied inconsistently across the board. And, even though there was  
3 a kind of understanding among the staff that, of course, the seismic risk could  
4 essentially dominate the risk at a number of plants. And, until that -- and so to  
5 make decisions based on only looking at internal events primarily with guesses  
6 about the seismic risk was just wrong. And now, I think -- and if you look at the  
7 way seismic risk was treated, the tunnel vision in applying, you know, looking at  
8 the whole picture of the impact on operator actions and external, you know,  
9 support as a result of a large seismic event, ignoring all those things made it,  
10 really makes the tool very weak.

11                 So, hopefully, this will enable, the strengthening of the process  
12 ultimately. But, I think it casts some doubt on some of the decisions that have  
13 been made based on partial PRA's.

14                 COMMISSIONER APOSTOLAKIS: So, I'll come to you. But,  
15 basically, then, you don't dispute -- you don't -- you're not against the use of risk  
16 information in principle, but you are concerned that in some instances it's not  
17 applied well?

18                 ED LYMAN: Yeah, and I mean --

19                 COMMISSIONER APOSTOLAKIS: That's what I got.

20                 ED LYMAN: You need to have the uncertainty analysis.

21                 COMMISSIONER APOSTOLAKIS: Yeah.

22                 ED LYMAN: And it has to be a good uncertainty analysis. And, in  
23 some cases, the uncertainty may wash out everything you're doing. But, that, I  
24 think, is not really --

25                 COMMISSIONER APOSTOLAKIS: Well, if that's what it is, that's

1 what it is.

2 ED LYMAN: Right, but that hasn't been the case in the past.

3 COMMISSIONER APOSTOLAKIS: Okay. Mr. Cochran?

4 THOMAS COCHRAN: Well, I think probable risk assessment is a  
5 very valuable tool, and you should continue to use it as you have been. The  
6 problem, I see a couple of problems. There are probably more. One is this, too  
7 often, people actually believe the ultimate answer, you know, the risk of a core  
8 damage event is less than one in 10 to the fifth. I think it's very good for looking  
9 at relative risks. I don't attach a whole lot of faith in the overall final answer, and I  
10 don't think you do either. And the other is, as I mentioned earlier, it's too much  
11 emphasis on the average and not on the distribution. And, of course, the  
12 uncertainties. So, I use it, and I've used it today to say this was a statistical  
13 event. If you look at U.S. reactors, you should be worried about fires. And, I  
14 think, the, one of the lessons learned from me from Fukushima is, if you're going  
15 to take care of the U.S. reactors, first thing to look at is fires. And, why, if you've  
16 got a 35 years after Brown's Ferry and you don't have a fire rule that everybody  
17 is following? Use your PRA, okay?

18 COMMISSIONER APOSTOLAKIS: Any other comments? Okay.  
19 One of the questions in my mind is, and I think only Mr. Mulligan addressed it.  
20 Are there any, I mean, you all discussed the recommendations that -- not the  
21 task force, but the latest SECY discusses, and some of you complained that the  
22 commendations haven't -- should have been included. Are there any other  
23 commendations that are not included in the short list that perhaps should be  
24 included in addition to the Recommendation 7? Do you think there is anything  
25 that's left out that should not have been left out?

1 THOMAS COCHRAN: Yes.

2 COMMISSIONER APOSTOLAKIS: Please.

3 THOMAS COCHRAN: Suspend the uprates, suspend the licensing  
4 extensions. You, the Commission, established a process, a short-term process  
5 and a long-term process that we were going to be able to participate in. We're  
6 still waiting for the long-term process so that we can get some of the issues that  
7 we think are important that were not on the front burner of the task force. And,  
8 one is, you know, the hydrogen generation issues and the and those speak to  
9 stopping the uprates. And I think you should also suspend the backfit rule with  
10 respect to application of any of these Lessons Learned from Fukushima. I think,  
11 to take this process and then turn it into rule-makings and then turn it into a  
12 backfit issue and then do a cost-benefit analysis is going in the wrong direction.  
13 You should suspend the backfit rule.

14 COMMISSIONER APOSTOLAKIS: One last -- I think -- I'm sorry--

15 CHARLES PARDEE: No, if you would ask your question and then  
16 I'll make a comment [laughs].

17 COMMISSIONER APOSTOLAKIS: Well, we're running out of time.  
18 You mentioned that there will be an issue of resources, Mr. Pardee. We had a  
19 recent example of that with fires where there was a limited number of experts in  
20 fire dynamics and fire risk assessment -- are we going to have the same thing  
21 with seismic expertise? I mean, there are very few people, and, how do we  
22 handle that?

23 CHARLES PARDEE: Yeah, I think we will have the same  
24 challenge with seismic expertise and the issue with resources, just to be clear, is  
25 not one of expending payrolls; it's one of simply a finite number of proficient

1 individuals that are expert in their field. So this is not a matter of hire more, this  
2 is a matter of where we would most productively dispatch those experts that we  
3 collectively, in this industry, including regulatory bodies have. So yes, I would  
4 anticipate that we would run into similar circumstances with seismic probabilistic  
5 risk assessment. I think it's also important to note that the absence of immediate  
6 seismic assessment does not mean that our power plants are not robust. As a  
7 matter of fact, empirical experience is showing us that the methodology used  
8 previously has resulted in very significant physical margins through damage in  
9 our power plants inspections -- North Anna are supporting that. Clearly,  
10 inspections at Kashiwazaki-Kariwa site and what we know about Fukushima  
11 Daini are demonstrating very robust physical margins. I do think we will  
12 transition to a more risk informed approach to seismic analysis, but that does not  
13 substitute for the physical the margins that currently exist in our power plants.

14 COMMISSIONER APOSTOLAKIS: Back to you, Mr. Chairman

15 CHAIRMAN JACZKO: Thank you. Commissioner Magwood.

16 COMMISSIONER MAGWOOD: Thank you chairman. I've often  
17 made remarks since Fukushima; I've often observed that the NRC staff and the  
18 federal family have done every good job, in fact, and excellent job, of responding  
19 to the Fukushima emergency and really, a lot of people went above and beyond  
20 the call of duty to react to it. I want to take the opportunity to also say that I think  
21 that the industry in the United States -- I know that you, Chip, in particular, were  
22 personally involved in a lot of Fukushima response and did a very good job, and I  
23 think representing United States well. And I also think that the NGO community -  
24 - I think I remember seeing Dr. Lyman on TV a few times talking about this.  
25 NGO community made a lot of very sober; very serious, very helpful comments

1 publicly. I just wanted to thank you for that because I think that's continuing  
2 today. The comments we've heard today so far, from the industry and from Dr.  
3 Cochran and Dr. Lyman I think, all have been in the range of the reasonable. I  
4 think that there's clearly disagreements about how to go forward, but I think  
5 everything I've heard from all of these parties have been the sorts of things that  
6 the Commission has to take very seriously and are taking very seriously.

7           There are a lot of details to work out and I appreciate many things  
8 that Dr. Cochran and Dr. Lyman brought today and there's a few things I want to  
9 look into a bit more and may want to talk a little bit later in detail. But one thing  
10 for you, Tom, that I just wanted to ask. You were very emphatic in the idea that  
11 we should immediately institute a station blackout coping time of eight hours, and  
12 I just wondered if -- I know the task force recommended eight hours, but is there,  
13 in your mind, is there a reason to focus on eight hours versus some other time  
14 period? What drives us to that particular coping time?

15           THOMAS COCHRAN: Well, obviously, I would make it as big as I  
16 can get away with, but I'm not -- don't share the expertise that's on the staff or  
17 even in the industry on this matter. But the accident Fukushima says loudly that  
18 the coping time was inadequate. And then you look at the coping time in the  
19 U.S. -- in the NRC regulations and it's like two hours, and you look at the  
20 performance and it's like four hours or more and eight hours is certainly doable  
21 because a lot of people are doing it. And again, to me, it's sort of so obvious that  
22 the first thing you would do is go ahead and say, "Okay, let's bring everybody up  
23 to eight hours," and not -- we don't need to have a discussion about this. Can't  
24 you tell this guy to bring it up to eight hours and expecting to bring it up to eight  
25 hours?

1 COMMISSIONER MAGWOOD: That's a very --

2 THOMAS COCHRAN: Tell this guy to do it. He would have done it  
3 in eight hours. He would have had it in --

4 COMMISSIONER MAGWOOD: Before Chip responds to that let  
5 me say that I think that --you know, we've had discussions. In fact, I think we've  
6 had a pretty significant Commission discussion about the coping time several -- a  
7 few months ago. And we talk about this quite a bit. And one of the things that  
8 was left with me after that conversation was I'm not really sure what the target  
9 should be. I'm don't know if it should be eight hours. I'm don't know if it should  
10 be 72 hours. I don't know what it should be.

11 THOMAS COCHRAN: Does anybody think it should be less than  
12 eight hours?

13 COMMISSIONER MAGWOOD: No, I don't think--

14 THOMAS COCHRAN: Well let's make it eight hours and let's do it  
15 right here; you know, vote and make it eight hours.

16 COMMISSIONER MAGWOOD: Well, let me give Chip a chance to  
17 respond. What's the industry's thinking about this? You've had several months  
18 to think about this.

19 CHARLES PARDEE: First of all, I wish it was as simple as Dr.  
20 Cochran points out; that that would be something we could mandate and go  
21 execute immediately. The industry has already started actions to evaluate what  
22 it would take for us to go to 24 hours. Now evaluating what it would take is a lot  
23 different than having a tight list of prescribed actions that we have already  
24 undertaken. It appears to us that there are generally three windows that we're  
25 examining what we can do to -- as preparatory activity. What kind of preparation

1 we can do, what kind of preventive activities we can undertake and how we can  
2 best prepare for the unthinkable.

3           And then there's that window of time that we're talking about and  
4 that is post event; when the station is in significant upset condition, and we  
5 cannot depend on outside resources. And then there is that period of time where  
6 we do think we can bring outside resources to bear. And the important thing is to  
7 make sure we synchronize those with sufficient overlap such that we can't find  
8 ourselves in a position where we are, in fact, sitting with an accident where the  
9 blackout condition extends beyond our capability. It's not clear that simply  
10 mandating we go to eight hours will fix that. We, frankly, think that focusing on  
11 diversity of power sources, on redundancy of power sources and ensuring  
12 sufficient flexibility, such that we have protection against a whole different range  
13 of events, rather than trying to guess on what the consequences of a specific  
14 event would be best for us.

15           So, in increasing the size of our batteries, for example, is an option,  
16 but perhaps we would have a superior option in adding independent DC power  
17 sources over above our station blackout batteries. Such as, pre-positioned DC  
18 generators and such that would give to us the same capability, and much more  
19 flexibility as it pertains to other events that we may have to contemplate as we go  
20 through looking at synchronizing these windows.

21           Do we consider the exhaustion of the batteries to be an acceptable  
22 end point? No, we don't. We think that maintaining DC buses and their viability  
23 are vital to us being able to prevent core damage and protect the primary  
24 containment systems; but simply prescribing going from four to eight makes little  
25 sense to me. The underlying notion makes sense to me.

1 TIMOTHY GRETEN: May I say something?

2 COMMISSIONER MAGWOOD: Yes, please.

3 TIMOTHY GRETEN: The other thing to remember too -- like on  
4 this particular issue in the weeds no power plant, with maybe the exception of  
5 Fort Calhoun for a big part of the summer, is an island. You have local  
6 knowledge when informing these decisions, too. I mean, Pat Mulligan state of  
7 New Jersey, for instance, for the power plants there. Smart people have a  
8 knowledge of the local conditions. And figuring out how long the power plant  
9 could be expected to have to function on its own, or could outside resources be  
10 brought to bear, it's something where the state and locals have expertise they  
11 can bring to bear and say, "Yes this makes sense," or, "No it doesn't." And the  
12 power plant -- I can't think of the name but it's out in the middle of nowhere up in  
13 Washington state -- is probably going to have a lot less supplemental resources  
14 available from their friends elsewhere in the nuclear power industry or other  
15 states than, say, the state of Illinois, where there's a couple power plants 15  
16 miles up the street. So, I think that while there's obviously need for a hard and  
17 fast minimum, figuring out what makes sense in these things is something that  
18 the state and local governments also have to be part of.

19 COMMISSIONER MAGWOOD: I appreciate that comment, but, by  
20 the way, we don't make Fort Calhoun jokes around here.

21 [laughter]

22 Chip, that actually raises another question I had for you. The  
23 industry made announcement some weeks ago about a rather large effort to  
24 make emergency equipment, including emergency generators and other things  
25 available on a sort of multi plant basis. It sounds a lot like what are FEMA

1 colleague was talking about. What's the status of that?

2 CHARLES PARDEE: We are now undertaking actions to do just  
3 what your are saying; setting up regional facilities where we would pre-stage  
4 emergency equipment, such as standby diesel generators, fuel oil supplies,  
5 communications equipment, things such as that. And obviously, we would have  
6 to do that with a mind towards those timelines. We have to ensure that the plant  
7 can protect its vital safety functions during that period of time, prior to which we  
8 can get additional safety equipment there. So we are also looking at transport  
9 capabilities. And I think the comments that were made during the prepared  
10 remarks early on were right on the mark. One of the more difficult challenges  
11 that we're going to have is getting the equipment from these regional centers to  
12 the power plants in a predictable timeframe, and we think we will need the  
13 assistance of things like transport of the National Guard to be able to ensure that.

