UNITED STATES OF AMERICA

U.S. NUCLEAR REGULATORY COMMISSION

BRIEFING ON THE JAPAN NEAR TERM TASK FORCE REPORT PRIORITIZATION OF RECOMMENDATIONS

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9:00 A.M. AND 1:00 P.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

External Panel 1

Christopher Paine
Natural Resources Defense Council

Charles Pardee
Chairman, Industry Fukushima Response Steering
Committee and Chief Operating Officer, Exelon Generation

Ed Lyman
Senior Staff Scientist, Union of Concerned Scientists

Neil Wilmshurst
Vice President and Chief Nuclear Officer,
Electric Power Research Institute

External Panel 2

Sue Perkins-Grew
EP Director,
Nuclear Energy Institute

Patrick Mulligan
State of New Jersey and the Conference of Radiation
Control Program Directors

Timothy Greten
FEMA, Deputy Director,
Technological Hazards Division

Phillip Musegaas
Hudson River Program Director,
Riverkeeper

APPEARANCES

Afternoon Session

NRC Staff Panel

Bill Borchardt
Executive Director for Operations

Eric Leeds
Director, Office of Nuclear Reactor Regulation

Jim Wiggins
Director,
Office of Nuclear Security and Incident Response

P R O C E E D I N G S

CHAIRMAN JACZKO: Good morning everyone. The Commission meets today to discuss the staff's 45 day review of the 90 Day Task Force Recommendations. The Steering Committee which we established to conduct this review has confirmed that the task force did a very good job. And the Steering Committee has endorsed moving forward with virtually all of the task force's recommendations. In addition, they've recommended several new measures beyond the steps outlined by the task force which touch an important issue such as spent fuel storage and emergency planning.

I want to thank the Steering Committee for their excellent work as well as all of the NRC staff that assisted their efforts. I also want to acknowledge the broad range of stakeholders who participated in this process. The Steering Committee benefited from the diverse perspectives they brought to the table and the Commission will hear from many of them today. And because of the staff's hard work and tremendous participation of our stakeholders, the Commission is now in a position to provide clear and definitive guidance on the task force's recommendations. We need to move forward expeditiously because we still have a great deal of work ahead of us.

We not only need to implement the recommendations we choose to move forward with, but we also have to conduct the longer-term review, including some of these additional items that are mentioned in the 45 Day Paper, which could lead to additional recommendations based on new information and insights.

During today's meeting we'll hear from the staff and a broad cross section of stakeholders including other Federal agencies, state representatives, industry leaders and public interest groups committed to nuclear safety and environmental protection.

Our first panel will consist of stakeholders who will share their perspectives on the recommendations related to preventing and mitigating an accident. The second panel will also consist of stakeholders who will address the recommendations related to emergency planning.

And the third and final panel, the staff will provide an overview of the additional information that the Commission requested concerning the recommendations. Before we begin, would any of my colleagues like to make any remarks? Okay, if not, we'll start, I guess, with Chris. Christopher Paine, who is with the National Resource Defense Council.

CHRISTOPHER PAINE: It's on? Okay. Thanks for having us here today. My name is Christopher Paine, I direct the Nuclear Program for the Natural Resources Defense Council. Regarding the staff's recommendations on Task Force Recommendations 2.1 and 2.3, the seismic and flooding issues, I don't think the most recent staff paper resolves the timeline of GI-199, in terms of providing a timely resolution and forming near term action, it's not clear how the GI-199 process is going to mesh with the process called for by the task force. Does the NRC intend to use GI-199 as the vehicle for establishing criteria and methods to assess seismic safety deficiencies at specific licensing sites? We urge the NRC not to wait years for inspection and criteria, when it has already established methods and regulations for dealing with this exact issue in the context of early site permits and combined license reviews for new reactors.

And it's interesting that the staff recommendation in the latest SECY describes the preferred process of applying present day regulatory guidance and methodologies to the reevaluation of flooding hazards at operating reactors, but did not go far enough in extending this common sense conclusion to seismic hazards. And I have more, much more detailed extended comments I'll give the Commission on each of these issues because we only have five minutes.

On Recommendation 3, preventing or mitigating seismically induced fires and floods. This important issue unfortunately was relegated to Tier 3 status with no proposed schedule for consideration. That's a mistake. NRC sees no valid reason for excluding seismically induced fires and floods from the risk assessments and plant walk-downs that are contemplated under Recommendation 2. In 2007, the quake at Kashiwazaki-Kariwa nuclear power plant, the world's largest demonstrated serious knock-on fire and flood effects.

Recommendation 4, on station blackout coping. Overall we agree with the development of appropriate coping times to a tiered approach, but we think that the four and quarter year time table for issuance of a final rule is far too leisurely. The only proposed interim action for SBO mitigation -- better protection of existing EMD EDMG equipment -- would still be based on current insufficient design basis criteria. The Commission should require meaningful, near-term actions to mitigate SBOs. Significantly longer on-site SBO coping capabilities for critical and emergency core cooling functions is commercially available now. Why wait? Consider ordering near-term acquisition of extended coping via larger capacity, DC battery back-up, self-powering alternatives using residual heat-removal steam, and robust portable power units. Why should Americans have to

wait four plus years for eight hours of SBO coping capability, when French citizen already enjoy 20 hours of extending coping at their PWR units. Numerous opportunities in BWRs are for AC self-powering, using RCIC, HPSI and LPSI turbines.

On Recommendation 5, the hardened vents. We agree with addressing the need for reliable hardened vents in both BWR Mark I and II reactors, but moreover, vent technology has progressed. Serious consideration should be given to requiring that these be hardened filtered vents, like those that IMI Nuclear has installed at Benzau, and Liebstadt in Switzerland. You note both PWR and BWR types of reactors now have filtered vents. Some 90 reactors in Europe have some required form of filtered vent technology installed, why has the NRC allowed the U.S. to fall behind in this important area of accident mitigation?

I think that the comments of Dana Powers of the ACRS are relevant here. How much information do I need to know about specifically Fukushima? We did it for Mark III's, why can't we do the same thing for I's and II's. It's obvious that inerting is just not enough. The level of study and precaution taken in the U.S. is dramatically less than that taken in other countries and leaves us vulnerable to the kind of cliff-edge effects for flooding that seem equally applicable to hydrogen control.

CHAIRMAN JACZKO: Here's what I'm going to do. We were supposed to have on other person here, so everybody take another two minutes. Everybody will have seven minutes.

CHARLES PARDEE: Oh great. Oh man.

CHAIRMAN JACZKO: Well, that'll cost you a minute.

[laughter]

CHRISTOPHER PAINE: So, Recommendation 7 for spent fuel safety. We agree that providing spent fuel pool instrumentation in accordance with 7.1 is a decent start, but SECY-11-0137 has muffled the task force clear call that this equipment be classified and regulated as safety related. The staff memo now only calls for reliable spent fuel instrumentation that is potentially safety related. And staff massaging of the 7.2-7.4 Recommendations demote them to a Tier 2 priority for eventual rulemaking, rather than as a candidate for near term Commission Orders. This would kick out resolution and implementing action for at least four years, which we do not view as a positive development.

However, both the original Near-Term Task Force Recommendation and subsequent staff analysis ignore the safety advantages of off-loading densely packed spent fuel from vulnerable pools into better protected dry casks. I don't believe the Commission's current official position on this issue is documented, substantiated or defensible.

The Near-Term Task Force and staff framing of this issue artificially constrains the problem to one of insuring spent fuel cooling of spent fuel make-up only. And we agree with the concerns of our colleagues at UCS in their comments on recommendation 7.2-7.5 which they will go into in greater detail.

On Recommendation 8, emergency response we agree with the Near-Term Task Force recommended Orders, but we think that they're too oriented towards rationalizing paperwork and guidance. We would prefer to see a more hands-on role by the NRC in establishing hard and fast performance criteria for emergency response, and realistic methods for verifying them on a

recurring basis.

The SAMG voluntary initiative began some of the necessary work, but ended in notable deficiencies to which the industry has responded “guidance is being developed.” The issuance of an Order, in our view, is clearly preferable and should not be a big hill to climb, at least since some of the best practices have already been gleamed from this initial attempt.

The rest of our recommendations concern emergency response. We have a lot of concerns and I would like to move to my last point, that there are other key emergency planning issues that haven't even been raised by the task force, or by the subsequent staff reviews. In our paper, we show what a major accident -- our latest H-PAK runs of a major accident at Indian Point what that would be. And it raises fundamental questions about emergency planning and preparedness, and we have included some of those in our statement. Thank you.

CHAIRMAN JACZKO: Thank you. Next we will hear from Mr. Charles Pardee.

CHARLES PARDEE: Okay, good morning, Mr. Chairman. Again, I appreciate the opportunity. I'm Charles Pardee, and I'm here representing the industry as the chairman of the Fukushima Response Steering Committee. I'm not going to elaborate at all on the organization or the governance that we've established for the Steering Committee, we did that last meeting, so I won't. I would say though that Mr. Wilmshurst, who's here representing EPRI is also a principle member of that Steering Committee, and we will be speaking to somewhat different roles. I, as representing the industry, and Neil as representing EPRI, and that is not an inclusive representation, they also have

other activities that they're involved with. So while I think in those areas of overlap you will find a great deal of alignments, Neil may have other elaborations to provide for you. So just a minor point of clarification there.

Likewise, the industry submitted both a letter by way of comments on the 45 Day SECY and we submitted slides for this morning, but I'm not going to use them, just in the interest of time management I thought I'd just speak at a high level to some of our conclusions as a result of our review of the 45 Day SECY.

And last comment before I get into the contextual material, the engagement with the staff has remained very, very good. These are some of the most substantive discussions that we've had with staff in years. It's always been good, but clearly we share a common focus on trying to do the right things as quickly as we can. That doesn't mean that we have universal agreements on details and such, but the dialogue is excellent, the engagement is excellent, we certainly feel like our positions are being carefully considered as we work our way through this process.

I'll shift gears to the specifics of the 45 Day SECY. First, I will restate that we largely agree with the scope and the timing that’s contemplated for the Tier 1 activities. So most of the dialogue is around what we need by way of specificity to make sure that we implement correctly the first time, as opposed to taking an iterative process because insufficient guidance has been provided. For example, and we have talked about this before, there are references to things like reliable hardened vents, and really the attention paid to what the definition of reliable is, how many cycles, what kind of conditions that those vents are expected to be able to be functional in. Things like that will define how quickly we can move through the process so while I do not mean to minimize the

challenge of the timing of the proposed actions, paying attention early on to what exactly the specific implementation details are will serve us well as we work our way through this process, because it will prevent us from having to circle back and repeat our analysis, or redefine what the requirements are.

You pointed out in your opening comments, Mr. Chairman, that there are still some things that we have not yet discovered based on our reviews at Fukushima. One of those, the viability of ultimate heat sinks was pointed out in the letters and we fully recognize that we may learn things later on that would cause us to have to move more quickly through some of those actions based on continued Lessons Learned.

But, I think that the picture of what happened at Fukushima and how that applies to us here in the United States is filling in on that timeline that we discussed the last time we were together.

In events such as this, beyond design bases a highly station-specific and complex low probability sequence of events, we think we are best served rather than trying to address the specific learnings from Fukushima -- that sequence of events with a seismic event followed by the tsunami -- we're much better off stepping back and looking at hazards more generically. And we think in order to do that and protect against those extremely low probability high consequence events, we need to maintain that focus on redundancy and diversity and flexibility versus a highly prescriptive solution to one of many, many accident sequences. So, I think one of the principle points that the industry would like to make is that focus on diversity of either mode of force or water sources or electrical supply redundancy, so that we do have reliability. And likewise, flexibility so that we can accommodate the uncontemplated would serve

us best in these kinds of accident sequences.

We have spent a considerable amount of time with the staff going through the approaches regarding adequate protection and enhancements to safety. I won't belabor that here, but I will say that we are doing that not in an attempt to be obstructionist but rather we have, you know, well-established rules that have served us well through the years, and we see nothing coming from Fukushima that would cause us to need to abandon those or somehow redefine, for example, adequate protection by a series of singularly small decisions. So, not a point of argument, but one of great interest to us as we work our way through the tools that are being used to implement these actions.

And, again, I'll say I think we are agreeing on the end-state, it's how we get there in a fashion that will be repeatable in the future, consistently and predictably for us.

We agree with the concerns over prioritization. There is a lot proposed here. We already had a lot that we were, had taken aboard as far as improvement initiatives. The SECY document clearly points out the need to be careful with resources and prioritization. We agree with those comments, and we think we can responsibly move through this. But, it will require a great deal of dialogue to make sure we get this as close to right as we possibly can.

Lastly, I'll close with a comment that I have made before. We spent a lot of time. One of the principle themes at the last Regulatory Information Conference was the importance of focusing on plant operations. That's our first strategic goal in our governance. That is to make sure that with all of this activity, we don't take our eye off the ball with how we operate the current 104 power reactors that we have in this country. And we continue to use that as our

touchstone as we work our way through resource allocation and prioritization. We think that we can accomplish what is being proposed in responsible timelines, but we'll have to keep that balance at the forefront of our minds as we work our way through it. And that is the end of my comments, Mr. Chairman.

CHAIRMAN JACZKO: Thank you. I will now turn to Ed Lyman, who is a senior staff scientist at the Union of Concerned Scientists.

ED LYMAN: Thank you. Good morning. And, again, on behalf of Union of Concerned Scientists, we appreciate the opportunity to comment on the current status of the prioritization recommendations. I think we do largely agree with the latest 45 Day Paper. Our main concerns have to do with the timelines associated with the proposed rulemakings, and how you are going to address what we see as urgent issues that really should be addressed in a more rapid timeframe in the interim. So, like NRDC, we -- that's a general concern.

I'll talk about some of our specific concerns with the recommendations. We also think that the protection of concurrent events related to seismic initiators shouldn't be deferred as a Tier 3 issue. And then if you're going to do a good seismic PRA you're going to need to understand the full implications of those concurrent events to be able to reduce the uncertainties associated with them. So, we see that as something that is integral to the effort to try to better understand the overall impact of seismic events.

On Recommendation 4, we note again the timeline for the rulemaking is long, and, in the interim, the proposal to rely on strength in 50.54(hh)(2) measures will have to, we think, involve significant enhancement to those measures, so that they'll be more effective in the interim. And in the staff papers, for instance, they've said numerous times that the current guidance for

50.54(hh) is silent on the issue of whether that equipment needs to be protected against external events like seismic events. But, I would just read from the current guidance, Phase II and III guidance document. It says that this equipment is "not to be treated as safety-related equipment, and not subject to any new special treatment requirements, e.g., QA seismic, EQ" etc." So, it seems it's not silent, but there's an explicit exemption from those safety-related requirements, and we think that needs to be re-examined.

Also, the scope of those measures as spelled out in the guidance is insufficient. For example, the requirements for operation of portable pumps for make up only require 12 hours of fuel and water supply, specified in the current guidance, and that clearly would have been inadequate in Fukushima.

Now, also, with regard to Recommendation 4, we think if Recommendation 8 leads to a long-term rulemaking for integrating SAMGs and EDMGs, you're going to need better guidance for how to implement those measures in the interim. And you do need to look at some of the implications of Fukushima. They did have accident management guidelines at Fukushima. And, I think, looking at the timelines in the more recent information, it's clear they tried to carry them out, but there were major obstacles, and those should be understood.

For instance, the current timelines that were revealed in the September document to the IAEA show that how the interactions between adjacent units really affected their ability to implement accident management measures. For instance, the explosion at Unit 3 both undid their attempts to prepare the hardened vent at Unit 2 for eventual use, and also interfered with their ability to establish alternate injection cooling. That led to many hours of

delay for both of those and might have affected the outcome of Unit 2. So, you do need to look at those interactions carefully in the 50.54(hh) guidelines as well as the impact of concurrent events such as aftershocks, the role of aftershocks, also has become more clear on their impact on implementing accident management.

And, again, in response to the idea of flexibility, we think that flexibility, like I said in the first meeting, is not always a good thing if what you have are plans that are too general and that they're -- I understand the point that you can't think of everything, but I do think that you need to define a well-established set of events, work through scenarios from beginning to end to make sure that you are -- that you can actually implement some of these. So, flexibility in the absence of actually trying to define some specific objectives is not going to work.

With regard to Recommendation 6, in the meeting last month, we thought that hydrogen mitigation for ice condensers in Mark III's enhancements there could have been implemented as a short-term issue, and we see that in the latest paper the staff has gone in the other direction, moved it to Tier 3. Now, we don't think it really meets the criteria for Tier 3 because all these licensees have already implemented voluntary measures. So, there isn't a whole lot more that would need to be done to convert those voluntary measures to regulatory requirements and ensure that the hydrogen mitigation and station blackout is more reliable for these very vulnerable containment types.

With regard to Recommendation 7, we agree that reliable spent fuel instrumentation should be a priority issue. And we also do agree that issues associated with enhancing makeup capability might be considered slightly less

priority because of the concerns of my colleague, Dave Lochbaum, about the potential safety implications of long-term spent fuel makeup, especially in boiling water reactors and the impact of the accumulation of condensed water on the safety systems. And one only need look at the management or lack of management of contaminated runoff at Fukushima to know that you need to have a much better handle on how to manage long-term makeup.

So, we think prevention with regard to spent fuel is a better strategy. And so we do support the staff's recommendation that examining whether, again, moving spent fuel out of the pools sooner to reduce the density and close packing of spent fuel to increase downcomer space to enhance natural convection cooling to avoid rack feed and the other measures that have been discussed for mitigating spent fuel accidents. That would reduce the demands for makeup water in the event of an accident. We think that that focus is appropriate.

Finally, just on Recommendation 9, we know that it's a subject of the next panel, but I'd like to say that we do support strongly the staff's suggestion that the sacrosanct 10 mile zone be reevaluated, both with regard to evacuation planning and with regard to potassium iodide. And I'd just like to note in the remaining time that as a result of the Freedom of Information Act requests, we've learned that the so-called SORCA study actually assumed that there would be an ad-hoc evacuation of the 10 to 20 mile zone, and that the -- some of the consequences that have already been publicly reported from the SORCA program actually depend on the fact that that zone will be evacuated. And, so the implication that simply having planning within a 10 mile zone being able to expand that as needed needs to be re-examined to the extent that you rely

actually on evacuation of that 10 to 20 mile zone for the -- some of the protective action benefits that are seen in that study. And I'll stop there. Thank you.

CHAIRMAN JACZKO: Thank you. I'll next turn to Neil Wilmshurst, who is vice president and chief nuclear officer at Electric Power Research Institute.

NEIL WILMSHURST: Good morning. Thank you very much for the opportunity to speak to you this morning. EPRI as a 501(c)(3) corporation, can't suggest any priorities on the NRC recommendations. However, what we can do is offer comment on the technical complexity issues, the current and the future possible state of knowledge in the key areas and help inform you on the efforts that are underway and foreseen in the future.

You may be aware EPRI has decades of experience in this field. In particular, we played a key role post TMI 2 understanding what happened and helping develop the technically correct responses. Since that time, our global membership's grown. We now have members from 80 percent of the nuclear power reactors around the world. So, we are bringing the global membership into this equation as well.

We've been involved in the Fukushima response since the day of the event. We've been working with TEPCO, working with NRC, Research, DOE, and other industry groups. And, as Mr. Pardee mentioned, closely involved in the Way Forward Initiative, informing the discussion on the response strategies, and helping develop those R&D responses required.

As I mentioned, we've got a very strong relationship with TEPCO, developed over the past decade or so, and that's bringing lots of information to the table, helping us understand what happened, why things happened, and

enable some of those discussions around what is the correct technical response.

Other non-US entities are reaching out to us to help coordinate R&D, entities like CRIEPI in Japan and EDF Research, other global entities. So, there's a big global effort around Fukushima, which we bring to the table.

And I think one of the key issues which we all need to be aware of, that this is a global issue, and there are finite global technical capabilities in some of these areas. And one of the things I'm conscious of is the need to leverage those results for the benefit of the entire industry and make sure we drive to the right technical solutions in the right timeframe. And, reflecting on one of Mr. Pardee's comments, we've got to balance what the right thing for those resources to be working on. Is it the research portfolio which existed across the world before Fukushima, or is it the research portfolio coming out of Fukushima? There's a balance making sure the right work's being worked on.

So, moving on to the work we have in progress. We are working on SAMG technical bases. EPRI developed the technical basis for the current SAMGs. We're reflecting on the Lessons Learned from Fukushima, building in additional scope into those SAMGs, which will then be subsequently handed off to the relevant owners groups and bodies to actually work on the procedures.

Prior to Fukushima, we were working on external hazards. That work is clearly taken on a stronger impetus, and a stronger focus on seismic and external flooding events. But, that was something we worked on before Fukushima.

You'll be aware we've been working with USGS and NRC Research and others on seismic hazards. That work continues. We're working very hard to bring that to conclusion in order to inform the necessary debate on seismic

hazards and what that means. And, something working on specifically coming out of the Fukushima Steering Committee is the seismic and flooding walk-down criteria.

