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UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

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ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

(ACRS)

+ + + + +

SUBCOMMITTEE ON FUKUSHIMA

+ + + + +

WEDNESDAY

JUNE 20, 2012

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ROCKVILLE, MARYLAND

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The Subcommittee met at the Nuclear
Regulatory Commission, Two White Flint North, Room
T2B3, 11545 Rockville Pike, at 8:30 a.m., Stephen P.
Schultz, Chairman, presiding.

COMMITTEE MEMBERS:

STEPHEN P. SCHULTZ, Chairman

J. SAM ARMIJO, Member

DENNIS C. BLEY, Member

CHARLES H. BROWN, JR. Member

MICHAEL T. RYAN, Member

WILLIAM J. SHACK, Member

JOHN D. SIEBER, Member

1 GORDON R. SKILLMAN, Member

2 JOHN W. STETKAR, Member

3

4 NRC STAFF PRESENT:

5 ANTONIO DIAS, Designated Federal Official

6 STEVEN ARNDT, NRR

7 STEVEN BLOOM, NRR

8 ERIC BOWMAN, NRR

9 ROBERT FRETZ, Japan Lessons Learned Directorate

10 TERRY JACKSON, NRO

11 STEVEN JONES, NRR

12 RAO KARIPINENI, NRR

13 ROBERT PASCARELLI, Japan Lessons Learned

14 Directorate

15 DAVID RAHN, NRR

16 LISA REGNER, NRR

17 DAVID SKEEN, Japan Lessons Learned Directorate

18

19 ALSO PRESENT:

20 STEVEN KRAFT, NEI

21

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P R O C E E D I N G S

8:29 a.m.

1
2
3 CHAIRMAN SCHULTZ: I'd like to call this
4 meeting to order. This is a meeting of the Advisory
5 Committee on Reactor Safeguards, Subcommittee on
6 Fukushima. I am Stephen Schultz, chairman of the
7 Subcommittee.

8 Members in attendance today are Jack
9 Sieber, Dick Skillman, Dennis Bley, Sam Armijo, John
10 Stetkar, Michael Ryan, Bill Shack and Charlie Brown.

11 The purpose of today's meeting is to
12 receive a briefing and hold discussions with NRC staff
13 on the Draft Interim Staff Guidance documents for
14 assisting nuclear power reactor applicants and
15 licensees with the identification of measures needed
16 to comply with requirements contained in the three
17 Tier 1 orders which were issued on March 12th.

18 Order EA-12-049 is mitigation strategies
19 for beyond-design basis external events. Order EA-12-
20 050 is reliable hardened vents for Mark 1 and Mark 2
21 containments. And Order EA-12-051 is spent fuel pool
22 instrumentation. The final versions of these ISGs are
23 expected to be released by August 31st, 2012.

24 This entire meeting is to be open to the
25 public. The rules for the conduct of and

1 participation in this meeting have been published in
2 the Federal Register as part of the notice for this
3 meeting.

4 The Subcommittee will gather information,
5 analyze relevant issues and facts and formulate
6 proposed positions and actions as appropriate for
7 deliberation by the full committee. The full
8 committee briefing on this same topic is scheduled for
9 July.

10 Antonio Dias is the Designated Federal
11 Official for this meeting. A transcript of the
12 meeting is being kept and will be made available as
13 stated in the Federal Register notice.

14 It is requested that speakers at this
15 meeting first identify themselves and speak with
16 sufficient clarity and volume so that they can be
17 readily heard.

18 We have received no written comments or
19 requests for time to make oral statements from members
20 of the public regarding today's meeting. However, I
21 understand that there may be participants on the bridge
22 line who are listening in on today's meeting and we
23 have an agenda that will allow ample comments by
24 members of the public from the bridge line or from the
25 audience here today.

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1 We will now proceed with the meeting and
2 I'll call upon David Skeen from the Japan Lessons
3 Learned Directorate to open these presentations.

4 **MR. SKEEN**: Well, thank you, Dr. Schultz.
5 And thanks to all the Subcommittee members for being
6 with us today.

7 For those of you who may not know who I
8 am, my name is Dave Skeen. I'm the director of the
9 Japan Lessons Learned Project Directorate. And on
10 behalf of Mike Johnson and the entire Long-Term
11 Lessons Learned Steering Committee, I'm pleased to be
12 here with you today to brief you on the Draft Interim
13 Staff Guidance that we are developing to support the
14 implementation of the three orders that were issued to
15 the reactor licensees on March 12th of this year.

16 Two of the orders require all power
17 reactor licensees to implement mitigation strategies
18 to cope with beyond-design basis events, and to
19 install enhanced spent fuel pool instrumentation. And
20 the third order requires licensees with BWR plants
21 that have a Mark 1 or Mark 2 containment design to
22 have a reliable containment venting system.

23 We look forward to providing information
24 to you today on the implementation of these orders,
25 and to your thoughtful questions and comments as the

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1 staff makes presentations on each one of them.

2 I will provide a brief reminder of how we
3 got to where we are today, and then touch on the
4 schedule for completing the Guidance documents before
5 I turn it over to the rest of the meeting to the staff
6 to discuss the Guidance for each of the orders in more
7 detail.

8 Well, it's been a very busy year since the
9 accident happened at Fukushima Daiichi and the staff
10 has been engaged with stakeholders as we have
11 developed the recommendations to enhance the safety of
12 U.S. nuclear power plants.

13 We've held over 50 public meetings as we
14 developed the orders and request for information and
15 the subsequent implementation guidance for these
16 regulatory actions.

17 We have also worked closely with Ed
18 Hackett and the ACRS staff to engage the ACRS
19 Subcommittee and the full committee on several
20 occasions since the accident occurred in March of last
21 year.

22 I believe there were four meetings on
23 Fukushima-related issues in 2011 and this is the fifth
24 opportunity to meet with the ACRS since January of
25 this year.