14 But we have our equipment lists being generated. We're starting to  
15 look at the mechanics of how we would station these-- what are the appropriate  
16 locations and such. We have also started beefing up the quantities of  
17 emergency equipment at our power plants; additional pumps that were procured,  
18 similar in fashion to what we did to the B.5.b activities and such. So activities are  
19 underway for both these regional dispatch centers and improving the posture at  
20 the stations independent of these centers as well.

21 COMMISSIONER MAGWOOD: Thank you. My time is up, so I'll  
22 close this. I just wanted to thank Mr. Mulligan for his comments. I heard from  
23 several states about the communications issues; it's something that I know the  
24 staff is assessing and hope to make sure that sort of lack of communication  
25 doesn't happen in the future. But it's something that I've heard from a lot of

1 states, it wasn't just New Jersey. But thank you very much chairman.

2 CHAIRMAN JACZKO: Commissioner Ostendorff.

3 COMMISSIONER OSTENDORFF: Thank you, Mr. Chairman.

4 Thank you all for your presentations. I honestly find this different viewpoints, a  
5 little bit of tension at the table, different perspectives but presented in a  
6 respectful, collegial manner, very helpful for us on the Commission. I'll note for  
7 the record Mr. Chairman I think that Mr. Cochran must never have received his  
8 honorary submariner card, and was trying to lobby for one today.

9 [laughter]

10 CHAIRMAN JACZKO: Directing some of those comments at  
11 somebody on this side of the table. I can't figure out who.

12 [laughter]

13 COMMISSIONER OSTENDORFF: But, in all seriousness, I really  
14 find this interchange and the give and take very constructive for the Commission  
15 making some difficult decisions. Sue, you haven't had a question, I'm going to  
16 start out with you and I'll come back to some of the others. Big picture on the  
17 emergency planning arena. I want to make sure I understand this. What I took  
18 from your comments was that the previously approved EP rule appears to be  
19 consistent with the foreseen-- if the Commission approved the task force  
20 recommendations, whether they be in the short term paper or in the longer term,  
21 there does not appear to be any big disconnect or any inconsistency. I'm trying  
22 to look at -- mindful of how to implement EP issues, and we already have this  
23 ruling that's marching down the path, is there any problem, from your  
24 perspective, on inconsistencies with short term recommendations?

25 SUE PERKINS-GREW: I don't see a problem -- sorry-- With the

1 inconsistencies, it's just the overlay of the additional work on top of implementing  
2 all of the new rule issue areas, as well as the guidance of 0654, sup 3, and the  
3 FEMA REP Program Manual. I did point out though, with the on-shift staffing  
4 analysis, we have a very comprehensive methodology that we've developed in  
5 order to satisfy the current rule for performing that shift staffing analysis. So now,  
6 to develop another template to accommodate whatever this multi unit event looks  
7 like, it's just a timing factor that that would be an additional staffing analysis that  
8 would have to be done. So it's more of a timing issue, but no inconsistencies;  
9 just the overlay and how do we best integrate that with the current workload of  
10 the industry as well as our offsite partners.

11           COMMISSIONER OSTENDORFF: Okay, thank you. Patrick I  
12 want to echo Commissioner Magwood's comments; we appreciate hearing your  
13 perspective on New Jersey with respect to assessment communications.  
14 Communications are always extraordinarily difficult, especially in an interagency  
15 process that we operate under. And I just wanted to see if Tim had any comment  
16 on Pat's comments about the communications in Fukushima.

17           TIMOTHY GRETEN: We agree there was a big issue. The -- part  
18 of the problem early on from FEMA's perspective was that the information that  
19 the states and the public in the United States was seeking just didn't seem to be  
20 available from anyplace including from NRC. Because you all were not getting --  
21 I mean, it wasn't one of your plants. You were at the mercy of the Japanese  
22 utility or other sources to get that information and I don't think NRC got really  
23 hard data until certain U.S. assets got over there from the FERMAC and whatnot  
24 to help the Japanese. I think that's when your information feed started getting  
25 better.

1           So for the first couple days of this part of the information deficit was  
2 that there wasn't good information to give beyond what was available really in the  
3 public media. After that point, one of the problems that really came up was the  
4 plumbing issue and the set of pipes being used for communicating information  
5 was this is an international incident and State Department/DOE really have point  
6 on that. I think even NRC was really referring questions that were asked about  
7 this back to those entities.

8           I know that one of the bandwidth issues that was raised before, it  
9 was about seismology, but it also applies to federal radiation folks, especially  
10 those people buried in different agencies: HP's who work for CDC, or EPA or  
11 whatnot. A large amount of the federal resources, including backup resources,  
12 people who were brought in who were retired, and people from academia, were  
13 really focused on helping to organize information that could actually help the  
14 Japanese with a real life crisis and not on taking information from that crisis,  
15 stepping it down, and making sure it was pushed out the door as general  
16 information.

17           A secondary function that was done about that too was answering  
18 specific questions: Hey, we have cargo containers that have sailed through this  
19 radioactive cloud. They're coming into the port of Los Angeles. The long shore  
20 man union tried to go on strike because they don't want to unload these things.  
21 What do we have to do with these? What is the safe standards? If you look at  
22 what cleanup standards and safety standards are, in like the EPA Protective  
23 Action Guides, or some of the other places they are put, a lot of it isn't just 55  
24 mile an hour speed limit, exceed not exceed. It's not a binary thing. It depends  
25 on source terms and amounts, and you need to do some calculating to figure out

1 what's going on. It's not a simple thing.

2 COMMISSIONER OSTENDORFF: I appreciate -- just a limited  
3 time here. We thank you for your response. I'm going to ask a question Chip  
4 and Tom and Ed and the topic and the focus on here just for a very brief moment  
5 or two is the reliable hardened vent recommendations. I know in the middle of  
6 July when I talked to INPO, I asked INPO senior executives, do INPO and  
7 industry have sufficient knowledge of the sequence of events of Fukushima, the  
8 modes of failure, pneumatic, electro-mechanical, electronic weathering in DC  
9 control power kind of issues associated with operating those vents, and as the  
10 time period back in July, late July, the response I received was a -- there's still  
11 significant outstanding questions in this area.

12 When we had a July 19 public hearing meeting here with Charlie  
13 Miller and the task force, there was other discussion about whether we did or did  
14 not have sufficient knowledge. And so I want to just kind of ask -- I'm going to  
15 frame this because the time limitations here, so please bear with me. Let's just  
16 say it's an open question as to whether or not there's sufficient understanding of  
17 what happened to Fukushima with respect to the hardened vents and the  
18 operator accessibility to those vents to operate them.

19 The question is, if there is not, today, a sufficient or understood  
20 technical basis or reliable hardened vents, would it be appropriate or  
21 inappropriate for the NRC to issue orders to require reliable hardened vents. I  
22 bring it up because the SECY paper talks about including interactions with  
23 stakeholders to develop the technical basis and so I'm trying to get to that. I'm  
24 just going to go right down the line and start with Chip.

25 CHARLES PARDEE: Okay, first of all, I think to your reflections we

1 are learning more about the timelines associated with the containment control  
2 parameters and such. However, we don't yet have a complete understanding on  
3 what the transient looked like from a primary containment point of view and a  
4 hydrogen generation or release point of view. With regards to your specific  
5 question, the industry undertook, as part of the Mark I containment upgrades, the  
6 installation of hardened vents on those power plants, which, at the time were  
7 dependent upon AC power sources. So we had the ability to vent wet wells at  
8 our power plants with the notion that the venting may contain either fission  
9 products or hydrogen in the exhaust. And then subsequent to the events in 9/11,  
10 we established the capabilities to vent our primary containments absent A/C  
11 power, so local operational procedures, access, things like that. I think orders,  
12 while they may provide a regulatory footprint as it were for the actions that have  
13 been undertaken by owners groups and such. We think that the capability  
14 currently exists and the real challenge for us would be making sure that we were  
15 concise in exactly what was in the orders, to make sure that there was not some  
16 unintended expansion of that would take some time for us to implement.

17 COMMISSIONER OSTENDORFF: Thank you. Tom.

18 THOMAS COCHRAN: Historically, you had five whitewater  
19 reactors that had significant fuel failure. Four of them had hydrogen explosions.  
20 Three of them couldn't contain the hydrogen explosions. I think that's evidence  
21 enough that you got a serious problem with hydrogen. We know it's primarily  
22 with BWRs and primarily with BWR Mark I and IIs, and you've demonstrated you  
23 could harden vents in Is and IIs are not that different. So, I think you should get  
24 on with requiring hardened vents in the five or so remaining reactors. How do  
25 you go about that? I would tell them, "Get me a plan within 60 days for how

1 you're going to implement hardened vents in the Mark IIs or we're going to shut  
2 them down until you provide us with that plan, and we expect you to accelerate  
3 the installation of the hardened vents."

4 COMMISSIONER OSTENDORFF: Okay

5 THOMAS COCHRAN: And I wouldn't, I wouldn't mess around with  
6 it. I'd just get on with it and not drag this out in the rulemaking and go through a  
7 backfit, and then do a cost benefit analysis. You know what you need. Get the  
8 hardened vents. Now, following that, you ought to figure out whether we're going  
9 to keep running these Mark Is and IIs with extended licenses as you've done  
10 already with the Mark Is, when most of them have gotten 20 year license  
11 extensions. You have a system whereby you don't even address this issue in the  
12 license extension, because it's not an age related event. So, you've instituted a  
13 process which ensures that an obsolete technology like a BWR Mark I will stick  
14 around forever if they can keep these things operating like they were B 52s.

15 COMMISSIONER OSTENDORFF: Okay.

16 THOMAS COCHRAN: I think you need to reassess that and figure  
17 out a way to phase these obsolete technologies out, rather than to continue to  
18 relicense and in the mean time, you'll suspend the relicensing.

19 COMMISSIONER OSTENDORFF: Thank you. I know - if I could  
20 30 seconds we had to respond to here --

21 ED LYMAN: We don't think you know along the postmortem of  
22 what happened in Fukushima would be relevant for informing perhaps some of  
23 the details. We don't think that's necessary to go ahead and ensure that there  
24 are robust hardened vent equipment and procedures that are -- could be  
25 plausibly operated under severe accident conditions. I mean a lot of the analysis

1 as far as I know has already been done, not only back when the first voluntary  
2 measures were applied, but also in B.5.b, I just wanted to read from the B.5.b  
3 procedures that when concerning venting and containment, one of the  
4 considerations is for the purposes of the strategy, it should be assumed that  
5 reactor building and any other locations where vent valves are located will be  
6 accessible. Now, that assumption is highly questionable and just removing that, I  
7 think we've already learned from Fukushima that that assumption is no longer  
8 valid. So, just simply by going through what the industry's already done to  
9 comply with B.5.b and questioning some of those assumptions, you should be  
10 able to come up with a robust strategy for venting.

11 COMMISSIONER OSTENDORFF: Thank you. Thank you, Mr.  
12 Chairman.

13 CHAIRMAN JACZKO: Commissioner Svinicki.

14 COMMISSIONER SVINICKI: Well, I will add my thanks for all of  
15 you being here today. I'm grateful for the chairman's adherence to our time  
16 limits, because in my view it allows us to have more participants here at the  
17 table, so I appreciate that none of you have taken offense at that, because we  
18 want -- we always want to extend our invitation list, but it causes us to have to  
19 compress the presentations a little bit. The other thing I guess I would share is  
20 that I --

21 CHAIRMAN JACZKO: You get an extra five minutes, by the way,  
22 for saying that.

23 COMMISSIONER SVINICKI: Okay, thank you.

24 [laughter]

25 COMMISSIONER SVINICKI: -- is that I was scheduled to be on a

1 panel and give a presentation, and the structure of it had been that I was doing  
2 the math and assuming I had 20 minutes, and then I found out days before the  
3 event that I have five minutes, and the learning that I had from that is it's a whole  
4 different -- it's a kind of a Madison Avenue art form to communicate in five  
5 minutes, because you can't say nearly as much, but I want to acknowledge that  
6 many of you or the organizations you represent have been part of building the  
7 agency's record and your participation in other ways, so please know that in  
8 other comments you've submitted, or transcripts from meetings that you've  
9 participated in, are also part of the record of our deliberation of these important  
10 recommendations. So, thank you for that and Mr. Greten, I have to weigh in with  
11 a fact just because you mentioned that a reactor in Washington state, that wasn't  
12 near to anything, I think you're referring to the Columbia generating station and  
13 since I had the chance to visit there recently, I would pass along to you that I  
14 enquired since they abut a large Department of Energy Nuclear Installation, the  
15 Hanford site, I asked about mutual aid agreements that Columbia might have  
16 with the Department of Energy and they informed me that they do have those  
17 types of -- so, even in an instance where the geography might tell you that they  
18 appear to be very remote, I think it actually is just reinforcement to a comment  
19 that you and Mr. Mulligan made that local entities and authorities know about  
20 these types of aid agreements and other things, and they have an awareness of  
21 the situation on the ground that day to day is important, but in a crisis event is  
22 that much more important, so I think that I appreciate your commentary along  
23 those lines.

24 Ms. Perkins-Grew, I wanted to return to an answer that you gave  
25 Commissioner Ostendorff because I had taken a slightly different meaning from

1 some comments that were made at the staff's public meeting and your  
2 presentation. Commissioner Ostendorff asked you if there were inconsistencies  
3 between the rule changes that the Commission affirmed just this month, so we  
4 had a package of changes to our EP regulations. I was very supportive of  
5 moving forward with those, because I couldn't see any down side to getting those  
6 in place, that those were in development long before Fukushima occurred and so  
7 they weren't informed by those events, but I still thought that they were important  
8 changes and we should move forward.

