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TRANSCRIPT OF PROCEEDINGS

APPEARANCES

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1 PROCEEDINGS

2 ERIC LEEDS: All right, I think we're ready to begin. Again, my
3 name's Eric Leeds. I'm the director of the Office of Nuclear Reactor Regulation.
4 Before we start this next plenary session, I'd just like to make a quick
5 announcement that we're going to have a special session today on forging a new
6 nuclear safety construct. This is the preliminary recommendations of the ASME
7 presidential task force on response to the Japan nuclear power plant events.
8 The speaker is our previous chairman, Nils Diaz. He is the chair of the ASME
9 presidential task force. This session will be conducted from 5:30 to 6:00 tonight
10 in the White Flint Amphitheater, which is downstairs here at the hotel.

11 And, with that, let me get into our current plenary session. This is
12 the director's session, and our focus is on operating new reactors. The panel of
13 distinguished nuclear experts that I spoke about this morning are seated here
14 with me today. I have Marty Virgilio, the NRC deputy executive director for
15 Reactor and Preparedness Programs; Tony Pietrangelo, senior vice president
16 and chief nuclear officer of the Nuclear Energy Institute; and Dennis Koehl, the
17 senior vice president and chief nuclear officer of Xcel Energy. And the way we're
18 going to run this is we have half a dozen or so questions prepared that I'm going
19 to begin with and talk to the panelists about. And in the meantime, what I'd ask
20 you all to do is please write down your questions. The strength of this session
21 relies on your participation. We'll look forward to getting your questions up here,
22 and we'll ask the panelists your questions. But, to give you some time to think
23 about that, we will begin with some of our own questions. And, with that, let me
24 get started.

25 All right, our first question, both the NRC and industry are working

1 hard on efforts to address the lessons learned by the Fukushima disaster. And
2 I'll address this first one to industry, and I'll address it to Dennis. As an industry,
3 what actions are licensees undertaking in response to Fukushima that are
4 outside the scope of the NRC orders and 50.54(f) letters?

5 DENNIS KOEHL: Well, immediately following the Fukushima
6 event, the industry, through the Institute of Nuclear Power Operations, initiated a
7 series of industry event reports. We actually put out four industry event reports
8 that resulted in licensees evaluating or taking actions to deal with extended loss
9 of A/C power onsite to take a hard look at our severe accident mitigating
10 guidelines and to perform walk-downs of those guidelines to ensure that all those
11 actions associated with those could be carried out. We took a hard look at the
12 rulemaking under the B.5.b. item that came out after the 9/11 event, looked at
13 that temporary equipment to ensure that our operators could actually put that
14 equipment in place and actually operate it and make the connections, make sure
15 everything was there. We also looked at validating both seismic and flooding
16 capabilities through walk-downs. Now, some of that's getting expanded now in
17 the orders in the 50.54(f) letters that are following, but there were initial walk-
18 downs to take a hard look at that.

19 Looking at the Mark I containments, we looked at hardened vent in
20 the containment venting system, mainly for accessibility -- can we get to the
21 valves, is there platforms there, you know, from the standpoint is there backup
22 means to manipulate those valves? And then we also took a hard look at our
23 spent fuel pool monitoring, both our systems as well as our understanding of
24 what and when different heat loads would be in the pool. In addition to this, most
25 of the utilities or licensees have or will have under procurement by the end of

1 March additional flexible portable equipment. To give you a good example, Xcel
2 Energy, you know, we purchased additional diesel-driven fire pumps that are
3 similar to the sizing that we bought for B.5.b. so that we have redundancy in that
4 equipment, we have sufficient for multi-unit sites, and that we basically cover all
5 aspects so that we can provide cooling to both the reactor core. We can provide
6 cooling to the spent fuel pool, and we have the ability to fight fires and outside
7 events with those additional fire pumps. Along with that did come a lot of
8 changes in our procedures.

9 As Commissioner Ostendorff talked about, we took a hard look at
10 our communications systems. You know, what is it going to take, what
11 temporary type of equipment could we procure such that we can improve our
12 telecommunications, whether that would be in the area of satellite phones, which
13 is one of the areas that we expanded on, but also to look at communications
14 systems that we presently had and was there quick, easy ways to buy some
15 portable equipment whether that's a small generator that we could put on there
16 and make connections to that equipment so that we did not lose that capability.
17 Again, it's to look at ensuring containment integrity and ensuring that we do
18 maintain the core and the spent fuel pool cooled.

19 Also, the industry undertook -- we put it in the text of our "Way
20 Forward" dialogue, our document, but we looked at what can we do as an
21 industry to help one another. One of the items we just finished revising and
22 issuing is the emergency response plan, which integrates both the Institute of
23 Nuclear Power Operations, EPRI, and NEI so that we have a coordinated
24 response should something happen here in the U.S. or internationally so that we
25 know all the channels and means of communications. That revised emergency

1 response plan was signed by those three different organizations last week and is
2 now in effect. It was under revision at the time of Fukushima. We just carried it
3 further to gain the learnings.

4 The additional item that we're looking at right now under what we
5 termed "Building Block 3" are regional response centers. There's a lot of
6 equipment that we can bring to bear. Last year, we actually did a survey of all
7 the utilities and plants here in the United States to get a good understanding of
8 all the equipment that they physically had on site and also equipment that they
9 felt that they would need if they were challenged by a beyond-design-basis
10 event. So, with that list, we now have a very good inventory of where all the
11 equipment is. We do feel in order to keep the economics down that we can place
12 this equipment in regional response centers and then work with both, you know,
13 the private sector as well as with FEMA in order to be able to get that equipment
14 transported quickly to any site that would potentially need it. Again, we haven't
15 settled on yet the actual locations of these regional response centers because a
16 lot of it deals with what's the earliest, shortest coping time for any individual site
17 for a specific event because then we would need to be able to get that needed
18 equipment to them, you know, in that time to have onsite delivery of it.

19 And the other item that we're looking at with that aspect is to make
20 it very simple. We would have the instructions right there with the equipment, the
21 procedures, but also make it so that they're common connections. So, when it
22 does show up, it's almost in the form of a plug-and-play, and we will be working
23 through those aspects of it this year. We've already come to terms with and
24 settled on all the mechanical. We've got to work through a couple issues right
25 now on electrical design.

1 ERIC LEEDS: Very good. Thank you, Dennis. Sticking with the
2 Fukushima theme, I'll direct this to Marty. Marty, with the NRC maintaining a flat
3 budget from 2011 to 2012 and additional funding being provided to the
4 investigation evaluation and rulemaking efforts related to Fukushima, how will
5 other areas within the NRC be affected?

6 MARTIN VIRGILIO: Thanks, Eric. As you've noted, our budgets
7 are flat, and as Bill explained yesterday with the cost of the building and rent and
8 everything else going up, our budgets are actually declining. But if you focus on
9 the operating reactor business line, what we have is our safety mission that we
10 have to continue to accomplish. We have to continue to implement the reactor
11 oversight process. We have to continue to respond to events that occur. We
12 also have some, I would say, some discretion around some of the other activities
13 that we are working on. And I know that for this audience license renewals and
14 power uprates and all the license amendments, the hundreds of license
15 amendments that we're working on today, that's where we wind up moving
16 resources. That said, we're continuing with the schedules that we have for the
17 uprates and the renewals. But it is having some impact on some of the other
18 licensing activities.

19 ERIC LEEDS: Okay, thank you. Tony, let's get you involved. This
20 next question, now that the emergency preparedness rule has been issued, what
21 issues are the industry seeing as a result of the implementation of it, and are
22 there any that may prove difficult to deal with?

23 TONY PIETRANGELO: I think the communication on the EP
24 rulemaking has been exception. I think we got out in front of this with guidance in
25 parallel with the rulemaking. But at the present time, we don't see any significant

1 issues with implementing the rule. However, given the 50.54(f) letter and
2 Recommendation 9.3, I think all parties are in agreement that we have to
3 implement the rule first and that additional staffing analysis for multiunit as well
4 as what we intend to do with the mitigating strategies order will be a phase two of
5 that staffing assessment. So I think we're in pretty good shape there.

6 ERIC LEEDS: Very good. I'm just looking at what they're bringing
7 up to me. Be careful what you ask for?

8 [laughter]

9 ERIC LEEDS: My goodness, lots of questions. Marty, any
10 comments that you want to make with regard to the emergency preparedness
11 rule from the NRC standpoint, you know, in terms of implementation.

12 MARTIN VIRGILIO: Yeah, I think that it represents our first
13 successful outing on cumulative effects of regulation. What we did is we spent a
14 lot of time working with the stakeholders throughout the development of the rule.
15 We make sure that we had the guidance at the time that we implemented the
16 rule. And looking at the schedules for implementation, we also worked with the
17 stakeholders to make sure that the rules and our expectations could be met.