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1 And I believe we have benefitted greatly
2 from our discussions with the ACRS as we prepared the
3 Guidance for the seismic and flooding walkdowns that
4 was just recently issued and as we are currently
5 developing the program plans for the Tier 3 items that
6 we're working on.

7 I am sure we'll be meeting with the
8 Subcommittee and the full committee several more times
9 this year, and I certainly appreciate your willingness
10 over the last year to accommodate us by getting us on
11 your agenda sometimes on rather short notice, but
12 hopefully things will be a little less hectic as we
13 move forward on the Fukushima Lessons Learned this
14 year and we can schedule meetings with you at a more
15 normal pace.

16 So, just let me give you a brief history
17 of how we got to where we are today. As you may
18 recall, two weeks after the accident at Fukushima the
19 Commission directed the staff to form a Near-Term Task
20 Force to review what was known about the accident at
21 the time and determine if any safety enhancements were
22 needed at U.S. nuclear power plants.

23 The Task Force issued a report within 90
24 days and determined that although there was no
25 imminent risk from continued operation or licensing

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1 activities, there were areas where safety could be
2 enhanced.

3 After receiving the report, the Commission
4 directed the staff to form a steering committee to
5 further refine and then implement the Near-Term Task
6 Force recommendations. And also to form the Japan
7 Lessons Learned Project Directorate to work for the
8 Steering Committee and to help implement the
9 recommendations.

10 We prioritized the NTTF recommendations
11 and got the Commission approval for our plans to
12 implement the recommendations. I think it was
13 December of last year that we finally got the
14 Commission's approval to go forward with our plans for
15 the orders.

16 And we actually got the orders issued by
17 March 12th, which in NRC land is breakneck speed to
18 get things done that quickly. So, a lot of work went
19 into that to get that done.

20 So, just let me touch on the schedule here
21 briefly and then - this holds for all three of the
22 orders, the schedules that we're talking about that
23 you see on this slide. And then I'll turn it over to
24 Steve and Eric to talk first about the first order,
25 and then subsequent staff will be up here to brief you

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1 on the other orders as well.

2 So, at the beginning, the NRC-issued
3 Guidance, we plan to have that out by August 31st of
4 this year. We've had a lot of meetings with
5 stakeholders along the way and those are underway and
6 going pretty well. And we certainly look forward to
7 your comments to help us as we put the finishing
8 touches on those over the next few months.

9 Once the Implementation Guidance is
10 issued, the licensees owe us an update on October 31st
11 of 2012. And the way we structured that with the
12 Steering Committee was that we want six-month updates,
13 periodic updates on progress that the licensees are
14 making so that we are sure that, you know, things
15 aren't falling through the cracks or not getting done.

16 So, the first one after we get the
17 Implementation Guidance out, we will ask the licensees
18 to give us their first progress report, if you will,
19 by October 31st of this year.

20 Then after the Guidance is out, they have
21 until February 28th of 2013 to submit their plans for
22 how they're going to implement the orders, the orders
23 that are applied to each one of them. And that's for
24 the operating reactors that we have today.

25 If you're a combined license holder, you

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1 have until August 31st of 2013. You have a little bit
2 more time there. And if you're a construction permit
3 holder, also it goes out to August 31st of 2013.

4 MEMBER ARMIJO: Dave, just a quick
5 question.

6 MR. SKEEN: Yes.

7 MEMBER ARMIJO: They have basically two
8 months between the issuance of the Guidance and the
9 first update.

10 MR. SKEEN: Yes.

11 MEMBER ARMIJO: What kind of information do
12 you expect in that initial update?

13 MR. SKEEN: Yeah, it's -- well, it's not
14 just the - it's overall progress that's going on at
15 the plant whether it could be, for instance, for the
16 FLEX approach for the mitigation strategies, we
17 understand that they've already procured some
18 equipment and that kind of thing. So, their first
19 report would tell us how much equipment have you got,
20 where are you so far, right.

21 MEMBER ARMIJO: Okay.

22 MR. SKENN: So, it's just as a first blush,
23 here's what we know in three months after you've got
24 the Guidance out there, right?

25 So, really it's just a first check-in to

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1 say here's where we are. It's kind of a baseline for
2 what each licensee is doing at that time.

3 MEMBER SIEBER: The letter that transmitted
4 the order was dated March 12th, and the first response
5 was dated 90 days. So, you should already have the
6 first response, correct?

7 MR. SKEEN: That's right.

8 MR. BLOOM: There was no 90-day -

9 MEMBER SIEBER: And what was the degree of
10 compliance across the Board? Without naming
11 licensees, did you get back what you expected to get
12 back from licensees?

13 MR. BLOOM: Sir, there was no 90-day
14 response for the orders. It was a 30-day response of
15 whether they were going to comply or whether they were
16 going to request a hearing. And everyone complied and
17 said, yes, we agree, we're going to do it, and no one
18 requested a hearing -

19 MR. SKEEN: Yeah, I thought -

20 MR. BLOOM: -- for at least the mitigating
21 strategy ones. I don't believe we got any hearing
22 request for any of the other orders either.

23 MEMBER SIEBER: Okay. I thought it said 90
24 days.

25 MR. SKEEN: I think the 90-day you're

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1 talking about, Dr. Sieber, is for the 50.54(f)
2 letters, the requests for information.

3 MEMBER SIEBER: 50.54.

4 MR. SKEEN: Yeah, that was on the seismic
5 and flooding and - so I think that's what you're
6 referring to in the 90 days, but Steve's right.

7 MEMBER SIEBER: Yeah, that's the first one
8 that's -

9 MR. SKEEN: Right.

10 MEMBER SIEBER: You're supposed to discuss,
11 okay.

12 MR. SKEEN: Right.

13 MEMBER BROWN: One other question.

14 MR. SKEEN: Yes.

15 MEMBER BROWN: Looking at the FLEX stuff,
16 you mentioned this first licensee update would be one
17 of the items that could tell everybody about the FLEX
18 situation.