Seismic is an area of particular concern for me around resource constraints when we get in the space of the seismic hazard to particular sites, understanding how that can be done, maximize the use of the technical resources available.

Other areas we're working on, spent fuel pool phenomena had significant debate during the days of Fukushima, including the potential for the zirconium fire. We're developing inspection techniques for spent fuel pool liners, and we're also working with a broad number of stakeholders to understand the spent fuel disposition. What is the potential for increasing -- for improving safety by a different means of spent fuel disposition?

Other things we're working on, we're compiling the radiological data from Fukushima to support an understanding of the mechanisms and the pathways with the ultimate aim of understanding the microclimate issues and just what happened, both on the land and within the ocean, the transport of the radiological issues there.

I mentioned we're supporting TEPCO very closely in a number of areas, most notably the water cleanup. We've been involved with TEPCO, helping with water cleanup. And that relationship is particularly key to I think all of us understanding what went on. And TEPCO are committed to working with EPRI to develop a technical understanding, beyond the basic timeline, the technical understanding of why things happened, and what the physical phenomena were, which I'm sure that work will inform debate of things like

hardened vents and hydrogen control, what the significance of those issues are. And, as I mentioned, that work is ongoing at the moment.

So, my conclusions really are that the Near-Term Task Force Recommendations in Tier 1 appear to be consistent with what's being discussed within the way forward environment, as Mr. Pardee mentioned. In some areas the cause of what happened is yet to be fully understood. More analysis may be beneficial, and I can tell you that we are certainly driving very hard to get that analysis done. And, just to reiterate, my main observation is that the global R&D community is going to see some resource constraints in some distinct technical areas, which may drive the timeline beyond what some may feel is optimal. Thank you for the opportunity to comment.

CHAIRMAN JACZKO: Thank you. Commissioner Ostendorff?

COMMISSIONER OSTENDORFF: Thank you, Mr. Chairman. Thank you all for your participation today. I'd like to start my first question, Neil, with where you left off. And I'll ask you a question. I want to ask Chip one as well on this area. And it deals with you mentioning things that still are not understood about Fukushima. And I was wondering if you could maybe bore down a little bit more specifically and highlight those areas from Fukushima, with respect to our Task Force Recommendations, that you think we may not have sufficient understanding on.

NEIL WILMSHURST: I think the main issue is exactly what happened with hydrogen evolution. Where did the hydrogen leak from? What were the thermal hydraulic phenomena within the core? And understanding those thermal hydraulic effects? And then, matching that with the timeline of when the utility vented, and what happened. I don't believe it's fully understood

exactly the physical phenomena that related to the hydrogen venting and the hydrogen explosion.

COMMISSIONER OSTENDORFF: Chip, do you have anything you want to add to that?

CHARLES PARDEE: Yeah. I would agree with Neil that I think containment response is some area where we have a broad understanding of the sequence of events and consequences, but we still have more to learn. Likewise, as I mentioned, whether or not the viability of the ultimate heat sinks which turned out to not be a substantive issue at Fukushima simply because they were overcome by other events, but in the spirit of making sure that we're stepping back at a systemic basis with careful examination of viability of the ultimate heat sinks, especially as a consequence of the seismic activity there on the site is important, and we're striving to learn that.

There are also some softer issues that are not driven necessarily by technology that we continue to examine such as the command and control structure between the control room staff and the station staff, and other authorities who were making the decisions. What were the timelines associated with those decisions and whether or not they served to provide for the proper accident mitigation activities and such. And likewise, the decision-making authority goes directly hand in hand with command and control so I would say that those are the general categories of items that we're still carefully examining.

That said, I think we know enough that we're able to step back and take at least a first pass here with our programs, our systems, our training, our decision-making authority here in the United States, and look for areas of weakness, and we are out doing that now.

COMMISSIONER OSTENDORFF: Chris, do you or Ed want to provide any comments? Ed?

ED LYMAN: I'll just throw this out there, but we still don't understand, or I haven't seen any convincing explanation of how the RCIC continued to work at the Unit 2 as long as it did, and NRC's own assessment of this type of event indicated that after the batteries are exhausted, that the RCIC will not function for much longer than that. So I think understanding of how the battery capacity was somehow maintained beyond its lifetime, could shed some light on the safety margins still available. And maybe someone has an answer to that, but I haven't seen it in print yet. Thank you.

COMMISSIONER OSTENDORFF: Let me go on to a comment Chris, I think both you and Ed made and it deals with the time period, timelines for completing action. What I was hearing, you know, not necessarily across the board, but some general agreement with a lot of the recommendations but perhaps more strongly disagreeing with how long it would take to get there. Is that fair?

CHRISTOPHER PAINE: Right.

COMMISSIONER OSTENDORFF: And I was curious, let's just take the station blackout rule, where the SECY paper talks about a timeline, I think of four and a quarter years to get to rulemaking, and there's always a tension between how much stakeholder engagement is there or not. I know that Ed, we've had previous discussions about some downsides of orders, as it does not allowed for proper engagement or wholesome engagement of stakeholders. I'm just curious, I'll ask Chris and Ed this, what do you see as a reasonable time period, reasonable but maybe aggressive time period, to get to rulemaking on the

station blackout coping strategy?

CHRISTOPHER PAINE: You know, I really don't have a direct answer for your question, but it needs to be less than four and a quarter years just to get to the starting line. I think that's ridiculous, frankly, and untenable. Given the extended coping that's already prevalent in Europe, for example, 20 hours at French units. So you've got commercially available, reliable mill spec power supplies on the market, you've got lots of recent advances in battery bank technology, you've got new self powering options for RCIC and HPSI and LPSI turbines, and for the auxiliary feed water turbines, in PWRs.

I mean, you know, it shouldn't take four and a quarter years just to get to the starting line for installing those items. So I just throw that problem in your lap, the Commission really has got to figure a way to accelerate this.

COMMISSIONER OSTENDORFF: Ed, do you want to comment on that?

ED LYMAN: Yeah, I would agree that I think we understand that to do rulemaking properly takes time. So the question is what do you need to fill in that gap? And so we don't necessarily think that the timeline for a final rule that comes to the best answer necessarily should be expanded, but we think there needs to be interim measures to address the issue on a more urgent basis. And, you know, to the extent this means you may have to set the safety bar a little higher than you may come out in the end, that's not necessarily a bad thing. If all the analysis you need to do is really into reducing conservatives, maybe you need a more deterministic approach to begin with, and then reduce conservatism later.

COMMISSIONER OSTENDORFF: Chip, do you have any

response to that?

CHARLES PARDEE: No, my concern lies not with the absolute timelines, it's making sure we stay very carefully focused on unintended consequence. There's no doubt in my mind we could move faster. But it would raise the issue of what did we go upset that we didn't realize? Attaching power supplies to turbines and such is a lovely idea but there are consequences to those things that we just have to be very careful of. So, it's hard to argue that faster is better, and I'm not going to try to, but right is best. And we will move as fast as we can and yet do it correctly.

COMMISSIONER OSTENDORFF: Okay. Chip, let me just stay you for a very quick question. You had talked about your primary focus in the industry being continued plant operations for our existing 104 reactors, but are there particular concerns you have about implementing any or any particular recommendation or group of recommendations or all recommendations as they might apply or impact plant operations for existing reactors?

CHARLES PARDEE: I think the challenge that most clearly illustrates those concerns, and I think it's particularly poignant, when reflected upon what we did post-9/11 which did not involve operations, individuals to a large extent, nor did it involve the station engineering staff, those people principally focused on continued safe operations. Some of the recommendations that are being proposed that we agree with, such as rationalizing the beyond design bases emergency response in the context of severe accident management, or equipment damage mitigation timelines and such, is important to us, but that falls squarely in the laps of the senior licensed reactors operators and our licensed reactor operators, for which there is simply a finite number.

There's a lot of them, but there's a finite number of them, especially the proficient ones. And that would be an example that best illustrates how we have to be careful about competition with other priorities and resources to make sure we execute it correctly.

Neil pointed out that there are simply a limited number of experts in seismic response and hydrology associated with flooding phenomenon and such, and I am quite confident that we are engaging those that exist here in the country and elsewhere, but this is not something that we can create in our academic programs in a year or two. There are just simply limited numbers, and we need to make sure that we deploy them correctly.

COMMISSIONER OSTENDORFF: Let me ask one last question of Chris, and Ed, this is just spent fuel instrumentation, safety related versus reliable. I know there's a lot of discussion in this area. Let's just suppose hypothetically that a licensee determines that they think a way of providing independent instrumentation for the pool level might be just something as simple as just inserting or installing a remote camera with a screen. Your thoughts on whether that should be safety, or quote, is reliable good enough? Ed, you want to start out?

ED LYMAN: I think we agree with, you know, that maybe labels aren't necessarily the best way to approach this, but you do need – if the staff recommends safety related then we're not going to quibble with that, so we would support that. But again, we do understand the concept of reliable, and again, if you're going to have flexibility, you need to be still thinking about what circumstances you want that camera to be functional. And so, you know, if you're not going to have strict safety related criteria, you better have a pretty

broad scope of events that you can show that you're going to still be able to maintain that capability, otherwise, you know, you're not going to have a reliability. So, you know, with a sufficiently broad scope I think, you know, reliable will be adequate. But again, we're not going to dispute the staff's recommendation of safety related.

CHRISTOPHER PAINE: I just think the key point is that safety related, if it is so designated, brings it within the scope of NRC's recurring inspection activities, and you know, we would like to see the spent fuel improvements subjected to regular NRC inspection.

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

CHAIRMAN JACZKO: Commissioner Svinicki.

COMMISSIONER SVINICKI: I want to join in thanking you all for your presentations and also for the input from your organizations and your participation in the public meetings that the NRC has conducted that the NRC staff has led. I know that's there's been lots of healthy exchange, so I appreciate your input into that process.

I think I might start with Mr. Wilmshurst about EPRI activities. You mentioned that EPRI is not appropriate for you to propose a prioritization of activities, but could I ask you how do the activities that EPRI has planned or underway correspond in terms of the prioritization of issues laid out in the staff's paper, I think put that way it's legitimate for you to kind of indicate how EPRI is looking at the sequencing of activities.

NEIL WILMSHURST: Yes, certainly. The activities we have underway correspond very well with the Tier 1 activities, so we're pretty much in

alignment with the activities in Tier 1.

COMMISSIONER SVINICKI: I don't want to put you in the unfair position of representing other organizations, but you did mention that you have some vantage point that allows you to understand, perhaps, TEPCO activities, maybe things occurring in Japan by government officials. The U.S. Department of Energy is, I think, looking at undertaking some evaluation or perhaps research. And I know that in terms of research agendas, we're probably at a very early stage of planning and moving towards implementation of a long-term program. But could you describe, generally, what you see as between those different organizations the longer-term, multi-year investigation and research. I assume at least the planning for that is underway?

NEIL WILMSHURST: Yeah, long-term, obviously one item I did bring up was the spent fuel pool phenomena, an issue which I know the NRC Research had been working on with DOE on the zirconium fire potential, that's one thing that's out there. We'll continue to run obviously a lot of work on seismic PRA, and PRA in general, understanding the hazards, the approaches, the methods in PRA space. And I see a large effort out in the future on the radiological consequences from Fukushima and leveraging results from other forums as well.

COMMISSIONER SVINICKI: I was going to ask you, specifically, about radiological and health effects issues. Does EPRI have a role, or are you speaking more generally about other government and private institutions?

NEIL WILMSHURST: We have a team who work collaboratively with other organizations. We do have a role that has some expertise in that field. I wouldn't claim to be the only expertise but we do have a number of experts in

that field.

COMMISSIONER SVINICKI: Are you monitoring efforts? My understanding is the government of Japan has monitored over 300,000 individuals at this point. Is that, would you be comfortable describing your understanding of kind of the health effects that's going on on the ground right now?

NEIL WILMSHURST: I'm afraid that is beyond my -- that's something I can't comment on today.

COMMISSIONER SVINICKI: Okay, thank you. And then when I said longer-term research, I was really thinking even in the 5, to 10, to 15 years in terms of what exactly happened in the core. And I think of that as, maybe I should call that very long-term research, is there planning for a research program to better understand and then perhaps inform our severe accident models? Is that planning underway?

NEIL WILMSHURST: Absolutely. That is a project which we're in the early stages of -- to do just that, informing the severe accidents codes, validating the codes against the physical location of the core when we get that far in the investigation. To update the understanding for use in future, future decades going forward.

COMMISSIONER SVINICKI: If you had to put a timeframe on research such as that, or getting to some results, I used 5, 10, 15 years, what timeframe would you put to it?

NEIL WILMSHURST: I would say initial results, five years. Substantive results, 10. In kind of a ballpark timeframe.

COMMISSIONER SVINICKI: How does that compare to Three

Mile Island and our understanding of what happened in the core there? Did that take longer, or shorter period of time?

NEIL WILMSHURST: It's comparable, but I think you need to remember after TMI, the level of fundamental knowledge of the in-core effects was somewhat, well substantially less than it is now. Everything we're seeing to date indicates that the codes we have aren't substantially away from what happened, whereas TMI, it was very much a new issue.

COMMISSIONER SVINICKI: And when you make that statement that in looking at the events of Fukushima, our modeling and computational tools are somewhat in alignment, or I think you said, not too far away from what we think happened, what do you base that on at this point in time?

NEIL WILMSHURST: Looking at runs of computer codes against what the physical observed effects are.

COMMISSIONER SVINICKI: Okay, thank you. And again from your broader vantage point of looking not just at EPRI's activities, but those with whom you're coordinating, do you represent that there are any gap areas that no organization is addressing at this time?

NEIL WILMSHURST: There's nothing that comes to mind, but you can be sure that that's something that always in the back of our minds, looking for those areas.

COMMISSIONER SVINICKI: Okay, thank you. And Mr. Pardee, in the last Commission meeting that you participated in, I had asked you about the development I believe led by INPO, but with a heavy involvement of TEPCO and others too, people use different terminology, I'll call it a timeline or a chronology, I think you had responded in the Q & A session that a notional timeframe was

November. Since it's now mid-October, can you update me on the timeframe for producing that document, and since we're closer in time, could you describe more thoroughly what it is that will be produced in November?

CHARLES PARDEE: Yeah, first of all, the timelines that we commented upon in our last Commission briefing remain largely intact. We're still looking at November to have at least the first pass through the timelines. And as we reflected previously, I think that this will be an iterative process that we continue to refine as we learn more, but you know we are in the review stage now with the timelines.

To your second question, there are no new revelations coming out of the timeline reviews and such. There is a considerable amount of factual, I'll say, correction or amplification that's being provided, but I think the general sequence as we understood it, two, three, four months ago has remained accurate. And we are now in the process of filling in details, the unit's specific differences and response, some of the challenges associated with multi-unit responses, as you well know, there were six units there that we affected, four significantly. So we are learning more about the specific operator actions and the emergency response activities and such, but directionally we haven't made any significant changes in our understanding of the accident sequences, and we're continuing to fill in gaps.

COMMISSIONER SVINICKI: In terms of understanding the accident sequences, I had heard an observation that after I thought about it, it made a lot of sense to me. It indicated not as you begin to construct a timeline, as you go further out in time, the uncertainties that are inherent in our current state of knowledge have a bit of a compounding effect, and that as you go further

out there becomes greater and greater uncertainty in producing a timeline. Is that something that you've heard, or would that make sense to you?

CHARLES PARDEE: Well, obviously recollection is best when produced quickly, and I think as time goes along, you know, and human nature is such that as we internally reconsider facts and information, we internally make adjustments, so part of this is additional recollection and such.

I think it's important, however, to reflect upon our approach, and that is it is important for us to have as complete an understanding as we had to the sequences and such there at Fukushima. However, our goal is to try to extrapolate that out to any number of different sequences of events that could occur, be they induced by flooding, by tornadic activity, by seismic activity, and how that would manifest itself at each of our stations. So while it is important for us to do the best we can with the timelines, when we draw upon that information and then try to reflect upon it in a symptomatic fashion, so that we think that we can improve or enhance our safety posture, our stations here in the United States, the specifics become somewhat less important.

COMMISSIONER SVINICKI: Can you just then -- I think that might relate to a comment that industry had filed. I've not seen the industry's comments on what we call the 45 Day Paper, but I did see what was filed on what we call the 21 Day Paper and there was a call for an approach akin to what was done with the loss of large area approach which was more of a performance-based approach. Could you talk about why industry has a preference for that approach when it comes to these severe natural events?

CHARLES PARDEE: There's been a lot of discussion about trying to find those cliff-edge effects, you know where there are dramatic consequences

for relatively minor additional progressions, be it flood level or the degree to which energy is deposited during seismic events and the reason why we think we have to take this approach is because the stations themselves are considerably different. If we had a fleet of power plants here in the United States that were uniform in their design and construction and sited in a uniform fashion and such I think a more generic approach would service, or I should say a more standardized approach would service but there are so many different variations to not only what present state is regarding design bases and consequences beyond design bases events as well as what the actual external hazards are that we think this approach serves us correctly or would serve us correctly.

COMMISSIONER SVINICKI: Okay, thank you very much.

CHAIRMAN JACZKO: Commissioner Apostolakis.

COMMISSIONER APOSTOLAKIS: Thank you Mr. Chairman, thank you for your presentations. I like the idea that Mr. Pardee expressed that we should keep this at a high level. So I'll make comments at a high level. My first comment, really, is not a question, but you are welcome to comment. You mentioned Mr. Pardee that we should do something or we should be aware of low probability events and so on, and if you implied that the Fukushima event was a low probability I disagree. There are a lot of people who think it was not -- well, a low probability in the context of nuclear safety, yes it was low probability. I have seen various estimates, one in a 1,000 years, or one in 300 years. Two days ago I heard one in 70 years. These are not low numbers as far as nuclear safety is concerned and there are reasons for it, I mean the tsunami threat was underestimated, the database was not complete and so on. There was no flooding, internal flooding, risk assessments of the equipment were not in right

places and so on.

So on that is my comment. Does anyone have a comment, on this? Good. Now if I look back at incidents that have created problems for us, I would say, at a high level, again that they were due to the incompleteness of our analysis. If we have thought about something, usually we manage it very well, there are all sorts of studies and reviews and so on. One of the lessons from Fukushima which I think we have not studied very well is the occurrence of an earthquake plus something else, a tsunami in that case, maybe you flood somewhere else and so on, which is Recommendation 3 of the task force. And another thing was the management of a major accident the state of the civil infrastructure is very important and again I'm not sure we have taken that into account, which is related to Recommendation 11 As far as I can tell, neither one of those is in Tier 1. Now I know that Mr. Paine and Mr. Lyman want the, what you call concurrent events, to be in Tier 1 but I'm wondering why they are not? I mean, don't you think we should start immediately thinking about secondary events following a major earthquake and so on? It's going to take a while for us, as a community, to develop a methodology so I don't see why we can't start immediately. Any objections to that? Instead of Tier 3 move them up to Tier 1. So your silence is agreement?

[laughter]

CHARLES PAINE: That's our recommendation.

COMMISSIONER APOSTOLAKIS: I know. I said Mr. Paine and Mr. Lyman. There are only two left.

[laughter]

CHARLES PARDEE: The industry's approach, and this starts way

back to when the industry first developed emergency operating procedures we've been focused on symptom based versus event based procedures. So we don't start with an earthquake happened. We start with safety systems have been disabled for some reason and obviously we don't discount the cause because ultimately that's how we can either correct or mitigate some of the negative consequences. The fact that our procedures are written and the Way Forward Document contemplates continuing symptom based response that is inclusive of various sequences that you're describing. Not to say that I think it's 100 percent covered, we're looking carefully, as Mr. Wilmshurst said, to look for sequences that perhaps we don't have as robust a mitigation methodology or equipment base in order to respond to.

But the general notion that the operators, or the design response of our events are not precipitated by complete understanding of a particular event or a series of events, it's the consequences and that is very similar to, for example, the medical field where a patient coming in to the emergency room isn't completely diagnosed, he or she is stabilized and it's the same general approach there.

To your second point about whether or not infrastructure impediments would be a problem we are addressing that with the industry, we talked, I believe, at a previous Commission briefing about regionalized emergency response centers where we have hardware and communications equipment and the like that we can deploy rapidly to our stations, including absent roads and such, we're contemplating having to use helicopters or such for air transport so we do think that would be an improvement to our response posture and we're pursuing it.

COMMISSIONER APOSTOLAKIS: I do appreciate the value of symptom based procedures, but as you said these are not 100 percent answered so I guess, the question is what is what is the percentage, how much do they answer? I think by doing the studies, maybe doing PRAs, irrelevant in this case, they will provide very valuable insights without taking away from these procedures.

CHARLES PARDEE: And we agree with that Mr. Commissioner and we think that's a valuable cut set to look at IT from a symptom based and then go back and look at event based because there are additional learnings.

COMMISSIONER APOSTOLAKIS: The question is really whether it should be Tier 3. Eventually, it will be done and it's already mentioned in the IPEEEs but it's really a short paragraph that some licensees did it and they didn't find anything in it; that's not very unlikely.