9 I had taken from your comments about the staffing analysis that  
10 there might be an emerging concern that you would -- industry will move forward  
11 to implement and do that staffing analysis at the same time that there's  
12 consideration now of multi-unit events and things. You said there wasn't an  
13 inconsistency and I'm not hanging that label on it, but is there a concern that --  
14 and I use the staffing analysis, I don't know if there's other changes in that we  
15 just affirmed to the EP rule, that it is questionable how you might go about them,  
16 because we're in a very active debate now about modifications to that. Is that a  
17 fair conclusion from what you stated?

18 SUE PERKINS-GREW: Well, what I was responding to is in the  
19 SECY that came out this week that recommended that the additional study be  
20 conducted in conjunction with the implementation of the rule change. So, while  
21 licensees are embarking on the rule as you approved it for multiple scenarios that  
22 they have to do for the rule change that we would be adding on an additional  
23 requirement for this additional study. My comment surrounds the fact that it  
24 takes time to develop the criteria in order to perform that study, come to  
25 consensus on which you know, what does a multi-unit event look like, the

1 multiple occurrences, simultaneous damage. Are you in B.5.b space, EOP  
2 space, CMG space, you know defining all those details, because what we  
3 learned in developing the methodology for this current rule change, it's very  
4 intricate and it's not a simple add on you know, a template to lay over your  
5 existing staffing analysis, that it took a lot of time with staff engagement, and  
6 stakeholder engagement to come up with the right methodology.

7 So, with that experience, it's just a comment on if we're forwarding  
8 with the implementation of the existing rule, we need to take the time to  
9 deliberately come up with the additional criteria.

10 COMMISSIONER SVINICKI: Okay, well I think that clarification is  
11 helpful and I certainly drew from your presentation and what in my mind I'm  
12 referring to as the EP end of the table here with Mr. Mulligan and Mr. Greten as  
13 well, that there's a lot of moving parts and I appreciate the FEMA perspective  
14 about onsite, offsite, Mr. Mulligan about state and local entities as well, that I  
15 think that was certainly the experience on the EP rule that we just finalized. So,  
16 we need to look at these connection points and we need to look at unintended  
17 consequences or intended consequences perhaps as we proceed down there.  
18 So, thank you for clarifying that specific piece on the staffing analysis.

19 I think I would turn to Mr. Leith or Dr. Leith. I just had some  
20 questions and I know you didn't stop through your presentation, but I studied it in  
21 advance of the meeting today. You had presented that the seismic hazards are  
22 updated every six years. Is that a nationwide update or is it regionally on a  
23 rolling six year frequency?

24 WILLIAM LEITH: That's a nationwide update.

25 COMMISSIONER SVINICKI: A nationwide update and another

1 part of your written presentation or presentation slides had indicated that for a  
2 certain region the hazard estimates had changed. Your term was significantly --  
3 was that meant to indicate that in the most recent update there were more  
4 significant changes than you had seen in periodic updates in the past and how  
5 would you define significant versus a hazard increase that was not significant?  
6 Do you have like a, like a numerical metric for that?

7 WILLIAM LEITH: I don't have that information on which and which  
8 numerical values have gone up and down. It -- in general we reevaluated the --  
9 in the last update of the national seismic hazard maps. We have -- a significant  
10 change was in the attenuation of the waves with distance, and that actually  
11 caused the lowering of the seismic hazard throughout parts of the United States  
12 and other parts of the reevaluation included new understanding of earthquake  
13 sources, which resulted in an increase in the earthquake hazard in other parts of  
14 the United States. So, it --

15 COMMISSIONER SVINICKI: Okay, that, and that was actually in  
16 the follow-up I was going to ask was do, do we ever see hazard estimates  
17 diminishing or as our tools become more sophisticated, is it in general that they  
18 increase, but you're saying it really as we update it, it may go up, it may go down,  
19 depending on the analysis.

20 WILLIAM LEITH: That's correct, yeah.

21 COMMISSIONER SVINICKI: And it is also --

22 WILLIAM LEITH: But it has -- I would remark though that the  
23 general picture doesn't change very much. The -- you know --

24 COMMISSIONER SVINICKI: Okay.

25 WILLIAM LEITH: So regionally, one region may go down, another

1 may go up a little, and you know in particular, well as you know, most reactors in  
2 the central and eastern U.S., and there's a great deal of uncertainty in those  
3 hazard assessments in the central and eastern U.S., because earthquakes are  
4 infrequent and if we don't have the opportunity to grab the ground motions, and  
5 evaluate them, make steps you know, as in Virginia, you know once every  
6 century or so, and so it's a process that is continually evaluated on the research  
7 side and we will for example, be using these ground motions from the Virginia  
8 earthquake to reevaluate the hazard in this region. There's a -- we recognize -- I  
9 think all of you do, that there's a huge risk to underestimating the potential  
10 ground motions and there's a huge cost to overestimating them, and there's a  
11 great deal of research that still needs to be done in the eastern U.S. to reduce  
12 the uncertainty that causes either under-design or over-design.

13           COMMISSIONER SVINICKI: How do you go about reducing that  
14 uncertainty? Is it increased amounts of field work or is it just better  
15 computational tools, and again, I'm not a seismologist, so just for a lay person,  
16 how would you say you would attack the question of reducing uncertainties?

17           WILLIAM LEITH: I can provide a couple of answers to that. We've  
18 provided a report to the Nuclear Regulatory Commission in January at their  
19 request, which was on how to improve the monitoring of earthquakes, to gather  
20 the data necessary to reduce that uncertainty, and so implementing those  
21 recommendations, just improving their recording of earthquakes would have a  
22 great affect. Small earthquakes are used to extrapolate the ground motion to  
23 larger earthquakes. The fact that we can't in many parts of the country record  
24 these little, small earthquakes, limits our ability as the tail of the distribution blows  
25 up toward the larger side. So, that would be, that would be one really important

1 thing to do.

2 A second is I have to say I look at the Virginia earthquake as a  
3 missed opportunity, because we didn't get the ground motions close in, because  
4 we don't have the stations there and so, but we still have an opportunity to  
5 maximize the knowledge gain from that by evaluating the records that we have.

6 COMMISSIONER SVINICKI: Okay.

7 WILLIAM LEITH: So, fully exploring the information there is going  
8 to be very helpful for understanding the eastern U.S. seismic hazard.

9 COMMISSIONER SVINICKI: Okay, thank you, and just quickly, Mr.  
10 Pardee, you had made reference too that industry had some written comments  
11 about the work, industry's work on a provisional timeline to reconstruct the  
12 progression of events and accident conditions at Fukushima and these  
13 comments also talk about the timeline would lead to discussions with Tokyo  
14 Electric Power. This is an industry to industry engagement. I'm very interested  
15 in this work and its results, but at times I've heard folks reflecting on Three Mile  
16 Island say that it may be many years before we have great understanding of an  
17 accident reconstruction. Can you give me very quickly, just a notion of  
18 timeframes or objectives that industry has for this industry to industry  
19 engagement? I'm hoping that you're not content to wait many years for these  
20 answers.

21 CHARLES PARDEE: No, we -- while I do think that there will be  
22 additional information evolving from Fukushima as we learn more, as we're able  
23 to inspect buildings and such. We have largely constructed the timeline that we  
24 think will constitute the vast majority, the basis for our lessons learned. We,  
25 under the auspices of the Institute of Nuclear Power Operations are reviewing

1 the timeline that we've constructed with the Japanese authority and the Tokyo  
2 Electric Power Company now, and seeking to address any either gaps in our  
3 understanding or factual inaccuracies. So we are talking a matter of a hand full  
4 of months, certainly not years before we think we have a very substantive record  
5 of the sequence of events, including some less obvious factors such as the  
6 evolution of the decision making and such associated with accident mitigation,  
7 post event.

8 COMMISSIONER SVINICKI: Okay, thank you. Thank you, Mr.  
9 Chairman.

10 CHAIRMAN JACZKO: Well, thank you, and as Commissioner  
11 Svinicki said, I appreciate everyone being here and it is a large group, but I  
12 appreciate your succinct responses and the information, and if you certainly have  
13 more information you want to provide to us, please send us letters or whatever  
14 you like and we'll certainly consider that. So, thank you. Now, we'll take a very  
15 short, five minute break.

16 [break]

17 CHAIRMAN JACZKO: We'll now hear from the staff. Bill, you  
18 want to start.

19 BILL BORCHARDT: Good morning. The NRC staff is committed  
20 to learning from the event in Japan and making the appropriate changes to the  
21 U.S. facilities. While the presentation that we're providing today is focused on  
22 the Lessons Learned from those events in Japan. We shouldn't lose sight of the  
23 recent events that even occurred in the United States. In the last four months  
24 we've had flooding at Fort Calhoun, earthquake near North Anna, Hurricane  
25 Irene, tropical storm Lee. And these reemphasize the importance of ensuring

1 that the U.S. nuclear power plants are protected from all external hazards. I'd  
2 like to acknowledge the work of the Near Term Task Force and to publicly state  
3 that it's quite clear the work that we have been involved with has built off the very  
4 good work by the task team that was led by Charlie Miller.

5           The paper that we provided followed the Commission's direction in  
6 identifying those Near Term Task Force recommendations that we believe can  
7 be initiated, in part or in whole, without delay. The staff's recommendations were  
8 developed by senior management. Representing the major NRC program offices  
9 and the regional offices who deliberated and considered the wide range of  
10 regulatory tools available to the staff. The staff's independent conclusion agrees  
11 with the Near Term Task Force that there's no eminent risk to public health and  
12 safety from continued operation, and continued licensing activities for U.S.  
13 nuclear power plants.

14           We did identify a subset of the Near Term Task Force  
15 recommendations that we believe have the greatest potential for safety  
16 enhancements in the near term and can be initiated without delay.

17           The staff's paper benefited greatly from the external stakeholder's  
18 input. As you witnessed this morning there's a wide range of views and they're  
19 all very well founded and appreciated.

20           The staff held a public meeting and received written comments.  
21 And the stakeholders, I believe, agreed in concept with the fundamentals of the  
22 recommendations that were discussed at the meeting. And express a desire for  
23 continued stakeholder involvement in the regulatory processes that go forward.

24           As such the staff's recommendations are focused on maximizing  
25 the potential for future stakeholder engagement whenever possible. Just note

1 that the next paper is scheduled to be issued on October 3rd. In that paper we  
2 will be providing a prioritization of the Near Term Task Force recommendations,  
3 including regulatory actions to be taken, implementation challenges, and a  
4 schedule with milestones.

5 It'll be important as we move forward that the actions resulting from  
6 the events in Japan be integrated with the full range of ongoing and emerging  
7 nuclear safety activities of both the operators and the NRC; and that'll be quite a  
8 challenge for us to do that integration in an informed manner. So with that I will  
9 turn the presentation over to Marty.

10 MARTY VIRGILIO: Thank you, Bill. Good morning, chairman,  
11 Commissioners. I just wanted to recognize that at the table with us today we  
12 have Eric Leeds, our Director of Nuclear Reactor Regulation and Jim Wiggins,  
13 the Director of our Office of NSIR. But they're here today as members of the  
14 Steering Committee and also behind me in the well are other members of the  
15 Steering Committee; they're the people that helped us develop the paper that we  
16 presented to you on Friday. What I want to do is go through the slide deck as  
17 quickly as I possibly can and then open up the opportunity for you to ask us  
18 questions.

19 So starting on slide 2, just a refresher that the task force, the Near  
20 Term Task Force completed its work, provided its report to you on July 12th and  
21 subsequently on July 19th we had a Commission meeting with Charlie Miller and  
22 the task force members.

23 As directed by the Commission now the staff has engaged in a  
24 review of those recommendations to determine what are the appropriate next  
25 steps. And what we have provided to you on Friday was staff's assessment of

1 those actions we think we can initiate in the near term.

2           So if we go to slide 3, the agenda. Basically, we'll talk a little bit  
3 about our review of the Near Term Task Force report and our staff  
4 recommendations around the report.

5           Slide 4, just a summary of what Bill just mentioned that the task  
6 force found that there was similar events, or sequence of events very unlikely to  
7 occur in the United States. The existing mitigation measures -- mitigation  
8 measure and features that are at the U.S. nuclear power plants today reduce the  
9 likelihood of core damage. And the staff has independently assessed and  
10 concluded that there is no eminent risk from continued operation and licensing  
11 activities.

12           The Near Term Task Force report provided 12 overarching  
13 recommendations and looked at accidents beyond the design basis from a  
14 Defense-in-Depth perspective. Looking at ensuring accidents don't occur,  
15 mitigation of accidents that do occur and ensuring preparedness for emergency  
16 situations.

17           On slide 5 it's just a refresher as a -- as direction coming out of the  
18 Near Term Task Force report. The Commission asked us to provide a number of  
19 products. The first was a charter for how we would proceed to manage the work  
20 moving forward, and the staff has provided that charter to the Commission. The  
21 second piece was the recommendations that could be initiated without undue  
22 delay. That paper was provided to you on Friday. We owe the prioritization now  
23 of the rest of the recommendations as Bill just mentioned. We'll provide that  
24 paper to you on October 3rd. And then with respect to Recommendation 1, the  
25 long term review of how we're going to deal with severe accidents, how we might

1 restructure Part 50 or our regulations; that's due -- recommendations are due to  
2 you in 18 months.

3           Slide 6, just a summary as directed by the Commission we  
4 provided a notation paper, vote paper on Friday, that makes recommendations  
5 on what items in the staff's judgment can and should be implemented in part or in  
6 whole without delay.