18 DENNIS KOEHL: I do think --

19 ERIC LEEDS: Dennis, go ahead.

20 DENNIS KOEHL: Just one follow-on little piece. As we move
21 through the process of implementation, I do think we've got to make sure we
22 make use of the frequently asked questions, so that if any items do come up as
23 we're working through the rule, that we can get those common answers out to
24 the whole industry.

25 ERIC LEEDS: Thank you for that. Good. Good feedback. Let me

1 move to another subject. About 70 percent of the nuclear power reactors have
2 received renewed licenses to operate to 60 years. The first renewed license will
3 expire in 2029, which is 17 years from now. What are the NRC's and the
4 industry's plans on potentially renewing licenses a second time, life beyond 60?
5 I'll look to industry to take the first crack at that. Tony?

6 TONY PIETRANGELO: Yeah, well, we're very interested in
7 subsequent license renewal, but we need to do the same thing we did to get the
8 first stage of license renewal through, and that's the technical research and the
9 underpinning for aging management and continued operation. So, the DOE, the
10 NRE, EPRI, and us are conducting that research. It's going to boil down to some
11 long-lived structures and components. Obviously, the containment building, the
12 reactor vessel, cable aging will be prominent in those discussions. So, we need
13 to get the technical underpinning down, and then I think we need to test the
14 process with the licensee coming forward within the next several years to walk
15 through that aging management and all the rest of the requirements that the first
16 license renewal was based on. So, there's a lot of work to do to provide that
17 underpinning, but it's well underway.

18 ERIC LEEDS: Marty?

19 MARTIN VIRGILIO: Eric, one of the things that I think we ought to
20 not lose sight of is that we've got two-thirds of the fleet through the first license
21 renewal period, but we still have a third of the fleet that we expect to come in with
22 requests for license renewal, and we need to not lose focus on that. Now, in
23 discussions with industry, I think that we can anticipate the first of the second
24 renewal applications somewhere between 2015 and 2019. And Tony has
25 outlined some of the technical challenges. What we have been doing is holding

1 stakeholder meetings with DOE, EPRI, NEI, and others to make sure that we
2 understand all of the issues. I agree with Tony. It's just the technical issues that
3 we're going to have to address, like the reactor vessel, reactor vessel internals,
4 cabling, but it's also I think we're going to have to get into the process issues as
5 well.

6 ERIC LEEDS: Thank you. Dennis, was there something you
7 wanted to add?

8 DENNIS KOEHL: Yeah, my only follow-on to that would be, you
9 know, in the process issues that we've got to take all the lessons we learned
10 from the first go-around and make sure that we're not re-asking all those same
11 type of questions. And I know that's kind of where Tony is going, you know, in
12 his remarks. But it is going to become important that we are going to be able to
13 have a well-defined process to move forward, especially once technical issues
14 get resolved.

15 ERIC LEEDS: Thank you, thank you. Another subject that is
16 important to the industry and the regulator, now that the pilots for NFP 805 are
17 complete and plants are starting to submit their applications to transfer to this
18 new first protection scheme -- this is for you, Marty -- what is the NRC doing to
19 ensure that the NFP 805 license amendments are being reviewed and processed
20 in an efficient and consistent manner? And when will the NRC achieve a one-
21 year review period for those submittals?

22 MARTIN VIRGILIO: Actually, this is really a question for you --

23 [laughter]

24 But I'll answer it for you. One of the things we've done is we've
25 gone to the staggered submittals, so that we don't have a backlog. And we're

1 looking at having six come in, seven, eight, you know, spread out over the next
2 several years. We've set ourselves a two-year metric to ensure that we have a
3 goal for completion. And I think that's achievable. The Commission has actually
4 challenged us to say can you do it in one year, which I think is going to be a real
5 challenge. But some of the things that we're doing as we're looking at
6 technology-enabled solutions, we're looking at automating how we do our RAIs,
7 we've developed templates for the review, and we're actually now also doing side
8 audits, which I think is a big contributor, not just passing questions over the door
9 through the transom, but sending people out to the sites in order to have that
10 conversation and dialogue. And I think those are the kinds of things that are
11 going to lead us to the efficiencies.

12 We've also looked at another aspect of this I'll just touch on, in case
13 the audience is not aware. Back in February, we sent a paper up to the
14 Commission outlining what are our plans of a licensee that has committed to a
15 certain schedule on this staggered approach over the next three years cannot
16 meet their scheduled dates. Well, one of the things that we're going to expect is
17 that the licensee alert us early on so that we're clear about that schedule change.
18 And we'd look for, particularly in the large fleets, somebody maybe swapping out,
19 looking for another licensee that could actually accelerate their schedule and
20 make a submittal to us. If that's not possible, what we're going to look to do is
21 lock down that schedule in a confirmatory order to make sure that the next
22 schedule, once they commit to this next schedule, in fact, that we have some
23 tools to ensure that the licensees meet that new schedule date. Thank you.

24 ERIC LEEDS: Thank you, Marty. And, seeing how you threw it
25 back at me, let me just add a couple things that Marty didn't touch on with regard

1 to NFP 805. And these are important; other initiatives that the staff is
2 undertaking to improve the efficiency and the effectiveness of the process. One
3 of the big things we're doing is we're doing a lot of outreach and a lot of
4 communications. Every month we have a public meeting on NFP 805, we talk
5 about the audit findings, we talk about our observations, we talk about what
6 we've learned from the progress that we've made, we talk about the RAIs, and
7 that's an open communication that the public's allowed to listen to. We do that
8 every month. Every two months, the director of the division that's responsible for
9 this, Joe Giitter, gets on the phone with every site vice president who's got an
10 application into the agency, and goes through the IOUs, you know, what's the
11 status of the application, who owes who what, if there are any show-stoppers, if
12 there are any bumps in the road. So we're doing an awful lot of outreach also to
13 try to make sure that the NFP 805 is successful and it's done efficiently and
14 effectively. And I do more than just read the questions.

15 [laughter]

16 DENNIS KOEHL: Eric, I would like to follow up on that just --

17 ERIC LEEDS: Please, Dennis.

18 DENNIS KOEHL: From the standpoint of the NFP 805 task force,
19 you know, that grouping of those licensees that are transitioning to 805 has put
20 together a very good group that has open communication beyond even the
21 meetings. I mean, that group's meeting monthly. They're looking at question,
22 issues that come to the different licensees. They're leveraging the use of the
23 template. Marty did talk about the template. I do believe that by having a well-
24 defined template with a guidance document that outlines what it is will assure us
25 that as we submit, the submittals are of good quality and they're complete in

1 what needs to be brought in. And those aspects will assist us in being able to
2 turn the one-year timeframe that's being asked by the Commission to where the
3 NRC should be able to complete those reviews and get those out. So there is a
4 lot of good communications going on with that task force.

5 ERIC LEEDS: Thank you, Dennis. Since I have so many
6 questions, I'm going to start going to the audience's questions, answer your
7 questions. And thank you for all the good questions. This one is directed to you,
8 Dennis, but anyone can get involved with it. You spoke of having equipment
9 ready to respond to a loss of A/C power, you know, Fukushima corrective
10 actions. How long do you expect a local plant to cope without A/C power until
11 emergency equipment arrives from offsite?

12 DENNIS KOEHL: Well, if you look at the guidance document that
13 we put together and the IER response, INPO has gathered that information in on
14 all the different types and models of plants. The timing is actually different based
15 on what equipment each station has, what additional resources that they may
16 have at the site. By making use of the FLEX equipment, what we're looking to do
17 there is basically a three-phased approach. The first phase would be what you
18 have is permanently installed equipment, how long can you actually go with your
19 permanent installed equipment. Then you move into your FLEX equipment,
20 which would be readily available on the site, that could be deployed and put into
21 place, and if it's diesel-driven, you definitely don't need to have your A/C power,
22 but you would then be able to continue to provide cooling to both spent fuel pool
23 as well as to core cooling based on how much time and when do you start
24 deploying it to actually put it into place.

25 And then the third phase would actually be, you know, offsite

1 resources and deployed to this site. So there's a lot of creative ideas, and one of
2 the items that we're now leveraging that we've completed the input for the IER on
3 loss of A/C is to now look at, all right, this utility can actually go nine hours with
4 installed equipment. Okay, what's that based on? What are some of the items?
5 Is there things that utilities that are sitting at four, six hours, is there things that
6 they can do in order to extend that time and then move to your FLEX equipment
7 to move it out greater than 24 hours and then with regional response to even
8 move it out to where it would be an indefinite period of time because you would
9 be providing the cooling.

10 ERIC LEEDS: Thank you, Dennis.

11 [talking simultaneously]

12 TONY PIETRANGELO: Could I answer what Dennis said? And
13 what you can get from Dennis is this is a performance-based approach. Every
14 site is different. The external threats they face are different. The designs are
15 different. So we're trying to build in flexibility through FLEX to be able to take into
16 account what those site-specific hazards are, how you protect the equipment,
17 what you deploy and when, so that you got overlap in the phases that Dennis
18 described, and basically provide indefinite support of those key safety functions.
19 This is not much different from what we did under 9/11 but at a much greater
20 detail in terms of protection of the equipment and hook-ups of the portable
21 equipment. So, there's a lot of work to do. We're trying to capture this in a
22 guidance document. We're ready to start interaction pretty soon with the staff on
23 that, and we look forward to it, but we're trying to tee this up in response to the
24 order on mitigating strategies as well as provide the basis for the longer term
25 rulemaking going forward under Recommendation 4.