CHARLES PARDEE: My opinion is that the enhancements as well as the competition for resources properly designated it as Tier 3, I think that was the right place to land it for those reasons, undoubtedly as we go forward and learn more, you know we'll adjust.

COMMISSIONER APOSTOLAKIS: Well, I'm not sure I agree with that. Now you keep coming back to a theme that whenever we considered doing something we have to think about its possible adverse consequences. How do you propose to do that? I mean, we will have to do a study for each thing, how it would affect normal operations and who would do that? Are you're expecting our staff to do it?

CHARLES PARDEE: No, that is something I would clearly expect NRC staff to be keenly aware of, and do their own evaluations but anytime we go

implement any kind of a change, be it changes to our operating procedures, be it physical plant modifications, I mean that's a very expensive part of our review and there's a regulatory framework behind it.

COMMISSIONER APOSTOLAKIS: So that would be part of the interaction with stakeholders and all that so the staff would be fully aware of your views on these issues.

CHARLES PARDEE: Yeah, I don't want to speak for the staff but I believe they would be fully aware and I'm sure they will be pleased to speak to it.

COMMISSIONER APOSTOLAKIS: I -- one last question for you. I have read, maybe, I don't know how many documents, from the industry or NEI, commenting on recommendations and one theme that is there and I don't see it in our Task Force Recommendations is that a lot of these things are by -- the proposals -- are by their nature site specific, that you can't have a generic thing, everybody do this and I don't know why our staff did not put those words in their recommendations. Do you have anything to add to this or do you agree that a lot of these things are really site specific?

CHARLES PARDEE: I think the hazards and the consequences of these externally driven events are site specific.

COMMISSIONER APOSTOLAKIS: And speaking of site specific, Mr. Lyman, you said that you would like to see a reevaluation of the EPZ and then you strongly implied you want to see it expanded. May you didn't, but that's the impression I got. Isn't that a site specific issue? I mean should there be some sites where it should be shrunk?

ED LYMAN: I don't know about shrunk, but it's definitely a site specific issue and if you look we issued recommendations, quite some time ago,

we reiterated this summer, that because it is a site specific issue that having a generic 10 mile emergency planning zone around reactors is on its face, not as technically sound as it could be. We did recommend that the site specific information be brought to bear to identify all the populations that could be at risk, for instance of exceeding EPA protective action guide recommendations for a spectrum of severe accidents and the fact, we assume now in Fukushima, it's been validated, that EPA protective action guide recommendations were exceeded 30 or 40 miles away from the site, so we think that that illustrates the point. It's clearly a site specific issue and you need to understand the meteorology and the population densities and other site specific features to come up with a science based approach to emergency planning. But we really do need to have clear criteria, protect the public, use the best modeling, and other tools available to identify the populations at risk and design accordingly.

Now that said, because you can't anticipate every potential contingency, you don't want to be too limiting so you do need to leave some margin but definitely I think that there are site specific issues that can be brought to bear.

COMMISSIONER APOSTOLAKIS: Do you have any idea how that would be done, bringing everything together.

CHAIRMAN JACZKO: There's a right answer to this question.

[laughter]

COMMISSIONER APOSTOLAKIS: Thank you Mr. Chairman.

MR. LYMAN: Through a Level 3 PRA?

[laughter]

CHAIRMAN JACZKO: That was the right answer.

COMMISSIONER APOSTOLAKIS: It's interesting through. What if there is a site where there are really no people nearby? Would you say – well if they come up and say "Well, it's only two miles." Would that offend you?

ED LYMAN: No I think that if we call for a-- it depends on the criteria you establish and you should apply uniform criteria.

COMMISSIONER APOSTOLAKIS: Then it would be okay?

ED LYMAN: If that's what the analysis shows given a sufficient margin of uncertainty, you know we would concede that.

CHARLES PARDEE: I was just going to say, I think there will be representatives on the second panel that will probably be able to speak in more detail than I can. From our perspective the initial evacuation from what we can see appears to have been successful despite the fact that they had a very significant release there and you can argue wind direction and timing and things like that but there isn't anything that we've seen that says current practice didn't suit. There are a lot of questions around protection of ingestion pathways and things like that, subsequent to the releases. I think we will have the opportunity to learn form and improve upon, but not in the initial evacuations, at least not from the information I'm aware of.

COMMISSIONER APOSTOLAKIS: Thank you, Mr. Chairman.

CHAIRMAN JACZKO: Commissioner Magwood.

COMMISIONER MAGWOOD: Good morning and let me add my thanks for your remarks today. Everything I've heard at the table today, I think, has been very instructive, very interesting. It's also been particularly interesting to see how much agreement there is at the table, which is somewhat disturbing so let me try to break that up.

[laughter]

One area where, and Commissioner Apostolakis is moving in this path a bit, but one area that does seem to be some area for further conversation is, and I think, Ed in your remarks you make reference to this with regard to Recommendation 4, in effect you can go too far with flexibility in some of these areas that there needs to be some kind of very clear, common approach to dealing with station blackout and things of that nature. I think that Chip made a very good observation that it's not only that the sites are different but the plants are different, the plants are very different. I consider them very different children as we look at them and you should treat them as different children and not try to do a one size fits all. In that respect, when you think about some of these issues, do you see that there might be some value in exploring -- let me add this sort of challenge to what you said. If you look at this from a performance basis and what is necessary for public protection, is it, in your view, not worth looking at it on a plant by plant basis to see if the response at a particular plant is, you know, I don't know about naming plants, Plant A because it's located say, in a desert, is different from the kind of reaction you might do for Plant B which is on a lake or Plant C which is on an ocean front. I mean, how should we look at this if it's a plant by plant issue? Is there, in your view, -- is there a value in going down that path as opposed to a much higher level generic approach?

ED LYMAN: Yes, absolutely and I think you'd be remiss if you didn't consider those plant site specific features. The kind of thing I had in mind, think of the way security is done. So you have target sets for each plant that are designed specific, site specific. You define a number of scenarios that challenge those and you play them out. I'm not suggesting, you know, full scale exercises

but at least tabletops to establish exactly -- to follow through on these scenarios and that's certainly something that would vary from plant to plant there would be common features, so you could define again the top level criteria but the implementation would be site specific.

COMMISSIONER MAGWOOD: That makes a lot of sense to me and so if you look -- I think security is a good analogy because with security, you know, you set a design basis threat and you go from there and the plant has a response to that. Do you think that's the general approach that one could take to a lot of these issues?

ED LYMAN: I think generally, yes, but again the devil being in the details and it will depend on how extensive that set of scenarios is. Just to illustrate the point, if you look at the B.5.b guidance, which I keep going back to, let me just read one of the top level guidance assumptions – “Implementation of the strategy is not expected to require extraordinary or heroic actions. In an event, the utility emergency response organization will decide on the potential benefit and feasibility of the strategy in light of plant conditions, for example, it is expected that dose rates and other accessibility considerations will be addressed at the time of the event in light of the actual plant conditions and this input will be considered by the ERO in directing response actions.” Now, obviously if you're defining your measures with that concept in mind you can run into serious problems and so we would say that you need to at least consider a set of scenarios and actually evaluate potential dose rates and see if some of the measures that you have in your toolkit couldn't be used under any circumstances.

COMMISSIONER MAGWOOD: Mr. Pardee do you have a

comment about that?

CHARLES PARDEE: No, I don't think any substantive elaboration. It is, I guess the one qualifier I would make is I understand where you're going with the analog of security response but given the extraordinary numbers of combinations of events and such, this will be a complex task. I think a good analogy but I think that the security response is relatively simple in comparison and I would just like to make that point.

COMMISSIONER MAGWOOD: Let me just stay with you for a moment. This is sort of along the same lines, in the letter that the industry sent to the agency some time ago outlining your thoughts about the path forward on some of these issues, the industry highlighted this regionalized approach to protecting or dealing with the issue of protection of 50.54(hh) equipment. And the industry's approach is this regionalized approach where you would have distributed equipment, accessible to different plants and the industry made an announcement some months ago that there's an anticipated large investment the industry plans to make in this direction.

I'd like to sort of have you compare and contrast why that approach is the path the industry has selected as opposed to, what's really more anticipated in the original task force recommendation, which was simply to protect the equipment – pour some concrete -- protect the equipment as it exists on the site. Can you give us a little more of a --

CHARLES PARDEE: Yeah, I mean, really there's three different dynamics that we look at as we seek opportunities to improve. There is prevent, keep it from happening in the first place, there is protect, assume that whatever the natural event occurs, for example, prevent would be higher flood walls, at

least in the context of Fukushima, just more physical protection from the surge. Protect would be additional barriers around vital equipment and then mitigate, just presume that the worst happened, what would you do to go prevent? And we're trying to work all three ends of that equation and clearly there's a cost benefit that steers you to one direction or the other. In some cases it appears that prevent would be the superior option, in others protect and yet others, due to either the sequence of events or the consequences we think we're going to be into mitigation to protect the vital functions like core cooling and containment integrity.

We approached -- to your question, we approached this from a couple different directions. One, is our goals clearly contemplate multiple units at one site, which was not inclusive with as we call the B.5.b approach, we considered one, not multiple.

So, step one was to look at what kind of provisions we needed to have on site in order to have contemplate multiple units being involved and that's going to require us to go procure additional equipment there on site, so we can mitigate consequences to multiple units. It also appears, and it is clear from Fukushima that the station staff exhausted their capability to mitigate and they did have reliance on off-site resources, and we think in order to enhance defense-in-depth we also need to have the ability to bring hardware and other equipment in, on site, in a short period of time in order to augment the emergency response functions, so that's the other end of the equation. Not prevent, not protect, but the emergency response phase. We think that there are reasonable things that we can do with sufficient adaptability on a site specific basis to truly enhance safety, like additional direct current power supplies,

additional motive devices for moving water about and communications equipment, things like this and we're better off deploying that from a regional center, one because it's physically removed from the site and one has to assume that an event that impacted multiple units on a site could very well have impacted the local infrastructure as you described, and two we think that the ability to share this equipment will mean we will have more robust response for any particular site that was impacted. Really the challenge to this is going to be moving it, as we described earlier on and that's where I think we'll end up requiring some help from other state and federal officials or things like National Guard Air Transport capability and things like that.

COMMISSIONER MAGWOOD: As we go down the path of looking at implementing measures like this at each plant site, is it possible in your mind that we may find that the original task force recommendation of protecting the equipment in place may actually be preferable in some cases as opposed to a regional approach? Because of the configuration of the sites or the location of sites or --

CHARLES PARDEE: We may, and my guess is that we may find some specifics where we find it's easier to protect or beneficial to protect in place, rather than bring it in outside to stick with your original question. We may, and if that's the case I fully expect that's the direction that we'll take.

COMMISSIONER MAGWOOD: Let me just very quickly end with -- just going back to Ed for a second. Ed, does that make sense to you, I mean there could be sort of a combination at different sites you might have different strategies that might come out of this to protect the plant.

ED LYMAN: Yes, with the caveat that again you run the same

series of tests against whatever you have proposed to make sure that you can carry them through. So you can have flexibility and diversity, you just have to make sure that there's one credible path to success for the range of events that you consider. And then the challenge is going to be, of course, how do you limit the range of events you consider.

CHARLES PARDEE: We all agree with that by the way. Flexibility doesn't mean random.

COMMISSIONER MAGWOOD: I failed to find violent disagreement, so I'll move on. Thank you.

CHAIRMAN JACZKO: Just a comment to and I'm not sure and perhaps this is a misunderstanding I have but we have -- the B.5.b or 50.54(hh) or whatever it is, the regional equipment you're proposing is not a replacement for the B.5.b equipment, it is a supplement to. So you would still have at the site, you would still have the B.5.b equipment which may have different requirements, so it's an augmentation to that not a supplementation.

The biggest challenge I think we have going forward and I think, as you look at these 12 recommendations, where we are today I don't think-- these are kind of obvious things. We saw what happened at Fukushima, we need to address those issues. The challenge is going to be in the constraints and that's where we have problems. Those constraints are going to be resource constraints. They are going to be people, they are going to be money and what I'd say information. Depending on how we look at it, you know, maybe one or two others.

Now if these things are adequate protection from our perspective money is not a constraint, in terms of imposition of requirements, it's a practical

reality, but from our perspective then and not a restraint. That brings us back to people and kind of information, so the knowledge. Many of these things and I know many people have commented on it and looked at it in the past, I mean hardened vents hydrogen control is not a new issue. It's been around for a long time. So that would lend me to believe that the information constraints there are not as big perhaps, as they would appear. There's people resources which means if you're going to design a new vent you have to figure out -- if you're going to install a vent you're going to have to figure out who's going to design it, you're going to have to figure out where to install it, you're going to have to do all of the analysis, get that submitted and would presumably impact safety related systems. That has to get analyzed, we have to approve probably a license amendment, response to an order, or however we did it. But probably it would come in with the license amendment. I don't know -- or not. So that's kind of a people constraint. Of those things, what do you think are the biggest hurdles for each of these issues or just in general? Is it the people, is it the knowledge? Just interested in your thoughts, probably Chip if you want to start and others.

CHARLES PARDEE: Well I don't know that there is a simple question but I think the prioritization of the people, the human talent, is probably the most constraining. I think as we examine each of the proposals we'll be able to put that into sharper context, to your question, so I don't mean to pan --

CHAIRMAN JACZKO: No, I know it's not an easy question.

CHARLES PARDEE: You know, interestingly, I think hardened vents on Mark II containments can serve as a very instructive one to go evaluate. Not so much Mark I's because the industry is generally already there and we'll have to, again, define what reliable is, but we installed hardened vents, we did

improve them with the capability to operate without normally sea power sources as a consequence of the B.5.b activities and such.

Mark IIs we looked at carefully years ago and said there are sufficient differences in the margins associated with containment that the benefits wouldn't exist, wouldn't justify and I think that's a good example if we want to go run a test case. Look at Mark II hardened vents and how we work our way through the benefits versus the cost either in disrupted prioritization or diversion of talent or money. That's a non trivial modification, you're introducing new exhaust paths from primary containment and that's the intent, but my goodness that's fraught with opportunity to do it incorrectly and introduce another problem, so that to me is a good example of what illustrates, you know, where the tension is going to come from as we try to decide what's right.

CHAIRMAN JACZKO: I appreciate that and I think the challenge for us here, in many ways, as I said, I think by and large this is a good set of recommendations, there's disagreements around the edges but it seems to me the biggest issue is just really when are we going to be able to get this done. I would say and this is – and I think everyone is complicit in this, and by everyone I mean the regulator, I mean public interest groups, I mean the industry, we do things very slowly around here. We don't move quickly, sometimes for good reason but I'm not sure that that's always for good reason. I'll give you all a chance to respond in a moment.

I have two issues that drive me nuts and they're going to continue to drive me nuts until I'm no longer in this job. One of them is GSI-191 which is PWR sump issues related to the ability, essentially, of our recirculation system to work in the event of a loss coolant accident. The other is fire protection. If those

service models are how we're going to do this, we're going to be working on this for the next 15 to 20 years. And that may seem reasonable, okay, we always want to make improvements, but if we look at the fleet 15 to 20 years from now most plants are near the end of their -- or many plants are near the end of their -- or in the middle of their license extension period. Maybe 5-10 years in Oyster Creek is shut down. Other plants may decide to shut down, so our horizon for action is near term.

It really is not long term and I think we have to look at this in a different way because our experience will tell us that we're not going to be successful, you know we talked about zirconium fire and that should be an issue we should have a handle on today, there really is no excuse for that. This came up in 9/11, we've done experiments so, I think if we do this the way we've always done things we will not get these things done in a reasonable period of time and you will continue to be churning on your plants and talk about distractions and things that don't have a solid impact for safety. Operators need, they need to know the procedures, they need to be able to train on them, they need to be able to use them, and they cannot constantly be in a state of flux.

I think as we look at this, I think we have to think differently we have to approach these things differently and we have to set ourselves near term timelines and I think the issues with the station blackout, I think Chris your comments are right on. We're talking about four and a half years for developing a rule on station blackout, and again let's be realistic. This isn't rocket science. We're talking about some way, either to extend battery time or to cope. These are not hard things to do. I would say the technical challenge for the station blackout is coming out with the basis for how long. That's very, very complicated if we

want it to be. I can't tell you what the analysis is, I can't tell you what the accident is, I can't tell you what metrics we'll use, is it a risk metric, do we use a CDF reduction, but then we're really talking here about very low likelihood events anyway. Station blackout is always going to be a very low likelihood event because you have to have diesel failures which have very high reliability rates, although they do fail. And you got to have some initiating off site event that's going to cause a loss of all site power that can't be restored for an extended period of time. All very low likelihood, so if we use a risk metric, we may not even get to something more than four to eight hours, so we have to pick a number, we have to figure it out, but when we get a number, figuring out how to cope for eight hours or 20 hours or 26 or 72 doesn't seem to be all that complicated, maybe it is. But it doesn't seem to be something beyond the realm of the engineering talent we have in this country. So that's one that I don't see should take four and a half years. I think that's something that we put people in a room for a week, should be able to come up with a reasonable assessment of what time is reasonable, go out, put a rule in place and start implementing it. So it's not really a question in here, I think, but I'm sure you're all itching to say something so Chris start and then.

CHRISTOPHER PAINE: I think that's exactly right. In terms of you started by saying how do we intelligently use resources and experience, technical experience? One way, for example, on the vents is to pay attention to what the Europeans have done for the last 20 years. Sometimes I think the NRC sort of exists in a vacuum and doesn't care that there are these other nuclear countries that have done a lot and have a lot of experience and have regulated heavily in this area and they have the technology. And they've deployed it;

they've deployed modern, highly effective chemical vents at their plants. It's recent technology, it's developed in the last couple of years. Go take a look at that and see what they've done and see if that could be adapted so you don't spend four and a half years getting to a regulatory basis for vents, but you adopt what they have done.

CHAIRMAN JACZKO: Chip, any comments?

CHARLES PARDEE: Well, I think it's purely a function of how we define success. So if success is extending the capability of our DC systems because we know they are kind of defense of last resort and maintaining battery life control over our steam driven pumps and such. If an acceptable solution path would be the capability of quickly recharging our batteries using DC -- several DC chargers driven by diesel engines that are located onsite with cables and such that are pre-staged and trained upon, I see no reason why we can't get there in reasonable timeframes, within five years.

If we start down the pathway of safety related additions to DC batteries that we already have on site where we know we have to expand the size of our battery wells and battery ventilation systems and any time you try to do structural changes inside these very hardened plant sites that becomes very complicated. So to me the answer to your question lies in what is the acceptable end result. And if we define that right up front, that using robust but not necessarily seismically qualified safety related equipment that we can demonstrate that we have confidence in our ability to deploy it and sufficient redundancy and flexibility such that if one temporary diesel driven DC generator was taken out we know where the second one is that is on higher ground or in a different building or something like that; there is a success path. It just depends

on the mechanism we use to get there.

CHAIRMAN JACZKO: Well, I think that's very helpful and I appreciate that and we went through something like this when we did the aircraft impact rule and you know there was a lot of discussion and I think somebody told me, and I don't know if this is true or not, but I think Steve told me this -- I'm going to blame him if it's wrong -- or maybe it wasn't Steve. The only place where the words design basis appear in our regulations is in the aircraft impact rule, which is a fascinating tidbit of information because we talk all about design basis and I don't even think we know what it means. It means different things to different people, we talk about beyond design basis and -- but I don't think we really know -- I'm well over my time so I'll stop here. But the point was with the aircraft rule, we sat down and said what do we want to accomplish? We want to make sure that the plants are robust and have some kind of set of acceptance criteria that demonstrates their ability to deal with this phenomenon, and with some type of analysis and some type of methodology to review. And I think that gets more to your point, let's just say what we want to do and do it. I think we can then perhaps get there and I think that's in everybody's best interest is to get this done and I don't want to say in a rushed way but in a reasonable way, because 15 years from now if we're still dealing with post Fukushima events, I mean that's just not where anybody needs to be. With that -- any other questions or comments from my colleagues? Well thank you, we'll take a quick break and then come back.

[break]

CHAIRMAN JACZKO: Our second panel. We'll start with Sue Perkins-Grew who's the director of emergency preparedness at the Nuclear

Energy Institute.

SUE PERKINS-GREW: Thank you, Mr. Chairman and good morning Commissioners. I appreciate this opportunity to provide the industry's perspective on the prioritization of the recommended enhancements to emergency preparedness. To do this I will suggest that there are three priorities that should be observed when discussing pending or proposed changes to emergency preparedness regulations. I'll present those priorities in a moment. As you're aware, licensees are dealing with many required changes affecting the emergency preparedness programs, and will continue to do so over the next several years. The key drivers of these changes, of course, are the recently approved new EP rule and the associated guidance, supplement 3 to NUREG-0654 and the cyber security rule.