7           We looked and focused, primarily, on six areas: Recommendations  
8 2,4,5,7,8 and 9 as we did our assessment. And as stated in our paper, we  
9 believe that all of the Near Term Task Force overarching recommendations, so  
10 all 12, if adopted would enhance safety, and the staff agrees with moving forward  
11 on each of those recommendations. So as we developed our recommendations  
12 in the near term, we focused on the six; that should not be misinterpreted by  
13 anyone that we're not interested in the others as well. Some of them were longer  
14 term recommendations and as I've just mentioned, Recommendation 1 the  
15 Commission asked us to look at that in longer term; look at that over 18 months.

16           So on slide 7, what we did is we looked at the recommendations,  
17 those that were not the longer term studies, and we looked at them through a  
18 lens of what would have the most potential safety improvements, or  
19 enhancements in the near term. We also looked at which ones could be initiated  
20 without delay. And finally, we looked at what would be a measured approach to  
21 moving forward that wouldn't be very -- that wouldn't be disruptive, or too  
22 disruptive to the work we already had ongoing. And this is not about bodies,  
23 again, as Mr. Pardee pointed out, this is primarily about skill sets. What activities  
24 that we have ongoing and how we could adjust our activities so not to have the  
25 most impact, but recognizing that certain skills -- we don't have an abundance of

1 certain skills on the staff or available to us under contract.

2 So, again, the remaining recommendations, the one's that we don't  
3 talk about today, we will address in the paper that's due to on October 3rd.

4 So now on slide 8, we'll start talking specifically about the  
5 recommendations that we believe we can take action on in the near term:  
6 Seismic and flooding walk downs, seismic and flooding hazard evaluations,  
7 station blackout, the 50.50 4(hh)(2) equipment, this is also known as the B.5.b  
8 equipment, and also known as equipment that is there to provide protection for  
9 large fires and explosions, and they were put in place subsequent to 9/11.

10 On slide 9, I address three additional issues: hardened vents for  
11 the Mark I containments, strengthening of our onsite emergency response  
12 capabilities and 9.3 emergency preparedness. And now I will speak to each one  
13 of these in a little bit more detail.

14 What I did want to recognize is that on October 31st we did have a  
15 stakeholder meeting. Time was very compressed from the time that we had the  
16 SRM to the time that we owed you the paper; we'd had 21-days and so, we did  
17 our best to gather the stakeholders, and we really appreciate the people that  
18 were able to turn out and provide their input. I know it was short notice and I  
19 know oftentimes people have problems with logistics needing to get approval, but  
20 we did have I think a very good turnout and we did get letters, and written  
21 comments subsequent to that meeting. So, that also helped us as we moved  
22 forward in this area.

23 I would say that there are three points that the stakeholders at the  
24 meeting -- we found that there was general conceptual agreement on the six  
25 areas that we were focusing on. We found that the, all the stake holder panelists

1 expressed the desire for stakeholder involvement, regardless of the process we  
2 use and there were various points of view that I think emerged with respect to the  
3 vehicles that we use, and then we'll talk a little bit about orders, 50.54(f) letters,  
4 rulemaking, those kinds of comments. We received some feedback from the  
5 stakeholders on that.

6           So, slide 11 gets into the vehicles and we looked at orders,  
7 requests for information under 50.54(f) and we looked at rulemaking. Where the  
8 staff felt like we had sufficient information to define direction, and not necessarily  
9 all the information that we needed, but to define direction. We believe that orders  
10 were appropriate and that -- those orders we're thinking that we would use the  
11 provisions of the backfit rule that would allow us to redefine the level of protection  
12 for public health and safety that would be regarded as adequate.

13           We recognize that even with the orders, although we understand  
14 the direction that we want to go in, that there's still a number of details that we  
15 still need to have. Our regulatory assessment needs to be developed. We need  
16 to make sure that we're clear around performance objectives, what defines  
17 success and we need to make sure that we have the acceptance, clear  
18 acceptance criteria that all the stakeholders fully buy into and understand.

19           Slide 12, the second of the two vehicles that we'll talk about,  
20 50.54(f) letters, these are -- this is our -- this is areas where we felt that we  
21 needed additional specific information just to make sure that we were on the right  
22 path with respect to direction. We, here again, under 50.54(f), we're thinking that  
23 we would move forward and ask these questions under a presumption that we're  
24 looking to redefine what constitutes the level of adequate protection.

25           Finally, the third tool that we're going to be using is rulemaking and

1 here again, rulemakings will be issued following our normal agency process and  
2 this will include the development of the technical basis, the regulatory basis and  
3 all the associated implementing guidance. Again, for each of the  
4 recommendations, the final regulatory action is going to in fact, dependent on  
5 Commission direction, supporting the basis that we move forward with.

6 Slide 13, now I'm going to get into the specifics of the  
7 recommendations, six recommendations, and I'll start with recommendation 2.3,  
8 which is the seismic and flooding hazard walk downs. Here the task force, the  
9 Near Term Task Force made its recommendations that licensees be required to  
10 perform seismic and flood protection walk downs, to identify and address any  
11 plant specific vulnerabilities. The staff looked at that recommendation and we  
12 believe that the best approach to moving forward is to develop a 50.54(f) letters,  
13 basically request for information. Within that, we would develop a methodology  
14 and acceptance its criteria for conducting the seismic and flood walk downs. We  
15 would ask industry through this mechanism to perform the seismic and flood  
16 protection walk downs, identify and address any plant specific vulnerabilities,  
17 verify the adequacy of monitoring and maintenance for protection features, and  
18 inform the NRC of the results of the walk downs, and any corrective actions that  
19 they either have taken or plan to take in response to this request.

20 Slide 14, the second area is seismic and flood hazard  
21 reevaluations. This was recommendation 2.1 from the Near Term Task Force.  
22 They recommended that we reevaluate seismic and flood hazards at nuclear  
23 sites against current NRC requirements, and guidance. So, the staff looked at  
24 this recommendation and we believed that we need some additional stakeholder  
25 interaction to make sure that we're on solid ground and alignment with respect to

1 the technical basis, and acceptance criteria for conducting these reevaluations to  
2 make sure that we understand the specific seismic hazards, and we're going to  
3 rely on and leverage some of the existing work that's been done under the  
4 generic safety issue, 199. Staff will in this area develop a letter, a request for  
5 information under 50.54(f) to require the reevaluation of site specific seismic and  
6 flood hazards, identify actions that have been taken or plan to be taken around  
7 any plan specific vulnerabilities that are identified.

8           The staff will evaluate each licensee response and take appropriate  
9 regulatory actions to resolve the vulnerabilities that have not been acted upon,  
10 and here our notion is that we would know the direction and if we find that as a  
11 result of our evaluation additional action is necessary, we would use orders as  
12 the tool, as the follow-up tool in this area.

13           Slide 15, now we shift to station blackout and the Near Term Task  
14 Force had recommended that the NRC initiate rulemaking to update 50.63, to  
15 require each operating reactor a new reactor licensee, to establish a minimum  
16 coping time of eight hours, establish the equipment, procedures, training, what  
17 have you necessary to have this extended coping time of 72 hours and then have  
18 preplanned and pre-staged offsite resources to support uninterrupted core  
19 cooling and spent fuel pool cooling.

20           What the staff is recommending in this area is that we engage the  
21 stakeholders through a rulemaking process to ensure that we have the enhanced  
22 capability to maintain safety through a prolonged station blackout. We would  
23 develop the regulatory basis for the proposed rule and all the implementing  
24 guidance that we would need to ensure that the rule is implemented as part of  
25 this process.

1           Leveraging some of the dialogue that you had this morning, again  
2 the staff as we've looked at it, are questioning the eight hours, the 72 hours. I  
3 think we as the Steering Committee, support the notion of this tiered process. I  
4 think we're just again wondering whether -- questioning whether eight hours is  
5 sufficient. So, that's part of where we are today and, but we'll continue that  
6 dialogue and that conversation through the rulemaking process.

7           The next area, slide 16 is the 50.54(hh)(2) equipment and the Near  
8 Term Task Force recommended in this area that licensees provide reasonable  
9 protection for this equipment and they add equipment as necessary to address  
10 multi-unit events. The staff evaluated this recommendation and we believe that  
11 we have enough information directionally to move forward with orders, and to  
12 ensure that licensees do provide reasonable protection of this equipment. This is  
13 going to take a fair amount of stakeholder interaction to ensure that we define the  
14 acceptance criteria. What does success look like? What does it really mean to  
15 say reasonable protection? And so, that's going to require a fair amount of work,  
16 but we believe directionally that we could do this through orders.

17           Slide 17, reliable hardened vents for the Mark I containments, for  
18 recommendation 5.1, the Near Term Task Force recommended that the NRC  
19 require licensees to ensure that they have reliable hardened vents in the BWR  
20 Mark I and Mark II containments. The staff is recommending that the NRC  
21 develop and issue orders to licensees for the Mark I containments. Again, this is  
22 an area where directionally we understand where we want to go, but it's going to  
23 take I think a fair amount of dialogue and conversation to make sure that we're in  
24 agreement around the technical basis and acceptance criteria, with respect to the  
25 reliable hardened vents.

1           The task force -- the staff, as we looked at the task force  
2 recommendation, was not able in these 21-days to make a conclusion with  
3 respect to the Mark II containments. Furthermore, we even asked ourselves  
4 whether there is issues that need to be addressed with respect to ice condenser  
5 containments and other smaller containment designs. So, we intend to try to  
6 explore this further, or will explore this further as we develop the 45-day paper  
7 that's due to you on October 3rd, but I think this is going to require a fair amount  
8 of study and I don't want to over commit to you as to when we'll have a final  
9 answer in this area.

10           Slide 18, strengthening response, onsite response, emergency  
11 response capabilities, Recommendation 8, the Near Term Task Force  
12 recommended strengthening and integrating what we have today in terms of  
13 emergency operating procedures, severe accident management guidelines, and  
14 extensive management -- mitigation guidelines. The staff looked at the Near  
15 Term Task Force recommendations, 8.1, 8.2, 8.3, and 8.4, and we believe that  
16 these can all be accomplished in an integrated manner through rulemaking, and  
17 this would be, this would be informed through stakeholder interaction. How we  
18 would propose to start this is to issuing an advanced notice of proposed  
19 rulemaking. This is an opportunity for us to engage all the stakeholders in a  
20 discussion around the methodology for integration of these tools, the processes,  
21 procedures, the trainings, the exercises, everything that comes with this  
22 recommendation, and we would interact with the stakeholders to modify the EOP  
23 generic technical guidelines in order to ensure that the guidelines for the severe  
24 accident management guidelines and the extensive damage mitigation guidelines  
25 are done in an integrated manner, and reflecting all the appropriate design

1 features and what we know about severe accident progression.

2           Moving on to slide nine, emergency preparedness, actions, here  
3 the Near Term Task Force made its recommendations that facilities be ready to  
4 address a prolonged station blackout for multi-unit events and the staff has  
5 looked at that recommendation, and we believe that we need additional  
6 information to move forward and so we're proposing to issue 50.54(f) letters, to  
7 require licensees to perform the staffing studies necessary to determine the staff  
8 necessary to deal with the multi-unit events. As you heard from the stakeholder  
9 panel this morning, that can be done in conjunction with the implementation of  
10 the EP rulemaking. It might require a little additional time, might be done as a  
11 two step process, but to us as we looked at this as a staff, it made sense to do  
12 this collectively. So, that's the first part of our recommendation.

13           The second part of our recommendation goes to ensuring that you  
14 have the adequate communications, equipment onsite to deal with onsite  
15 logistics and coordination, as well as communicating with the offsite to ensure  
16 that that's reliable. So here again, we would engage the stakeholders in  
17 development of the technical basis and acceptance criteria for this  
18 recommendation, before we required licensees to respond under 50.54(f).

19           Bill, in his opening remarks talked about the next steps and that's  
20 slide 20, and my last slide. We owe you a notation vote paper on the 3rd of  
21 October that would reflect on the other regulatory actions from the Near Term  
22 Task Force. It'll talk a little bit about our implementation challenges. Again, not  
23 so much resources, but skill sets are a challenge and we'll do our best to provide  
24 you a notion of what work we would have to displace in order to work on these  
25 near term actions that we've discussed today, and other actions that we'll discuss

1 in that paper. I'm not sure given that I'm looking ahead and I can see October  
2 3rd on the calendar already as to how precisely we'll be able to give you those  
3 resource estimates, but we'll give you our best shot, and if we owe you additional  
4 information following that paper, we'll certainly provide that to you.

5 We want to in that paper talk a little bit more about regulatory and  
6 technical basis that'll need to be developed. We'll address the other  
7 recommendations and we'll talk about schedules and milestones, and how we  
8 will go about stakeholder involvement. Clearly in our mind and in the paper that  
9 we provided you on the charter, having and standing up an external advisory  
10 panel would be very helpful to us as a sounding board, but we certainly will reach  
11 out to all stakeholders through meetings, through public notices, through all  
12 mechanisms available to us, to get the information that we need to make sure we  
13 get everybody's input as we move forward on these recommendations.

14 The first of the meetings that we're going to have, there'll be an  
15 announcement coming out in the near future, on September 21st, industry has  
16 made an offer. The Way Forward Group has offered to come in and present to  
17 us the actions they either have ongoing or have planned, and we're going to  
18 have that meeting and have that discussion with industry, and that's the  
19 beginning, and that concludes my presentation, and the staff stands ready to  
20 answer any questions that you might have. Thank you.