19 I thought that was a joint industry-type
20 activity as opposed to an individual licensee
21 activity. So, I've not quite figured out how you're
22 going to get a hundred or 50 or 40 or 30 or whatever
23 the number licensees are and then that stuff is going
24 to be staged so that everybody had joint access to it
25 at -

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1 MR. SKEEN: Right.

2 MEMBER BROWN: So, I'm not quite sure who's
3 going to be reporting on that. That's my question.

4 MR. BOWMAN: In part, you're right. There
5 is a move on the part of industry to contract out for
6 provisions of the offsite resources, but there's also
7 the requirement within the mitigating strategies Order
8 EA-12-049 to acquire additional equipment and
9 reasonably protect it onsite.

10 That equipment is what we anticipate will
11 get the individual reports. And I would expect it to
12 be on a site-specific basis. So, we'll get about 65
13 different reports on what -

14 MEMBER BROWN: I remember that, okay.

15 MR. BOWMAN: -- the equipment is.

16 MEMBER BROWN: I remember seeing that that
17 there were some items for onsite which would be, I
18 guess, that's right. They were the licensee.

19 MR. SKEEN: Right, exactly. We've been
20 told there's a request for proposal out from industry
21 to anyone that would propose to set up the offsite
22 recourse depots, but we aren't privy to the
23 information on what's in there as of yet.

24 MEMBER BROWN: Wouldn't there be some
25 interest? I mean, if there's not a - again, my

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1 reading this and trying to understand it was you
2 didn't have to have everything on site. There was a
3 provision for certain response-type -

4 MR. SKEEN: That's right.

5 MEMBER BROWN: -- activities could be off
6 site.

7 MR. SKEEN: That's right.

8 MEMBER BROWN: And there would be not just
9 one location in the country, but multiple locations.

10 MR. SKEEN: That's right.

11 MEMBER BROWN: So, it seems to me that some
12 coordination between from their analyses and
13 evaluations, what's going to be on, what's going to be
14 off, et cetera.

15 MR. SKEEN: Right.

16 MR. BOWMAN: There will be. And I would
17 anticipate the first official docketed communication
18 we have on it would be in the integrated plans that
19 are submitted in February of 2013.

20 MEMBER BROWN: So, there's going to be a
21 second step, is what you're saying.

22 MR. BOWMAN: Yes.

23 MEMBER BROWN: Once the sites determine
24 what - or the licensees determine where they want to
25 draw the line, then they have to get general consensus

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1 from other licensees as to how they -

2 MR. SKEEN: That's right.

3 MEMBER BROWN: Okay, all right.

4 MR. SKEEN: And it's not a one size fits
5 all, right? Depending on your geographic location and
6 are you in a fleet and all these different - each
7 licensee has to give how am I addressing the
8 mitigation strategies, right? How am I doing that?

9 So, yes, there's probably some generic
10 piece to that, but there's also some very site-
11 specific.

12 So, going back to the plan, our first
13 update is October 31st. And then they have to come
14 every six months and tell us how are you doing, right?

15 So, I would envision the mitigation
16 strategies is going to be involving a piece that we're
17 going to get over time. So, that's how that would
18 work.

19 So, again, so they give us updates every
20 six months until they complete the orders, until they
21 complete implementation of the orders. And then the
22 completion dates for these, the latest completion date
23 is by December 31st of 2016 to implement all three of
24 the orders at your sites, right? That's for the
25 operating plants.

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1 If you're combined license, it's prior to
2 your initial fuel load. And if you're a construction
3 permit holder, it's prior to receipt of your operating
4 license.

5 So, we think we've captured enough. And
6 the reason for the updates, again, like I said, was to
7 make sure we're getting the information along that
8 things are progressing as we hoped. And if not, we
9 have the joint steering committees that can get
10 together and talk. Between our steering committee and
11 the industry steering committee we have public
12 discussions on that to say, you know, we're not making
13 as much progress as we like or we seem to be on
14 schedule and things are moving well.

15 So, that's the whole point of having those
16 discussions.

17 MEMBER SKILLMAN: David, may I ask -

18 MR. SKEEN: Yes.

19 MEMBER SKILLMAN: I'm Dick Skillman. I'd
20 like to ask this question please. I see operating
21 reactors, combined licenses, construction permit
22 holders. Should there be a column for design
23 certifications?

24 When you look at 10 CFR 52, you look at
25 the -

1 MR. SKEEN: Right.

2 MEMBER SKILLMAN: -- appendices -

3 MR. SKEEN: Right.

4 MEMBER SKILLMAN: -- had we known 40 years
5 ago, 30 years ago what a Mark I or Mark II containment
6 might need in terms of pressure relief -

7 MR. SKEEN: Right.

8 MEMBER SKILLMAN: -- either the NRC would
9 have changed the design criteria, or we would have had
10 some form of a regulatory guide or some form of
11 underlying guidance -

12 MR. SKEEN: Right, right.

13 MEMBER SKILLMAN: -- so we wouldn't be in
14 the pickle that we're in today.

15 But looking ahead, there are design
16 certifications out there that barely resemble current
17 technology or, in some cases, technology ten years
18 ago.

19 MR. SKEEN: Yeah, understand.

20 MEMBER SKILLMAN: What thought is being
21 given to forcing change on the design certifications
22 so we're not having this conversation six years from
23 now when someone comes in and says I want to be a
24 subsequent -

25 MR. SKEEN: Right.

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1 MEMBER SKILLMAN: -- applicant?

2 MR. SKEEN: Right. That's a good question
3 and we will take that back. That's something I don't
4 think we discussed that at the Steering Committee
5 level certainly about the design certification piece,
6 but we'll certainly bring that up and think about that
7 as we go forward.