In addition, licensees and their off-site response organization partners who will also be implementing the recently revised FEMA-REP Program Manual. As I stated before, and I'd like to stress again, that these regulatory changes will have a significant cumulative impact on licensees and off-site response organization resources. Compounding this issue for industry and the staff, many of these resources needed for change implementation are also the same resources that must also maintain existing EP programs and regulatory activities. We therefore believe that informed change evaluation and prioritization is essential for successful integration of the recommended enhancements to our emergency preparedness programs. It is essential because it is possible to overwhelm the organizations responsible for implementation and cause them to be unsuccessful. Prioritization is also appropriate, given that we are talking about enhancements to existing

emergency preparedness regulations and programs.

With this backdrop we recommend that the first change priority should be implementation of new rule, EP rule requirements. These new requirements have undergone a rigorous multi-year technical review and are supported by stakeholder informed implementation guidance and schedules. There's no need to delay these changes.

The second priority should be moving forward with the development of guidance in two areas, emergency response organization staffing analysis, and enhancements to back-up power sources for communications equipment. The recent SECY refers to these as the Tier 1 recommendations.

As I mentioned in the Commission briefing on September 14, a staffing analysis for an event affecting multiple units, will require the creation of new criteria and instructions. These must be informed by changes being contemplated in other areas such as the integration of the emergency operation procedures and severe accident management guidelines.

Addressing the remaining EP related recommendations collectively referred to as Tier 2, should be the third and final priority. The advancement of potential changes in this category must be informed by the evolving understanding of the events and issues at Fukushima.

With respect to this third category, it's important to remember that the recommendations in the near-term task force report are largely insights based on initial review without the benefit of verified event analysis and technical bases. The evolution of insights into purposeful rulemaking is a complex process that requires careful analysis to ensure problem statements are well defined, and that proposed solutions are clear, or yield clear and tangible benefits. I would

note, too, that in the recent SRM affirming the final EP rule package, the Commission stated that future EP rulemaking should include stronger technical basis for certain areas.

We will address the -- industry is prepared to address the Tier 3 recommendations at a future date when the staff is prepared to move forward on those changes.

Mr. Chairman, as you pointed out in your vote sheet on the EP rule, emergency preparedness is a shared responsibility. There are numerous stakeholders from the private sector and government agencies at the local, state, and federal level. This means that changes to emergency preparedness requirements necessarily entail an expanded level of stakeholder engagement. Such engagement adds to the time and complexity of developing new requirements, but is ultimately needed if these requirements are to add value to existing programs, and number two, to be appropriately aligned with the national preparedness objectives, and the national response framework.

In summary, the industry recommends that the priorities outlined above be used to manage the pending and proposed changes to emergency preparedness regulations. Doing so will result in enhancements to emergency preparedness programs and response capabilities, and reduce the commutative impact of changes on licensees and our off-site response organization partners. Again, thank you for this opportunity to share our views, and this concludes my prepared remarks.

CHAIRMAN JACZKO: Thank you. I'll next turn to Patrick Mulligan who is the frequent visitor here at the Commission, Mr. Mulligan.

PATRICK MULLIGAN: Thank you, Mr. Chairman. Good morning,

Commissioners. I wanted to thank, again, thank you for the opportunity to participate in this panel. It's an excellent opportunity to be able to come here and share the state perspective, which you asked me to do today. In that capacity, I'm going to try to focus my comments on what you asked me to do with Recommendations 9, 10 and 11. But I think, again, I'm going to take a larger view of things and just give you a state perspective on, and Sue hit on it a little out a little bit, the cumulative impacts on all the rulemaking guidance that's going to be coming out very near, and what that'll do on the impact of the states.

After carefully reviewing the SECY that came out just last week, regarding the staff's proposed prioritization of the near-term task force recommendations, there are several important points I'm going to make.

Perhaps the most important point I do want to make regarding those recommendations are the cumulative impacts of all the other guidance documents that will be coming out in the near-term. NRC rulemaking and FEMA-REP Program Manual changes will be coming out in the near-term. They'll have significant impact on state and local resources. For probably the next 18 to 24 months, as we go through that process and in the implementation. And as you know, these are all cumulative changes that are a result of the impact of September 11 events and post Hurricane Katrina studies that have been done. It's very important for us to implement these as a priority at this time, so that we could at least catch up with those lessons learned from those events.

And as NFC's staff has made clear in their recommendations, significant time and resources will be required to implement all those changes that we're looking at from those two guidance changes. Particularly true the FEMA-REP Program Manual, which includes some significant changes in the

final version. And it will be particularly true of the version that we've recently seen, because it adds some additional requirements that we did not see in the 2009 draft that was released. Further, what that does is that it, you know, the guidance requirements that that REP Program Manual put on us, actually goes beyond the planning basis that we currently have in place, which is NUREG 0654. And looking down the road, it's going to require a significant overhaul to that planning basis document, now that we have changes in other REP guidance, and rulemaking that's out there that goes beyond that, we need to go back and change the planning basis for that, too. So there's another significant effort coming right on the horizon to make the changes for that, and that is a document that we think is a priority that needs to be updated and completed quickly. And some of the lessons that come out Fukushima can be incorporated into that as well, as far as, you know, when we take a look at 0654 as a planning basis, we can use the lessons from Fukushima to update and inform that document as well.

Beyond the impact rulemaking, we've got the changes to Supplement 3, which is obviously going to change the way we do our protective action decision-making another important change that will be coming out in the relative near-term that'll require additional state resources to implement.

And I'd like to take this opportunity, too, and I will take exception -- I think I heard it in the first panel, none of the findings that I've seen so far from the Fukushima event indicate that a change is necessary in the 10 mile or 50 mile planning basis at this point. Nothing I've seen changes that planning basis. And the plans and procedures that states and locals have in place provide flexibility to expand as necessary to protect the public. And as we move forward in the process and gain additional insights, if we want -- I'm not saying that we should

not go back and take a look at that planning basis, but I think we need to carefully measure actually what the findings are and what the findings prove, when we go back and take a look at the planning basis. I'd like to remind you that the planning basis for the 10 mile EPZ is not the EPA PACs; it is NUREG 0396. And that we need to really carefully look at what we are doing with that planning zone because we just arbitrarily go and expand it beyond 10 miles, because that is a significant cost, and significant resources are required to do that at this point. So we need to carefully look at that.

And with regard to the priorities discussed in the SECY, I believe that the NRC has made some very prudent proposals with respect to emergency preparedness. The tiered approach provides a framework that includes the assessment of available resources and skill sets to accomplish the critical objectives for the recommendations. And moving forward, I think the NRC should remain cognizant of the impact on resources. And staff, not just at the NRC, but at the local, state and local levels, and what impacts that will have on our state resources, the technical experts that are required to perform those analyses, and in that process, better evaluate technical aspects of the recommendations to efficiently and effective use -- to efficiently and effectively use the limited resources that we have to make real enhancements to emergency preparedness, and not just prioritize those with a near-term task force, but also prioritize them within the larger picture: What are the things we need to accomplish in the near-term? Thank you, I'd be happy to answer any questions when we're done.

CHAIRMAN JACZKO: Okay, thank you. I'll turn to Timothy Greten, who is the deputy director of Technological Hazards Division at FEMA.

TIMOTHY GRETEN: Thank you, and good morning. Sue and Pat covered a lot of what was of interest of FEMA, so I'll be very brief. FEMA supports the recommended tiered approach for implementing the near-term task force recommendations, and we're ready to help the NRC out any way we can, whether it's, you know, carrying out additional joint policy development, especially for recommendations 9.1 through 9.3, public meetings, plant updates, exercise updates, and the like.

FEMA also appreciates the commitment we received from NRC to continue the joint rule out of NUREG 0654 sub three, sub four, the Rep Program Manual, NRC's updated rules over the course of this fall and this winter.

Looking forward, we also look forward to working jointly with NRC and with all of our stakeholders on updating the base NUREG 0654 document to include lessons learned from Fukushima, PPD-8, and other things we've learned over the last five, 10, 15 years. A lot of those changes were identified with the REP Program Manual, sub three, sub four updates, but the proper place to make those updates was really in that source guidance document, or even in some of the underlying regulations. And this is something that the FEMA staff and the NRC staff with input from all of our stakeholders, are really looking into digging into after we've gotten the current role out finished up. That's really a next spring-summer timeline issue, but that is going to be very dependent on the other work load that the NRC has on its plate, based on how long it takes to implement some of the near-term task force recommendations, and some of the other items that the NRC is looking into.

And along those lines, we're also ready to support any way we can some of the other topics that were identified in the papers for this meeting as

potentially needing to be looked at. Potassium Iodide policy and distribution, or if the NRC decides to examine the different components of the EPZ makeup -- I support what Pat said, or FEMA supports what Pat said, that this is something we really want you to think out very carefully, and there is flexibility built into the current 10 and 50 mile standards. We also know that with a small module reactors that are being contemplated, the EPZ topic was something that's been actually thought of, in any case, for what could be done for that style of reactor and different kinds of reactors that are out. And the Federal Radiological Preparedness Coordinating Committee, which FEMA shares with the NRC is obviously a key member of -- could be a very useful group to help work though some of these policy considerations, especially with the region of other federal agencies. That concludes my remarks, thanks for your time this morning.

CHAIRMAN JACZKO: Thank you, we'll now turn to Phillip Musegaas, who is the Hudson River program director, Riverkeeper.

PHILLIP MUSEGAAS: Thank you, Chairman. I just have a brief statement. I want to thank the Commission for inviting Riverkeeper to give our perspective today on emergency planning and on the NRC staff's recommendations for prioritizing the task force's recommendations, it's lots of recommendations.

As a preliminary matter, Riverkeeper disagrees with the staff's conclusions as to whether the task forces' findings, quote "identified an eminent hazards to public health and safety," end quote. We support the actions of NRDC, and other citizens' groups that require the NRC to begin implementing the task forces' recommendations immediately, in order to address urgent safety and preparedness concerns at operating nuclear plants.

Riverkeeper has also filed a legal challenge in the Indian Point relicensing proceeding to suspend the re-licensing proceeding pending the implementation of these recommendations, and to require full assessment of the risks and impacts of Indian Point's operation in the relicensing review. And my comments are sometimes focused on Indian Point and sometimes generals, just for your information.

For today's meeting, however, my comments are focused on the staff's specific recommendations in SECY 11-0137. Riverkeeper fully supports NRDC's earlier comments regarding Recommendations 2 through 8. We also support the staff's recommendations to address Recommendation 9.3 as a Tier 1 issue, but we disagree with its recommendations regarding the remainder of Recommendations 9 and Recommendations 10 and 11. In particular, emergency planning enhancements to address station blackout and multiunit events should be implemented immediately.

More importantly, the Commission should also approve the staff's additional recommendations regarding further review, two issues that were mentioned in the SECY: transfer of spent fuel from spent fuel pool wet storage to dry cask storage and the need to reevaluate the basis for the 10-mile emergency planning zone.

Riverkeeper strongly urges the Commission to immediately address the issue of spent fuel storage. The risks of high-density storage in aging pools is well-documented and was further highlighted in the events surrounding Fukushima Daiichi. I realize that the review of those events is ongoing, but, at this stage, we believe it's still an open issue that needs to be re-examined.

Transferring spent fuel from overfilled pools to hardened dry cask

storage would lower this risk significantly if not entirely, yet the Commission has thus far refused to consider it. Why? The Commission has not provided an adequate answer in Riverkeeper's view, and in its absence the public can only assume that the nuclear industry has complained of the economic costs of transferring fuel, and the NRC has capitulated to these complaints.

The need to reexamine the basis for the 10-mile emergency planning zone is at least as critical an issue as nuclear waste storage and requires the same expedited response from the Commission. Riverkeeper's position on the feasibility of a 10-mile EPZ for Indian Point is clear, and, I think, is well-known to the Commission. We believe it will not protect the public living near Indian Point from exposure to radiation in the event of a radiological release, whether from accident or sabotage, because it will be impossible to evacuate people working and living in the area in time to prevent exposure.

Twenty million people live and work within 50 miles of Indian Point, and the prevailing winds in the Hudson Valley throughout the year tend to blow from the north towards Manhattan and the densely populated metropolitan area. The mounting evidence of widespread contamination from the Fukushima Daiichi meltdowns in Japan should be a wakeup call to the Commission to address this issue as soon as possible.

And, I just want to make a note on a comment regarding what Patrick Mulligan said. In terms of Indian Point and the local off-site emergency response planning that goes on, I can tell you that, in terms of the amount of flexibility given to expand the 10-mile zone in the event of an emergency, I've been in hearings with Westchester County emergency officials, where they specifically state that they only plan a drill and do exercises with the NRC, with

Entergy, and with other counties in the area, to drill for the 10-mile evacuation zone. They do not drill for expanded evacuation zones or emergency planning zones. And, again, this is Indian Point I'm speaking of, perhaps not in other areas, but for Indian Point's example, that is not the case.

In conclusion, Riverkeeper will continue to press for resolution of these issues with the Commission, with our federal and state elected officials, and in federal court, if necessary, until they are resolved, and the public regains its confidence in the NRC to put public health and safety first. Thank you.

CHAIRMAN JACZKO: Thank you. I'll now turn to Commissioner Ostendorff for questions.

COMMISSIONER OSTENDORFF: Thank you, Mr. Chairman. Thank you all for being here today. I'm going to start out with a question for everybody that's based on, Sue, your slide that talked about changes, your summary slide, changes require extensive shareholder engagement, and in this question will -- everybody will get a chance to respond. But, if you look at the -- in the previous panel we had a lot of discussions about how long does it take to get things done, and how long does rulemaking take, et cetera, et cetera, and, certainly, stakeholder engagement is a very important part of that process to ensure that all views are heard. If we can use as a baseline, perhaps, the EP rule the Commission's approved order this year, and look at the stakeholder engagement that was conducted as part of that rulemaking -- are there any fundamental differences as to how the NRC should approach stakeholder engagement for the recommendations from the near-term task force?

SUE PERKINS-GREW: Well, I'll take the first shot at the answer to that, Commissioner. I think one of the things that we learned that went really

well, by stakeholder engagement, whether it be industry or the off-site partners that we have, getting the end-user involved in the solutions is very important. And, I think as we approach the recommendations in the near-term task force, our end-users are largely the off-site response organizations. So, I think there's also other opportunities out there to leverage public and private stakeholder capabilities that are out there. I just attended the National Emergency Management Association Leadership Conference, and we tried to solve a lot of these issues, whether they be prolonged station blackout multiunit events, these cascading events that impact our nuclear power plants. There's a lot of partnering that's going on beyond the nuclear industry or planning for the nuclear industry that are part of the more national effort. And I think there's a lot of opportunity there.

You know, we talked about the industry response plan, regionalizing storage of critical equipment for prolonged station blackout. There's a lot of good work being done by public and private engagement that I think we should leverage. So, I think that's very important to get all of those partners involved to make sure that whatever solutions we come up with are in the best interests of our industry and the public safety.

COMMISSIONER OSTENDORFF: Okay. All right. Patrick?

PATRICK MULLIGAN: And I agree with what Sue's providing. You know, the tack we took with the EP rulemaking and the stakeholder involvement, and, particularly, and more important, I think, was even better for supplement three in gaining insights into that process, because the reach out to the stakeholders at the regional level was tremendous during that effort, and what it did is it gave us the opportunity to have some input into the process prior to

seeing or getting a final rule. Very often, you know, once we're asked to comment on what's final or what comes out in a draft, it's very difficult to change, theoretically, what's going on in the basis for that document. And, in the process that we use for the EP rule, and, particularly, for supplement three, it'd be having us engaged very early in that process helped us to not only shape those documents a little bit better but also bring us to an understanding of what was going to be expected of us at the end, so that we have a lot better knowledge of how we're going to go about implementing it, knowing a lot more about it up front.

So, my recommendation was that, you know, that, the process you use for stakeholder involvement and outreach for those two efforts, I think, would be very useful in moving forward and would even assist in, you know, hastening the process and moving towards implementation more quickly the more people you can get involved to have input.

COMMISSIONER OSTENDORFF: Thank you. Tim?

TIMOTHY GRETEN: The process for the EP rule went well. The process for documents after that, sub three, which started after that, was even better. Between the NRC, FEMA, our stakeholders, everybody involved, we've gotten savvier with getting inputs sooner in the process rather than there's a problem, we write the document, send it out for comment, and that's when stakeholders get involved.

I think as we move in to 0654 in the confines of FACA and whatnot, we want to make sure that we get stakeholders, all of them, involved as soon as possible before we even start putting pen to paper. The sooner they're involved with developing it, the better the process is going to go. And, certainly, the more on spot, more on target it's going to be once it goes out for comment, and,

certainly, when it's implemented.

COMMISSIONER OSTENDORFF: Thank you. Phillip?

PHILLIP MUSEGASS : Sure. Thank you, Commissioner. I think the process went very well from our perspective, from an NGO's perspective. We participated throughout the process on the EP rule. I think we disagreed with the final rule, but that's different than the process. We appreciated the amount of involvement that we were given and other stakeholders were given. So, I think, to the extent, once the Commission determines which issues that we're looking at today go through the longer-term rulemaking process and which issues are dealt with interim measures or both. Then, you know, we're absolutely willing to participate in the processes as best we can.

COMMISSIONER OSTENDORFF: Thank you. Patrick, let me turn back to the comment you made concerning the -- I think you used the phrase accumulative impacts looking at the NRC EP rulemaking we've already done, the FEMA rep, et cetera? I know that you're certainly speaking from your capacity, the State of New Jersey and CRCPD. Do you have any gut feel for how your colleagues in other states feel about the same issues, as far as resource constraints?

PATRICK MULLIGAN: Yeah. As a matter of fact, I, you know, before I come to these meetings, I engage --

COMMISSIONER OSTENDORFF: Tell us about that.

PATRICK MULLIGAN: -- well, with all those folks that are part of my committee, which, if you look at the committee, the advisers, and the membership of my committee, I can reach out to about 22 states before I get here. And nobody's in disagreement. You know, I don't believe that any state or

local government has been spared from, you know, the impacts of the, you know, the poor economy over the last few years, and everybody's resources have dwindled. I know for many states, you know, they're saying it's not a question of, you know, doing more with less, it's doing less with less. And we're actually looking at things that we can take off the plate that we don't -- we can't -- we just can't do anymore with the resources we have.

So, yes. No. It's not just New Jersey. This is a national type issue that we're looking at dwindling resources all over, and every state faces those same issues, and the implementation and taking on and prioritizing network.

COMMISSIONER OSTENDORFF: Okay. Thank you. Tim, I'm going to ask you from FEMA where you said not just the nuclear piece we're talking about today, but, also, more broadly, since FEMA deals with a whole host of issues nationally, do you have any comments on the resource issues faced by state or local authorities?

TIMOTHY GRETEN: It's always a concern. The -- probably the biggest thing FEMA has faced or America has faced is just that the sheer number of people, that is the variable cost, who are affected by any disaster. There's a lot more people living in Florida or New Orleans or whatnot. And, certainly, you know, there's more people living near nuclear power plants than there were before, too. So I know that's certainly been impacted as states have gone through and adjusted their plans as time has passed. But, you know, it's -- there's a demand to do, to just keep doing more and more. And, there's, of course, always that resource restraint. I mean, I think you saw the -- even the stories in the papers before the end of the fiscal year how, you know, the disaster relief fund was tapped out. There’s just a lot of help that’s needed out there.

COMMISSIONER OSTENDORFF: Okay. Tim, let me stay with you just for a question. In the previous panel, there was discussion by industry about centralizing certain emergency equipment that could be deployed across the country, whether it would be portable diesel generators, emergency battery charging equipment, et cetera, et cetera. From where FEMA sits, do you have any comments or reaction to that approach? Any things that you've seen that work well or things that we should be cautious about in looking at centralized equipment repositories?

TIMOTHY GRETEN: FEMA does have centralized supply repositories for all sorts of different things. Giving an answer, a full answer to this would really involve sitting down with the different stakeholders involved in figuring out what exactly we would need to be pre-positioned, what would be the optimal way to do it, and that doesn't mean studying it forever. It's, "Hey, this is a plan that makes sense." You can work it out in a half-hour. You know, if it may pass the lab test. And, you know, also figuring out the other stakeholders who need to be involved to move that stuff in the event of a much larger catastrophe, you know, a New Madrid earthquake kind of scenario. And this would actually be something where we would be very much reliant on Pat and his colleagues, say, in New Jersey, and ask them, "Hey, what makes sense in New Jersey for this kind of challenge?" Because this would have to be a very locally tailored solution. You know, what makes sense here might not make sense out in Washington State.

COMMISSIONER OSTENDORFF: Well, I appreciate it. And I'll comment that assuming FEMA has a wide range of experiences, a lot of different disasters nationwide, and, to the extent that FEMA has lessons learned in this

particular concept as to how to, you know, deploy equipment in emergencies, they might have applicability for nuclear industry or for the NRC staff. I know that, if you haven't already shared that -- and you may have -- but, if you have not, I'd encourage you to do so.