21 CHAIRMAN JACZKO: Great, well, thank you. I have a series of  
22 questions. I'm going to try and -- I've got a lot of them, so I'm going to probably  
23 most of them will be to you. So, I'm going to ask you to be as brief as you can in  
24 your answers. So, hopefully I can get through all of them. It's four pages, but  
25 there's not that many, hopefully and some of this is just to clarify. I think you all

1 did a very good job trying to put together a very comprehensive paper in a very  
2 short period of time and obviously there were challenges in doing that in 21-days,  
3 which I think are completely understandable. So, there's some things that I just  
4 wanted to help try and clarify, think about what really the intent of the staff is in  
5 some of these areas. So, hopefully be able to do that.

6 I think as Bill has mentioned in the beginning, if we look at the level  
7 -- the 12 recommendations, I guess I just want to get your sense and just  
8 reiterate that what we saw in the papers at that level of the 12 overarching  
9 recommendations, the staff does agree with all of the task force  
10 recommendations.

11 MARTY VIRGILIO: Yes.

12 CHAIRMAN JACZKO: Okay. The -- if we look to 2.1,  
13 Recommendation 2.1, that has some specific recommendations about ordering  
14 licensees to look at seismic and flooding hazards, and if necessary after, update  
15 their design bases and the SSCs. The Steering Committee, when you look at  
16 that recommendation and look at what you've provided in this 21-day report,  
17 believe that the recommendations of the Steering Committee, which ultimately  
18 includes taking appropriate regulatory action are equivalent to what the task force  
19 recommended.

20 MARTY VIRGILIO: Yes, and as a matter of fact, we had  
21 conversations with the task force on that very issue and their members said,  
22 "Yes," they believe that is equivalent.

23 CHAIRMAN JACZKO: Okay great. If I go on -- you can sense a  
24 pattern here; they're all going in order. If you go to 2.3, can you give me a sense  
25 of why the Steering Committee chose a different regulatory tool here than the

1 task force. The task force of course specifically stated doing an order.

2 MARTY VIRGILIO: And I think that in cases where we're very  
3 comfortable with the direction that we were going, we went forward with orders  
4 where we felt we needed additional information to decide what the best  
5 regulatory tool and next step would be. We went to the 50.54(f) letters to gather  
6 information.

7 CHAIRMAN JACZKO: Okay. The -- if I go now to the 4.1, which is  
8 the station blackout 50.63 update, one of the things that was not clear to me is  
9 how we -- how the Steering Committee would look at going forward with this rule,  
10 and clearly we've had some discussion on some technical details and technical  
11 information, but as I read the task force one of things, the task force said was,  
12 this rule, for instance, would go forward as a -- through a backfit analysis be an  
13 exemption under adequate redefinition of adequate protection. So, the thing that  
14 I wasn't clear about in reading the paper is how would the staff plan to prepare  
15 this or would it be based on essentially an adequate protection basis with an  
16 exemption from a backfit under that basis.

17 MARTY VIRGILIO: I will acknowledge that the paper isn't clear.  
18 We've had a lot of discussions amongst the Steering Committee since the paper  
19 was developed, but at this point and time, I think the best approach for us is to  
20 redefine adequate protection or to take a -- take that as the technical basis or the  
21 rationale for the proposals we'll make to the Commission.

22 CHAIRMAN JACZKO: Okay. Thanks.

23 BILL BORCHARDT: And if I could just add, I think a number of  
24 issues, I mean this is one very good example, but that may not pass the cost  
25 benefit analysis, but what we're going to do is proceed along the line that this

1 work is going to be accomplished and at some point will need to come to the  
2 Commission and say, "Do you want to use adequate protection?" and move  
3 forward or else we're up against the wall, but and so that'll be a specific probably  
4 issue by issue decision we'll be asking the Commission for, some point along in  
5 the process.

6 CHAIRMAN JACZKO: Well good, if I could turn then to 5.1 and I  
7 think Marty touched on this a little bit, maybe just a little bit more detail here  
8 would be helpful and this has to do -- obviously I think the real fundamental  
9 difference here between where the Steering Committee came out is not including  
10 the Mark IIs and can you give me a sense of why I mean, a little bit.

11 MARTY VIRGILIO: We just did not have sufficient information with  
12 respect to the Mark IIs, the ice condenser containment and other containment  
13 designs to move forward at this point and time. If we will --

14 CHAIRMAN JACZKO: Oh, go ahead.

15 MARTY VIRGILIO: We'll address it to the best we can and the  
16 paper we'll provide you on October 3rd.

17 CHAIRMAN JACZKO: Okay, so --

18 MARTY VIRGILIO: But we need additional technical detail.

19 CHAIRMAN JACZKO: Okay, and so one of the things you may be  
20 considering is more containment designs even then just Mark IIs.

21 MARTY VIRGILIO: Right. There's our discussions amongst the  
22 Steering Committee was geez, ice condenser containments might pose an  
23 additional opportunity.

24 CHAIRMAN JACZKO: Okay. Well, I appreciate that. If --  
25 Recommendation Number 7 we haven't really touched on. The Steering

1 Committee didn't recommend moving forward now with the task force  
2 Recommendation Number 7 and that deals with the spent fuel, make up capacity  
3 instrumentations for spent fuels. Based on the discussion in the paper and the  
4 earlier discussion we had in general about the recommendations, does the  
5 Steering Committee support this recommendation and should we expect  
6 something coming forward in the 45-day report?

7 MARTY VIRGILIO: Yeah, we do support the recommendation.  
8 We're conflicted over how to move forward with respect to the pedigree of some  
9 of these requirements, and we see that these are tied to 2.1, 2.3 and I think we're  
10 going to need to make sure we understand clearly where we're going to respect  
11 of seismic design, and other features.

12 CHAIRMAN JACZKO: And by pedigree --

13 MARTY VIRGILIO: We're talking about quality controls and  
14 maintenance procedures.

15 CHAIRMAN JACZKO: Great, thank you. Going on to -- maybe  
16 we're going to do it, we're almost there. If we look at Recommendation Number  
17 8, which has to do with the emergency operating procedures and kind of  
18 incorporating all this scenario where the Steering Committee recommended a  
19 rule instead of a I think they were orders on the task force and then followed up  
20 with a rule, so you know, to some extent it may be six and one half dozen of one  
21 and versus the other. But again, to get to that specific question, where there  
22 didn't seem to be clarity, does the staff right now envision this rule being  
23 prepared on the basis of adequate protection?

24 MARTY VIRGILIO: Redefining adequate protection, yes.

25 CHAIRMAN JACZKO: Okay thanks. Looking at 9.1 and 9.2 which

1 again weren't touched on in the discussion but clearly are recommendations that  
2 had some short term components, again I just want to clarify here, does the staff  
3 support these recommendations and this something we expect to see more of in  
4 the 45-day paper?

5 MARTY VIRGILIO: Yes, we support them, I'm just trying to think  
6 through whether we'll have more information. I mean what we're recommending  
7 now is to engage in the conversation, start the staffing analysis, under 50.54(f)  
8 ask licensees to provide us the information of the communications equipment.  
9 We will address all of these in October 3rd from various perspectives, but  
10 technically I think we need to move forward on this. We're ready to move  
11 forward on this.

12 CHAIRMAN JACZKO: The -- and again 9.3 is similar and I think  
13 you touched on that a little bit in what you heard a little bit from the previous  
14 panels about how we would proceed with 9.3. The last one to get to is 9.4 and  
15 that has to do with ERDS modernization. And this is one I know we're doing a lot  
16 of work now to get folks to move forward on the ERDS modernization initiative.  
17 Is the sense of the staff that if licensees don't get things done which I think  
18 they're supposed to be done sometime mid next year, with the commitments that  
19 they've made to us, is this something the staff would be prepared to issue orders  
20 on if necessary to?

21 MARTY VIRGILIO: Yes, if you got the moment where we stand  
22 now is I think 50 percent, Jim you can correct me, 50 percent of the licensees  
23 have implemented. We'll have another 30 percent by the end of the calendar  
24 year, and the remainder have committed -- firm commitments -- to do the  
25 upgrades by this summer.

1                   CHAIRMAN JACZKO: Okay, great, good, well that's excellent, so.  
2    Again, and I appreciate that because I think some of those things weren't  
3    necessarily clear, and again I think some of that was just a reflection of the  
4    difficult challenge you had in a fairly short period of time. So I appreciate you  
5    helping me clarify some of those.

6                   I had one other question that doesn't get so much to the specifics of  
7    the recommendations, but it does get a little bit to how we move forward to some  
8    of the new reactor issues, and if anybody has thoughts on this, Marty or Mike  
9    Johnson. The Steering Committee refers to both SECY-11-0110 and SECY-11-  
10   0115. In those two SECYs the staff gives two options available to the  
11   Commission for implementing the Near Term Task Force recommendations for  
12   the Vogtle and Summer COL's. The staff didn't necessarily give us a preference  
13   about either of those two options. I don't know if the staff has a preference for  
14   how we would kind of apply those, or is that something that just left us to figure  
15   out.

16                  MIKE JOHNSON: Chairman, we've been thinking about it. The  
17   fact is we don't have a preference. We think either would be viable.

18                  CHAIRMAN JACZKO: Okay. Thank you. So we've got to figure it  
19   out, which is fine. Yeah, that's okay. Okay great, well those are the questions I  
20   had. We'll turn the Commissioner Apostolakis. Thank you.

21                  COMMISSIONER APOSTOLAKIS: Thank you. Well, I read also in  
22   addition to the SECY the comments submitted by stakeholders. I noticed that  
23   NEI in its comments keeps coming back to the theme that we ought to have  
24   provide flexibility to the licensees when we implement these recommendations,  
25   however they didn't define the concept of flexibility. Perhaps they mean we

1 should have performance based objectives that we define rather than telling  
2 them exactly what to do. You have any comment from that?

3 ERIC LEEDS: Yes commissioner, I you know Marty touched on it  
4 in his presentation and I think Chip Pardee also touched on it in his presentation.  
5 I think what we want to get out of this process is to make sure we both  
6 understand what success is. What the end point is as we go into it. And I think  
7 we heard from all of our stakeholders. I know in our previous meeting before this  
8 meeting with our stakeholders, they all want to be involved in the process and  
9 they all want to make sure that we hear what they have to say. And I think that'll  
10 go a long way into us being able to formulate what is success for this activity,  
11 what our expectations are, we'll listen to the industry, but we want to listen to the  
12 NGOs just to make sure we all understand what success is so that we're driving  
13 to an end point that we can agree to.

14 COMMISSIONER APOSTOLAKIS: But we can define success in a  
15 highly prescriptive way. I mean that doesn't mean that you're not giving them  
16 any flexibility, so I agree that we have to all understand what success is, but the  
17 question is, should the definition of success be performance based, or highly  
18 prescriptive, or case by case?

19 ERIC LEEDS: Well certainly, we always defer towards  
20 performance based, risk informed performance based, that's our overarching  
21 mantra. That's what we like to go to.

22 COMMISSIONER APOSTOLAKIS: Except in the SECY there is no  
23 word "risk" anywhere.

24 [talking simultaneously]

25 ERIC LEEDS: Overarching mantra [laughs]. All right. But, you

1 know, you take a look at flooding, just taking a subject out of the air, we have  
2 plants that are in the desert in Arizona where they have to get their makeup  
3 water from the city of Phoenix. They have a different issue flooding than the  
4 plants, say, a Fort Calhoun. So is it plant specific? It's got to be performance  
5 based. It's has to be appropriate for that site. So there, there always has to be  
6 flexibility.

7 COMMISSIONER APOSTOLAKIS: I agree with that I really think a  
8 lot of these things are site specific.

9 ERIC LEEDS: Yes, sir.

10 COMMISSIONER APOSTOLAKIS: And there's only way to study  
11 site specific but I don't want to go into it. I was surprise -- yes, that's what it is.  
12 Yeah, because you can't impose the same requirement on Palo Verde and San  
13 Onofre.

14 I was surprised to read that we want to develop or we want the  
15 licensees to develop, that's another question, each licensee or any -- but  
16 anyway, I don't want to address that. Develop acceptance criteria methodology  
17 for doing walk downs. I would have thought that was something we settled some  
18 time ago. And we know how to do walk downs, Marty?

19 MARTY VIRGILIO: I would have thought so too, until I had a  
20 discussion with Jack Grobe on the Near Term Task Force about really what he  
21 had in mind in terms of the walk downs and the technical expertise that was  
22 involved. It almost reminds me of the ISA approach in terms of walking down the  
23 site, not only just to look at what you have and does the as-built design match  
24 your design drawings. I think that the Near Term Task Force had in mind a  
25 different look at this, and we need to make sure that we're clearly aligned before

1 we start these walk downs as to what is the methods that we expect, what  
2 technical expertise we expect to be involved in this and how they're conducted.

3 COMMISSIONER APOSTOLAKIS: But we have conducted walk  
4 downs in the past.

5 BILL BORCHARDT: I don't think it's an issue of methodology; it's  
6 an issue of acceptance criteria. Look at the flooding issue, you're going beyond  
7 the current design basis, so part of the evaluation was, okay, given this new  
8 scenario, what is the appropriate acceptance criteria, when you do the system or  
9 the plant walk downs.

10 COMMISSIONER APOSTOLAKIS: That's interesting that you said  
11 that we're going beyond the design basis. We did ask a number of years back  
12 the utilities to do the IPEEEs and the word vulnerability was all over the place  
13 without being defined and now we also have the word vulnerability in several  
14 places and again there is no definition. Is it because everybody understands  
15 what it is, or is it difficult to define, or -- because you remember one interesting  
16 result of the IPEEEs was that every single licensee said they didn't find any  
17 vulnerabilities and then in the next sentence they said, but we did the following  
18 things to enhance safety. So why are we still using a term that is not well  
19 defined?