1 DENNIS KOEHL: Yeah, one of the what I consider fortunate items
2 for us was 9/11 and the fact that we did identify as part of the B.5.b. equipment
3 external means to actually get water to the core as well as to the spent fuel pool.
4 So I think by having that all preplanned and done, you know, by adding additional
5 pumps, it now gives us the ability instead of trying to move one pump around, we
6 can actually, on a multiunit site, you can be providing it to both of the cores, we
7 can leverage the resources that we have on the site, we can train them and
8 practice it to the point that if it's deployed early, especially if we know the event
9 is, you know, significant and we've lost that electrical power, it will allow us that
10 we can deploy those resources and that equipment. And if we practice it and run
11 exercise on it, we will be able to demonstrate that we can actually put it into play.

12 ERIC LEEDS: Marty, did you want to add anything?

13 MARTIN VIRGILIO: Just for those that are not that close to this, to
14 point out, and I think Dennis started down this road, there are three critical safety
15 functions that we're trying to ensure that are maintained: Keep the core cooled,
16 keep the spent fuel pool cooled, and maintain the containment function. If you
17 turn the clock back to July when the Near-Term Task Force put out its report,
18 they actually did suggest timeframes. For the first phase, they suggested eight
19 hours, and that's relying on installed equipment. For the second phase, they
20 recommended 72 hours. That's relying on the portable equipment that would
21 come in. And then the third phase would be to operate indefinitely with support
22 from the offsite regional support centers. As we developed the orders for this,
23 and the orders were issued on Monday, we came, as Tony pointed out, to the
24 notion of a more performance-based approach, to look at this on a site-specific
25 basis, to make sure that we were doing the right thing for each site. And those

1 orders are out there. Guidance -- we'll develop guidance for those orders. That
2 guidance, we've committed to have in place by August 31st of this year, and then
3 following that, we'll get into the implementation phase. All plants will be required
4 to have these functions implemented within two refueling outages or the end of
5 calendar year 2016, whichever comes first.

6 ERIC LEEDS: Okay, thank you. Thank you. This next question is
7 one both for the industry and the regulators, so we'll let you all think about it for a
8 moment. But the question is much has been discussed about temporary
9 equipment in response to the Fukushima event. What work has been done on
10 instrumentation capability and the lack of plant parameter status, which was a
11 major challenge in responding to the Fukushima event?

12 MARTIN VIRGILIO: One of the areas is the spent fuel pool
13 instrumentation. And as we looked at this, we found that it really did create a
14 distraction, because, at the end of the day, as we learned more about
15 Fukushima, there really wasn't a challenge with respect to the spent fuel pools,
16 but at the time, those of you who are watching CNN and other shows would have
17 remembered that they were flying helicopters over the site and dumping water on
18 the spent fuel pools because they were so concerned about not having cooling
19 media in the pools. So, one of the things that we addressed in this first series of
20 orders is spent fuel pool instrumentation. And we wanted to ensure that there
21 was redundant, diverse, reliable instrumentation so that it wouldn't be a
22 distraction to the operators who might be fighting or responding to more serious
23 concerns.

24 DENNIS KOEHL: And from the industry's aspect, it was one of the
25 areas that we took a hard look at as one of the results of one of the IERs, the

1 Industry Event Reports that came out of INPO was to specifically look at what
2 were the key instruments that would be required by the station in the event or the
3 accident, and again, it's looking at what that specific event would be for the site,
4 because they're all susceptible to potentially different events, but to identify what
5 that equipment would be and what would be needed from the standpoint of both
6 installed equipment as well as FLEX equipment in order to keep that
7 instrumentation available to the control room. The issue of the spent fuel pool
8 monitoring, it is being addressed in the orders that were just issued, but if you go
9 beyond that to look at the other indicators, we are looking at temporary battery
10 chargers that can be put in place to keep certain batteries available such that
11 those instruments that are being fed from that would continue to accurately read
12 for the control room and that they would have that indication. So, again, we're
13 looking at what's installed, what modifications could we do to extend that phase
14 one portion, but then definitely looking at, all right, from the standpoint of FLEX
15 equipment, what can we do and what can we put into place. And if it's a diesel-
16 driven battery charger, and I've had this discussion with my in-house engineers,
17 the bigger concern they have is we can deploy it, we can get it there, but I now
18 got to be concerned about how do I deal with the exhaust because where the
19 battery's located inside the building and those type items. And we're working
20 through those aspects and that logistics to get that corrected so that we don't
21 have to worry about that and we can actually deploy that temporary equipment.

22 ERIC LEEDS: Very good. Thank you. For the audience and the
23 panel, a lot of the questions that are coming up here are Fukushima-related. And
24 we're going to get to a lot of those, but whenever I get one that isn't, I also want
25 to bring them up too because this is the Regulatory Information Conference. It's

1 the RIC, not the FRIC.

2 [laughter]

3 ERIC LEEDS: So I want to get to all the different subjects that we
4 have. Certainly, Fukushima is first and foremost on all of our minds. For the
5 panel, and the requester asks all of you to respond to this question,
6 Commissioner Ostendorff talked about better upfront communications with the
7 public. What steps are you and your organization taking to accomplish this?
8 Dennis?

9 DENNIS KOEHL: Well, I'll start.

10 ERIC LEEDS: Thank you.

11 DENNIS KOEHL: Definitely one of the items that I think we did that
12 NEI actually did extremely well was the outreach and the communication when
13 Fukushima happened, but it really goes beyond NEI, and it really goes to each
14 and every utility and the relationships and the communications that you do on a
15 daily basis with your neighbors, the people in the community, local and state
16 authorities, so that they do understand all the items that we are doing to actually
17 put in place preventions. The other key item is we talked a little bit about
18 emergency preparedness and the new EP rulemaking. It's getting that dialogue
19 and getting that communication out to local authorities to make sure that the
20 offsite response organizations, that they do understand what their role is
21 assisting the station and what can be done and to make sure that there's a good
22 understanding of it.

23 If you go back to Commissioner Svinicki's discussion that she
24 talked about yesterday from the social and economic impacts of the event, we do
25 need to make sure the public does understand. And if I, again, that

1 communication tool, like Commissioner Ostendorff said, we got to make sure
2 we're communicating the information such that it is understandable to the public
3 and they do know what we're doing. And, again, it's opening up. I realize after
4 9/11 we closed a lot of sites. There wasn't much in the way of tours. You know,
5 from the standpoint now, that outreach to the local community to get them in to
6 understand what it is, to see some of this additional equipment, to see that you
7 do have procedures and processes in place to do it, it does provide that
8 additional assurance to the public. So, I would encourage everybody's
9 communication staff, and I know that's sometimes hard, especially if you have
10 long interviews and those type items, but to really open that up and to outreach
11 to the public to make sure that they have a good understanding.

12 TONY PIETRANGELO: Under our Way Forward plan, there's a
13 Building Block 5 -- or 4, excuse me, on communications that NEI has
14 responsibility for. And really, since the event last March, between Congressional
15 staff briefings, press briefings, financial community, all our other stakeholders, we
16 tried to get out in front of this and not run and hide from Fukushima, and be very
17 transparent about what the industry's doing and why we're doing it. The other
18 thing I would stress, and following up with what Dennis said, is the more people
19 we can get to the sites to actually see the implementation of this, and I
20 wholeheartedly agree with Commissioner Ostendorff's admonition to get people
21 to see what we're actually doing in the field. We never lose when we get folks to
22 the sites to see the professionalism of the individuals who operate the facilities,
23 the robustness of the facilities, and what we're trying to do to respond to
24 Fukushima in a timely manner. So, you can never do enough communications,
25 and we're going to continue to work at it.

1 MARTIN VIRGILIO: I'll just key off Tony's last point. We can never
2 do enough about communications. We had a lot of lessons learned about
3 communicating during the event. It was an event that involved another country,
4 and we were trying to be respectful and let them get out in front of us and not
5 speak for them, not presume to know more about the event than we actually did.
6 And that actually turned out to be a problem for us because we were constrained
7 for so long that there was a vacuum created. Other people stepped in and
8 started speaking and, from what we knew from our time in the operations center,
9 they weren't speaking factual information. I think they were, in some ways,
10 creating their own notion about what was happening. And so, we took that as a
11 lessons learned. We also learned I think a number of lessons about
12 communicating with other federal agencies during a crisis. And now, I think
13 we're better prepared here for not only a nuclear issue but any other issue that
14 might strike us as a result of what we learned back in March, April, and May
15 timeframe last year.