TIMOTHY GRETEN: That is in our short-term plans to do so, sit down with the NRC, and FEMA Logistics and begin fleshing out how that might happen

SUE PERKINS-GREW: Actually, if I could add, Commissioner, we have started that dialogue. We have meetings set up with the NRC and FEMA Logistics coming up in, I think, next week. So, again, it's starting to expand our horizon from the industry, so, what Chip Pardee had already talked about, the industry response plan, taking that list of equipment, and starting to conceptualize how that would work, leveraging not only federal resources, but, of course, our state partners, because it does start locally. So, we're, again, working on those public and private partnerships.

TIMOTHY GRETEN: Like Sue said, we're meeting next week.

COMMISSIONER OSTENDORFF: Good. I'm very pleased to hear that.

[laughter]

Thank you. Thank you, Mr. Chairman.

CHAIRMAN JACZKO: Commissioner Svinicki.

COMMISSIONER SVINICKI: Ms. Perkins-Grew, I may start with a question for you. When we think about Japan as a society, we think of them as generally having a very high level of preparedness for various events. I think it's something that, you know, maybe it's a stereotype or it's folklore, but I think that

they do a lot of civilian drills and try to be prepared for various events. But, in terms of the overall government or regulatory structure for emergency preparedness, is it your sense that it's somewhat analogous, I mean, from what I read, they have, you know, an evacuation zone, and there was capability to have that be enlarged if it needed to. And I do hear things about it, as the event unfolded, that make me think that there is a lot of parallelism. But, as a professional in this community of practice, do you have a sense of how analogous the approach to EP regulation is in Japan?

SUE PERKINS-GREW: Only from the sense, Commissioner, that we have engaged in dialogue with members of Chubu Electric after the event occurred. They came to NEI to exchange ideas. And it's clear from that dialogue that we had with Chubu Electric representatives, when we went through the 16 planning standards that we have here in this country, NUREG 0654 being the basis, that from our dialogue at that point, it was clear that they -- their planning standards are not as extensive as we have here in this country. That's what I got from our dialogue. I'm also anticipating, I think, that the NRC staff under Patricia Milligan is hoping to perform a study to look at the EP perspective from, you know, comparing the planning standards and the actual response from the Japanese events. So, I'm hopeful that that study does come to fruition, because that would be very helpful. Because, right now, we have their documents, but it's really hard with the translation and, you know, knowing what we know here, and I'm very reluctant to make any sort of comparison without some fully engaged analysis that would take a look at those events.

COMMISSIONER SVINICKI: Are you aware if the IAEA or any other international organization is undertaking a study like that?

SUE PERKINS-GREW: Specifically, no, I'm not aware of it, Commissioner.

COMMISSIONER SVINICKI: Okay. Neither am I. Mr. Mulligan, I might ask you, I think both from your perspective of your responsibilities in New Jersey but also the CRCPD, aside from any comparisons or analysis that the NRC might do, again, you're part of that community of practice of emergency preparedness, what activities are you undertaking, either at the state level, or as professional associations to evaluate the implications of the Fukushima events on state and local emergency preparedness capabilities? Are you undertaking any of your own evaluation and lessons learned?

PATRICK MULLIGAN: Yeah. Actually, we, in addition to this process, meeting with the licensed operators within our state to see if there are things that we can put in place that we can do better. Particularly, I think that what we're trying to nail down into initially is communications and assuring that there are backup communications and redundant systems so that there can be communication from a site to our state operations center, where we can do that. And, helping our communications to get us assessment data, plant status, you know, SPDS and things like that, beyond, you know, what we have in place already to be able to get some redundant systems in there. So, we're working with the utilities to do that.

Now, from an off-site perspective, we are, we're taking a look at all our plans. We do that annually, but, in light of it, we're taking a look at it as, you know, its applicability, you know, for road impediments. You know, what are we going to do? And trying to go down those roads to see whether or not we have sufficient resources in place and dedicated to the program and to be able to

handle those kind of situations.

But, it's not particular, I mean, to this situation, we do that every, you know, we do that all the time. With every situation that we see, you know, with hurricanes, we learn some things during -- in our response to Hurricane Irene in New Jersey that we need to improve not just our hurricane response plan, but our nuclear emergency response plan.

So, we try to take everything we learn and apply it. And I think that all the states do that, but, beyond that, I mean, keep in mind that since 9/11, the greater community, not just within the EPZ's, but all communities are starting to plan better for hazards. So, that when you talk about expanding an EPZ, we've already been doing that essentially by bringing the rest of the counties and local that have, were not in that emergency preparedness fold, in over the last 10 years as we've, you know, kind of implemented the old hazards approach, and, including chemical companies and other hazards in. You know, we've got a much broader community of emergency responders that are trained beyond just the EPZ now. You know, I know that there's a, you know, everyone, county and local throughout the entire state are on board now with that process.

So, you know, I think that makes that's flexibility to expand or plan beyond that 10 mile is very easy, because those people are not unfamiliar with response efforts.

COMMISSIONER SVINICKI: Okay. That's helpful. Some of you have commented on the EP rule changes that the NRC promulgated. And, just broad brush, the NRC, at the time of the events in Fukushima, was well underway in the development of changes to our EP regulations and saw no downside to continuing to finalize and promulgate those. Some of you have

commented on the substantial body of work that it happens after it's off the Commission's plate in terms of putting the changes in place. They have to be implemented in the case of emergency preparedness by many, many thousands of frontline workers that they have to put these changes in place.

And I don't know if this question will make any sense, but along the lines of you can't make yourself unaware of something that you're aware of, the events in Fukushima have occurred, and, as you go about implementing the rule change that the Commission put in place, which was not informed, necessarily, by the events in Fukushima, you can't unlearn anything that -- or observations that you might have out of the events in Fukushima.

So, although we must, of course, implement the rule we put in place, and we have to stay within the confines of what we've done, it seems to me that there may be opportunities to inform the implementation of it, again, not changing the requirements that we just put in place, but we are aware now, and we have preliminary learnings out of Fukushima. Are there any examples you can think of where, as we move forward on implementing the rule that we just finalized, the EP rule changes, that we could take what we've learned out of Fukushima and inform that, while not changing the requirements, at least inform its implementation, or is that kind of something that logically, as you work day to day on it, you find that it doesn't make sense?

TIMOTHY GRETEN: One of the big things that we are learning lessons, like not waiting for the analysis to be done, but seeing what did we actually do from our end for Fukushima is in the communications realm. The FRPCC was charged by the National Security staff with updating the federal communications plan prescriptive messaging. NRC has been a key member of

that team. We've also had folks across the federal family and the state level, you know, seeing what do they need from the federal government? What are they expecting? As Pat and the CRCPD pointed out there were a number of shortcomings during Fukushima. So, that's one thing. We're certainly going to be looking to the future analysis to learn what else can be gleaned from Fukushima. But, there's already a treasure trove of information.

I might have been out of pocket for about three weeks, and, even during that period of time, that document has grown tremendously and is something that, if we had a situation today, would be even more useful than the information that we had say six months ago. Progress is being made.

COMMISSIONER SVINICKI: Okay. Thank you.

SUE PERKINS-GREW: Also, Commissioner, I think with some of the rule issue areas, and I just jotted down a few that come to mind, we already are going to be addressing the ERO staffing. We have the on-shift staffing analysis as part of the rule that we'll be implementing. Then we'll be working immediately as part of the Tier 1 effort to look at the broader emergency response organization that's augmented. There's an opportunity there.

Also, with regard to alternate facilities, that has a role to play when you think in the, you know, in the context of Fukushima type of event as well as challenging drills and exercises. Maybe taking scenarios, not necessarily in an evaluated exercise, but the smaller, you know, more routine drills that we do within that exercise period, which will be in eight years. I think there's some opportunity there to go to that level and use what we know to hone our skills.

COMMISSIONER SVINICKI: Okay. Thank you. And I would just ask as a final thought for any of you to respond, I know there's some difference in

terms of the Tiers and the prioritization, but is there anything that you or the organizations that you represent believe is entirely not even on the table in this discussion, either in EP or just generally, that you would like to see as an area of study arising out of Fukushima?

PATRICK MULLIGAN: I'll speak up. Yeah. I think the one thing that we've left out is taking a look internally at how we as organizations responded during that event. Granted, it was international. It was not a U.S. response, but it had very much a U.S. component to it. There were no health effects in the U.S. It was measured. From the state perspective, we needed to deal with that, and we were getting hundreds and hundreds of questions. But, it lacked, because it was an international event, it lacked the coordinated effort at the federal level from a single agency.

So, I think that the one component that's left out is globally from a federal/state response, taking a look inward and seeing how if we have another international event that ends up affecting the United States, how are we going to do that? And are our communications in place within our country to really get all those agencies coordinated at once?

And I think that we have a plan in-house to do that, and I believe that it will work. But, again, I don't believe it worked well for this international, and that's, particularly, there's a lot of nuclear power reactors right on the Canadian border. And that's a real international threat that we need to take a look at. How do we communicate internally in this country for an international event?

COMMISSIONER SVINICKI: Okay. thank you. Philip, did you want to say something?

PHILLIP MUSEGAAS: If I may briefly. This probably isn't a direct answer to your question, but I think something that could help, well, two quick things. One, I would have said, you know, reevaluating the 10-mile EPZ basis would have been a recommendation but the staff has included it in some sense, in the SECY. But, also, on a related note, I think it would help the Commission in terms of public confidence and public response, as it goes on and as you learn more about what happened in Japan and the actual, you know, with everything from EPRI to NRC's looking at the emergency planning response, you know, if you make a real effort to share that information with the public and explain how, what you're doing, and how the actions you're taking are in response to what you're learning from that -- and I say that for a couple reasons. One is that it just makes common sense. And, also, you know, that the media, as is want to do it, it's moved on. The general media has moved on to other issues. And, so, you know, there still is a lot of news about Fukushima in terms of radioactive dispersal and ingestion pathways and other things that's still continuing to come out. But that's not, you know, getting to the general public. So, I think it would help the agency. It's not, you know, it's not mandatory, obviously, for you under the Atomic Energy Act, but I think it's, it would behoove the agencies in terms of gaining public confidence to make that effort.

COMMISSIONER SVINICKI: I appreciate that. As just a final point. If it sounded like I kept belaboring that the EP rule we just finalized was not informed by Fukushima, it's just on the point you're mentioning, Phillip, because I think because we finalized those rule changes after Fukushima, many in the media thought that that was a response to Fukushima. So, you're correct that it's a complex topic, easily misunderstood. Thank you, Mr. Chairman.

CHAIRMAN JACZKO: Commissioner Apostolakis.

COMMISSIONER APOSTOLAKIS: Thank you, Mr. Chairman. Let me pick up on this issue of public confidence. Your statements a few minutes ago, you said, you know, to enhance public confidence or something like that, but, earlier on in your closing remark, you said that if we did certain things, then we would gain again public confidence that we are dedicated to safety. And my question is, when did we lose that public confidence? Did we lose it; do you think that we have lost it? And tell me why.

PHILLIP MUSEGAAS: Well, to begin with, I think you have lost it in terms of, speaking about Indian Point, and that, and, my comments on public confidence are limited to what we see from our members. Riverkeeper is a membership organization. We have about, depending on how you count it, about five to ten thousand members, and then we also, because we're a public organization and we're well-known in New York, we get a lot of inquiries and comments and feedback from the general public in the Hudson Valley.

So, my comments are informed by both what I've learned through researching this in a non-technical way and from getting feedback from the public. I can tell you that the overwhelming majority of the feedback from the public that we get in the New York area is negative about the Nuclear Regulatory Commission. They do not believe that the Commission is doing enough to make sure that Indian Point is safe. They do not believe that the Commission's process for license renewal review is inclusive enough and broad enough. And, to certain extent, they do not believe that the Commission's response to Fukushima and what that, the implications that may have for Indian Point, in particular, because the only plant we're focused on in this area, has been

sufficient. And, so, that's, I can go into more details, certainly.

But, on issues like emergency planning and nuclear waste storage, in particular, those are issues that the public has widespread concern over, the emergency planning and the feasibility of the emergency plan for Indian Point. Even people who believe in nuclear power and think Indian Point should remain open will readily admit that if there's ever an accident there, then they don't have confidence in the ability to protect themselves and their families. And, so, and I don't say that lightly, and this is not -- I also do not say that to denigrate anything that FEMA does or anything that local responders do. But, you know, the local agencies on the ground are doing, would do everything in their power and would do everything possible, I think, to respond to an emergency. This is a question of the overarching practicability of continuing to operate Indian Point, given the population density and the location.

So, that's on the EP note. And the response of the NRC, with apologies, Chairman Jaczko, because I don't mean to single you out --

CHAIRMAN JACZKO: Is it going to be good or bad?

[laughter]

PHILLIP MUSEGAAS: I'm not sure yet. It depends. But, this whole, I think it was a mini-controversy about, you know, when recommended evacuating Americans to 50 miles away from Fukushima in Japan, and yet you did not recommend that same standard be applied here in the event of an emergency -- that resonated with the public at Indian Point again, and, I think, you know, and --

CHAIRMAN JACZKO: That's bad.

PHILLIP MUSEGAAS: I guess it's probably bad, yeah. I apologize.

That's why I gave the apology in the beginning. But, so, in terms of, you know, the continuing justification for, or lack of justification for the 10-mile EPZ is probably the most critical issue in terms of public confidence in the area, and, second to that is nuclear waste storage. The public has become much more aware of, I think, of, since Fukushima, because there was, you know, there was continual coverage of the spent fuel pools and what spent fuel was and how it, you know, what the risks are. So, we received numerous inquiries about, you know, how Indian Point's nuclear waste was stored. Is it inside containment? A lot of people were not aware that it was not inside containment, like Mark I reactors, although that's different, that's not analogous.

But, so, there's a question of, you know, if there's this mitigation measure out there of moving spent fuel from the pools to dry casks that would, you know, it's not going to solve all the problems, but that, in the public's view would address this particular risk issue of overly packed pools, of losing water, not being able to make up water on the rods, then there's a question of, well, why doesn't the NRC just do that? I don't have the answer. You guys have the answer to that. And I think the answer may be out there. On all these questions, the answer may be out there in that the knowledge base to make that answer to the public may be in the NRC. It just hasn't been given to the public. And, again, in my experience. And, so, I'll stop there.

COMMISSIONER APOSTOLAKIS: Mr. Pardee said earlier that evacuation worked very well in Fukushima. Do you agree with that?

PHILLIP MUSEGAAS: Do I agree with that? I think it's, my understanding, and I'm not an expert on the dispersal at Fukushima, but my understanding was that there was significant radiological dispersal well outside

the 12-mile -- I think they have a 20km zone, is that correct? So, I think that there was significant dispersal. The plume went to the northwest and deposited radiation far outside that area. How, whether that affected people outside the 12-mile zone that were not evacuated, I don't know the answer to that, but that suggests to me that the potential was there, that the evacuation did not go well.

I don't want to make analogies to Indian Point between Fukushima and Indian Point in terms of evacuation, because my understanding of Fukushima is it was a predominantly a rural area with a smaller cities, smaller populations, and less of a congested metropolitan area. So, I don't think there's an apt analogy there.

COMMISSIONER APOSTOLAKIS: Anybody else wants to comment on that? Do you agree with Mr. Pardee? Evacuation worked?

TIMOTHY GRETEN: From FEMA's perspective, certainly it could be argued that the evacuation is still ongoing. And just from open media reports and from, you know, from what we've heard from Japan, from our counterparts, even with the tsunami, evacuations did precede. The Japanese were able to evacuate the EPZ that they had set up around the power plant. I know that there have been other evacuations, radioactive hotspots and whatnot. But, I think that, certainly the lessons that can be learned from the evacuation there, and from FEMA's perspective, it's not just about the nuclear power plant, but it's also about the whole area that was affected by the tsunami, those lessons are ongoing. You know, evacuation isn't just a, okay, get out of the area. It's when can you come back? If you can't come back, what is the long-term solution for where you're going to live and how you're going to resume your life? And, I think a lot of that is still playing out.

PATRICK MULLIGAN: Yeah, and I guess it's a pet peeve of mine in clarifying when we're talking about evacuation versus relocation. And, in my mind, as a nuclear emergency responder, that's very different. Evacuation or immediate moving of population to protect them from acute health effects, that is done within the first few hours. Later on, and I think they did a good job with that, but that was not necessarily from the radiation incident that was going on. It wasn't, that wasn't in effect yet. A lot of those evacuations were just from, you know, tsunami effects. But I do think that from an emergency perspective, the evacuations, I think they did a credible job under the circumstances. Beyond that, I think what we're really talking about is relocation. I think we have a tendency to mix those terms up too much. Relocation are actions that we take to protect people from exposures over a long period of time. Therefore, we have -- it's not an evacuation. It's, we have some time to evaluate those areas and to move them out.

So, I'd like to make that distinction between evacuations and relocations. I think they did both of them well. I think they did relocations based on science, once they started getting data in, which I think is a prudent thing to do once you start moving people out of their homes, that we just don't take knee-jerk reactions and just start, you know, arbitrarily moving people away from places they don't need to move away from.

So, I think it was, you know, I think they did handle well from a scientific and an emergency perspective, keeping in mind the difference between evacuation and relocation.

COMMISSIONER APOSTOLAKIS: Thank you.

SUE PERKINS-GREW: You know, I should clarify; I share the

same pet peeve that Patrick has. You know, when we typically generically apply the term evacuation when, you know, particularly when you talk about the emergency preparedness zones, their evacuation is very discretely meant for the people most at risk, which is closest to the source. So, therefore, in the short-term, immediate action is to evacuate. Longer term, once the information comes in, the data comes in to the decision makers, they would make additional decisions to relocate, tell people to leave the area, and also follow up with when they can return. So, you know, to us practitioners that makes a big difference. So, I'm glad you made that. Thank you, Patrick.

COMMISSIONER APOSTOLAKIS: Thank you. Thank you, Mr. Chairman.

CHAIRMAN JACZKO: Commissioner Magwood.

COMMISSIONER MAGWOOD: Good morning to all of you. Thank you for your comments today. Just two questions. I'm going to focus on Patrick. Welcome back, by the way.

PATRICK MULLIGAN: Thank you.

COMMISSIONER MAGWOOD: The comments you made about the resources and the state agencies being under pressure, having to give some thought to the cumulative effects of all of these regulatory actions, that's something I've heard from many states at this point. I guess they're all under a great deal of stress right now.

But, at the same time, it's, we had this conversation with licensees as well, that, you know, you ask me to understand that there is this pressure on resources, but, at the same time, if something is important from the safety perspective, you have to do it. We, you know, you can't, you have to prioritize.

And, in that context, as you talked to your colleagues in other states, where do the recommendations that came out of the task force report, like looking at multiunit events and things like that, where do they fall on the priority line in your overall perspective as a state emergency planner?

PATRICK MULLIGAN: There's not an easy answer to that question, and what I see is is that it's going to be a mixture. There are priorities that are coming out in the new rulemaking that need to be made immediately, well, the new rules that have to be done. But, I also think that there are competing priorities that we'll see out of Fukushima that need to be worked into that schedule where if rulemaking says you need to accomplish everything under this rule within two years, if we expect that we're going to take into some of those priorities that we need to do as a result of Fukushima, then maybe we need to back off on that schedule and take care of the priorities. I'm not saying that we need to push those priorities back because we have all this to do first. What I'm saying is that it introduces a whole another set of priorities into the mix where we need to take a look at the rulemaking that's in place and reprioritize that schedule to accommodate these other things that we need to accomplish near-term, so that we may need to extend that period of implementation for rep manual.

COMMISSIONER MAGWOOD: So --

PATRICK MULLIGAN: So, I don’t want to stand around counting widgets for FEMA when I need to really do something about communications for Fukushima that isn't a rule yet.

COMMISSIONER MAGWOOD: So, a better way to talk about this isn't so much -- in your view from the state perspective is not so much prioritizing as integration?

PATRICK MULLIGAN: Yes.

COMMISSIONER MAGWOOD: That's a better way of thinking about it?

PATRICK MULLIGAN: Yes. Integrating what we're going to be learning and getting from Fukushima into what we already have and then reprioritizing that entire mix into, you know, getting what is most important first.

COMMISSIONER MAGWOOD: Mr. Greten, do you have a view on that?

TIMOTHY GRETEN: We certainly don't want to have Pat counting widgets either. We think he has better things to do. One of the things we've definitely seen with the EP rule implementation is there's some non-compressible timelines for implementing changes. I would use the hostile action based planning updates and exercises as a pretty good example. Under the EP rule, exercise schedule is being expanded from a six to eight year cycle where all these different kinds of exercises need to be done. The rules and guidance are being promulgated and what needs to be in your hostile action based plan, the off-sites then need to update it, and then all 56 sites around the country need to do an exercise. In talking with all of our stakeholders, it confirmed our initial impression that we just can't have everybody at their next exercise do that hostile action based drill, you'll have a cycle of 56 of them in one year, where you can't possibly support it because there's some unique federal assets, say, that need to participate in these exercises to provide the best realism and they can't do 56 in a two year span.