20 BILL BORCHARDT: Well I --

21 COMMISSIONER APOSTOLAKIS: But are we meaning ...

22 BILL BORCHARDT: What I think we're illustrating is that some of  
23 these activities in the past years had a soft regulatory footprint, if I can introduce  
24 a phrase, and certainly safety improvements were made at the plant, some of  
25 them done by industry voluntary initiatives, some of them prompted by generic

1 letters or other regulatory tools. But there, what we didn't do is have in all cases  
2 very firm acceptance criteria. We looked at more of a process that helped to  
3 improve safety at the plants. So we didn't ensure that there was 100 percent  
4 consistency across the fleet, from our perspective the industry may have done  
5 activities in that with that intent, and we didn't have firm acceptance criteria for all  
6 of those individual specific issues. And what is being discussed in the walk down  
7 is at some point -- now if we're going to have a regulatory requirement it is our  
8 responsibility to make sure there's a clear understanding as to what the  
9 acceptance criteria for each of the elements that are being walked down. And  
10 what the language as I interpreted it is that we believe that it should be  
11 commonly understood amongst all stakeholders as to what the appropriate  
12 acceptance criteria are. Then go out and do it.

13                   What we don't want to do is say rush out, go do something, and  
14 then have the regulators say, well we don't really like the acceptance criteria you  
15 used, go do it again and use these acceptance criteria this time, so it's more like  
16 the principle that it's more important to do it right than it is to do it fast.

17                   COMMISSIONER APOSTOLAKIS: The way I understand your  
18 answer is defining the acceptance criteria automatically you also defining what is  
19 vulnerability.

20                   JIM WIGGINS: I'd just offer another insight, and this is a lot of this  
21 is coming from my regional experience. We've had walk downs even in our own  
22 programs for many, many years. My experience even at the sites as a resident  
23 and supervising others is you're best able to do the walk down when you know  
24 what you're looking for. A fire walk down's going to be different than a seismic  
25 walk down's going to be different than a flooding walk down. And I agree with Bill

1 with and Marty, what we've heard from Jack Grobe and others on the task force  
2 and I think it's smart and it's the right thing. If you're looking for seismic I think  
3 you'd better have seismic experts on that group that have an idea of what they're  
4 looking for.

5           Also, when you talk to acceptance criteria, it's a universal  
6 assumption if they find problems they'll be put in the corrective action program.  
7 What gets interesting is how do you define what's a problem. What level of an  
8 issue is it that you would have to react to and when do you get to a simple broke-  
9 fix like a say you're doing a seismic walk down you find a place for a hangar  
10 that's missing some hardware or something like that, it's pretty straight forward,  
11 you're going to restore it back to the condition. But this walk down might be even  
12 beyond that. It might raise a question with regard to whether they selected the  
13 right hangar design for this particular application, this particular level in the facility  
14 knowing what the seismic hazard would be that they're assuming they're looking  
15 at.

16           COMMISSIONER APOSTOLAKIS: Another way of putting it, is you  
17 know, what is the problem is the same thing as what is vulnerability.

18           [talking simultaneously]

19           BILL BORCHARDT: You're redefining vulnerability, that's the  
20 important part because take B.5.b equipment, that was for a certain scenario.  
21 Now we're going to look at that equipment from a whole different scenario,  
22 flooding, which wasn't really incorporated. So, there's different vulnerabilities  
23 and acceptance criteria.

24           COMMISSIONER APOSTOLAKIS: Just a quick question here. I  
25 get the impression that when the document, the SECY document, says flooding it

1 means external flooding, and I don't understand why internal floods were not  
2 included. And second, I think Mr. Cochran this morning said that one can look at  
3 what happened at Fukushima in one way that says we had an earthquake and a  
4 flood or a tsunami. Another way is to say we had an earthquake and another  
5 serious event that occurred which happened to be a tsunami there but it may be  
6 something else somewhere else. Now if we take that broader view and we're  
7 going through the trouble of defining acceptance criteria and walk downs and  
8 how to do them and so on, why not do it for -- include you know fires and internal  
9 floods and maybe hurricanes, and then do a comprehensive job there and define  
10 walk downs for all these events. Why limit ourselves to external floods?

11 ERIC LEEDS: If I may respond.

12 COMMISSIONER APOSTOLAKIS: Sure.

13 ERIC LEEDS: A number of items, no, we did not as a Steering  
14 Committee we did not discuss internal flooding and we didn't discuss all of the  
15 external hazards, and reviewing all the external hazards. There are a number of  
16 external hazards that were discussed in the report. Certainly earthquakes, the  
17 flooding, tsunami, and fires caused by earthquakes are also discussed ...

18 COMMISSIONER APOSTOLAKIS: That's what I meant.

19 ERIC LEEDS: Internal flooding, we have had Lessons Learned in  
20 the past the Susquehanna plant had a significant internal flood at that plant just a  
21 couple years ago where they had a condenser boot I believe failed and flooded  
22 that site and I think the industry learned a lot of lessons from that. We didn't  
23 necessarily have safety lessons from that, but you know, in the 45-day paper, the  
24 Commission asked the staff to consider things outside of the report, things that  
25 aren't considered in the report. And we've already started a list of those items.

1 Perhaps we should add that to the list.

2 COMMISSIONER APOSTOLAKIS: Thank you.

3 CHAIRMAN JACZKO: Commissioner Magwood.

4 COMMISSIONER APOSTOLAKIS: Oh, I'm sorry. Marty

5 CHAIRMAN JACZKO: Oh, yeah.

6 MARTY VIRGILIO: Just to add to what Eric said, I do read into  
7 Recommendation 1.4 which is to go back and reevaluate the insights in the IPE  
8 and IPEEE's to determine if there additional actions that we can work on. I  
9 personally would say that if we're going to go down that road we out to think  
10 about updating those tools and then looking at those. And that would get you to  
11 the kinds of issues you're talking about I think. But that's the longer-term effort  
12 and we are recommendations on that.

13 COMMISSIONER APOSTOLAKIS: Terrific.

14 MARTY VIRGILIO: No, that's 18 months.

15 COMMISSIONER APOSTOLAKIS: Oh, that one.

16 MARTY VIRGILIO: Yes, sir.

17 CHAIRMAN JACZKO: Commissioner Magwood.

18 COMMISSIONER MAGWOOD: Let me echo some of the thanks to  
19 the chairman for working on such a compressed time frame, I know that 21-days  
20 isn't much time to do this kind of work. I also wanted to thank the stakeholders  
21 for doing it this morning because I know we asked them to respond in a very very  
22 short period of time that was much shorter than our normal process and I really  
23 appreciate the effort they've gone through to respond to our request for their  
24 participation.

25 I should note that you know the Commission, in its infinite

1 generosity, originally was thinking about doing this in 20 days but we decided we  
2 might need the extra day so we went to 21-days. You've already covered the  
3 issue of the Mark II's the Chairman brought that up in his questions and I wanted  
4 to explore that just a little bit further because I think you've raised an important  
5 point about the other small containments. It sounds -- it certainly seems to me  
6 that we're likely to do something with those small containments. Is there nothing  
7 that needs to -- should be conserved in this short term 21-day report timeframe to  
8 think of -- to look for more information or to gather information because I find as I  
9 look at this there's a lot of things we -- that I find I don't know about these  
10 systems, and as I asked staff that they don't know about these reactors at this  
11 point. I wonder, is there anything we should consider doing at this early stage  
12 before moving off to a 45-day report?

13           JIM WIGGINS: We were having a number of discussions in the  
14 group. First on the Mark II's if you go back to the actual Near Term Task Force  
15 report the basis for going after Mark II's as indicated in that -- I have a lot of  
16 comments on this during the Steering Committee that's why the emergency  
17 planning guy is answering a containment venting question. You'll see and I know  
18 that there's a historically solid basis for venting Mark I's. We've been there,  
19 you've heard from the prior panel that was part of a Mark I program that was  
20 back in the 80s. The Mark II we haven't gone there yet. And the task force  
21 makes a conclusion of it's reasonable to assume based on the volumetric  
22 comparison between Mark I's and Mark II's that you should do Mark II's also.

23           We just want to talk to our staffs. We don't think it's a gather  
24 information licensee exercise; we think it's a gather information from the  
25 containment systems branch staff here. With regard to the other containments, in

1 particular the ice condenser containments, I think if we were to ask, and we likely  
2 would, for an operating experience summary between Mark II's and say ice  
3 condensers, you might find there's more provocative issues than the operating  
4 experience on the ice condensers. There's been a number of rather knotty  
5 issues with regard to the ice in the baskets, the corrosion of the baskets, and  
6 how do you know you got what you need in there, and how do you it'll perform  
7 and how do you know its existing condition meets the design condition for it to  
8 function the way it's supposed to.

9                   So I think we want to take the time to ask our own staff and the time  
10 is 24 days. It's the difference between 21 and 45. We thought we can get a  
11 discussion from our own staff here which would allow us to make a more  
12 informed decision. I think for a -- you may -- I would not be surprised when you  
13 see the 45-day report but you'll see that the schedules for some of the other  
14 issues don't appear to be as far down range as you might suspect. It's not all  
15 long term things. Some of these particularly the containment one and I think the  
16 issue with regard to the spent fuel pool and the instrumentation; that's a pedigree  
17 issue, it's a very specific question. We didn't have time to resolve -- to get by the  
18 21-day report. I think we can resolve both of those before we do the 45-day  
19 report, and then we'll -- you may see those things in a timescale more -- May. I  
20 don't want to over promise because there's some serious resource issues for the  
21 staff on how to make all these things happen. You may see some things that are  
22 happening earlier than you might think if you think all of these are long term  
23 issues.

24                   COMMISSIONER MAGWOOD: I appreciate that. That explanation  
25 helps a great deal. Thank you very much. I believe it was Dr. Lyman was talking

1 about -- spent some time talking about the hydrogen igniters and the need for a  
2 short backup power; that's not an issue I recall seeing much about. Is that  
3 something that was discussed by the Steering Committee in any detail?

4 MARTY VIRGILIO: It wasn't necessarily addressed but we are at  
5 this time, formulating the list of additional actions that we believe we need to look  
6 at and I know that fuel performance, hydrogen generation, hydrogen control are  
7 all on that longer term list.

8 ERIC LEEDS: If I can just make a statement; I think that the report  
9 -- The near term taskforce that wrote this report. I think they -- and I think I've  
10 said to each member of the Commission, I thought this was a bold and  
11 courageous report. They had a couple disadvantages. One of them was that  
12 they didn't get any external stakeholder input and the value that we're seeing  
13 from external stakeholder input are these types of suggestions. You know, what  
14 about igniters, backup power for igniters, what about filtered vents, what about,  
15 you know, there's a number of items and I think that's why -- I heard Bill mention  
16 that we want to do it right the first time. It's so important that we have that  
17 external stakeholder input, that we listen to that, help use that information to  
18 inform us as we go forward, factor that into that paper and provide you that  
19 information.

20 COMMISSIONER MAGWOOD: Very well said, I agree entirely.  
21 Eric, since you jumped in -- a question for you. One of the things that I think that  
22 will become important as this goes forward, not just over the next few weeks, but  
23 really over the next several years is when we get into the implementation of  
24 actions at the plant sites. And we had a conversation this morning briefly about  
25 prioritization. I think the Chairman was asking about how we prioritize these

1 activities related with regard to things like license renewal and all sorts of things -  
2 - but beyond those types of activities is there's safety activities. There's things  
3 that are enhancing the safety of various plants: GSI-191 and other activities that  
4 are going on at the plants. Have you considered how you're going to prioritize  
5 these activities when you go to the licensees and begin the conversation about  
6 getting this work done verses other safety activities that are taking place at the  
7 plants?

8           ERIC LEEDS: Commissioner, you just touched on the greatest  
9 concern that I have with regard to going forward with the Fukushima actions; how  
10 to prioritize them, how to prioritize them vice the work the staff already had  
11 ongoing and how to prioritize them vice what licensees have ongoing at the sites.  
12 And I can give you examples of each one of those where we're going to have to  
13 do a lot of thinking and a lot of work. One of the task force recommendations is  
14 to take a look at the fires resulting from earthquakes. Well, as you all are aware,  
15 we're very, very busy with NFPA805 activities; very safety significant activities.  
16 And we have a limited skill set in the fire protection.

17           Another example that I want to share with you is when I met with  
18 Constellation Energy. Licensee for Ginna is completely redoing their auxiliary  
19 feedwater system. It's going to reduce the core damage probability at that site.  
20 Voluntary initiative; you know, I applaud it as a regulator I want them to do that  
21 work. I'm very loath to put something else on their plate that might deter them  
22 from doing that; that may not have the same safety impact. So we have a lot to  
23 weigh. It's going to be a real challenge for the staff.

24           BILL BORCHARDT: Commissioner, I think there's a couple  
25 dimensions to that question and I think the drivers going to be skill sets; we've

1 already mentioned that. And I think if we take the skill sets that are required for  
2 each of the recommendations and look at what other work is being accomplished  
3 and then risk inform a prioritization of that work, that'll help make a better  
4 informed decision about which ones -- activities should be done and when.

5 COMMISSIONER MAGWOOD: You're thinking about skill sets  
6 assessment internal or external?

7 BILL BORCHARDT: Well, internal is a first step but as part of that,  
8 then once we come up with a first rough cut I think we need to engage the  
9 stakeholders to find out what makes sense from an outside of NRC perspective  
10 as well. So, I mean, it's not a simple issue, it's just taking these  
11 recommendations and force ranking them for safety significance because it's -- I  
12 think going to be more -- at least as much influenced by skill set availability as it  
13 is by risk.