16 ERIC LEEDS: Thank you. Go ahead, Dennis.

17 DENNIS KOEHL: Yeah, just one follow-on item, and that's social
18 media. In today's environment, it is so quick. I know we talked about it earlier,
19 about, you know, Tweeting and Facebook and everything else, but that is a
20 means of communications and it will -- if we do not prepare our staffs and
21 everybody else for that and to stay ahead of it, a lot of information can go out
22 that's incorrect. So we do have to look at that aspect, I think, as a total industry
23 and work at that.

24 ERIC LEEDS: Thank you. Thank you all. Good responses. All
25 right, this question will take us back to the Fukushima lessons learned. Will

1 temporary equipment under FLEX have specific quality assurance requirements
2 or undergo what amounts to commercial-grade parts qualification process to
3 bring it to what can be considered nuclear grade? And, Marty, I'll ask you to go
4 after that first.

5 MARTIN VIRGILIO: Yes, we will in fact lay out programmatic --
6 what we call programmatic requirements. This is -- this will all be worked out in
7 public meetings between now and the end of August, the time when we're
8 committed to have the guidance to industry. I think one of the things that we
9 recognized as we were reading the submittals from industry on FLEX was they
10 had a notion about, for example, maintenance of the equipment. And we,
11 following the event, had actually -- we had our inspectors go out into the field
12 under a temporary instruction, look at some of the equipment that had been
13 installed post-9/11, and had some lessons learned with respect to how that
14 equipment was being maintained. And we want to make sure that those lessons
15 learned are actually factored into this guidance.

16 TONY PIETRANGELO: Absolutely. And one correction to the
17 question. It's not temporary equipment; it's portable equipment. It's going to be
18 there forever, as long as that site is operating. It's portable equipment. And
19 that's what FLEX is based on, being able to move this equipment around to
20 support these key safety functions. We totally agree with Marty. I think one of
21 our lessons learned from the TIs on the walk-down of the B.5.b. equipment was
22 that we didn't, as an industry, have a consistent standard for programmatic
23 controls. And that's something we'll put in place. That's being developed as part
24 of our guidance. And, again, I think it should be captured as part of the
25 rulemaking so that we have an inspectable, enforceable, programmatic control

1 established on this equipment.

2 ERIC LEEDS: Thank you. Dennis, anything to add or --

3 DENNIS KOEHL: No.

4 ERIC LEEDS: No? All righty. Okay, let's go to the next -- woo, we
5 got a lot of questions. [laughs] The next question: With 12 years of the reactor
6 oversight process under our belts, is it time to replace current performance
7 indicators with new ones rather than waiting for a leading PI? A leading
8 performance indicator may not exist.

9 MARTIN VIRGILIO: Well, let me start.

10 ERIC LEEDS: Okay, Marty.

11 MARTIN VIRGILIO: Every year, we step back and we look at the
12 reactor oversight process. We do that, and it will actually come up in April, where
13 we look at industry performance, industry trends, and we look at how well the
14 reactor oversight process served us. And I think at this point, we're always
15 looking for continuous improvement, but, by and large, we feel very comfortable
16 that with the performance indicators that we have and with the inspection
17 program we have, which is multi levels, there's the baseline inspection program
18 and then there's the supplemental inspections that we'll do on a site-specific
19 basis, and if there's a generic issue, we'll follow that through the inspection
20 process. We feel very comfortable that the reactor oversight process is serving
21 us well.

22 As far as leading indicators, don't forget we've got the crosscutting
23 issues. And I think they are, in fact, not only looking backward but giving us
24 some idea of what future performance would be by looking at human
25 performance by looking at problem identification and resolution and looking at

1 safety conscious work environment.

2 ERIC LEEDS: Tony?

3 TONY PIETRANGELO: Bill Borchardt, in his slides yesterday, had
4 the MSPI indicators on there, and it was -- and Bill Ruland was sitting in front of
5 me, and I said, "This is the old adage, 'Measure it and it will get better.'" And you
6 saw that decline. And it was because we took the time I think to develop and
7 indicator that was not gameable at all. It included both reliability and availability
8 of key safety systems. And it's gotten better over time. If somebody's got a
9 leading indicator they want to put forward, do it. I mean, we've been looking at
10 this every year. As Marty said, there's a process to review this. And the process
11 has worked. I think when plants put themselves really in those columns and you
12 do see a differentiation between the plants from column one to column four, et
13 cetera. So, it's a very transparent process. I can't think of another industry that
14 has every inspect report it gets on the Web as well as your biannual assessment
15 letters. So, it's all out there for people to see. It's transparent. The indicators
16 are on the Web. The inspection reports are on the Web. And if there's better
17 ideas on how to do it, please bring them forward.

18 ERIC LEEDS: Thank you. Dennis?

19 DENNIS KOEHL: The only item that I could add is from the
20 standpoint of what Marty talked about, the crosscutting aspects. I think it's up to
21 the industry to take and be looking at those early on and not waiting until we're
22 three or four into that aspect, is to look for those earlier signs and act on the
23 earlier indications of it to see and do the root cause and evaluation and look for
24 what do you need to tweak within the different areas, whether it's in human
25 resources, whether it's in your performance or use of the human error reduction

1 tools, or if it's in -- especially if it's in the safety culture aspect, is there's other
2 indicators besides the NRC indicators that we have to evaluate against that to
3 find where those issues are get ahead of them.

4 ERIC LEEDS: Okay, thank you. We'll get back to a Fukushima
5 question. The question reads, "Fukushima and North Anna both had
6 earthquakes that exceeded their design basis. These events have shown that
7 there is margin in the as-built design to withstand earthquake loads. Is a detailed
8 re-review of the seismic analysis really that high of a priority to place on
9 resources compared to other Fukushima lessons learned and initiatives?"

10 TONY PIETRANGELO: Let me take a cut at that one. We -- and
11 I'll go back to Kashiwazaki-Kariwa, which was even a more significant
12 earthquake in 2007, beyond the design basis, and really no damage to the
13 safety-related structure systems or components. But I think you've got to step
14 back. Even though I think operating experience tells us that our plants are very
15 robust with respect to seismic risk, when you step back from Fukushima, what's
16 the responsible thing to do? That was a beyond design basis event at
17 Fukushima. I think it's perfectly reasonable for us to go back and reassess our
18 seismic risk based on the latest information and our flooding risk based on the
19 latest information, and we'll get to other external events as well, given what
20 happened there. But the other big lesson learned is that if you can't cope with an
21 extended loss of A/C power, you're going to damage fuel, and that's why we put
22 FLEX and Recommendation 4 first and foremost in our mind as what we have to
23 get after with respect to Fukushima. That, we think, has the greatest safety
24 benefit in the shortest amount of time, but we have to do some of the other things
25 as well. And if there's something we need to shore up with the plant with respect

1 to the new information, I think that's what the request for information are all
2 about. So it's the responsible thing to do, and we're going to do it.

3 ERIC LEEDS: Thank you, Tony. Marty or Dennis, any comments?

4 DENNIS KOEHL: Well, my, I guess, I follow on with the fact that
5 we know there's potential for margin to exist. What we don't always know is how
6 much margin that is and where it's at. So I do think there's some benefits to
7 understanding, you know, where we are in relationship to that so that we at least
8 know where our margin is in the different calculations. And I'm not a seismic
9 expert. I'll kind of follow with the Commissioner Ostendorff said, but I do know
10 there's a lot of information that is coming down the line here as a result of this,
11 that I think if we do it and we do it in a smart fashion, we can all gain some
12 benefit from it.

13 MARTIN VIRGILIO: So I'll just add to Dennis' last point about
14 doing it in a smart fashion. What we intend to do is prioritize, both for the seismic
15 and for the flooding as well to pick those sites that probably have either where we
16 see the largest difference between the ground motion spectrum and where the
17 design is and focus on those. Similarly, the ones that would be more likely
18 subject to flood, that could challenge the plant, we'll be looking at those first. Our
19 intent is to finish all of the high priority seismic issues over the next five years,
20 finish all of the flooding over five years. And we still haven't laid out our schedule
21 for other external events, but we felt like starting with the flooding and seismic
22 was the appropriate place, and then we'll get on to the others.

23 ERIC LEEDS: Thank you. All right. New subject -- Tony, I'm going
24 to direct his one to you first. Beyond the VC Summer new build, what's your
25 prognosis for additional new builds and for new COL applications?

1 TONY PIETRANGELO: Yeah, even before Fukushima, we had
2 been pretty consistent in our predictions on four to eight new plants by 2020, and
3 I think it still holds. I think what we're finding is that the business conditions for a
4 new plant investment are different whether you're in a regulated or deregulated
5 market. The prices of natural gas -- if there's any parameter you can track over
6 time that I think has a perfect correlation with interest and new nuclear, it's the
7 price of natural gas. And when it's very high, you have a very high interest in
8 nuclear. And when it goes down to where it is now, that interest recedes. So, it
9 depends on the business conditions.