At the same time, you also want to spread things out, so you don't have a slug of change made, and then nothing for eight years, and then you have

another spade of exercises. So figuring out how to sequence all of that together with all the other changes is certainly a challenge, but it's also something we're doing our best to make sure we're, you know, working at the state and local level as much as possible, to see what makes sense. And, you know, we've put together this mandate, that mandate, you need to do this, you need to do that. What does common sense dictate is the first thing we need do, let's tackle that.

COMMISSIONER MAGWOOD: Thank you. Anyone else have a --

PHILLIP MUSEGAAS: If I could make a quick comment. This may be a naive comment, and take it for what it's worth, but, I mean, we're talking a lot today about the Commission's resource constraints, and the state's and local counties' resource constraints. Has there been thought given to looking at licensees' resources and potentially licensees' fees and things like that? If these requirements are found to be needed to improve safety, can some of the economic or the resource burden be shared with the licensees?

COMMISSIONER MAGWOOD: Your mean with the states, is that what you're suggesting?

PHILLIP MUSEGAAS: I'm sorry?

COMMISSIONER MAGWOOD: Resources shared between licensees and the states, was that your comment?

PHILLIP MUSEGAAS: Yes, just that would it make sense to look at either increasing licensing fees or other, and I'm sorry, I'm not familiar with -- entirely with how the system works with the NRC and licensees, but in terms of the actual financial resources, figuring out a way to have licensees contribute more, a larger share of whether it's specifically emergency planning resources. I know with the Indian Point example, the surrounding four counties are often,

even though on paper it looks like Indian Point supplies millions of dollars for supporting emergency planning and responses, in fact, the counties run at a deficit when it comes to emergency planning compared to other counties in the state that do not have a nuclear plant nearby. So, is that clear?

COMMISSIONER MAGWOOD: No, I understand, I appreciate that. I don't want to leave you out Sue, did you have a comment you wanted to make?

SUE PERKINS-GREW: Well, licensees have always been assessed by their states depending on what the laws are in each state for state and county support for whatever it takes to implement their emergency plans for the reactor. And I think as a discussion that Patrick and I had earlier, that, you know, sometimes when the money is paid by this -- the utility, what happens to that funding once it gets to the state, depends on the state. So Pat, maybe you could elaborate on your experience as, you know, a state emergency agency, that's it's not just a matter of money being thrown into it, it's how the money is used and directed towards the actual resources that are required.

PATRICK MULLIGAN: Yeah, and I think that's probably not just true for my state, for -- but for many states, just because there's more money that's being received into the funding of the state doesn't necessarily translate into additional resources for that particular program. So again, it's not, you know, licensees in my state can throw $4 million more at me, and I still can't hire people. That's just the way that, you know, the policy is in the state. So -- and I'm not saying that for me and my program, nobody can. So, throwing money at it doesn't fix the resource problem all the time.

TIMOTHY GRETEN: And one other -- one other thing to consider, the emergency response community and the state and local folks, even if they

are paid for with, you know, state or local rep dollars, they have to respond to the actual emergency that they're facing, you know, at the time. So I suspect that large part of, for instance, the New Jersey emergency planning staff, or anybody in New Jersey associated with the emergency response was tied up for a good, you know, month, month and a half with Hurricane Irene follow-up on -- or you know, I believe it was Minnesota where there was a government shutdown, and, you know, that put a month long break in plan. So there's all these other factors too that have nothing to do with nuclear power or nuclear power plants that are also -- add to the time it takes to make change at the state and local level. That's just the way it is.

COMMISSIONER MAGWOOD: Patrick, another -- one other question for you. We've heard a lot about -- and the staff that included this as another consideration in their paper -- we've heard a lot about potassium iodide, and whether the program that is currently in place is sufficient to protect public safety. And of course there will be some dialogue about this -- I just wanted to get -- as you talk to other states, what's the current thinking in relation to that issue today?

PATRICK MULLIGAN: I think right now, and every state does it differently, and in New Jersey we have the option of pre-distributing anyone that takes it. For now -- we're going to make some changes, because I think, for now, you know, the policy that we have in place, it may have people taking KI a little too early. And we need to guard against that, because from what we've seen in Fukushima is that, you know, they probably had a few days before they needed to actually start taking that. And anything taken immediately, like we might have people do, is not prudent. So, we're going to change that.

But I think if you take a look at the strategic stockpiles that are in place, they have it stockpiled, some for nuclear power plants specifically, but the strategic national stockpile that was put in place has ample doses of KI available for rapid dispersion in the event that you need to expand that distribution beyond a 10-mile area or even out to -- and then we can draw from those resources. So I think that, you know, after 9/11 what was put in place from a national strategic stockpile perspective of KI, is that there are stockpiles out there, there's a mechanism for moving that to areas that need them, and I believe we can take a look at that. But I believe that there's a mechanism in place and sufficient doses out there to move around for any type of an emergency, no matter how far you need to expand it. I just believe that it's out there.

TIMOTHY GRETEN: Building on that, I know that the national security staff well before Fukushima had actually directed NRC, HHS, and other agencies to examine improving guidance for KI, especially for pediatrics. I know that the Federal Radiological Preparedness Coordinating Committee turned a paper in to the White House science and technology office, you know, outlining what the different states were doing, and also outlining that there's a -- it is a somewhat complicated issue, just because for instance, the average American through iodized salt in their diet, has a lot of iodine already, you know. Is it -- it's -- the same dosage for you and me might be different based on what we eat in our food, or our basic body chemistry. So it's a complicated issue.

COMMISSIONER MAGWOOD: Sounds like you just made a promotion of using more salt in your food. I'm not going to endorse that at this time.

[laughter]

Thank you very much.

CHAIRMAN JACZKO: Well, I'll just follow up on that. I'm not sure that -- I think HHS manages the national strategic stockpile and it would probably behoove us -- I don’t know who -- just the best person to do it, to ask them, I'm not sure that they would agree that there's ample stockpiles to distribute well beyond a 10-mile, based on some conversations I've had with them. So that may be an interesting factual point that we just want to get clarified. Again, I don't want to speak for them, that may be what they've communicated to you. I've heard slightly different things in my conversations with them. So it's a factual point that probably would be worth us just getting resolved.

We've talked a little about some of the challenges with kind of changing the exercise regime, and what -- you know, and again, recognizing that there's challenges and there's resource constraints and all this, but I think what our focus needs to be on is how do we overcome those, and how do we get done what we need to get done, because I think that's really why we're here. I mean, I think none of us would be here if we thought we didn't need to do anything post-Fukushima. Clearly, I think we all recognize we need to do some things, and I don't think that there's a lot of resistance, I think, to what the task force has recommended, and then those additional items the staff has recommended. It's really just a question of I think timing, resource allocations, all those kinds of things -- prioritization and all those good things.

So, in that spirit, what would be the constraints, let's say, when we have a now an eight-year -- or an eight year cycle, so that's exercises every two years. We're talking about four exercises in a cycle. One of which is a hostile action drill, one of which I think is a non -- quite going to a general emergency, so

that leaves two exercises in the cycle, both of which I assume are the typical exercises that would involve --

TIMOTHY GRETEN: Release and an ingestion pathway.

CHAIRMAN JACZKO: Right, so release and ingestion pathway. I mean, what would prohibit us from developing guidance to on a -- maybe in that first eight-year cycle on a pilot basis incorporating in the ingestion or the release pathway, a multi-unit event. I mean, it's really more on the modeling end than it is on the exercise end. I mean, the developing an exercise that's built around that, I think would probably fall to FEMA more than anything. But I mean, you know, as a -- kind of a maybe first time around as a pilot, kind of, FEMA gives them a pass, gives you a pass on kind of the -- maybe they would grade one, somehow you could incorporate a second unit into the event as kind of a plus to your actions. What would keep us from doing that? I mean, what would be the constraints on doing that?

TIMOTHY GRETEN: Well, first of all, in terms of things that aren't constraints, I am aware of nothing in guidance that would prohibit that from happening. The second thing is that just as a matter of -- the whole reasonable assurance concept; those exercises are certainly key points to it. But it also -- there's annual plan reviews, there's, you know, pretty much constant interaction with all the state and locals about updating plans and whatnot. It would be really a matter of figuring out what is the requirement, what is it we want to do, and figuring out how are we between us, NRC, different stakeholders, certainly the state and locals, going to prototype that and then putting metal on target and making it happen.

CHAIRMAN JACZKO: Well, could we pull the exercise we did? I

mean, we did that with the hostile action based drills. And we did pilots at our facilities -- now, we did those I think in an off year, so we actually added an exercise cycle I believe for the hostile action pilot, so, you know, again, given the resource challenges, maybe we wouldn't even add an extra cycle in. But what would prevent us in -- you know, in a year or two years from starting that, and you know.

TIMOTHY GRETEN: From an exercise design standpoint, the biggest thing with multi -- it's -- most of the planning now if I'm not mistaken is based on single reactor failure -- single reactor issues. And I think to design an exercise that really got it, what would be different between a single reactor failing and a multi-reactor failing, that the whole on what would be different, like figuring out what those differences would be and how would you need to prototype an exercise based on that would be the key to making everything else happen.

CHAIRMAN JACZKO: Is that more FEMA? Who does that, is that us, is that --

TIMOTHY GRETEN: I think that's really based on the underlying design basis for the reactors. The --

CHAIRMAN JACZKO: Would we do more of that then --

TIMOTHY GRETEN: Yeah, what drove the original, you know, 10-mile EPZ, source term, et cetera. And I think it would certainly be informed by, for instance, real life experience with the multi-reactor event that was in Japan. But I think that's something where that would be NRC-led to figure that out, but there's a wide range of stakeholders out there with opinions, and who are certainly ready to help. You know, FEMA, CRCPD, the states and locals, the FRPCC. I think that would be how you go about doing it. And then in terms of --

once that piece has been figured out, actually prototyping the exercise out would be, you know, working with a state who was willing to help. And I know that there wouldn't be any shortage of it, and you know, then it's just the incremental resources necessary to weave that into the exercise narrative.

SUE PERKINS-GREW: Mr. Chairman, if I could add, I think that -- two comments on this, the multi-unit scenarios. I'm not so sure those aren't being done now by the multi-unit sites like Palo Verde, and they're not necessarily an evaluated biannual exercise, but in their routine drill program. Because in addition to the evaluated exercise every two years, licensees typically have between four and six internal drills, which have some limited participation with the off-site. So I'm not so sure it's not being done now, in a limited fashion.

CHAIRMAN JACZKO: So in fact, I mean, essentially those scenarios may already exist?

SUE PERKINS-GREW: They may already exist. And then going forward to expand that into an evaluated exercise, that's really a scenario. I don't really -- I'm not sure you have to put it in a evaluated biannual exercise, it impacts the reasonable assurance determination from our off-sites. I'm not so sure it would, you know, have to be in that evaluated opportunity.

TIMOTHY GRETEN: Yeah, one of the other things that we've been hearing from our stakeholders, there's this natural tension when you do these exercises and certainly drills and whatnot, but the exercise most of all, that you learn the most from an exercise when you push things to failure. Like, that's how you learn. But there's definitely a reluctance sometimes to do that because it might give the wrong impression that we don't know what we're doing, and you know, we're primed for failure when that's just not the case. So, you know,

working with what's evaluated versus what can be done in a more learning-based, you know, non-attributable space is something that we're also looking at and talking to our stakeholders about. And there's some states now, Arizona comes to mind, where they're really at the vanguard of that, and they've figured out a way to make that work.

CHAIRMAN JACZKO: Well, I certainly, again, think that's, you know, a piece. I mean, EP in the end comes down really to that interface and that activity. And it's probably an area in which our regulations are less, well-defined than in other aspects, but I think the real value comes in with the exercises and doing them, so, you know, if there's a way to begin looking at these scenarios, quite frankly, I think it would probably inform the rule better than anything else than we could do, is to have a couple of states have gone through a multi-unit event. We might figure out in an exercise space and not in real life. And you know, it might actually tell us what kinds of things we really need to be looking for as we put together a rule to kind of do these things.

TIMOTHY GRETEN: Yeah, I mean, the other thing too, and I certainly wouldn't want to speak on behalf of your staff, but working with your staff, I think they're pretty tapped out now, the EP folks. And if this is something that's a priority, something else may have to give.

CHAIRMAN JACZKO: Well, we can -- that's certainly -- we'll have a chance to talk to them this afternoon, and I'm sure they'll appreciate the cover that you gave them.

[laughter]

I guess those were the main questions I had. I appreciate everybody being here and providing your insights and your thoughts on this.

Thank you.

SUE PERKINS-GREW: Thank you.

CHAIRMAN JACZKO: Anything else anybody had? Okay, thanks.

[break]

COMMISSIONER APOSTOLAKIS: Chairman Jaczko is busy. He asked me to chair this meeting. Bill.

BILL BORCHARDT: Thank you, Commissioner. Good afternoon. The staff's here today to present the results of our prioritization of the near-term task force recommendations. This is certainly not the first step, nor will it be the last in our efforts to implement improvements for U.S. nuclear power plants based upon the lessons learned from the events at Fukushima. In developing our proposed prioritization, we were principally guided by our safety mission. As such, we reviewed and prioritized the recommendations first based on the relative safety enhancements that each would provide. And then further refining our prioritization, we assessed whether sufficient resource flexibility, including the availability of critical skill sets existed.

The availability of those resources both from NRC, and all of our stakeholders, not only influenced our prioritization, but in many cases as well influenced how fast we can move forward. As we move forward with implementation, our safety mission must continue to be our guiding principle. And while it's important that we move forward promptly, we must also ensure that our activities are measured and prudent. It is critical that we implement the right fixes the first time, and not just quick fixes. The process of implementing these recommendations in accordance with the Commission’s direction will challenge the staff to ensure that we do not displace important safety work that has a

greater safety benefit and is ultimately of higher priority, because it serves the purposes of ensuring continued safe operation of the currently operating reactors.

We must ensure that we do not distract either our focus, or the industry's, from the safety of the 104 operating reactors. The staff's paper emphasizes the importance of seeking stakeholder input as we move forward on each of the recommendations. And as we further engage our stakeholders, we expect to identify additional issues and potential lessons learned from Fukushima beyond those that were identified in the near-term task force report. Within the paper that we provided within the last week and a half, we identified six additional issues with a clear nexus to Fukushima that require further consideration and possible prioritization.

As other issues are raised, we will remain disciplined to make sure that the activities that fall under the purview of the Steering Committee are those that relate to Fukushima. Other safety important issues will be folded into our normal regulatory processes. We are preparing to initiate the actions proposed. And our efforts will include detailed plans and schedules for completing the work described, aligning our organizational structure as appropriate to undertake these activities in the most efficient manner possible and preparing to seek stakeholder input. Eric will be doing the staff briefing for this afternoon.

ERIC LEEDS: Thank you, Bill. Good afternoon, Commissioners. The task force completed its review and issued a report to the Commission on July 12. A Commission briefing was conducted on July 19 on the report. As directed by the Commission, the staff has been engaged in a detailed review of the recommendations to determine appropriate next steps. We have now

provided the Commission with two papers recommending a prioritization of the task force recommendations and proposed actions on those that should be undertaken without delay or that should be undertaken in the near term.

The purpose of this Commission meeting is to discuss the staff's proposed prioritization of the task force recommendations, including a discussion of resources as presented in our paper submitted on October 3. I will briefly touch on the staff's review of the task force recommendations and then discuss the staff's proposed prioritization of those recommendations. I will also discuss additional issues related to the Fukushima Daiichi event beyond those identified in the task force report as Bill mentioned. Finally, I will discuss our current resource estimate to undertake the recommended staff actions described in our paper and our planned next steps.

I want to take a minute to reemphasize the task force report conclusions. A significant conclusion was that a similar sequence of events to that experience at Fukushima Daiichi is unlikely to occur here in the U.S. The task force also concluded that there is no imminent risk from continued operation and licensing activities at U.S. plants and as we have stated previously, the staff has independently assessed the events at Fukushima Daiichi and agrees with the task force conclusions, that there is no imminent risk from continued operation and licensing activities at U.S. plants. Now the task force report also contained a systematic and methodical --

COMMISSIONER APOSTOLAKIS: a Greek word –

ERIC LEEDS: Methodical. Thank you, Commissioner.

[laughter]

A systematic review of insights from this Fukushima accident. The

report provided 12 overarching recommendations which are structured around the defense-in-depth principles of protection from design basis natural phenomena, mitigation of emergency situations and ensuring preparedness in case of emergencies.

Now, in the Staff Requirements Memorandum, the Commission directed the staff to propose a charter for the staff review of the task force report and the charter has been provided to the Commission. The Commission also requested that staff recommendations of actions to be taken without delay and the paper completing this action was submitted on September 9 -- that's what we call our 21-day paper, and we briefed you on that paper on September 14. You asked us to provide a paper prioritizing the near-term task force recommendations and to complete this item by October 3, which we did, and that's what we call a 45-day report. And that, of course, is the focus of today's meeting.

You also requested that we provide a separate assessment of the task force Recommendation 1 within 18 months. This assessment will propose a regulatory framework that will appropriately balance defense-in-depth and risk considerations. Now, by way of background, the staff's September 9 paper, the 21-day paper identified and made recommendations regarding the task force recommendations that can, and in the staff's judgment, should be implemented in part or in whole without delay. This paper laid the groundwork for the development of our 45 Day Paper.

In developing the 45 Day Paper, the staff continued its review of the task force recommendations within the context of the NRC's existing regulatory framework and considered the various regulatory vehicles available to the NRC

to implement those recommendations. The staff initially prioritized the recommendations based on its judgment of the potential and relative safety enhancement which could be realized by each. The staff then refined its prioritization based on a consideration of additional factors such as the availability of critical skill sets, dependence on actions associated with other recommendations and the need for additional technical assessment and alignment.

The staff then performed an assessment of each task force recommendation to determine the required regulatory activities, an estimated schedule and associated resource impacts. An important element of this assessment was the objective of not unnecessarily diverting the NRC's or the nuclear industry's focus from other important ongoing safety significant activities in the course of addressing the task force recommendations. We believe that the staff's proposed prioritization represents a measured approach that allows the NRC to move forward on those recommendations with the greatest potential for near term safety improvements without unduly impacting existing regulatory programs and safety activities.

The 45 Day Paper provided three tiers of recommendations. Tier 1 were those items to start without delay. Tier 2 were those to start in the near term and Tier 3 were the longer term actions. The next few slides will explain the basis for each one of these tiers and the recommendations in each.

The first tier consists of those task force recommendations which the staff determined should be started without unnecessary delay and for which sufficient resource flexibility, including availability of critical skill sets, currently exists. This tier includes all the actions identified in the 21-day report and two

additional items. This next slide goes through all of our Tier 1 recommendations on the next several slides. Seismic and flood hazard reevaluation, seismic and flood walk-downs, station blackout, 50.54(hh)(2) equipment, reliable hardened vent for Mark I and Mark II containments, spent fuel pool instrumentation, strengthening on-site emergency response capabilities, and emergency preparedness.

Now, after submitting the 21-day paper, the staff continued its review of containment vents and spent fuel pools. This review led the staff to conclude that resolution of the reliable hardened vent issues for Mark I and Mark II containments should be undertaken concurrently. As such, the staff has proposed to include hardened vents for Mark II containments in the order proposed for resolution of Recommendation 5.1. The staff also concluded that installation of spent fuel pool instrumentation should be initiated without delay. To that end, the staff has proposed to interact with stakeholders to inform its determination of the functional requirements necessary for this instrumentation. After receiving stakeholder input, the staff recommends that the NRC develop and issue orders to licensees requiring the installation of reliable spent fuel pool instrumentation.

All right, the second tier. Thank you. The second tier consists of those task force recommendations which could not be initiated without delay due to factors that include the need for further technical assessment and alignment, dependence on Tier 1 issues or availability of critical skill sets. These actions do not require long term study and can be initiated when sufficient technical information and applicable resources become available. The staff believes these recommendations will further enhance safety and attempts to initiate them as

soon as the necessary technical information and/or resources become available. We anticipate this to occur in the near term.

Tier 2 includes the task force recommendations regarding spent fuel pool makeup capability, and the remaining portions of Recommendation 9.3 not addressed in Tier 1, with the exception of the recommendation regarding the implementation of the enhanced emergency response data system, or ERDS, which has prioritized into Tier 3. As a follow on activity, the completion of Recommendation 7.1, the staff concludes that the existing spent fuel pool instrumentation and makeup requirements should be enhanced through rulemaking. It would be appropriate to initiate this rulemaking after consideration of insights from Tier 1, specifically Recommendations 2.1 on seismic, 4.1 on station blackout, and 4.2 which is 50.54(hh)(2).

Once sufficient technical information is available, the staff recommends that the NRC engage stakeholders in support of this rulemaking activity and the staff would then propose to move forward with the development of the regulatory basis, proposed rule, and implementing guidance. The staff reviewed the planning standards in 10 CFR 50.47(b) to determine all the areas that may be impacted by multi-unit or prolonged station blackout events, and recommends upgrading the planning standards to address station blackout and multi-unit events.