14 COMMISSIONER MAGWOOD: And obviously it'll be something  
15 you'll have to look at by a plant by plant basis. It won't be something where one  
16 size fits all. One last question. There was a USGS representative this morning  
17 who was talking about the seismic instrumentation. I just want to give you a  
18 chance to sort of give us your thoughts about that. He did indicate that he  
19 thought we should have our own equipment out there which, obviously, we don't.  
20 But just as for your opinion about that or your reaction as to his comments.

21 MARTY VIRGILIO: The only thing I can say is that, shortly  
22 following the earthquake at North Anna, I asked our staff about that issue and  
23 they came to the same conclusion with respect to instrumentation; more modern  
24 instrumentation would've been helpful.

25 BILL BORCHARDT: To be honest with you, I don't recall whether

1 or not it had been seriously considered in the past as to requiring something  
2 more sophisticated than scratch plates to be installed in the plants and how that  
3 issue got resolved so it's probably a look up we need to take.

4 COMMISSIONER MAGWOOD: Especially, I think -- and Jim if you  
5 wanted to respond, but since it's after the fact, does that fall into the safety area  
6 since it's more diagnostic than it is predictive? I'm not sure how to think about  
7 that issue.

8 JIM WIGGINS: It does though, influence and trigger certain review  
9 activities that we have to do, and the licensee has to do. While I haven't thought  
10 a lot about it; I'll give you a first reaction on instrumentation. Generally, come  
11 down if it's important enough to have them we should require licensees to have  
12 it. I'm not talking about instruments out in the area remote from the plant to  
13 monitor, which would be a legitimate interest from USGS. That may be another  
14 government organization that ought to think about that. But if you look at the  
15 seismic response, in particular maybe the North Anna response, and you try to  
16 ask yourself what is the essential information that North Anna or a licensee would  
17 need in order to do the right thing. You have to ask what's the regulatory  
18 structure; they got to tell where they are vice a vie the operating basis  
19 earthquake and the safe shut down earthquake to determine what level reviews  
20 they have to do from a regulatory point of view, and any approvals they need  
21 from us.

22 You know, the North Anna-- you could say it's timely; it took weeks,  
23 a few weeks, you got an answer enough to know they have to do the exceed the  
24 SSE level review. Having a better instrument would give it more real time; it  
25 would resolve some of the questions that existed in the interim period and raise --

1 scratch an itch on why don't we know more about it.

2           The plant that I was a senior at did not have-- they had a  
3 generation beyond scratch plates and that's a 1980-ish license, probably  
4 designed in the 70s. There's other technologies; they had a system, at least at  
5 the time, that was -- a panel in the control room that recorded. It was, at that  
6 time, cassette recordings that you can take and analyze, so it went beyond the  
7 scratch pad. So there's other generations of instrumentation. The answers  
8 probably three questions that you asked.

9           COMMISSIONER MAGWOOD: I really appreciate this --

10          JIM WIGGINS: I'll leave it to you to kind of match answer to the  
11 question.

12          [laughter]

13          CHAIRMAN JACZKO: It's the questions he didn't ask.

14          [laughter]

15          COMMISSIONER MAGWOOD: It does sound like Jim is moving  
16 closer and closer to the 21 century so that's a good thing.

17          CHAIRMAN JACZKO: Commissioner Ostendorff?

18          COMMISSIONER OSTENDORFF: Thank you, Mr. Chairman. I  
19 want to extend Bill, my thanks to you and Marty and Eric and Jim and the rest of  
20 the team for your hard work. I know the Commission final SRM on this whole --  
21 on the near term taskforce report -- had some aggressive timelines in there and I  
22 think it's consistent though with doing this in a measured way to get it right the  
23 first time and getting it right rather than quickly is, I think, Bill, a comment I've  
24 heard you make several times which I agree with. I applaud the hard work you  
25 all have done over a very short period of time and our thanks to you.

1 I've got a number of questions, some of them I am just going to  
2 make a couple of comments on. I going to maybe pickup with where  
3 Commissioner Magwood was. I acknowledged that he was very gracious in  
4 giving one extra day, from 20 to 21-days as he previously highlighted. He's a  
5 very generous man.

6 On the seismic piece -- and I'm trying to understand a little bit the  
7 relationship between GI-199 those ongoing efforts that started out well before  
8 Fukushima. Could someone comment, maybe Marty or Eric, you know, how that  
9 timeline for 199 interfaces with the task force efforts and the different  
10 recommendations.

11 ERIC LEEDS: Commissioner, preliminary thinking, as we have  
12 discussed this as a Steering Committee, is that the GI-199 effort is perfect to use  
13 to go forward and pretty much what we're looking at doing is just expediting what  
14 we've already started using GI-199 as a basis for licensees to go back and  
15 reevaluate what they have at their sites if it's right, and also from preliminary  
16 information. What we have so far, our seismologists on the staff seem, strongly  
17 believe that the North Anna event, that earthquake that was centered in Mineral,  
18 VA, is bounded by GI-199.

19 COMMISSIONER OSTENDORFF: What is your understanding of  
20 the overall timeline for completion of GI-199 activities by the licensees?

21 ERIC LEEDS: The timeline prior to Fukushima, prior to  
22 [unintelligible] --

23 COMMISSIONER OSTENDORFF: As of today, where things  
24 stand.

25 ERIC LEEDS: We believe that the seismic hazards analysis is

1 supposed to be done by the end of this year and we were hoping that by early  
2 spring we'd be ready to go ahead with a final generic letter setting the licensees  
3 off with a timeframe to go forward. I think we're going to need to, we still need to  
4 have the work that's being done to develop that seismic hazards effort that's  
5 being done by the NRC, DOE and EPRI that, we can't speed that up. That just  
6 has to go through its course. We should have that done by the calendar year.  
7 Rather than using the generic letter what we suggested is using a 50.54(h) and  
8 just telling licensees to use that process, go forward. And that would truncate it  
9 and get us the information earlier. By doing those seismic walk downs ahead of  
10 time, Recommendation 2.3, we think that we'll have a better idea of what  
11 condition those sites are in and provide us that comfort that we need as the  
12 licensees go through the analysis that we'll need for the longer term seismic  
13 review.

14           COMMISSIONER OSTENDORFF: Okay. Thank you. Marty, I  
15 have a question for you. I appreciated your explanation of the thought process  
16 on the regulatory vehicles between orders, 50.54(f) letters, rulemaking, et cetera,  
17 and I wanted to maybe just kind of bore down into one of those and I'd asked a  
18 question of the previous panel dealing with the reliable hardened vents, the 5.1,  
19 and I know that we've had some discussions about is there or is there not an  
20 existing technical basis to move forward with an order and is there further  
21 engagement required with stakeholders in order to issue an order in that area.  
22 Are there examples of the NRC as a regulator issuing orders where that process  
23 required further interaction with stakeholders to understand the technical basis  
24 for the subject being regulated?

25           MARTY VIRGILIO: I would look to some of the orders that we

1 issued post 9/11 as examples of where in fact we issued the orders, but then we  
2 still had additional dialogue to make sure that we were in alignment with respect  
3 to methodologies that would be used in acceptance criteria.

4 COMMISSIONER OSTENDORFF: Okay. The big picture in just  
5 respect to the 5.1, how long would it take us, is there a ballpark estimate for how  
6 long would it take to issue an order for the reliable hardened vents?

7 MARTY VIRGILIO: I think it would depend, again, it's going to start  
8 out with, you know, the availability of the resources, the other work that would be  
9 disrupted. We're going to have to look at that and make sure that we're not  
10 disrupting things of higher safety significance. But, you know, our notion is that  
11 this is not going to be years. I mean, that's why we went to orders as opposed to  
12 rulemaking. So, we want to make sure that we start the dialogue, make sure that  
13 we're in agreement about things, and I think it was Mr. Pardee that talked about  
14 motive power, or you might have talked about, you know, how many cycles do  
15 we want, what does it mean for operator availability. There are a number of  
16 things that we want to make sure that we're in agreement on before we would  
17 say okay, go ahead and this is the requirements. This is what you're expected to  
18 meet.

19 ERIC LEEDS: If I could add just one thing about orders, we heard  
20 very strongly from the NGO's that they had some reservations with orders  
21 because they felt that they were being cut out of the process and they want to be  
22 part of the process. And so, I think this staff needs to consider that and going  
23 forward with issuing orders and making sure that our interactions allows for that  
24 type of stakeholder input before the orders are issued.

25 COMMISSIONER OSTENDORFF: Okay. Let's, specifically the

1 words that are in your SECY paper say this will allow and include interactions  
2 with stakeholders to develop a technical basis, basis and acceptance criteria for  
3 suitable design expectations.

4 MARTY VIRGILIO: Let me admit to an intentional ambiguity in the  
5 paper because we thought, there are two -- there are two paths we can go down.  
6 One is to issue the order that would start dialogue. And the other would be to  
7 have the dialogue completed and then issue the order, and we're still open at the  
8 time that we signed out that paper as exactly how to approach that. We definitely  
9 need to have the dialogue and we need to have the alignment around the  
10 acceptance criteria before anybody takes any action. But, you could in fact issue  
11 the order in a way that would say, as part of a feature of the order, you need to  
12 come to an agreement on acceptance criteria and then move forward to  
13 implement.

14 COMMISSIONER OSTENDORFF: Well, what I'm hearing, I think,  
15 if I'm correct, just confirm that, to the extent that you're going to have interactions  
16 with stakeholders that the NGO's would be part of that population?

17 BILL BORCHARDT: Absolutely.

18 COMMISSIONER OSTENDORFF: Okay. Good. Marty, you made  
19 a comment. I think the chairman had asked a question about Recommendation  
20 7, spent fuel pool, and then I just kind of wanted to get a very specific question  
21 here that there is nothing in the short-term paper based on some concerns and  
22 interface with the Recommendation 2.1 on the seismic piece and what the  
23 pedigree quality control measures might have to be for, in that area. Can you  
24 give us an example?

25 MARTY VIRGILIO: Well, do you apply Appendix B and all the

1 provisions of Appendix B to the instrumentation that you would have for wide  
2 range monitors. They have to have narrow range monitors today so they know  
3 where the water is relative to the top or close to the top of the pool. But, under  
4 what conditions do we do this? And again, this goes back to, I think, some of the  
5 notion in Recommendation R1 as to, do you need, you need to come to some  
6 alignment or some agreement as to what are the provisions of Appendix B that  
7 you would provide, what provisions of the maintenance rule you would provide  
8 for these beyond-design basis, the design basis extension, accidents and events.  
9 We're, we may be uneven today with respect to some of our beyond-design  
10 basis rulemakings and requirements with respect to quality assurance,  
11 maintenance rules and other activities.

12 BILL BORCHARDT: I'm sorry. In the past, for example after 9/11,  
13 there's a lot of discussion as to how do you ensure functionality of the function  
14 that you're concerned about and if you, the historical approach is if it was safety  
15 related equipment it would have to be 1E electrical power supply. It'd have to be  
16 seismically designed. You'd use Appendix B. All of those have many sub tier  
17 requirements built into it. Another approach was, would be that you, well, you  
18 don't need that, all of those requirements. You need to just enhance its  
19 functionality. So, those are the kinds of decisions that need to be made as we  
20 looked at spent fuel pool instrumentation as to what's appropriate under this  
21 circumstance and the other systems that already exist.

22 COMMISSIONER OSTENDORFF: Jim, did you want to say  
23 something?

24 JIM WIGGINS: I was going to say the principal hang up on 7, at  
25 least as I look at it, was that the task force said it should be safety related

1 instrumentation, safety related. I want to explore whether that's actually  
2 necessary rather you need reliable and next we'll get to Commissioner  
3 Apostolakis' question about having some flexibility in there. I believe the,  
4 fundamentally I believe the answer is that you need reliable instruments. You  
5 need reliable power to the equipment that you're counting on. If you buy into  
6 safety-related, there's a tail that comes along with it. It's Appendix B sure, but  
7 more specifically you're looking at separation of channels. You're looking at  
8 separation of control and instrumentation. You have the whole IEEE 603 rigger  
9 for how you set up a safety-related system and I'm not sure that's needed. It's a  
10 heck of a backfit if it is in terms of retrofit. I don't want to use the backfit word.  
11 It's really a retrofit. You'd have to say you'd have to do some major  
12 reconstruction in there. I just want to make sure we actually know what we're  
13 shooting for and what we really need in this and that's one of the ones as I  
14 mentioned that Commissioner Apostolakis, you could expect, or Commissioner  
15 Magwood rather, you could expect when you see it in the 45-day, the time scale  
16 for this might not be long, long. It might be, you know, something approximately  
17 what the rest of these things that we're talking about in the 21-day paper pending  
18 the fact that, you know, Eric can get enough resources and skill sets available to  
19 look at this and implement it.

20 COMMISSIONER OSTENDORFF: Again, thank you all. Thank  
21 you, Mr. Chairman.

22 CHAIRMAN JACZKO: Commissioner Svinicki.

23 COMMISSIONER SVINICKI: Well, I will join in thanking you and all  
24 those who supported you in your work on this and all you accomplished in 21-  
25 days. You looked at the work of people for 90 days and we gave you 21-days. I

1 think at some point we'll give you two -- we'll give you a couple hours to turn  
2 around on some things here at some point. So, if we keep having it.