10 I think there's additional COL applicants that want to have that
11 option on the table. When business conditions change, we don't think the price
12 of natural gas is going to stay under \$3 forever. The industry proceeded with that
13 notion in the early '90s and built a lot of gas facilities. And when prices got high,
14 those facilities weren't doing much. So, I think it's a long-term look at electricity
15 generation for our country. There's obviously, you know, electric supply stability
16 that we have to be concerned with, as well as national security interests. So,
17 these companies will make investments when the business conditions are right
18 and the option needs to be on the table, and I think that will proceed.

19 DENNIS KOEHL: I think there's one other aspect of it, and it's the
20 certainty of the process. I mean, I realize we've made the, you know, the first
21 step, but for a lot of other investors, it's going to be the certainty of the process.
22 And can it and will it work and be able to move the plants along?

23 ERIC LEEDS: The certainty of the process, Dennis, is that -- are
24 you talking about the entire process? Now, the licensing went through. We saw
25 that. Now we're looking at the build and schedule, money and schedule.

1 DENNIS KOEHL: Right. I think it's going to be both the licensing
2 as well as it is the potential delays or hold-ups that could happen as you're
3 moving into the implementation.

4 ERIC LEEDS: Thank you. Thank you for that. I'm sorry to cut off,
5 Marty. Go ahead.

6 MARTIN VIRGILIO: No, that's -- I just want to make sure that we
7 recognize that we've been doing our part at the NRC to ensure that whatever
8 option is brought forward, we're ready for it. We're not in the business of
9 predicting, but we do spend a lot of time talking to industry about what their
10 notion is of direction. We've got four certified designs right now. We've got three
11 more certified designs under review, or designs under review for certification,
12 plus the renewal of the ABWR, which is coming up. And we're also looking at
13 modular reactors now to make sure that if that's the option that's elected, that
14 we're ready and have a framework in place to support the licensing of the small
15 modular reactors. On that note, we are expecting applications -- the first
16 application for the small modular reactor to come in the end of calendar year '13.

17 ERIC LEEDS: Okay, thank you. Getting back to Fukushima.
18 Dennis, this question is directed to you, and the question involves the regional
19 response centers. The question reads, "Who will own the facility and the
20 equipment? Who will maintain the equipment and ensure that it's ready? And
21 who will be responsible to distribute the equipment in the event of an accident?"

22 DENNIS KOEHL: Well, from the standpoint, we do intend to put it
23 out for bid. From the standpoint of looking at the equipment, we are looking for
24 someone to basically do all the maintaining, having the warehousing and have
25 the contracts in place to transport that. It's similar to the PIN system where the

1 equipment is jointly owned by the industry, by those that are participating in the
2 regional responses. So the equipment would be owned by the industry, but we
3 would have contracts in place such that the vendor that's storing it would also be
4 the ones that were performing the maintenance on it. We would perform audits
5 of it. We'd leverage INPO to make sure that it's looked at from the standpoint of
6 NR procedures and our emergency response plans, that it would be able to be
7 delivered.

8 We did have a discussion, both myself, Bill Webster and Jeff
9 Gasser did visit FEMA in Washington here a couple of weeks ago to also lay out
10 that plan with them to look for their assistance also, because there's a lot of times
11 that you can get into one event where certain things get shut down or
12 transportation is not allowed, so we needed to make sure that we have those
13 protocols established with them such that the equipment would be readily able to
14 be moved. And, again, we would be maintaining the equipment there to ensure
15 when it's delivered, it would work.

16 ERIC LEEDS: Anyone like to add anything, or -- Dennis has got it.
17 Good, thank you. Okay, here's a question. I'm going to direct it to Marty, but I'd
18 also like to get an industry perspective on this one. The question: Would it have
19 been helpful to have some non-industry stakeholder represented on this panel?
20 What is being done does not only include non-industry perspectives in decision
21 making and to act on those perspectives in a substantial way.

22 MARTIN VIRGILIO: Well, I would just go to Fukushima as the first
23 example. And in developing the orders and the 50.54(f) letters that we issued
24 this week, we had over 20 meetings with industry that were open to the public.
25 And we did receive a lot of stakeholder input, and that was valued and utilized as

1 we formulated those products that we issued. I don't know about this panel.

2 That's your call.

3 [laughter]

4 ERIC LEEDS: And that's why I asked for your perspectives. Tony
5 or Dennis?

6 TONY PIETRANGELO: No, I agree with Marty.

7 MALE SPEAKER: It's your call.

8 ERIC LEEDS: That it's my call.

9 [laughter]

10 TONY PIETRANGELO: It's your call. No, in terms of the
11 Fukushima activities, there was a balance that needed to be struck between
12 speed and stakeholder participation. And I think you all have managed that
13 masterfully this year. There was excellent interaction communications at every
14 level, and that's why I think we're at the point we're at now where we can
15 hopefully move forward with implementation, guidance development. And, you
16 know, that's the next stage, guidance development, very, very important, identify
17 the problem and what the success criteria are so that we're all on the same page.
18 And we, you know, and Chip Pardee likes to talk about this a lot, the checks and
19 balances we have as an industry with our regulator, with other stakeholders. It's
20 kind of what sets us apart sometimes from other countries -- the participation we
21 get from government organizations, the general public, industry, the NRC,
22 Congressional oversight. There's checks and balances in place to help us
23 assure and provide confidence that what we're doing is the right things to do and
24 that we're held accountable to it. And so, I mean, maybe that's the biggest
25 difference we see, maybe with some of the way other countries are regulated

1 and how they interact in this process. We've got lots of checks and balances.
2 We participate fully. The NGOs do. It wouldn't bother me if you had an NGO
3 person on the panel at all, Eric, but that's your decision.

4 [laughter]

5 ERIC LEEDS: Thank you, Tony. Dennis, did you want to add
6 something?

7 DENNIS KOEHL: It's your decision. I can't add anything, Eric.

8 ERIC LEEDS: I would like to add one thing to amplify what Tony
9 and Marty said, and I agree with both of them. The agency does outreach to the
10 non-governmental organizations. If you come to any of our Commission
11 meetings, typically we have a representative from a non-governmental
12 organization at the table with the Commission. I think you'll see during this
13 Regulatory Information Conference if you go to a number of the technical
14 sessions, you will see representatives from the NGOs on the panels providing
15 their perspectives. We value their perspectives. I agree with what Tony said
16 very, very strongly. I think it's one of the things that makes us stronger as a
17 regulatory body, as -- it's part of our culture here in the United States. I think it's
18 just the right thing to do. And I will consider an NGO participant for next year's
19 panel. Thank you.

20 MALE SPEAKER: Sounds like a commitment.

21 ERIC LEEDS: That was a good -- yeah, it sounded like a
22 commitment, yes.

23 MALE SPEAKER: Who took that action down?

24 ERIC LEEDS: All right, moving along. Assuming that nuclear
25 power will be here for another hundred years, what's being done to improve

1 fundamental safety? Specifically what -- why isn't there work being done towards
2 a non-Zircaloy cladding to avoid hydrogen generation? And I'm going to ask the
3 industry to address that first.

4 TONY PIETRANGELO: I think we were asked once to provide
5 priorities for future research, and that was first on our list. That should be
6 something that's looked at. It's obviously an issue, hydrogen generation, that if
7 we had cladding that didn't result in that, that would be a significant step forward,
8 so doing the R&D. DOE has that charter. EPRI is also looking at that, so that's
9 where it belongs and it should be looked at.

10 ERIC LEEDS: My understanding is it is, but let me -- Dennis, did
11 you want to say something?

12 DENNIS KOEHL: My item is I think it's -- we should be channeling
13 that all through EPRI to look at what we're investing our dollars in and if it's going
14 to return on safety, by all means, we should be investing those dollars into that
15 R&D. You know, because, again, the hydrogen generation at Fukushima just
16 complicated the event and made an additional hazard that, if we can eliminate it,
17 you know, it would be improving safety.

18 ERIC LEEDS: Great. Marty, if you don't mind, I'm going to jump in.
19 You know, we know that there is work being done and research work being done
20 to examine other claddings, claddings that would not generate hydrogen. That's
21 ongoing right now. Also, I think it's fair for me to let everyone know that there is a
22 rulemaking in progress where we're looking to review 10 CFR 46(c) to allow
23 other cladding types to be used by the industry, such that they won't have to do it
24 by an exemption. And one of our specific goals is to allow for cladding types that
25 do not -- would not create hydrogen under the wrong conditions, so, thank you.

1 Anyone else?

2 All right, back to Fukushima. The FLEX model assumes only one
3 plant will need help. What about a large-scale issue that affects several plants at
4 the same time?

5 TONY PIETRANGELO: That's a misconception. FLEX is
6 designed, it's a multiunit approach where they got one, two, or three units at your
7 site or more. It has to be able to support the key safety functions at each unit
8 affected by the event.