Staff with the critical skill sets necessary for the resolution of these portions of Recommendation 9.3 are currently involved with the implementation of the recently issued emergency preparedness rule. Therefore, the resolution of this part of Recommendation 9.3 has been placed into Tier 2. These actions do not require long term study and can be initiated once sufficient resources

become available. In moving forward on this topic, the staff recommends that the NRC engage stakeholders to inform them on the development of acceptance criteria for the licensee examination of planning standard elements related to the recommendations and the issuance of an order to address those changes necessary in emergency plans to ensure adequate licensee response to station blackout and multi-unit events.

The third tier consists of those task force recommendations that require further staff study or support a regulatory action or an associated shorter term action that needs to be completed to inform the longer term action or are dependent on the availability of critical skill sets or are dependent on the resolution of the task force Recommendation 1 with regard to an extended design basis event.

The staff focused its initial efforts on developing the schedules, milestones and resources associated with Tier 1 and Tier 2 activities and it has not yet developed similar information for the Tier 3 recommendations. Once the staff has completed its evaluation of the resource impacts of the Tier 1 and Tier 2 recommendations, we will be able to more accurately address the Tier 3 recommendations.

The following are the list of the Tier 3 recommendations which include the 10-year confirmation of seismic and flooding hazards, seismically induced fires and floods, reliable hardened vents for other containment designs, overall hydrogen control, EP for prolonged station blackout and multi-unit events, enhanced ERDS capability and emergency preparedness-related decision making, radiation monitoring and public education. Tier 3 also includes modifications to the reactor oversight process and staff training on severe

accidents including the severe accident management guidelines.

Now, Bill also mentioned additional items. Many additional items have already been received both from our external stakeholders, including the Office of Science and Technology Policy, Congress, international counterparts, other federal and state agencies, non-governmental organizations, the public, and the nuclear industry, as well as more recommendations from the NRC staff. In the process of beginning to evaluate these additional recommendations, the staff has emphasized maintaining discipline with regard to these recommendations that are associated with the staff's efforts to implement the lessons learned from the Fukushima Daiichi event and which are more appropriately addressed through other existing NRC processes. For example, 10 CFR 2.206 or 10 CFR 2.802, which is rulemaking.

At this time the staff has identified a number of additional issues with a clear nexus to the Fukushima Daiichi event that may warrant regulatory action but which were not included in the task force recommendations and those issues are shown on the following two slides. These additional issues include filtration of containment vents, instrumentation for seismic monitoring, reexamining the basis for the emergency planning zone size, the pre-staging of potassium iodide beyond 10 miles, transfer of spent fuel to dry cask storage, and the loss of the ultimate heat sink.

Although the staff's assessment of these issues is incomplete at this time, these issues presented on these slides has already been judged to warrant further consideration and potential prioritization based on relative safety significance, that nexus of the task force recommendations and other ongoing staff activities. A determination of whether any regulatory action is necessary will

be made after the completion of this consideration. If the consideration determines that regulatory action is required, the staff will prioritize these additional recommendations, consistent with the approach taken with the task force recommendations. In addition, the staff expects the list of potential additional recommendations to continue to increase as we receive feedback from our external stakeholders, through our interactions with the international regulatory community and through the mining of the Fukushima Daiichi event for additional lessons learned by the nuclear industry and by our staff. As additional recommendations are raised, we will evaluate them and propose action as appropriate.

Bill also touched on this next slide, and this is the slide that gives me the greatest concern. Before the Fukushima event on March 11, the staff of the NRC was busy every day ensuring the safety of the nuclear power plants, ensuring the safety and security of nuclear materials. Now having the Fukushima event overlaid and the resources it will take for the staff to address those issues concerns me greatly for what safety significant work will have to be delayed, deferred, or shed. That will be quite a challenge for the staff and I'm sure the Commission will be involved.

Going back to March 11, the agency responded promptly to the developing situation in Japan. This is included in supporting the government of Japan, advising the U.S. embassy, and monitoring the situation at Fukushima Daiichi to fulfill our mission of protecting the health and safety of U.S. citizens. To date, the agency has expended more than 32 full time equivalents, that's 32 professional staff, not including management oversight and administrative support, in this effort. This necessary resource expenditure has resulted in

impacts to our regulatory processes, including our licensing and inspection activities.

The staff's October 3 paper, the 45 Day Paper, provided the Commission with the staff's resource estimates and the supporting schedules and milestones for each Tier 1 and Tier 2 recommendation. The staff's resource estimates were subdivided to show the required steps to address each recommendation. The staff's estimate to complete the Tier 1 and Tier 2 activities is 205 full time equivalents, including 30 in fiscal year 2012, our current fiscal year, and 90 in fiscal year 2013.

However, the resources need to complete the Tier 1 and Tier 2 activities will increase if unforeseen challenges arise in the process of resolving these recommendations. If funding for the use of contractors is allocated for these activities, these FTE values may change. Completion of the Tier 1 and Tier 2 recommendations will require us to reassign staff with the critical skill sets from across the agency. We anticipate that this will have a significant impact on our budgeted activities. However, the staff has identified some examples of work, including the National Fire Protection Association 805 reviews, the resolution of Generic Safety Issue 191, assessing debris accumulation in PWR sump performance, implementation of the recently updated emergency preparedness rule, for materials at fuel facilities, as well as nuclear power plants, reactor oversight program activities, and also near-term combined license reviews, which the staff does not intend to delay work on, in light of the task force recommendations.

As I said, the overriding challenge the staff will face when implementing these actions will be redefining agency priorities, while ensuring

that the process does not displace ongoing work that has greater safety benefit, work that's necessary for continued safe operation or other existing high priority work. This will be a continuous process as new operating reactor issues emerge, which because of their potential impact on safety, may take priority over action on some of these lower priority task force recommendations.

For my last slide I'm going to talk about the next steps, in addition to the activities I've discussed, in addition to the Tier 1 and Tier 2 recommendations, the staff will provide the Commission an evaluation of the schedules and milestones, resources and critical skill sets, and implementation challenges related to assessing the Tier 3 recommendation within the next nine months. At the same time, the staff will also provide its prioritization of the additional recommendations identified in this paper, and should the staff prioritization process lead to any of the additional recommendations to be included in Tier 1, the staff will promptly inform the Commission of this determination.

Staff will also provide options regarding the task force Recommendation 1, addressing a logical, systematic and coherent regulatory framework for adequate protection that appropriately balances defense-in-depth and risk considerations in 18 months. The resources needed for these activities have not been estimated yet and as such were not included in the staff's October 3 paper.

That concludes our presentation and I'll send it back to Bill.

BILL BORCHARDT: Thank you, Eric. Just want to emphasize a couple points that Eric mentioned and were mentioned this morning. One is that there's no doubt that the issues that the near term task force identified are very

important and need to addressed, but they need to be addressed in a holistic and integrated manner with all the other work, not just that the NRC has underway, but also all of our stakeholders, our federal sister agencies and departments throughout the federal government, the states, the stakeholders, the industry, they all have full plates already. I don't mean to say that the work identified in the near term task force isn't important but it ought not to automatically jump to the top of the priority list, because it may likely displace something that has a greater safety benefit. The second point I'd like to make is that if for no other reason than the six items that were mentioned in the most recent Commission paper as being additional items, to me that really demonstrated the value of having stakeholder input. We came up with those interactions with types of people that were on the panels this morning but also the international community. We did a lot of outreach since the near term task force report was issued and it's those six and many others that didn't make the cut, that were identified through that process and I would not be the least bit surprised to see additional ones added in to the process as we go down the road on these activities. My last comment is that in addition to Jim Wiggins, who's sitting at the table to answer every question that you might possibly have --

[laughter]

-- we have many members of the Steering Committee in the audience here, so I expect we may make liberal use of the podium there to answer many of your questions. Thank you.

COMMISSIONER APOSTOLAKIS: Thank you, gentlemen. Commissioner Ostendorff.

COMMISSIONER OSTENDORFF: I want to thank you for your

presentations today and for the work you have done in this very important area. Bill, I want to comment specifically on the remark you just made a minute ago and that was to applaud you and your team, the EDO's office, the Office Directors for taking this additional look to look outside the scope of what was presented in the near term task force report, recognize the time limitations they had and to take advantage of the opportunity to really give a comprehensive holistic review of the entire landscape. I think we're all appreciative of your efforts to make that happen.

Bill, about not quite seven months ago when we had our initial Commission meeting in March, on Fukushima, I asked you a question and that question was in the general nature of what did this agency learn from the Three Mile Island experience about how to approach regulatory changes and reviews after a significant event? And at the time your answer was very helpful to me, you talked about the need to insure that we have an integrated prioritized approach to doing business and that while there were some significant safety enhancements done post-Three Mile Island, there were also some changes mandated that did not increase safety and that perhaps distracted the industry and the agency. I think that's a fair summary of what we talked about. So now, almost seven months later, and I am going to venture to ask you to assign a grade to how the agency is doing, in the A-F scale, how are we doing as far as doing this in a more thoughtful and methodical manner?

BILL BORCHARDT: I think we deserve an A and I don't hand those out very often, but we've had really active stakeholder engagement and it's clear. And at least, what I heard from this morning's discussion, that even though there's some dissatisfaction with some of the stakeholders, the pace that we're

implementing new requirements, they all want to be involved in the development of the requirements. And in order to do that in a meaningful way, it takes time. You can't just go off in a room, write an order and impose a requirement and then ask for input after you've already imposed the requirement. I think the approach that we're on now is very aggressive, you now, as Eric was talking about the 21 Day Paper, 24 days later we have the paper that was just delivered to you. That was really working in a very expedited way. I thank the stakeholders for their participation because it took a lot of effort out of them as well.

I think we are awaiting Commission direction on the immediate actions and we're ready to move out on those, so I think it's certainly not a delayed response, I think it's quick, but at the appropriate level of engagement and I hope we're able to continue that general approach.

COMMISSIONER OSTENDORFF: Let me kind of tack on to that, and I'll ask you and Eric and Jim to respond to the following. This deals with the morning panel themes from the outside organizations dealt with timelines being slow and concern that rulemaking, for instance, I'm going to use station blackout, because Eric and I have been talking about station blackout quite a bit, and you know, the plan you have in there is about four and a quarter year approach to rulemaking and I think everybody appreciates the need to do effective, meaningful, constructive, stakeholder engagement, but there will always be a tension between that attribute and the other attribute, being, get it done as quickly as you can. I think we all want to get it done right. Do you have any comments-- Bill, I'll start with you but ask others to chime in as to how we might consider looking at rulemaking for whether it's SBO or anything else, to perhaps pursuit it on a little bit more of an aggressive timeline?

BILL BORCHARDT: I think, as a general rule, I believe that the way the estimates were developed as a part of the 45 Day Paper was using a pretty standard template. It didn't say that this is going to be the number priority for the agency or one of the top few, and so I'm confident that there are many opportunities to improve the duration of that rulemaking process, if the Commission chose to make that a high priority. What we would then need to do is to inform the Commission, what now is going to be delayed and deferred? Everybody's at full capacity. Now if we want to accelerate that, that's okay, we can do that but that will cause some other work to be deferred, perhaps, it'll require some decisions along the way such as -- it's not unusual in the rulemaking process where you put it open for public comment and you get a request for an extension. If you want to make the most aggressive schedule you're going to have to say no. Thirty days or 45 days for public comment, that we're going to stick to that and so it requires some discipline on everybody's part, not just the staff. So there would be a lot of opportunities. I think the thing we would find valuable is Commission feedback on, okay, make station blackout the number one priority and see what's the best schedule you can come up with. We'll do that and we'll tell you what the impacts are and then you might have another decision to make based on that because you might not like part of the answer, but at least that gets us moving forward in a constructive way.

ERIC LEEDS: If I could just add one thing, I just want to remind -- mainly for our stakeholders -- that these actions shouldn't be looked at in isolation from each other. This is defense-in-depth, so why is it okay for a rulemaking for station blackout to exceed -- to go for years? Well, we're proposing orders with regard to bring in more 50.54(hh)(2) equipment; that

equipment buys you more, there's more margin there. Also, the work being done with regard to seismic and flooding walk-downs. That should identify any kind of vulnerabilities, give you more margin. So you have to cascade these issues together and take them as a whole, as opposed to each individual item. Creating some sort of improvement; this is defense-in-depth.

COMMISSIONER OSTENDORFF: Thank you. Let me shift to some seismic questions, Eric and ask I guess we may run out of time here and I'm sure my other colleagues will also ask some on seismic because of the interests, GI-199 and the North Anna situation, but can you talk a little about how GI-199 schedule looks with respect to meeting certain milestones and how that interfaces with task force recommendations for seismic hazard evaluations and other things seismic

ERIC LEEDS: Yes, GI-199 it’s a relationship to the seismic. And there's another place where you have two separate actions that are each going to provide some margin. The one is the plant walk-downs for seismic risk, to identify seismic risk and take actions as appropriate, and that can be done in the near term and that's something we suggested to the Commission we start right away.

We would also start on GI-199, having plants evaluate their sites for the information that the U.S. Geologic Survey has identified, that may make changes to a plant's abilities to resist a seismic event. We have work that's ongoing right now at NRC, as well as DOE and EPRI, working on the seismic source term, if you will, that work should be done here by the end of this calendar year, and once that work's done, we'll have the hazard source, the seismic hazard source necessary for us to promulgate a requirement. At first, we were

going to an issue of a generic letter, but now based on Fukushima, if the Commission agrees we will promulgate that in a stronger 50.54(f) manner to licensees, to evaluate their sites in accordance with this new information that we've received from USGS to take a look at their vulnerabilities at the sites, at each individual site for a seismic event. So that we can see what kind of actions they need to take if any to upgrade their site. Does that answer your question?

COMMISSIONER OSTENDORFF: It does. And let me throw in just one quick segue to that. Is there anything that's been discovered so far, in looking at the North Anna seismic event from August that would inform our thinking on how to approach the task force recommendation related to seismic?

ERIC LEEDS: Yes. In fact, the GI-199 effort really reconfirmed the U.S. Geological Survey data and reconfirmed what we believe we need to do, for all these sites, with regard to taking a look at the seismic risks at their sites. So there is a nexus between the two, and in fact, it gives us comfort that we're in the right place.

COMMISSIONER OSTENDORFF: Thank you.

COMMISSIONER APOSTOLAKIS: Commissioner Svinicki.

COMMISSIONER SVINICKI: Good afternoon, how's everyone holding up, given all the work that we're having you do? I was just sitting back here and listening to the presentation, and I also spent some thoughtful hours over the long weekend with the most recent paper, the one we refer to as the 45 Day Paper. And I really sincerely have to compliment the three of you, certainly, for your leadership. Marty Virgilio, I don't see him the room, but he's been putting in substantial hours on this activity as well. And I know that behind you, even if they're not in this room you have many hundreds of very devoted NRC

staff that are working these issues.

And I know there was some discussion this morning about public confidence and I just want to express -- well, there's public -- I guess I'm not a member of the public; I am in some capacities but from my side of the table I have a lot of confidence in the leadership, the senior staff leadership of this agency; you bring tremendous experience to these questions. This is a very historic and very demanding time to be in a leadership position at NRC. So I want to thank all the members of the steering group. I hope the Commission will conclude action on your charter soon; I think we owe you that.

But in any event, you are already, as you always are, busily underway with everything whether or not you have a charter in hand, you're engaged in doing the work that needs to get done. And I, you know, there's one thing I don't question, it's the commitment of all of the NRC employees that I've met in my years that I've spent here now. But people are very devoted to the task at hand, and I think as I sat with the paper and read it through, I just don't know that I could have produced something as thoughtful in the short amount of time you were given. And so I really -- and the 21 Day Paper was good and hats off to those folks, but they had hardly any time at all. But I think what you did is you built on that 21 Day Paper in such a thoughtful way. And I'm like Mr. Borchardt; I don't give out a lot of A's, and I don't give out a lot of praise that isn't merited, but thank you to the three of you for your leadership, for your colleagues on the steering group. And all of the -- Mr. Skeen and the project directorate that I think has been very, very busy devoting themselves full-time to this.

And I think that if I had to assess my own confidence at the agency's response I think that we have really hit the ground running on a lot of

activities and I think also, though, I would resonate with what Mr. Borchardt said when he talked about doing it right and doing it one time. And so maybe I like simple questions; they read really well in the transcript. And I was reading the transcript of my own words from the mandatory hearing and it's very painful to read transcripts of yourself because you think you sound so eloquent, but I have a propensity for run-on sentences and this is one long run-on sentence as I say this, but Commissioner Magwood asked a wonderful question in the mandatory hearing to me as I reviewed the transcript; it was the highlight of the mandatory hearing. He turned to Mike Johnson and he said, "Mike, is thing safe?" And I thought it was really -- it was a great question. So I'm going to ask Mr. Borchardt, in your view do we have the time to take the time to do this right?

BILL BORCHARDT: Yes, that is my simple answer. I mean the more complete answer is I believe today, as I did immediately after the events at Fukushima that there was no reason to take an immediate regulatory action to shutdown the 104 operating reactors in the country. That they were of robust design, we had the processes, procedures, everything in place to assure adequate protection of public health and safety; I believe that's still true today. Does that mean we shouldn't look at opportunities to make necessary improvement, or important improvements; of course, we ought to. And that's what this effort is all about. But it's also why there’s other important activities, like GS-I191 that are perhaps equally, if not more, important in the grand scheme of things. So just because it's a lesson learned or an activity coming out of the events of Fukushima, it doesn't mean, in my mind, that it ought to be number one on the priority list.

COMMISSIONER SVINICKI: And I appreciate that, because

although I was very impressed with the 45 Day Paper, as I got to thinking about it, my concern in moving forward is that we can't allow viewing the Fukushima response in its very singular light. We're still at a phase where we get papers on it one by one, and we can't view it as immediately from a safety standpoint, displacing everything else that the agency had going on, would be a great budgeting gimmick, I guess, if you were a program official in NRC, if you could hang a label of Fukushima if that meant you got budget priority. I don't know if that's the most risk-informed way for us to go about our work. Eric already enumerated a list of things that are very important safety initiatives. And I might ask Eric to respond to the statement in the staff's paper, which is that after each recommendation I think that it says something about the staff assesses that this recommendation, meaning a near-term task force recommendation, “will improve safety.”

When you go about prioritizing and looking at ongoing activities and trying to figure out where these recommendations, if approved, fall in terms of work that was already ongoing, and understanding of the degree to which they improve safety is going to be very important, and I think that's what you're saying in terms of engaging the Commission on what might not get done, or an ongoing activity that's going to be deferred or displaced. Do you feel that you have the tools -- this will to be a two part question -- do you feel you have the tools to inform that degree of safety that is enhanced to give us some sort of a qualitative or a quantitative feel for that? And then when you do that and present that to us, do you feel that you have good quantitatives on the ongoing activities so that you can present the Commission with a truly safety-informed prioritization? As you move forward, I imagine you also might learn things, as you're moving forward on

the Fukushima recommendations that might either elevate them in priority, or decrease their priority. And then how will you engage in a very dynamic fashion to make sure that you're always putting first things first? I think that ended up being a four-part question.

ERIC LEEDS: Yes, ma'am. I think it did. Let me see if I can get, I don't know if I got them all, but I'll try.

The short-term, the tools, do we have the tools necessary to inform the degree of safety, of these actions, vis-a-vie all the other actions than NRC has ongoing. And the short answer would be yes, I do believe that we have those tools. But when you take a look at the breadth of activities and you think about that the staff normally processes some 950 license amendments a year, and those include near-term NFPA-805 actions or extended power uprates, or any numbers of activities, culling those out amongst the staff is going to be our challenge. Making sure that we don't miss something that's more safety significant for something else. And making sure that all the staff is aware of how to prioritize and how to raise those issues up through management, such that we can make those decisions.

And let me give you an example. I can't give the staff just blanket guidance that safety comes first, and impacting power operations comes second, or what comes third, because it's all too nuanced. If you take a look at extended power uprate, and extended power uprate, you think, well, you're raising the power of the plant, that's a licensee, something for the licensee, how does it help safety? Well, I'll give you an example of an extended power uprate that we granted to a licensee that completely redid their auxiliary feed water system, reduced the core damage frequency for that plant, made that plant safer. You

know, as a result of going up at a higher power. That would not be something that we would have not wanted to do, because auxiliary feed water, those transience occur during a plant's lifetime. The Fukushima event is a low probability high consequent event, something we don't expect to happen during a lifetime, something we have to be ready for, but we don't expect. So how do you prioritize those? Those need to be raised.

License renewal would be another example, where you intuitively think, well, we could just stop license renewals. Well, there again, license renewals have uncovered some very significant issues, safety significant issues, such as the wetting of underground cables, such as containment shell degradation. We want those programs to go on, they raise safety significant issues, issues that are safety significant today, that we need to address. I'm sorry, I may be going off on a tangent. Am I answering your question?