3 CHAIRMAN JACZKO: [unintelligible]

4 COMMISSIONER SVINICKI: That's true. Hi, Marty, how are you?

5 MARTY VIRGILIO: All right.

6 COMMISSIONER SVINICKI: I'm kind of thinking, well, Marty had  
7 to deliver most of the staff's presentation, so I ought to just, that means that out  
8 of fairness the questions should be directed to others. But, then I thought, no. I  
9 have to direct my questions to Marty. Marty, you made a statement that, and it's  
10 in the paper that I'm quoting, but I think you used it just off the top of your head,  
11 but it was I think almost verbatim, this -- the staff believes that all of the task  
12 force's recommendations if adopted would enhance safety. My question for you  
13 is if the tragedy in Japan followed by the nuclear event had never occurred, and I  
14 presented you with the list of recommendations of the task force, would it be your  
15 assessment that those recommendations just taken by themselves enhance  
16 safety even if Fukushima never happened?

17 MARTY VIRGILIO: I think they would enhance safety.

18 COMMISSIONER SVINICKI: Okay. So, I'm not trying to pick on  
19 you, but I wanted just to confront you with that because I think that you know  
20 really what you as a steering group and the staff have to evaluate. It's a lot more  
21 complicated than a statement of do these recommendations enhance safety. I  
22 mean, at the end of the day you may wish it were really that straightforward. And  
23 so, I asked Mr. Pardee about accident reconstruction and timelines out of the  
24 events at Fukushima and the task force acknowledged that there's a lot that we  
25 don't know about the specific sequence of events. I'm assuming that didn't

1 change in the lengthy 21-days that you were given either.

2           So, I think you know and I just want to give you a chance to react to  
3 that, to say that at the end of the day it's more complicated than looking at  
4 whether they enhance safety. I mean, we -- you also responded to questions  
5 about redefining adequate protection. So, I might ask you or anybody else to  
6 respond really to this train of thinking, which is that we use the term redefine  
7 adequate protection. I mean, what that's a fancy way of saying that we're going  
8 to relook at how safe is safe. I mean, that's what that means in laymen's terms.  
9 So, we don't have the kind of fidelity on the events at Fukushima that we would  
10 like and yet we will go ahead and say that in some high level those events have  
11 led us to believe that we must reexamine how safe is safe.

12           How do you respond to that disconnect, that you have an absence  
13 of some of the key specifics that you might want? How did you as you looked at  
14 the task force recommendations and develop the 21-day paper, what was your  
15 discussion about that particular kind of high level disconnect?

16           MARTY VIRGILIO: We recognize that our state of knowledge is  
17 not complete at this point in time, but for those actions that we felt that we could  
18 move out of the near term we felt pretty comfortable that the kinds of details  
19 that'll be revealed as TEPCO and the government of Japan gain access to the  
20 plant and actually see what the state of the core damage is and get a better  
21 understanding maybe of how the core damage progression occurred, but we'll  
22 definitely learn more. But, on some of these issues we felt like we did have  
23 enough information to move forward. Station blackout is a really good example.  
24 I mean, I'm not sure that we need to know more about the station blackout event  
25 than to know that we need to relook at the six to eight hours that we have in

1 place today and think about do we have the right scheme? Eight hours might be  
2 the right time, but I really do think that that three tiered approach really makes a  
3 lot of sense in light of what we've seen from Fukushima.

4 COMMISSIONER SVINICKI: How are you as a steering group  
5 struggling with the sequence here where the Commission has given you 18  
6 months really to look at the overarching redefinition of our framework and yet  
7 you've got to address implementation of near term actions? I mean, it's nice that  
8 the Commission set up that construct, but I think it's probably -- it's complicated  
9 for you on a going forward basis. How are you day to day dealing with that?

10 MARTY VIRGILIO: We've looked at each one of these near term  
11 recommendations and we believe that the best approach is to move forward in a  
12 process that redefines adequate protection or 50.109. We did some amount of  
13 research on this given we didn't have a whole lot of time. I have to give a shout  
14 out to Commissioner Ostendorff for his -- in March of this year he developed a  
15 presentation on adequate protection in Commission decision making and I think  
16 that was very helpful to us.

17 We've also looked at some of the court actions, the Union of  
18 Concerned Scientists versus NRC in the D.C. Circuit Court provided some  
19 guidance to us that I think was fairly useful with respect to Congress not defining  
20 adequate protection and giving the Commission wide latitude to what constitutes  
21 adequate protection recognizing it's an evolving standard and that it needs to  
22 keep pace with information as information becomes available. And so, we look  
23 at Fukushima as this is new information that's become available and I think it fits  
24 right into where the Circuit Court fell out and where Commissioner Ostendorff  
25 summarized in his speech some of the things that we need to look at as we look

1 at what constitutes adequate protection and what constitutes the basis for  
2 redefining adequate protection.

3 COMMISSIONER SVINICKI: And I'm not in any way visiting the  
4 question of, obviously the agency has got a lot of discretion on defining adequate  
5 protection, a tremendous amount of deference than the judgments that we render  
6 in that regard in terms of any litigation. But, I'm more asking you are you as you  
7 go about assessing implementation of these near term actions, are you kind of  
8 answering the 18-month question as you go along? And by the time we get to 18  
9 months you will already have -- and the Commission has made discreet one by  
10 one decisions on specific actions where we also have answered that question.  
11 What are we even looking at in 18 months?

12 MARTY VIRGILIO: We may in fact do this. I mean, this is a one at  
13 a time decision, which is consistent, I think, with the way Commissioner  
14 Ostendorff in his presentation on adequate protection outlined the approach and  
15 it may be at the end of 18 months we're well informed as to how we would  
16 proceed with respect to Recommendation 1. I'm not sure that it'll, we certainly  
17 will --

18 COMMISSIONER SVINICKI: That we're well informed or --

19 MARTY VIRGILIO: Yes.

20 COMMISSIONER SVINICKI: -- we'll already have made the  
21 decision that --

22 MARTY VIRGILIO: They will have.

23 COMMISSIONER SVINICKI: -- we'll be implicit in all the other  
24 decisions that we make.

25 MARTY VIRGILIO: It may well have.

1                   COMMISSIONER SVINICKI: I think it's more likely to be the latter.  
2 Another easy topic, I would ask each of you perhaps that as you looked at, not  
3 the recommendations, but at what I term the instruments or the regulatory tools.  
4 We have different ways of describing its orders, generic letters, it's that whole  
5 basket of options that we have as a regulator the instruments available to us.  
6 So, not the substance of what you're doing, but the instrument by which you're  
7 doing it. So, there's been a lot of discussion about the 21-day paper did not align  
8 in every instance, frankly, in most instances with where the task force was. I  
9 would ask if the, could you -- is there an easy way to give me a calibration on  
10 how hard over you were on the instrument? Meaning that often that when I read  
11 a staff recommendation I don't know if that was 51-49 judgment call or were you  
12 80 percent that it had to be the instrument that you picked and felt strongly? In  
13 general for the instruments that you arrived at as a steering group, did you feel  
14 strongly that that instrument and no other?

15                   ERIC LEEDS: If I could answer that question, Commissioner. I  
16 don't know that I could give you a 51 to 49 or a percentage, but we reached  
17 consensus very quickly on the different --

18                   COMMISSIONER SVINICKI: Well, that's helpful because that's  
19 indicative of your, the strength of what you thought.

20                   ERIC LEEDS: Thank you. And if I could just say one thing, about  
21 a 50.54 letter and really it's for the external stakeholders. That's a very powerful  
22 regulatory tool. It requires a response from, you know, it's a request for  
23 information from a licensee that requires a response under oath or affirmation  
24 and then the staff uses that information as stated in the regulations to determine  
25 whether a license should be modified, revoked or suspended. It's a strong

1 action.

2 COMMISSIONER SVINICKI: Well, so can -- on that point, there  
3 are those of us, okay -- so some of these appear, to use another colloquial term  
4 that are tougher, you know, some of the tools and instruments are tougher and  
5 more compelling than other tools. Did the steering group when it considered the  
6 instrument that it wanted to recommend for these various actions, would you  
7 characterize that the steering group was in any way influenced by the extreme  
8 amount of external scrutiny of the NRC right now in terms of looking tough? Was  
9 that at all a factor in what you arrived at in choosing instruments for various  
10 actions?

11 ERIC LEEDS: That's an interesting question.

12 COMMISSIONER SVINICKI: And that might be something that an  
13 individual in their mind is really, it's not, it wasn't part of your discussions, but do  
14 you think it was a factor?

15 ERIC LEEDS: I think that the, I think the steering group began with  
16 the end in mind. What do we want to accomplish? What's the best tool to get us  
17 there? And I think that's how we made the decisions that we made and picked  
18 the tools that we picked. I don't think it was the case of looking at -- well, I think  
19 we acknowledged that if there was a discussion about it, we acknowledged that  
20 we'll probably get criticized from both sides. You know, we wanted to do what  
21 was right. Jim?

22 JIM WIGGINS: Yeah. I would say, you know, we'd be hard  
23 pressed to offer an argument that we were oblivious to the pressures that the  
24 staff and the Commission --

25 COMMISSIONER SVINICKI: No, and that's fair. I'm not saying

1 that it's wrong.

2 JIM WIGGINS: -- was under. But, we also were focused on the  
3 Commission direction, which was an action oriented direction, identify those  
4 actions that can go forward now without unnecessary delay. So, the Commission  
5 direction was actually more of a focus on us than what I would characterize as  
6 these atmospheric conditions behind it. It was an action oriented thing. It was  
7 the idea that we wanted to not study things to death. We wanted to actually do  
8 something. Now, a number of these -- it's probably more accurate to say we're  
9 initiating activities in it, but that's in fact there's an active verb in there, you know?  
10 There's going to be engagement. There's going to be decisions made. The  
11 decisions that we're going to have to deal with on an earlier question about  
12 where does the stakeholder engagement happen, vis-à-vis the order. One of the  
13 things that I think we have to be very careful about is that we don't get drug in to  
14 analysis paralysis activity. You heard that from the earlier stakeholders. You  
15 know, you can't deny the truth in that. We try to do things by consensus, not just  
16 internally but externally also. Sometimes that causes us to drag things out. In  
17 the EP world and in the security world we've been working -- we're a little bit off  
18 the subject -- we've been working with --

19 COMMISSIONER SVINICKI: Are you once again answering  
20 questions that weren't asked of you? And I well know that I'm over my time, so.

21 JIM WIGGINS: It's related.

22 CHAIRMAN JACZKO: Do you have more questions you wanted to  
23 ask before we go into [unintelligible]?

24 JIM WIGGINS: I was just going to say it's a related answer. We  
25 use those working groups that I talked about before I meetings and private

1 meetings, and also, and it's more of an action-oriented activity. You get with the  
2 stakeholder and say, "We're going to do this, it's going to get done by this time,  
3 so we can move forward." So that'll be a consideration. I think it was  
4 Commissioner Ostendorff's question of where does the stakeholder come vis-à-  
5 vis the order?

6 We're committed to have a process that we're not going to get bogged  
7 down in analyzing things for excessive amount of time.

8 COMMISSIONER SVINICKI: Okay, and I think that's fair. I'll just  
9 close by saying that I think, Bill Borchardt made the comment that, you know --  
10 well he didn't make this comment, but after Three Mile Island the NRC put in  
11 place some things which it subsequently revoked. And I imagine it was a desire  
12 to look action-oriented that probably caused them to put in place some things  
13 that it subsequently pulled back on, so I appreciate, Bill, that you're trying to keep  
14 that prism in mind as we move forward. Thank you. Thank you.

15 BILL BORCHARDT: Commissioner, if I could just add, the  
16 regulatory tool's important. But it pales in comparison, in my mind, to where we  
17 end up, right? And where the regulatory requirements are, what regulatory  
18 requirements exist from whenever we make final decisions, whenever the  
19 Commission makes final decisions. That'll be really important because that'll  
20 have the long-standing safety impact that do or don't. Mr. Chairman, can I just  
21 make one thank you --

22 CHAIRMAN JACZKO: Sure.

23 BILL BORCHARDT: -- before you close. I want to thank Marty and  
24 all the office directors that served in the Steering Committee, but specifically  
25 there's four people who made this 21-day paper possible. These guys talked a

1 lot, but the people who really did work were David Skeen, Rob Taylor, Amy  
2 Cabbage and Tim Reed, who I'm sure are in the room here. But they are the one  
3 who actually put the paper together and distilled all the comments made by all of  
4 these brilliant colleagues of mine. So, thank you.

5 CHAIRMAN JACZKO: Well, thanks. And they've set the bar high,  
6 so we -- maybe next time we'll go with Commissioner Magwood's 20 days  
7 instead, so we know the team that can get it done.

8 Well, I want to thank everybody for their very thoughtful comments,  
9 and I think it was a very good discussion and given us a lot of things to think  
10 about as we go forward. And I will just, I think, echo to some extent what was  
11 said about it in the end. You know, it's what we accomplish is what's going to be  
12 important and, you know, if we look to the challenges we have in front of us, even  
13 if, you know, I think as Commissioner Svinicki asked, without Fukushima we  
14 have issues: fire protection, GSI-191, GI-199, that are ongoing activities. And so  
15 all of this has to be brought together and that's why it is so important for us to  
16 have a timeframe and a timetable to get these things accomplished, because  
17 three years from now there will probably be something new and it will be  
18 important for us to be well on the way of addressing the Fukushima issues that  
19 we decide need to be addressed. Otherwise we will find ourselves never getting  
20 out of the hole of moving forward and always have new challenges.

21 So, but I appreciate all the work so far, and I think we have a lot to  
22 think about. So, thank you very much.

23 [Whereupon, the proceedings were concluded]