9 DENNIS KOEHL: And as far as the regional response centers, we
10 are looking at that from the standpoint of how much equipment do we need to put
11 in there. And, like I said earlier, having done a survey across the industry, there
12 is a lot of equipment that's readily available. There's also a lot of equipment
13 because we've had a lot of dialogue with different vendors that there's equipment
14 that's available from the vendors in warehouses presently in the U.S.

15 MARTIN VIRGILIO: And the only thing I'll add is that's not just an
16 industry commitment, but that's a feature of the order that we issued on Monday.

17 ERIC LEEDS: Okay, thank you. All right. The question reads,
18 "You" -- and I assume it means the NRC -- "mentioned that some resources for
19 discretionary areas may be affected as a result of budget pressures. How likely
20 is it that license renewal applications presently being reviewed will be adversely
21 impacted and timelines extended?"

22 MARTIN VIRGILIO: I think that if we look out to 2014, as we start
23 to get responses to the seismic and flooding analysis, as we start to see the
24 implementation of the mitigative measures, our workload is going to increase and
25 we're going to be drawing on certain specific skill sets. We've already seen this

1 having its impacts, and it's the skill sets, I think, that's more challenging than
2 actual the resources, and our ability to move people in to take on certain work.
3 So, that said, I do believe that we're likely to see some schedule slips. We're
4 already looking at, because of the resources that are dealing with the seismic
5 and flood, are coming primarily from our new reactor organizations, that it could
6 have an impact on some of the COL schedules. What we're trying not to impact
7 are any of the ones that we think are the highest priority or the ones that are
8 going to be the lead or first of a kind for a given design application. We're also
9 anticipating that some of the other licensing actions, topical reviews may be a
10 topical review that's not tied to a certain specific plant or specific licensing action
11 is another area where we may, in fact, look for reductions, but, again, it has to be
12 that right skill set. It's not just slowing down work. It has to be work that where
13 we can take those skills and put them on the Fukushima issues.

14 ERIC LEEDS: Thank you.

15 DENNIS KOEHL: The only follow-on that I'd have is from the
16 industry is as we develop the guidance documents for the response to the orders
17 and the 50.54(f) letters, I think it's going to be important that that guidance be,
18 you know, specific such that we can deliver that guidance in, you know, a
19 template format similar to how we went about NFP 805, such that it will, you
20 know, facilitate the review by the regulator in the most cost effective and efficient
21 time.

22 ERIC LEEDS: Okay, thank you, Dennis. Okay, this is a question
23 more for the regulator, but I'd be interested in the industry's perspective also.
24 Can you elaborate on non-NFP 805 sites? There's an approximately 50/50 split
25 between plants that are transitioning to NFP 805 and those that are not.

1 Yesterday, Bill Borchardt discussed delay in non-NFP 805 issues. How will this
2 affect going forward with multiple spurious operations enforcement discretion?

3 MARTIN VIRGILIO: You want to take that one?

4 ERIC LEEDS: No.

5 [laughter]

6 ERIC LEEDS: I can certainly take it. I see this as there's two parts
7 of this question. A 50/50 split between NFP 805 plants and non-NFP 805 plants,
8 and I think that's pretty natural. There are a number of plants where I don't
9 believe that NFP 805 would buy them much improvement in the risk of that plant.
10 The plants are already designed. They've already made a lot of modifications.
11 They've made a lot of changes. And they can live very well within the current
12 regulatory regime. With regard to plants that are transitioning, I think that, you
13 know, while we have about half of the plants have committed, I think that there's
14 still a lot of licensees that are on the fence and that they are going to watch how
15 the process works going forward with the plants that have already come in for --
16 to transition to NFP 805, see how well the process works for them.

17 I think a number of licensees -- and I've been told flat out by a
18 number of licensees that are transitioning that the transition is improving the plant
19 risk. It's improving the core damage frequencies for that plant. It's making the
20 plant safer. And the licensees are doing -- making the transition. They're
21 committing the effort and the resources to making that transition because they
22 want to make the plant safer, which is doing it for the right reasons. And I think a
23 number of other plants, they still have to go through that process to see what the
24 transition would mean to them. And I think that we'll see, depending on how well
25 we go through this initial phase, how we go forward and how much of the

1 industry goes that way.

2 With regard to the multiple spurious operations enforcement
3 discretion, that's one of the areas that certainly is being impacted by our work on
4 Fukushima and our expertise, the critical skill sets that Marty just talked about.
5 And it's unfortunate, but, you know, when you're transitioning 30 to 50 technical
6 experts to work on Fukushima lessons learned, something will not get done or
7 will be delayed. And unfortunately, that's one of the things being delayed. If
8 industry would like to add any perspectives?

9 DENNIS KOEHL: Well, I would agree with what you said, having
10 one unit that we're actually transitioning to 805 and another one that we're
11 bringing into compliance, that we were in compliance with Appendix R and we're
12 making the modifications needed for the multiple short operations. So I do think
13 that having the guidance out earlier kind of helped. I realize that there's people
14 that are going to be challenged in the reviews of looking at these items as we
15 complete them or make the modifications.

16 ERIC LEEDS: Thank you, Dennis. Tony, anything?

17 TONY PIETRANGELO: No.

18 ERIC LEEDS: Thank you. All right. I believe this next question is
19 squarely in the NRC's lap. Marty, I'll direct this one to you, but I'll be happy to
20 add if you'd like, okay.

21 [laughter]

22 ERIC LEEDS: How has NRC's staff morale been affected by the
23 media's airing of the Commission's disagreements? Has the related IG report
24 regarding your chairman's management style caused any change at the NRC?

25 MARTIN VIRGILIO: It has had an impact on the staff. I will relay a

1 personal note that when we were involved in the hearings in mid-December, they
2 were being broadcast back into the building. And we have television sets on
3 each floor, if you've been into our offices, and they were just jammed with
4 people. Their jaws were dropped. There was just a look of shock on their face.
5 And I think to the senior management team's credit, we had shielded the staff
6 from some of the disagreements and issues that were aired back in December,
7 and so, I think it came as somewhat of a surprise to them. That being said, I
8 think that morale up to that point, and I'll go to some of the various surveys that
9 we are subjected to, is very high. As you might have known, that we're rated
10 number one best place to work in the federal government year after year, and
11 this year we were number two. That does in fact reflect on the morale of the
12 staff. We have our IG Culture and Climate Survey, which is another indicator
13 that tells us staff morale is very high. But you can't -- you can't dismiss or
14 discount the impacts that December had on the staff. I've traveled out to the
15 regions. I've pulsed them on some of these issues.

16 And I find that this has more of an impact on headquarters folks. I
17 think living here in the Washington metropolitan area, being closer to the
18 Congressional hearings had maybe a little bit more of an impact. We're
19 continuing to work with the staff. We have a number of programs that support
20 our open collaborative work environment. So, there's opportunities for the staff
21 to bring forward issues on any given day to any of their management team. And,
22 by and large, I think that at this point it's not affecting the morale, and that leads
23 to engagement of our employees. If there's morale issues, employees'
24 engagement decreases, and we're not seeing evidence of that.

25 ERIC LEEDS: Yeah, and, Marty, if I can add, I agree with

1 everything that you said. The staff, I think the staff is extremely resilient. They
2 are completely committed to the NRC's mission of protecting public health and
3 safety. They believe in it. They live it every day. I think that we see it in the
4 Fukushima actions and the way the staff is handling those. And I think that
5 today's meeting, this conference, the Regulatory Information Conference, this
6 wasn't done by me or Marty. This was done by the staff. And I think their
7 dedication to the mission and the NRC is reflected in the quality of the
8 conference. It's what they do every day. There has been no change. Dennis or
9 Tony?

10 DENNIS KOEHL: I'd agree with your comments.

11 TONY PIETRANGELO: I'll add one thing, that -- and it builds on
12 what Commissioner Ostendorff was saying earlier about communication building
13 public confidence and trust. We as an industry, whether we like it or not,
14 credibility in our industry is directly tied to the credibility in the agency, and when
15 there's things that undermine that credibility, we all suffer for it. So, while it
16 wasn't as bad as watching the Fukushima event transpire, it was pretty bad.

17 ERIC LEEDS: Ouch. Thank you, Tony.

18 MARTIN VIRGILIO: As a final note, Eric, I would have to say that
19 it's a lot of where we are today in terms of the staff engagement. The credit goes
20 to the management team, the folks that are sitting in some of these front row,
21 Eric, and others, that served as the interface and, at many times, the buffer
22 between some of the issues that we were dealing with and the staff. So, thanks
23 to the management team.

24 ERIC LEEDS: Thank you, Marty. You can't say we don't read the
25 hard questions up here.

1 [laughter]

2 ERIC LEEDS: Next question. What implementation challenges do
3 you see for the security plants for new reactors versus those for existing
4 operating plants that were already constructed and operating plants when the
5 Part 73 security rule was promulgated? Changes in security requirements from
6 new plants -- from old plants to new plants. Tony?