8 So, I think you for that comment.

9 MEMBER SKILLMAN: Thank you.

10 MR. SKEEN: That's a good question.

11 MEMBER SKILLMAN: Thank you.

12 MR. SKEEN: Okay. Well, that's all I want
13 to do is just kind of tee up where we are today. And
14 then like I say, you're going to get presentations
15 from the staff in detail on each of the orders and how
16 to implement them.

17 And I have to apologize. I can't stay for
18 the whole meeting. I have a meeting with Chairman
19 Jaczko at ten o'clock, but I'll stay at least until
20 10:00 over here on the side and provide comments if
21 necessary, but we have capable staff here to talk to
22 you about the technical details on each of the orders.

23 And, again, if you have any questions if
24 we can't answer them today, we'll certainly take them
25 back for comment and feed them in as we go forward.

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1 So, with that I'll turn it over to Steve
2 Bloom and Eric Bowman. Thanks.

3 CHAIRMAN SCHULTZ: Thank you, David.

4 MR. SKEEN: Thank you.

5 MR. BLOOM: Good morning. My name is Steve
6 Bloom. I'm the project manager for as we have
7 discussed, the mitigation strategies order. As Dave
8 said it's myself, Steve Bloom, and with me is Eric
9 Bowman who is the technical lead for this issue.

10 I'm going to give us a - go through and
11 give a brief history or background of where we've -
12 how we've gotten to where we are, how the order was
13 issued.

14 And then we're going to go through and
15 Eric will discuss what is inside NEI 12-06, the
16 Guidance document that was submitted by industry that
17 is the basis for what industry will do and how they're
18 going to implement the order.

19 And then we will also be here to discuss
20 quickly the draft ISG that was issued at the end of
21 May to explain what we have approved, what we have
22 found acceptable and where we have given some
23 exemptions - or exceptions that we don't find valid in
24 their NEI Guidance.

25 With that, I'll start on Slide 3. To go

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1 back in history, the SRM that was issued originally
2 had directed the staff to come up with an order that
3 provided reasonable protection for the equipment that
4 was originally provided based on 10 CFR 50.54(hh)(2),
5 which was better known as the B.5.b order, from the
6 effects of any design basis external event.

7 And then to add equipment to make sure
8 that any unit that was a multi-unit site, that had
9 enough equipment to handle all of that also.

10 Following the standup of the JLD and the
11 beginning of the discussions with the Steering
12 Committee, the Steering Committee then changed the
13 direction a little bit and said, no, they didn't want
14 us just to provide protection for the (hh)(2)
15 equipment, they wanted us to look at all the three
16 safety functions of core cooling, containment and
17 spent fuel cooling. And they wanted us to figure out
18 how we can make sure the licensees maintain these
19 strategies - or develop strategies that would protect
20 those three functions against a beyond-design basis
21 event. So, that was a change in direction from what
22 the NTTF report had.

23 Following that, we issued Order EA-12-049
24 which required, as I said, the licensees develop this.
25 We decided it should be done in a three-phase

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1 approach.

2 The first phase being to use whatever
3 equipment was onsite that was able to withstand that
4 beyond-design basis external event and to try to
5 mitigate the event.

6 Then we went into what they call a
7 transition phase, which is where you take the onsite
8 equipment that's not hooked up permanently, install
9 it, you have people go out there, hook it up, the
10 mechanical connections, any kind of electrical
11 connections and hook that up also and start using
12 what's there.

13 And then there was the final phase where
14 licensees would have to have an offsite depot or
15 whatever they're calling it, I've heard different
16 names, and bring equipment on, bring on more
17 consumables, oil pump, hydraulics, different types of
18 pumps, different type of diesels and bring that on
19 site and continue to maintain the three key safety
20 functions indefinitely.

21 So, when we developed it, that was issued
22 on March 12th following some minor comments that came
23 from an SRM from the Commission on Order EA-12-049.

24 So, how did we get to today? Well, all
25 during the whole time we were developing the order,

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1 how we've gotten to today, we've had about eight
2 public meetings with the industry and the public on
3 the development of, first, the order, and now on the
4 development of their NEI guidance, and then on the
5 development of our ISG. And we've had those since
6 last December until - actually, one was last week.

7 So, we've had a lot of interactions with
8 stakeholders trying to get comments. We continue to
9 have them. As I said and I'll explain later, the
10 public comment period for the ISG expires July 7th.
11 And we hope to get comments from them that will help
12 us shape whatever the final ISG document will be that
13 we will issue at the end of August.

14 So, NEI initially submitted a document on
15 May 4th that they call an NEI 12-06, diverse and
16 flexible coping strategies, Rev B.

17 We had a subsequent after that. We had a
18 public meeting with them and they quickly made some
19 changes to update things that they heard from us that
20 they didn't - that were easy fixes and came in with
21 Rev B1 on May 13th.

22 And so, when we wrote the ISG that we're
23 here to discuss also, the basis of that is our
24 approval of Rev B1.

25 We already know that the licensees based

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1 on a subsequent meeting that we had with them last
2 week are probably going to make Rev, whatever we call
3 it, Rev 0, Rev C, whatever it is, which will be their
4 final version of this document. Although, it probably
5 won't be the final, because probably the document will
6 continue to be a living document as we learn to - some
7 of the mistakes and continue to grow with this issue
8 that they will continue to probably have to make
9 revisions to it.

10 But they will probably have to make
11 another revision, and that hopefully will be the basis
12 of our final ISG that will be issued, as I said, at
13 the end of August.

14 CHAIRMAN SCHULTZ: So, Steve -

15 MR. BLOOM: Yes, sir.

16 CHAIRMAN SCHULTZ: -- could we just go
17 through that in a little bit more detail? The
18 document is going to be, you believe based on the
19 feedback you received from the industry, you will be
20 getting and reviewing another document?