COMMISSIONER SVINICKI: No, that I think is at least at a broad brush how you're going to balance that and I'll add a third variable into the mix. And I hate using this phrase, because I think each of us has a different definition in our mind, but cumulative effects was talked about quite a bit this morning. And there is only, I think, so much -- we're going to come up against some logistical and practical challenges. So I think, I know there's a diversity of opinion about the tiers for principally, the EP recommendations, and Mr. Wiggins has been permitted to be much too quiet here, but I'm actually pleased somewhat that I think there's an acknowledgment there of what we heard about from the second external panel this morning, which is that as a practical matter, a lot of those participants have a lot to do right now in implementing the rule. And I felt that some of your determination on Tier 3 for some things was a very practical

acknowledgment of the fact that the agency decided to push forward with finalizing those changes to the EP rule that we already had in process, and that that was already something we felt had a safety value to us, and we wanted to get that in place. So I thought that your binning in the tiers was consistent with a value judgment that we made some months ago, and that's how I viewed it. I acknowledged that there's diversity of opinions there.

And the one last comment I want to close on is I appreciate, Eric, your comment about the length of time for rulemaking, and the fact that under the staff's proposal, if it's adopted, you do have orders which I'm going to call kind of, compensatory action in this case. And it's important to note there's been criticism, I think, lately that the agency quote, you know, “did nothing to react to 9/11 until 10 years later.” And what that misunderstands is the fact that the initial tool available to this agency was orders, security orders were put in place, a whole plethora of security orders were put in place. And yes, it took some time to codify those changes into Part 73. And also the agency in 10 years' worth of learning even changed some of the things that were in the orders, so we made further enhancements to security. So I see what you're describing, Eric, as just a parallel to what we did in that incidence. And again, I think the criticisms that we didn't respond for 10 years misunderstands the tools and the way that we use them. So I think to the extent that station blackout is on a normal path of rulemaking, if the agency has put other measures in place, you need to look at that, and that gets -- I'll close with Mr. Borchardt's comment about assessing this holistically. And I think that's what we need to do. So I'm over my time, thank you.

COMMISSIONER APOSTOLAKIS: Thank you. Commissioner

Magwood?

COMMISSIONER MAGWOOD: Thank you. I won't repeat the praise that Commissioner Svinicki uncharacteristically heaped on the staff.

[laughter]

COMMISSIONER SVINICKI: One per meeting.

Just one per meeting. But I do agree with that, I think this is a very good effort particularly considering the short time frames involved, so I congratulate you for doing that. Just a few questions. You responded to Commissioner Ostendorff's question about the relationship between your recommendations and GI-199. I wanted to explore that a little bit further, because I look at Recommendations 2.1 and 2.3 and I -- maybe I should start with that. Would you walk me through how you think those two are going to interrelate? What are the steps that you actually envision going forward with those two recommendations together? And then how, sort of on a schedule time frame, how does it all come together in the end? How do you see that actually unfolding?

ERIC LEEDS: So as I understand the question, how does 2.1 and 2.3 relate? The 2.3 are the walk-downs, seismic and flooding walk-downs. 2.1 are the seismic and flooding analyses at their sites that we talked about. The walk-downs -- the way the task force, my understanding of the task force recommendation, was to -- for these plants to get seismic and flooding experts, and take a look at their sites, walk down their sites, and look for vulnerabilities, look for possibilities for improvement. Take a look at what can be done to make the plants more robust and more able to resist a seismic or flooding event now. What can be done immediately?

For the longer term, the 2.1, it would be informed by the work done by the activity on the walk-downs. I think that would inform the work on seismic and flooding for the longer term. Where seismic we'd take a look at GI-199 that Commission Ostendorff talked about, the new data that we received from the U.S. Geologic Survey, and have licensees do a more thorough reevaluation of the seismic hazards for their plant. And for flooding, that would go along a similar vein as the seismic, where licensees would take a look at what we've learned about flooding in the past decade since these plants have been licensed. Take a look at all the new information, and similarly, upgrade their plant. But it would be informed by the walk-downs, it would inform a longer-term, more permanent solution to whatever seismic or flooding issues we identify.

COMMISSIONER MAGWOOD: That's the way it reads, and I guess I really, just let me sort of chat with you about that, because it seems to me that when you do the walk-downs, you have to have a basis in mind as to what the hazard's going to be before you do the walk-down. So when you do these initial walk-downs, are we going to do them based on the current design-basis earthquake? Or are we going to do them on the basis of what we think might happen? I mean, what's --

ERIC LEEDS: It has to be based on what's current. What the current design basis -- current known flooding issues.

COMMISSIONER MAGWOOD: And if those, for example, if you were to have done a walk-down of Fort Calhoun last year, you might not have walked down with the idea that you would have the flooding we actually saw in the spring, but --

ERIC LEEDS: Well, sir, I wish you hadn't used that one as an

example, because that's where we actually did find an issue with the licensee's preparedness for flooding and had them upgrade, they actually received a violation, and we had them upgrade to -- and then, so they were much better prepared, and that's why they survived this flooding episode.

Jim, did you want to jump in?

JIM WIGGINS: I would just provide a maybe slightly enhanced perspective. I'll just add to what Eric said. Again, Fort Calhoun, we did find some problems with it, Elmo's people found some problems beforehand, but once the licensee was motivated by the fact that they knew the river was coming, then they got the right skill sets to go walk down the facility, they found other things. And they did work before the flood occurred to strengthen the resiliency of that site.

I would go back to North Anna. To me, this is just my own personal view, part of the reason why you can have an exceedence of a seismic design without any apparent effect, is it relates to the nature of how these facilities were actually constructed. You have all this elegant design work and calculations that engineers do, but they're actually built by constructors that have different sets of field engineers that use more conservative conventions. So there's a lot of extra margin built into these.

Again, though, if it's a walk-down, having done a walk-downs as an inspector, I've always found that you -- I think you're getting this, as you would say, you're best able to find something if you know what you're looking for. And the key to 2.3, as it separates out from any kind of a normal inspection walk-down or something that we might be able to reasonably pull off, is the licensee is going to be required to have the right skills looking at the facility. And I believe

that they will react to what they see. There will be things – if you have the correct skilled individuals there, they can see that something is off. And our expectation would be that they would react to that as they would to anything you would find -- that's how the ROP, that's the foundation of the oversight process. They won't make a -- they will react to it. So I don't know if that helps much, but I think the -- I think sometimes people tend to undervalue the effect of a walk-down, and when you say, well, it will be to current standards, you think you're going to get an on-the-cheap activity. I don't expect that that's actually what's going to happen.

COMMISSIONER MAGWOOD: So I guess what you're saying then is that the walk-downs, if done correctly, would be to somewhat conservative walk-downs.

JIM WIGGINS: Yes.

COMMISSIONER MAGWOOD: It would be based on a best understanding of what the risks and what the threats are, as opposed to the specific criteria that might be --

BILL BORCHARDT: Another way of saying it, I think, is it's more than just a simplistic, regulatory compliance walk down. You couldn't have just a general engineer take the regulations, take the Reg Guides and the Standard Review Plan, and do what we think needs to be done.

COMMISSIONER MAGWOOD: Okay, that makes me feel better, I appreciate that. And there was a lot of discussion this morning about station blackout. Commissioner Ostendorff mentioned this also. And as we were talking with the first panel, it was clear that particularly from NGO participants, that the idea that this will take four years was kind of, I don't think that they used the word outrageous, but they may have used the word outrageous. And I appreciate the

staff's explanation that it doesn't have to be four and a half years, it could be shorter depending on priorities. But at the same time, with all these different things going on, it's unlikely you'll be able to shorten all these things too significantly; we'll have to be very selective.

In that respect, it would seem to make some sense to consider -- and I fully agree with the staff's interest in trying to get the right answer first out of the box, as opposed to having the wrong answer quickly -- but did the staff give consideration to interim measures on station blackout before proposing just going down a rulemaking path? Is that something that you're giving serious thought to?

JIM WIGGINS: I think in the staff's view the actions that are in there separately, namely the 50.54(hh)(2) actions, the expansion, what that was, you know, the alternative role that those little pieces of equipment provide, would bolster, would strengthen the unit's capacity to deal with a blackout. I think that it's important, at least to me, it's important to understand what's going on in this station blackout rule. We are fundamentally changing the way station blackout is approached in plants.

The current station blackout rule comes with a coping time that's connected to an assumption about grid reliability and return of service to the grid. What this rule will do is it will be completely -- it won't need to consider that at all. It'll segment the station blackout responses into three pieces. An initial piece where you can apply this coping language, which is a amount of time that the site will need, with some margin, to use that equipment that's available at the site, and rig it so that you can bring it to bear for containment core and spent fuel pool treatment.

Then you have this next gap, and the next gap in time. So that

piece -- so you have installed equipment, then you have this next increment -- you have the regular equipment, and then you have this next increment of equipment that's at the site that would be to brought to bear. And then you have this next time period, and that's the time period that they're bringing in off-site resources. And once you get the off-site resources in place and usable, and you provide for sustaining those like getting fuel oil, or whatever you need to run the equipment, you basically have an undefined duration response, you can run that way for as long as you need to. That's not what the current station blackout rule does, that's one of the problems with the current station blackout rule. I think -- you know, sometimes I think it gets -- people don't catch the subtlety of what's going on here.

The other part of that is now, I know the Commission is going to have to make a decision about timing and the staff said yeah, we can probably advance things, not by shortcutting but by compressing and trying to do things in parallel that we'd otherwise do in series; you might be able to do that, not without an opportunity cost.

Where was I going with this? You know, I think when you think about -- oh, what it does is there isn't anything that's going to require you know, large calculations or large assumptions, it's basically how long will it take to get this piece -- this increment of equipment in place. That sets how long you have to be able to survive with normal equipment and how long would it take you to get the other stuff in place and usable. That's not calculation, that's just basically assessment of time and motion studies, things like that. It's a little less -- it's a little more straightforward to do.

Once-- the key though, is to figure out what's the assumption about

what's going on in the vicinity, that's what we'll have to get with the stakeholder interaction. Are we looking at seismic, flood, seismic and floods, we look at fires, tornadoes, whatever, whatever is the scenario that you have to impose in there so you can understand how hard it will be to get those -- get in to those latter two phases.

COMMISSIONER MAGWOOD: Is it-- sounds like your instinct might be that at the end of this-- four and a quarter years from now, or whenever this is done, that we would not necessarily have a change in the coping time is being the basis of the new rule, it would be something a lot less prescriptive. Is that a fair --

JIM WIGGINS: There will be a period of time that a licensee will need. I don't know how it's going to come out, but we'll have to see. Will we do one standard across, but we've heard issues about everything's different, all the approaches are different --

COMMISSIONER MAGWOOD: I guess that's my point, I mean you don't see this whereas now we have this --

JIM WIGGINS: I can see it can go a couple ways. You can go performance oriented rule or it can go more deterministic with some gates but you have performance pieces in between the gates. I can see either of those.

COMMISSIONER MAGWOOD: All right, that makes a lot of sense. Thank you.

JIM WIGGINS: The point I was trying to make is that a lot of times what hangs up rulemaking is technical basis development. It's a lot -- this is a lot more straightforward than ECCS rule change in terms of a technical basis development, you don't need experiments, you don't need that kind of data

analysis. So there is some opportunities for this to be done in a short time period.

COMMISSIONER MAGWOOD: Thanks a lot. Thank you.

COMMISSIONER APOSTOLAKIS: Well, let's talk about the walk-downs. When I read the task force recommendation, I was really perplexed to what the seismic walk down, what the value of that would be? For flooding, you know, I could see the doors closing and all that, but for seismic I was perplexed. And then I read part of an IAEA document, I think is cited in the report, that says the term plant walk down is used here to denote the seismic capability walk down for the seismic modules analysis and the fragility walk down for the PSA analysis. So it seems to me that the walk down is much more than just walking down. It's some analysis too; it's some fragility work, or capacity assessment that would be done in an office someplace, not walking down the plants. I'm still a little confused; can someone explain to me what walk down means and why it's so important?

JIM WIGGINS: I get that one. Let's see, I can try to pawn on the question and see if I can get away with it, we're going to have stakeholder involvement up front to figure out what the ground rules are for these key activities. So one of the things that you would discuss would be what are the ground rules for the walk down, what are we looking for, and what would we expect licensees to look for out there, how would they set it up from a staffing point of view? I can tell you this, we haven't had a discussion in the Steering Committee of those two definitions, that has not come up. That is certainly cannon fodder for the stakeholder interaction, certainly something that licensee might want to do. There was a question in the morning panel that kind of gets to

is there some potential of doing more than one thing at the same time. That may be one of those, I think it came up in the EP discussion and Sue Perkins-Grew was talking about several things in the EP that can be done simultaneously. It's certainly possible, but what I envision in these walk-downs, and I think this is what the team, actually what task force envisioned, is you can send someone who's a knowledgeable civil structural and pipe design person through the facility and you can see some things that are maybe rather obvious, you can see fasteners missing on pipe supports, you can see kind of unusual designs for the supports, you can look above the system or next to the system and look to see if there's non-seismic equipment that's in the vicinity that if you have an event the failure of that equipment affects the seismic, that's referred to in the jargon as the seismic two over one issue. Those kinds of things can be done in a walk down and I would contend, at least from a seismic point of view, restore this back to the way it was originally built, or the way it was intended to be built through the construction standards, there is a substantial amount of conservatives in most in these designs.

ERIC LEEDS: Can I add a thought Jim. I agree with everything that Jim said, and recall, we talked about -- you'd have seismic experts do these walk-downs, not just a general engineer and it would also be -- I think would be a combination of what you suggested, Commissioner, where there would be some office work as well as a walk down. Take a look at individual plant examination for external events, the IPEEE. But we have them go back and take a look at higher seismic load than they had originally been designed for and these licensees did that. Well you can mine that for a lot of very pertinent information that could inform the walk down, what are the most vulnerable systems, how are

systems currently configured with snubbers, hangers, piping arrangements, you know, where are the vulnerabilities. Someone knowledgeable in the seismic area, there can be some short term, highly worthwhile actions could come out of that.

COMMISSIONER APOSTOLAKIS: I'd feel much better if it includes a kind of analysis, because even if you are an experienced seismic engineer, just by looking at something, it seems to me you can't really tell what's going to happen in the case of a strong earthquake. So, okay, that settles that.

You mentioned vulnerabilities, a term that has remained undefined for 20 years now. If a heavy piece of equipment is hanging over a pipe, you might say well, gee if you can move it, you're removing a vulnerability, but what exactly is a vulnerability? Are we relying on the kindness of strangers to interpret the word vulnerability? The expert says, well, gee do this because it's vulnerable there. Say, okay we'll do it, unless it becomes too expensive. So what is a vulnerability?

ERIC LEEDS: I'll take a shot and pass this one to Jim right away, and maybe Jim will come in later. Vulnerabilities. We mine operating experience for vulnerabilities. We constantly look for ways that we can improve the safety profile of these plants through looking at operating experience here in the United States, operating experience internationally. I like to think of operating experience as the feedback mechanism for the regulator to know how well our processes and our systems are working, because we'll take what we learned from operating experience and we'll feed it back to the licensees in the form of generic communications, in the form of generic letters, in licensing actions, how we structure our technical specifications, and those -- that's what I would talk

about as vulnerabilities.

COMMISSIONER APOSTOLAKIS: It's really judgment, that's what you're saying?

ERIC LEEDS: Well we learn from events, we learn every day. And when you have those learning's, you got to mind them, you got to understand them, and then you pass that information out and you pass that knowledge on. And you have other plants learn from that and that's how the industry gets safer.

COMMISSIONER APOSTOLAKIS: Okay. I'll come back to something I raised this morning about the seismically induced fires, floods and maybe other things. Which brings a more general question in my mind, I mean we have the three tiers -- by the way, as a side remark, Tier 1 says recommendations which should be started without unnecessary delay, you don't imply that the others should have a necessary delay, obviously.

Tier 2, are recommendations which could not be initiated without delay, due to factors that include need for further technical assessment and so on. In Tier 3 require for the staff delay, but I think there is an implicit consideration here to safety significance, right? You didn't bother to put it down, but that's the number one consideration.

Well, again, as I said this morning, when we think of something as a community, we usually do a pretty good job because it's not just one guy saying, "Let's do this." There is a process. There is people thinking and so on. So, the real concern is the unknown unknowns, something that we haven't analyzed or known unknowns, that we know that an earthquake can cause a flood, but we haven't really analyzed it, and then we find it and we have a problem. So, one of the major lesions from Fukushima in my mind is, you know,

the tsunami following -- or caused by the earthquake. And I would -- I'm a little uncomfortable saying that this is a Tier 3.

Now, it could be 2 or 1. In my mind, it should be 1. Now, what does that mean? Again, without the necessary delay, it seems to me that in order to do that somebody has to develop some approach, some methodology, and I don't see why we cannot start it immediately. To have maybe a group of smart people think about how to approach this problem. If you say that no, it's really Tier 2 because we need the results from Tier 1, again, that's debatable. But, again, reevaluating the design basis -- the seismic design basis or the flooded design basis, I don't think that's going to enlighten the methodology, the development of the methodology for a flood following an earthquake. So -- but, I certainly disagree that it's a Tier 3. So, you can argue 1 or 2 and when to start and to what level, maybe somebody has to approach it at the conceptual level first, which doesn't cost much money, usually those guys are fairly inexpensive. Then, you know, you go into more detail, what it would take to do it, and so on.

So, I'm really -- I would say that this is not a Tier 3 and maybe it's really Tier 1, but I'm willing to live with Tier 2, and I wonder if you have any objection to that.

BILL BORCHARDT: I'll tell you, I'm not on the Steering Committee, but as a consumer of the product, I was comfortable with Tier 3 on this item for the reason that the methodology still needed to be developed. So, in my mind the work of doing, of carrying out the methodology is Tier 3 because we're waiting on the developmental work to take place. Well, now, you could put the developmental if you've got more refined in the number of steps required, you could make the development of the methodology Tier 1.

COMMISSIONER APOSTOLAKIS: That's what I said.

BILL BORCHARDT: And start right away. So, I think, maybe we're not quite so much disagreement, but that's how I read it.

COMMISSIONER APOSTOLAKIS: Okay.

JIM WIGGINS: I think you can't underplay the resource piece to this, and it's a question of where would you put your seismic and flooding people? They're going to be fairly occupied with this 2.1 or 2.3.

COMMISSIONER APOSTOLAKIS: That's why I said that.

JIM WIGGINS: So, it comes down to 2.1 and 2.3

COMMISSIONER APOSTOLAKIS: The safety concern is also important here, and we can debate that, but I think it is important. It is an important safety issue. And, I mean, if -- the difference is what Bill mentioned that, you know, starting the conceptual development of a model, he doesn't see that as part of the actual thing. And that can start earlier. I don't see any problem because somebody has to think about it, how to approach the issue, and it's independent of the design basis or what you're going to learn in Tier 1.

JIM WIGGINS: I'm probably speaking a bit out of school, but if you look at the EP version of this discussion, it comes out to flat out skill set availability, you know. There's just not enough time to do everything. And you have to pick.

Now, in addition, now the EP's got some advantages that the others don't, in terms of if there's time that becomes -- if there's a skill that becomes available because you're somewhere in a gap between the other thing that's going on, you know, theoretically, once you set up the rules for the, say, the walk down for seismic and flooding and once you set up the rules that are going to be

applied to the 2.1 issue then you might be able to spring some people free to start working the other. But, you know, that pops up in EP. Like, today, if we were able to get going we could actually do some stuff because the OMB's not cleared the rule yet. So, that's the biggest hurdle that we're looking forward to. But, what it does is it creates a gap that we have some skills that are available that are not occupied doing the outreach that's going to tie them down on the new rules. So, we could go out and do some of the things you're suggesting, even more than the Tier 1 and arguably the Tier 2 stuff. We could go out and start discussing it. But, I'm not sure that -- what the deal is on seismic, but I would hazard a guess that it's a close comparison. There is skill to do it.

COMMISSIONER APOSTOLAKIS: It seems like the plant responded very well to the earthquake.

JIM WIGGINS: Yes.

COMMISSIONER APOSTOLAKIS: So, I don't know why we're checking out design basis as number one priority. They did very well. I'm running out of time. You have something urgent to say? No, you don't.

[laughter]

Go ahead.

ERIC LEEDS: I appreciate the opportunity. Thank you. I would like to say one thing. I don't want to leave the public and our external stakeholders with the wrong impression from this morning's conversations about how long it takes the agency to move out on some items. On March 11th, the day of the Fukushima event, we had staff members on a plane headed for Tokyo to assist the U.S. Ambassador, to assist the government of Japan, to help our U.S. citizens over in Japan the day of the event. You look back at Hurricane

Katrina, before that hurricane ever made landfall, we had Regional staff as well as emergency preparedness experts from headquarters at the Waterford site, you know, less than 20 miles from New Orleans before that hurricane hit. We were there. Commissioner Svinicki used a third example that I would use. After 9/11 we took immediate action to improve the security profile of our -- of the plants here in the United States. When there's a health and safety issue, when there's a clear and present danger, the NRC staff acts and acts immediately. Thank you, sir.

COMMISSIONER APOSTOLAKIS: Thank you. Any closing comments from my colleagues here? Well, thank you very much, gentlemen. Very helpful as usual .

[Whereupon, the proceedings were concluded]