7 TONY PIETRANGELO: I don't see we see any insurmountable
8 challenges in that at all. I think the -- I think there's got to be a timeframe for
9 when you go from a kind of construction security posture to a, when fuel arrives
10 on site, a normal operating plant security posture. And I think that that will be
11 discussed in the guidance and when the rules apply and how that transition is
12 made. But we've had a lot of dialogue, I think, in the course of getting the COL
13 work done in that regard. But, at this point, we don't see any insurmountable
14 challenges to that.

15 MARTIN VIRGILIO: Not so much of a challenge, Eric, but maybe a
16 difference. We're looking at, as a matter of policy, what the security
17 requirements ought to be for the small modular reactors. I think that's not
18 necessarily a challenge, but it's a policy issue that we're looking at.

19 ERIC LEEDS: Sure, good. Thank you. All right, the next question.
20 The primary regulatory focus of NRC around licensees and applicants, are the
21 panelists satisfied that there is sufficient regulatory controls on vendors? For
22 example, should NRC be able to take direct action against vendors? Marty, I'll
23 look to you first.

24 MARTIN VIRGILIO: Yeah, there -- I think we do have the authority
25 to pursue vendors under our enforcement program if, in fact, there are problems

1 there. I would say that recent events have, and I know, Eric, you've mentioned
2 this in public meetings, that we've had a number of issues come up recently with
3 respect to vendors supporting the operating reactors. I think a recent issue
4 involving fuel performance is an example of where we're disappointed I think with
5 respect to the quality of the work that was done. With regard to the new reactor
6 licensees, I know that vendors have been a challenge. I know I've talked to the
7 applicants and the COL holder on the margins of this meeting and my visits out
8 to the sites and also in my discussions with the licensee. It has been a challenge
9 that they recognize and that they're working. Now, some of these vendors now
10 in this global market, some of the vendors are in fact overseas, so that presents
11 a challenge to us, but we continue to conduct our inspection activities. We send
12 our teams wherever the safety-related structures, systems, and components are
13 being constructed.

14 DENNIS KOEHL: And I do feel that there's responsibility on the
15 industry from the standpoint of we are utilizing those vendors; we are responsible
16 for the quality of the products that they deliver to us. We do have quality
17 organizations that audit them, and we've got to leverage those items to ensure
18 that we are getting the appropriate quality in the documents that come in whether
19 it's in the form of engineering calculations or it's a deliverable of a product and
20 the quality of that product.

21 ERIC LEEDS: Okay, thank you. The next question, and Tony, I'm
22 going to ask you to go after this one first. Is there any merit in having an
23 underground bunker system at each site with critical safety equipment and
24 backup equipment in the event of an accident?

25 TONY PIETRANGELO: Yeah, we've got layer upon layer of

1 hardened systems at each site existing, and trying to pretend that we know
2 exactly what the event is going to be and the design criteria for the underground
3 bunker thing, because I think, to refer back to Commissioner Apostolakis' talk,
4 the unknown unknowns. You don't know what the nature of the event is going to
5 be. You plan for, you know, we got our design basis, which are highly stylized
6 and very proscriptive means of addressing the design basis accidents. When
7 you go beyond design basis, there's a lot more uncertainty associated with that.
8 I think that's why as an industry we think the FLEX approach is the best way to
9 go about this because given all those unknown unknowns, we want the flexibility
10 to deploy where we can in preidentified areas, and it was the same approach we
11 took after 9/11 with respect to aircraft impact. You could try to pretend that you
12 knew exactly the angle that the aircraft was going to hit at and what the damage
13 footprint would be, or you could just take out quadrants of the plant and plan
14 accordingly. So this is much the same philosophy. And, you know, you have to
15 pick a design criteria if you're going to do underground or whatever. And I guess
16 I could always postulate something worse no matter what criteria you take. And
17 with FLEX, we say we don't know all of the unknown unknowns, obviously, and
18 we want to have the flexibility to be able to respond appropriately for those key
19 safety functions we talked about no matter what the event is.

20 DENNIS KOEHL: I just want to add one point, and that's the
21 diversity too of the FLEX. You can have multiple pieces of this equipment in
22 diverse locations so that the probability of the survival of different pieces of it, it
23 increases it considerably.

24 ERIC LEEDS: Thank you, thank you. All right, I think this is a
25 question both for the NRC and the industry. What lessons did we learn from the

1 Fukushima event that will impact personnel training, specifically operator training,
2 and what areas will we focus on?

3 DENNIS KOEHL: Well, from the pure fundamentals, operator
4 fundamentals, one of the items that I learned very quickly is it's a lot different
5 doing it in the dark than it is when you have multiple lights and everything else.
6 So, there was a lot of lessons learned from the standpoint of operators physically
7 carrying out procedures and doing items in total darkness and the ability to have
8 that backup type of equipment whether that's battle lanterns, flashlights, those
9 type items in making sure that you've got a good supply of that available for your
10 operation. People know their way through the plant. They've been there, but
11 when it's totally black, it's a totally different environment. So, I think that's a key
12 item that we've got to teach and drill on. You know, a lot of times we simulate it,
13 but we've got to get our operators, in my mind, used to that potential aspect.
14 Again, other types of redundancies and equipment, it's getting them to
15 understand what's totally available, what's there, what's the means, you know,
16 and is there, you know, additional equipment. Definitely with the FLEX
17 equipment we're putting in, it's getting them to understand how to get that
18 deployed such that they're able to do their job and there's, you know, we'd
19 leverage the resources that are on the site to deploy that equipment form so that
20 those instruments and that cooling water stays available to them to operate.

21 ERIC LEEDS: Thank you. Any other comments?

22 MARTIN VIRGILIO: I would say that as part of the 50.54(f) letters
23 that we issued on Monday, we're asking licensees to go back and look at the
24 current conditions of the plant, ensure they have the right numbers and skills
25 necessary in order to implement the emergency procedures, including the

1 implementation of the mitigation strategies that we've been referring to as FLEX
2 here. Another one of our high priority, tier-one items is to go back and look at the
3 severe accident management guidelines. I think that's probably going to have an
4 impact as well as we re-baseline those severe accident management guidelines
5 to the lessons learned from Fukushima and make sure that we have the
6 appropriate actions being taken by the operators, we've got the right number of
7 operators with the right skill sets to implement those actions.

8 ERIC LEEDS: Okay, thank you. All right, a different type of
9 question. What is the NRC and the industry doing to recruit and encourage the
10 next generation into the nuclear industry? Dennis?

11 DENNIS KOEHL: I'll take that. Recruiting takes on a little bit
12 different aspect. We're doing a lot of looking in our own backyard. What are our
13 local community colleges and areas to offer the opportunity, especially with the
14 fact that both of our stations now have license extension for an additional 20
15 years, it's to bring them in, but it's also to look at, you know, some of the ways
16 we've done business, you know, to offer more in the area of, you know, flexible
17 hours, leverage the technology. You know, I don't know about everybody here in
18 this audience, but if I have a problem with my phone or my iPad, I call somebody
19 that's a lot younger than me, and they can usually figure it out, fix it in the blink of
20 an eye. So, it's to leverage some of that technology and making it available to
21 them and letting them grow to help us look at what can they do to help improve
22 our processes and stuff at the station so they feel that they are contributing,
23 especially if it's an older station. Some of the equipment's going to stay, and it's
24 going to be older vintage. It's not going to be the new technology, but there's a
25 lot there that can be engaged by the younger workforce. And, again, we're

1 looking for ties to the area to ensure that we can continue to have a feed for our
2 workforce.

3 TONY PIETRANGELO: I think industry-wide, there's probably 40
4 partnerships with community colleges, and we've started a uniform curriculum
5 program, such that you can get an Associate's Degree in a particular discipline
6 and be ready to work once you get to a site. There's obviously internships that
7 each company has as well, so we've gone a long way. At NEI, our strategy is we
8 typically don't hire people right out of school, so we, to some degree, rely on the
9 NRC to hire the person, train them, and then lure them away from the agency.

10 [laughter]

11 TONY PIETRANGELO: And we've been successful [unintelligible].

12 [laughter]

13 ERIC LEEDS: We may replace NEI with an NGO next year.

14 [laughter]

15 ERIC LEEDS: No, thank you, Tony. Marty, did you want to answer
16

17 MARTIN VIRGILIO: From the government's perspective, both NRC
18 and the Department of Energy have been involved in educational grants. And
19 that not only provides support for individual students but also the faculty for their
20 experimental work. Looking at another dimension to the issue, NRC, we've got --
21 we have a University Champions Program where we're out working with the
22 schools, working with the educators about their programs, making sure their
23 programs are relevant to the issues that we're dealing with today. And then
24 we're also hiring approximately 25 percent of our incoming hires are entry level,
25 and we are bringing them through our own developmental programs, strategically

1 placing them around the agency and shielding them from Tony and industry and
2 their attempts to hire them away from us.