21 MR. BLOOM: Yes, sir.

22 CHAIRMAN SCHULTZ: As part of the
23 implementation of the orders.

24 MR. BLOOM: Yes.

25 CHAIRMAN SCHULTZ: So, has there been

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1 discussion regarding expectations about what will be
2 adopted from what you've put forward in the ISG? Are
3 we going to go through that today?

4 MR. BLOOM: Yes, we will when we get to the
5 end. At our meeting last week we came out with - I
6 think it was - and I have to do this - we gave you the
7 document, I know. I think there was 13, 15
8 exceptions.

9 And based on our public meeting with them
10 last week they understood a lot of them and decided
11 they were going to make changes to their document
12 based on that.

13 There were some of them that they didn't
14 like the way we worded it and said they would come
15 back with another revision of how they think they want
16 to revise it in their document, but that's to be seen
17 how that's going to be.

18 There were some of them, as I said, they
19 explicitly said, yep, we understand your comment and
20 we'll make changes directly. Other ones said, well,
21 we don't like it exactly the way you worded it, but
22 we'll put a revision in there that we think you'll
23 find acceptable, until we see it.

24 CHAIRMAN SCHULTZ: That's what I wanted to
25 get to. So, you had some immediate discussion related

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1 to changes that would be found acceptable, and then
2 there will be further discussion to come to agreement
3 on the remainder of the items.

4 MR. BLOOM: No, we - because we are moving
5 so fast, I won't say we're going to come to an
6 agreement on all the rest of them. They are probably
7 going to only have one more, I'll call it, shot to
8 submit something.

9 If we at that point still don't agree with
10 their comments, then the ISG that is issued in final
11 form at the end of August will again have some
12 exceptions.

13 There will be an endorsement of their
14 document with some exceptions that we still find, you
15 know, things that they need to adapt to because we
16 didn't have the time - we do not have the time to do
17 what we've done in past times where, you know, that
18 back-and-forth kind of thing, okay, here's your
19 revision, yep, this is still our comments and back and
20 forth.

21 We don't have that time based on the short
22 time frame that we're trying to do this.

23 CHAIRMAN SCHULTZ: Have one more back-and-
24 forth.

25 MR. BLOOM: Yes, one more. As I said, one

1 more. As I said, they're going to have one more shot
2 to come in with another document, and then we're going
3 to have to go final. We don't have the repetitive
4 type of process.

5 MR. BOWMAN: And of course in parallel to
6 that - this is Eric Bowman - we are taking public
7 comments from all the external stakeholders that we'll
8 need to take into account that may not be timely
9 enough -

10 MR. BLOOM: Correct.

11 MR. BOWMAN: -- to inform a back-and-forth
12 discussion with NEI and revisions of their document.

13 So, the final Interim Staff Guidance will
14 take into account comments we receive from all the
15 stakeholders.

16 We anticipate that what NEI will provide
17 is a set of comments along with a proposed revision to
18 the NEI document, and we'll work with that.

19 CHAIRMAN SCHULTZ: Thank you.

20 MR. BLOOM: Okay. With that, I will turn
21 it over to Eric to get into the discussion of what is
22 in actually NEI 12-06.

23 MR. BOWMAN: Thanks, Steve.

24 As I said, I'm Eric Bowman. I'm the staff
25 lead in the Office of Nuclear Reactor Regulation for

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1 the mitigating strategies - both mitigating strategies
2 that are required by 10 CFR 50.54 (hh)(2), the old
3 B.5.b mitigating strategies, as well as the mitigating
4 strategies for this order.

5 As Steve mentioned, NEI 12-06 is the
6 Guidance document that was submitted to document the
7 industry's proposal for the FLEX program to meet the
8 requirements of the Order EA-12-049. We're on
9 Revision B1 and we are very close to being in
10 alignment with what industry has proposed.

11 Our Draft Interim Staff Guidance we put
12 out endorses or proposes to endorse NEI 12-06 in the
13 Revision B1 form with some exceptions that we'll be
14 talking about shortly.

15 NEI 12-06 itself sets up the framework for
16 establishing, for developing and implementing the
17 mitigating strategies required by the order. There's
18 an assessment process that licensees must go through
19 in order to develop the strategies.

20 The document sets forth what the initial
21 conditions and the boundary conditions for these
22 strategies will be and tells the licensees how to
23 establish a baseline coping capability.

24 The baseline coping capability that's
25 discussed in NEI 12-06 assumes the loss of all

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1 alternating current power and loss of normal access to
2 the ultimate heat sink.

3 For the loss of all alternating current
4 power, they retain the assumption that the internal
5 power distribution system is initially available for
6 the baseline case, but make allowances for if there is
7 a need to address a loss of the internal power
8 distribution system.

9 So, fundamentally it winds up being
10 similar to a station blackout, but without the
11 availability of the alternate AC sources. The only AC
12 power that would be available would be from station
13 batteries through invertors, to the internal power
14 distribution system.

15 The document goes further to require an
16 assessment of what applicable external hazards would
17 be on a site-specific basis. That assessment informs
18 the level of protection that would be needed for the
19 reasonable protection of the equipment against beyond-
20 design basis external events.

21 MEMBER STETKAR: Eric, I have several
22 questions. You're kind of bouncing around among your
23 slides. So, I think I'll address them as you bring
24 them up orally rather than -

25 MR. BOWMAN: Okay.

1 MEMBER STETKAR: -- going through the
2 slides - well, I'll wait for the slides, because
3 you'll eventually march through them.

4 This first slide, the initial conditions,
5 there are many discussions in the NEI report about the
6 assumptions of robust equipment. And you can assume
7 that robust equipment is fully available.