3 TONY PIETRANGELO: It works both ways, too, as you know,
4 right.

5 [laughter]

6 DENNIS KOEHL: I was thinking that's 75 percent comes from the
7 agency.

8 MARTIN VIRGILIO: I wasn't going to say that, but --

9 [laughter]

10 ERIC LEEDS: It's a great place to work, Dennis. Right, next
11 question. Thank you all. Thank you all. Great answers.

12 The NRC dose assessment that formed the basis for the 50 mile
13 evacuation zone in Japan was extremely over conservative. What actions has
14 the NRC taken to control "what if" types of analysis and how do you handle that
15 here in this country?

16 MARTIN VIRGILIO: We were running multiple analyses every day
17 looking at various options. I mean we had three reactors in distress and four
18 spend fuel pools. And that's the -- that was the worst case scenario that we were
19 modeling. But we were looking at all different combinations. Plus the fact you
20 have to recognize that with a tsunami, they had lost their entire infrastructure,
21 their ability evacuate, their ability to communicate. There were many factors that
22 went into our recommendation to the ambassador in Japan, with respect to the
23 50 mile evacuation.

24 So it wasn't just the dose calculation alone. I would submit that in
25 hindsight, if you look at the maps that have been developed by Japan and DOE

1 and others, and you look at the deposition on the ground, we were not that far
2 off.

3 ERIC LEEDS: Thank you. Anything on that? All right. Let me go
4 to the next one. The Commission added several items to the list of issues to be
5 addressed that the near term task force did not identify: one was the loading of
6 spent -- nuclear fuel in pools. The question what is the NRC doing, or planning
7 to do, in this area. And I'm going to come back to industry also to see if you have
8 anything that you want to say about that.

9 MARTIN VIRGILIO: Could you read the front end of that question
10 again? I think there may be a misunderstanding.

11 ERIC LEEDS: There is. The Commission added several items to
12 the list of issues to be addressed that the near term task force did not identify:
13 one of these was loading of spent nuclear fuel in pools. And the question is what
14 is NRC doing, or planning to do, in this area. If you'd like to correct the --

15 MARTIN VIRGILIO: Well, I don't believe the Commission added
16 that issue. I think that was an issue that the near term task force, themselves,
17 identified that we ought to study. And it is something that, again, we have the
18 three-tier prioritization system, looking at whether we're doing the right thing with
19 respect to spent fuel storage: wet versus dry is a Tier 3 item, but everything that
20 we know today tells us, even in light of what we've learned from Fukushima, tells
21 us that the paradigm that we're operating under today is the right one from a
22 safety perspective.

23 That said, Brian may have mentioned in some of the sessions that
24 we have that we've got ongoing studies looking at spent fuel, and looking at the
25 risk associated with spent fuel storage in a wet environment. And we'll use those

1 studies to validate what I've just said: our current understanding of what's the
2 appropriate approach.

3 DENNIS KOEHL: Well, from the industry aspect I think we
4 determined that it was safe either in the pool or in a dry cask. From the
5 standpoint of going forward I think we've got to look at, you know, where and
6 what the Blue Ribbon Commission is going to look at for permanent storage, or
7 interim storage, and that'll then, you know, make the business cases for the
8 different sites of how they'll move fuel from the pool and the dry cask and then
9 potentially off to either permanent repository or interim storage.

10 ERIC LEEDS: Thank you, Dennis. Tony, did you want to -- no,
11 okay. All right. Let's shift off of Fukushima a little bit, but certainly related.
12 Yesterday we heard about knowledge management. How are you capturing
13 knowledge and experiences such that the next generation can benefit from the
14 current workforce and brain trust? Any tools or techniques that you'd suggest?

15 DENNIS KOEHL: Yeah, from the standpoint of my company, we
16 do have a knowledge transfer. We identify where critical resources are, or critical
17 knowledge factors are, and then have established a process and a program to
18 where it may be that we have to identify early on and bring in resource, start
19 them early or start one -- bring a new person in so that we can move someone
20 up to actually partner with this individual to actually get that transfer of the
21 knowledge of either he or she brings to the team. I do know from the standpoint
22 of our INPO evaluations, and those types of items that go on; they do look at how
23 we do plan for succession so that we have sustainability of the workforce as we
24 move forward.

25 I think it's challenging to all of us because, you know, the industry is

1 getting smaller and we're in competition for the similar resources. So I think it is
2 imperative that we do build in structure such that we do get that knowledge
3 transfer. Definitely in the area of documentation, and making sure that the
4 documentation is very clear and concise, and where engineering judgments are
5 applied, that they're explained because it is a different, you know -- in the area of
6 technical specifications is one area we find we're slowly losing the knowledge
7 that was there when these plants were originally first built, and having a good
8 understanding of that and making sure your documentation is clear. It is
9 definitely helpful with that knowledge transfer.

10 ERIC LEEDS: Thank you. Marty?

11 MARTIN VIRGILIO: Storing that information, that documentation in
12 a form that's easily found and easily retrieved has been a challenge for us, and
13 we've been working on that with a number of technology enabled solutions. The
14 other things I would say is it seems like you get back to the basics. And for us
15 mentoring has been a tremendous knowledge management, knowledge transfer
16 tool, especially with respect to people that are at the end of their career; it's an
17 energizing function, I think, we've seen to allow them to transfer their knowledge
18 to some of the newer employees.

19 And then looking at it from the newer employees perspective a
20 number of the new folks that we've hired we've sat them down and we've had
21 them -- challenged them to help us develop a program for new employees that
22 come in. What's the information that you need in order to be successful to do
23 your job. And they have taught us tremendous amount about what kind of
24 systems that we need to put in place for them, and for their peers.

25 ERIC LEEDS: Thank you.

1 TONY PIETRANGELO: One other element of this is, I think,
2 succession planning. I think every company has got succession planning in part
3 of an internal process; we have it an NEI. It's important to identify folks early on
4 who you want to get exposed to a number of different areas to broaden them,
5 and stretch them, and I know every company is doing it. Now the importance of
6 leadership, obviously, is to an organization is key. So getting, I think -- overlaps
7 between replacement people and people who might be leaving soon is a good
8 idea [laughs]. So, but I agree mentoring is probably the best way to do that.

9 ERIC LEEDS: Okay. I'll add one to all of yours just because
10 someone was looking for examples. The question here was looking for
11 examples. One of the things that the NRC does that I've seen work very well, and
12 it really takes off from the grass roots, is we've really encouraged the
13 establishment of communities of practice. And these communities of practice are
14 usually centered around technical disciplines. And you get a bunch of criticality
15 experts, gurus together in a room and they get energized from each other,
16 believe it or not. And we've set up share point sites and chat rooms and things.
17 And so you end up seeing that transfer of knowledge from the folks who have
18 been through it and have seen it, and the folks that are getting into that technical
19 discipline. And we've got -- almost every technical discipline has its own
20 community of practice and we found that has worked very well.

21 I think -- last question folks. One more for this panel. And this is
22 more directed to industry, but I'm sure -- there certainly is regulatory side to this.
23 Many plants still have original control systems at their sites. What is the status of
24 upgrading to more modern control systems?

25 DENNIS KOEHL: Well, from the standpoint of the older control

1 systems, it does become an issue of what you have for your spare parts and how
2 long can you manage through those spare parts. A lot of people have gone to
3 digital controls. I know we've transitioned portions of both of our sites to digital
4 controls. But, again, it's a business decision based on the obsolescence of the
5 equipment, the available spare parts that are out there.

6 It also becomes an issue based on who moves when. Because
7 somebody can move and then all of a sudden there's spare parts that now are
8 available because a whole system, you know, has been removed and it comes
9 in. So there's a little bit of a business decision around that as to when and where
10 you would have to install digital controls.

11 ERIC LEEDS: Thank you, Dennis. Tony?

12 TONY PIETRANGELO: Just a very, very important issue that we
13 continue to have to move forward on, and we probably can't do it fast enough --
14 moving forward, digital. I'm hoping the licensing of the new plants will facilitate
15 the back fitting of digital instrumentation in the existing plants as well as everyone
16 gets more familiar with the control systems.

17 ERIC LEEDS: Certainly. Thank you. Marty, any comments?

18 MARTIN VIRGILIO: Just as a measure of success in this area is
19 that we had a joint industry in NRC steering committee that we sunset last year,
20 because at that point in time we felt we had the guidance and the regulations in
21 place. Not to say we don't have challenges, as Tony points out, but I think that
22 there's been enough progress that we're ready to receive the applications,
23 approve them as they come in.

24 ERIC LEEDS: Okay, thank you. So to conclude this session, first
25 I'd like to thank you all for all of these questions. We've got a tremendous

1 number of questions. I'm sorry we didn't have time to get to all of them. But
2 please, everyone join me in a round of applause for our panelist. Thank you.

3 [applause]

4 We will reconvene after lunch. Thanks everyone.

5 [Whereupon, the panel concluded]