8 And there is a glossary, and the glossary
9 defines a robust design as the design of an SSC either
10 meets the current plant design basis for the
11 applicable external hazards, or it's been shown by
12 analysis or test to meet or exceed the current design
13 basis.

14 By definition by design, nothing fails at
15 the current design basis. So, assuming that that
16 stuff was available just says we meet the current
17 design basis, the whole purpose of FLEX is to address
18 beyond-design basis of that.

19 So, what's the use of having people assume
20 that everything is perfectly available if it meets the
21 design basis? It already is.

22 MR. BOWMAN: That assumption -

23 MEMBER STETKAR: That's nothing beyond what
24 people do in the current licensing world.

25 MR. BOWMAN: I understand your comment, I

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1 believe. That assumption is really speaking to the
2 baseline capabilities case -

3 MEMBER STETKAR: Okay.

4 MR. BOWMAN: -- where you've got the
5 assumption that the internal power distribution system
6 is available.

7 There are further requirements, I think
8 it's Section 322, Subparagraph 13, in the document
9 itself where it goes into if the robust equipment, in
10 particular the internal power distribution system,
11 isn't available, there would be a capability to
12 provide portable generators for either charging
13 station batteries, or as to directly power installed
14 equipment that you aren't capable of getting power to.

15 And there are other requirements for
16 bringing in the portable power independent pumping
17 capabilities as was done under B.5.b and 50.54
18 (hh)(2), fundamentally skid-mounted diesel-driven
19 pumps is what we saw for the most part in order to
20 provide makeup water to restore the spent fuel pool,
21 core cooling or containment capabilities.

22 MEMBER STETKAR: Okay. An important
23 assumption that you've mentioned a couple of times and
24 I have a little question about, is that the physical
25 structure of the internal plant electric power

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1 distribution system is presumed to remain available.

2 I mean switchgear is standing, power
3 cabinets are standing, instrumentation control
4 cabinets are standing.

5 If you look, for example, at most seismic
6 PRAs, you will find that the lowest HCLPF capacities
7 of equipment in the plant at accelerations above the
8 design basis, apply typically to switchgear, motor
9 control centers and instrument internal control
10 cabinets with high profiles.

11 In other words, they're the first things
12 that are expected to fail. So, it's really curious
13 why this presumes that they're not damaged.

14 MR. BOWMAN: The idea is to set up a
15 spectrum of response, if you will. First you go to
16 what's installed that would most rapidly be able to
17 satisfy their requirements.

18 And if that's not there -

19 MEMBER STETKAR: I under -

20 MR. BOWMAN: -- then you bring in the -

21 MEMBER STETKAR: Okay, I understand that.

22 But if something has fallen down and you anticipate
23 that, where you connect and how you connect that
24 portable external power supply might be a lot
25 different than if you presume you plug it into an

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1 existing -

2 MR. BOWMAN: Right.

3 MEMBER STETKAR: -- set of switchgear.

4 MR. BOWMAN: And -

5 MEMBER STETKAR: And I don't read anything
6 in there where that is taken into consideration. I
7 really can't find it.

8 MR. BOWMAN: It's on Page 26, the last full
9 paragraph. The use of portable equipment to charge
10 batteries or locally energize equipment may be needed
11 under extended loss of AC power, loss of the ultimate
12 heat sink conditions with appropriate electrical
13 isolations and interactions.

14 There are other spots in one of the
15 appendices where they go further into a primary
16 electrical connection to the internal power
17 distribution system for portable generators or local
18 connection.

19 And I think that in particular is in the
20 discussion for use of currently-installed charging
21 pumps to satisfy the need for RCS makeup, but I'd have
22 to go back and look for it further.

23 But they do make allowances for primary
24 and alternate means of connection both for fluid
25 systems and for electrical systems.

1 MEMBER STETKAR: All right. I guess I'll
2 have to read it again because I'm obviously coming at
3 it from a little bit different perspective and haven't
4 been involved in all of the nuances.

5 Let me ask you about DC power. Presumes
6 that DC power is available.

7 MR. BOWMAN: Right.

8 MEMBER STETKAR: It absolutely does presume
9 that DC power is available.

10 MR. BOWMAN: Yes.

11 MEMBER STETKAR: That batteries -

12 MR. BOWMAN: Yes.

13 MEMBER STETKAR: -- are only drained at
14 the rate of their design basis depletion extended by
15 whatever operator actions can do to save those.

16 Why is that?

17 MR. BOWMAN: That again is the baseline
18 case. That's the simple use the installed equipment
19 immediately, presuming that the installed equipment is
20 there and capable of functioning.

21 There's also the specific strategies that
22 are set up in the appendices. For example, the black
23 start of RCIC or manual start of the turbine-driven or
24 diesel-driven AFW pumps in order to maintain or
25 restore the core cooling capability.

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1 And in addition they have the portable
2 pumping capability to provide makeup to the reactor
3 coolant system, reactor pressure vessel or the steam
4 generators in order to -

5 MEMBER STETKAR: I'm mostly interested in
6 the issue of timing, because timing is important on
7 all of this.

8 MR. BOWMAN: Oh, yeah.

9 MEMBER STETKAR: And if you develop a
10 strategy that presumes you will have some time
11 available, that may be different than a strategy that
12 has contingencies for much less time available.

13 MR. BOWMAN: This does have both. Hence,
14 the "flexible" in the title. It changes what the
15 analysis winds up being.

16 MR. BLOOM: There are also parts in here
17 where it talks about shedding loads. I don't know if
18 you read that part.

19 MEMBER STETKAR: Oh, yeah.

20 MR. BLOOM: Okay. So -

21 MEMBER STETKAR: Shedding loads implies I
22 have something to shed loads from. I'm talking about
23 something that doesn't exist.

24 MR. BLOOM: Right.

25 MEMBER STETKAR: There is no DC power.

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1 MR. BLOOM: Well -

2 MEMBER STETKAR: The DC distribution
3 cabinet fell over.

4 MR. BLOOM: Well, the -

5 MR. BOWMAN: That is an eventuality that
6 would be addressed by the need to go do the black
7 start for RCIC or the manual start for the AFW pumps.

8 MEMBER STETKAR: Okay.

9 MR. BLOOM: I'll answer your question. I
10 hope I don't step on my own feet, but that was an
11 assumption that was made way at the beginning by the
12 Steering Committee that we can't take everything away.

13 We had to have some starting point that
14 said licensees have to start it here, this was a base
15 case, and that was the assumption that we were given
16 that the Steering Committee said no AC power, but
17 we're going to assume the DC power is still available.

18 MEMBER BLEY: Excuse me. Let me try and
19 ask Mr. Stetkar's question a little bit differently if
20 I'm understanding it correctly.

21 If one puts together a strategy and agree
22 all this has come about in really severe cases, you
23 know, wouldn't it make sense to base the way you look
24 at what you do to start with the most severe case
25 where you might be most time limited rather than

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1 working your way out to that?

2 You know, if in fact when you start you're
3 in better shape, there's plenty of time to back out
4 and take the more systematic straightforward goal. I
5 think -

6 MEMBER STETKAR: Yeah, Dennis, that's a lot
7 of it. And the way you presented it in terms of the
8 most severe case, I'd say looking at the likelihood of
9 the severity of cases at least what we've seen in a
10 lot of seismic PRAs, is there may be a relatively high
11 conditional likelihood of that rather severe case
12 also.

13 MEMBER BLEY: Exactly.

14 MEMBER STETKAR: So, we're not necessarily
15 talking about, you know, a one percent conditional
16 probability that you lose DC power given a seismic
17 event -

18 MEMBER BLEY: No.

19 MEMBER STETKAR: -- twice the design basis
20 earthquake, let's say.

21 MEMBER BLEY: No, this isn't just dealing
22 with seismic.

23 MEMBER STETKAR: It isn't. That's true.

24 MEMBER BLEY: But some kind of upper-level
25 structure that says, gee, do I have - let's take

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1 seismic event to start with.

2 If I do, let's jump to the fastest way out
3 of the most likely spot would be in for a real severe
4 seismic. If it's not real severe, we don't have any
5 trouble.

6 MEMBER STETKAR: I mean, obviously they
7 haven't developed any procedures yet, but that might
8 be a way of doing it is -

9 MR. BROWMAN: The intent that's been
10 expressed by the industry is to rely to a certain
11 extent on the Emergency Operating Procedures, going
12 through those with the verification that the reactor
13 has scrammed and you've got adequate shutdown margin.

14 And also that you have the core cooling
15 being provided by auxiliary feedwater or RCIC or
16 whatever the appropriate system is.

17 In parallel with that they have the other
18 means of going in to restore the core cooling
19 capabilities, and that includes a verification that
20 the core cooling's been established or a need to do so
21 through the black start or the manual start of the
22 appropriate systems.

23 So, there will be a need to think it
24 through based on what the symptoms of the
25 circumstances are to see is it obvious that I have

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1 lost my CD buses and I have to go do this? Then, I
2 would presume that they would immediately go to it,
3 but it's -

4 MEMBER STETKAR: Well, I guess we'll have,
5 as Dennis said, it's - I hate to use the term
6 "philosophy," but it's sort of applicable.

7 The philosophy of developing even flexible
8 guidelines in many cases is dictated by your presumed
9 boundary conditions.

10 And if you go in with a strong presumption
11 that the most severe events are rare and that you have
12 to have third-tier contingencies of getting around to
13 those potential very rare events, you might develop
14 your strategies and your Guidance and your training
15 for your operators and so forth much differently than
16 if you had considered those different possibilities in
17 a reprised order.

18 And I think that's the primary concern
19 here.

20 MEMBER BLEY: If we go back to right after
21 TMI, we were working closely with one of the vendors
22 at the time and they started developing their symptom-
23 based procedures.

24 Now, everybody's done that, but it turned
25 out they had just or were in the midst of finishing

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1 their first really big PRA study. And that factored
2 in a lot to the thinking of how well that was
3 structured.

4 And it just seems to me this idea of some
5 overlaying structure, I mean, the basic ideas are
6 really good. It's what we've been missing for a long
7 time is a flexible way to deal with things. And
8 people have proposed similar ideas in the past, but
9 this is the first time it's really gained traction.

10 But if it comes to implementing guidance
11 if that could have an overlay of something like
12 probabilistic - PRA thinking about that situation
13 would require different approaches to this and working
14 through that structure to put you in the right order
15 and maximize your chances, I think would be a big
16 help.

17 Right now it's very systematic, as you
18 say, from the straightforward, working a way up from
19 the most common, everyday situation to the more
20 severe, and that might not be optimal.

21 MR. BOWMAN: I don't want to put you in the
22 position of looking at this in a stovepipe. In
23 parallel with this, we've also got a rulemaking that's
24 being commenced through an ANPR following
25 Recommendation 8 of the Near-Term Task Force for

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1 integration of the EOPs, the mitigating strategies
2 that were developed under B.5.b which are termed the
3 EDMGs in there and the SAMGs.

4 So, I would see that as the vehicle for -

5 MEMBER BLEY: That may well be, but -

6 MR. BOWMAN: -- making those sorts of
7 judgments. And we've also got the station blackout
8 rulemaking that may in fact make these requirements
9 generically applicable, which might address your
10 comment regarding the design certifications.

11 So, there are other things going on that
12 are informing what we do here.

13 CHAIRMAN SCHULTZ: Eric, as the licensees
14 go through this assessment process and we're going to
15 get these six-month reports, first report, and then
16 six-month reports going forward, how is the
17 responsibility for assuring consistency and robust
18 approaches for each of the licensees, how is the
19 accountability going to be structured there?

20 Does the industry have a key
21 responsibility there -- or I should say doesn't the
22 industry have a key responsibility to assure since
23 they're offering the FLEX program, which is an
24 industry program, a responsibility for assuring that
25 each and every site has a consistent and robust

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1 approach to working through this and coming to the
2 proper conclusions?

3 MR. BOWMAN: There is.

4 CHAIRMAN SCHULTZ: I'm asking this because
5 -

6 MR. BOWMAN: We've started the dialog with
7 NEI on establishing templates for both the status
8 reporting and the integrated plans.

9 We haven't - right now, honestly, we're
10 concentrating on getting the Interim Staff Guidance
11 out in final form, because we can't really work on the
12 templates until we have the Guidance out that they'll
13 be based on.

14 But as soon as we get this a lot closer to
15 final, we'll be working with industry through NEI to
16 set up the templates for the reporting and the plans
17 and so forth.

18 So, I do anticipate that they will be a
19 key part of the approach to the solution.

20 CHAIRMAN SCHULTZ: I think that's
21 important. The document itself as presented by NEI
22 has a lot of, as one would expect, plant-specific
23 caveats.

24 MR. BOWMAN: Yes.

25 CHAIRMAN SCHULTZ: A certain group of plans

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1 will have to address this differently than others.

2 MR. BOWMAN: Uh-huh.

3 CHAIRMAN SCHULTZ: But we need a very
4 consistent final plan -

5 MR. BOWMAN: Right.

6 CHAIRMAN SCHULTZ: -- as we get to the
7 overall program with FLEX implemented. And so,
8 there's a lot to be considered in these evaluations of
9 the progress and reviews.

10 MR. BOWMAN: I agree.

11 I think I was about halfway done with this
12 slide.

13 (Laughter.)

14 MR. BOWMAN: The document goes further on
15 need to define what the site-specific FLEX
16 capabilities will be. And as you said, there are a
17 lot of site-specific or design-specific caveats in the
18 NEI 12-06.

19 Some of the programmatic controls for the
20 equipment and the maintenance of the procedures are
21 set forth in the document, as well as a discussion of
22 the offsite resources for the final phase of the
23 mitigating strategies.

24 MEMBER ARMIJO: Eric, I've been listening
25 to John and Dennis' comments and it seems to me that

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1 if you started with the determination of the
2 applicable extreme external hazards as your first
3 step, then it would lead into the approach that John
4 was talking about addressing really the far-beyond-
5 design basis threat, Fukushima-type threat, rather
6 than starting with a conventional emergency and
7 working your way up.

8 Because I think we could lose focus that
9 what we're really trying to address is those things
10 that are really extreme.

11 And if you really have an extreme thing,
12 some of these initial conditions really aren't valid
13 anymore.

14 MR. BLOOM: And that's exactly the point.
15 You take those initial conditions for a plant just as
16 it is today. And then you say, okay, now if you put
17 this extreme event that we've never considered before,
18 you start taking stuff away.

19 And that's exactly - I think it actually
20 validates, not takes it away, goes the other way. You
21 have to know where you're starting before you can say
22 how that event's going to affect what you've got.

23 MR. BOWMAN: Well, to a certain extent the
24 evaluation of the external hazards that are applicable
25 to a site is something that needs to be done to figure

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1 out what the reasonable protection of the equipment is
2 going to wind up being.

3 For a site that's in the middle of a
4 desert, it may not be worth - it may not add any value
5 to add a lot of flood protection.

6 MEMBER ARMIJO: Yeah, I understand.

7 MR. BLOOM: For example.

8 MEMBER ARMIJO: I understand, but seems to
9 me philosophically you'd start defining water is the
10 extreme external hazard that you have to face for your
11 particular site.

12 MR. BLOOM: Yeah.

13 MEMBER ARMIJO: And then you say, I could
14 handle that extreme case for the electrical equipment
15 or for the mechanical equipment by doing the
16 following, and then anything less extreme is going to
17 be a piece of cake.

18 I think that's where John was coming from.

19 MEMBER STETKAR: That's, yeah, I mean, you
20 have to be a bit concerned about what is the most
21 extreme -

22 MEMBER ARMIJO: Yeah, but -

23 MEMBER STETKAR: -- possible -

24 MEMBER ARMIJO: Well, you can overdo it.

25 MEMBER STETKAR: But as Dennis mentioned,

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1 and it was done post-TMI, the use - we've learned a
2 lot by doing risk assessment, regardless of your
3 philosophical bit in terms of risk assessment, that
4 systematic process.

5 In many cases, the most challenging events
6 are the - not the very low-frequency, very extreme
7 events. They're what I call the medium-frequency,
8 medium-damage events where, you know, your switchgear
9 is not guaranteed to fall over because that might take
10 a very high acceleration, but there might be 60, 70
11 percent chance that it falls over.

12 In other words, you bet that it would.
13 And those might occur at much higher frequencies than
14 your very extreme events.

15 So, there's one approach that Sam
16 suggested that you could look at the end of the
17 spectrum. And if you can cope with that, you can cope
18 with the intermediate events.

19 the way the FLEX at least as I read the
20 document presumes that you start from benign
21 conditions and then sort of anticipate further damage
22 as you go along, that may eventually get you to the
23 same place.

24 And I think your response to Dennis might
25 have been right if you're integrating those

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1 procedures. And I used to be a plant operator and a
2 shift supervisor. So, I'm pretty familiar with how
3 people deal with procedures.

4 If you develop the procedures in the right
5 way to check for the things that are both - could give
6 you the worst problems and might have a high
7 likelihood of being in that degraded state, you might
8 solve the problem despite the way the current sort of
9 guidance in the NEI document may lead you to think
10 because it doesn't have procedures in there.

11 I mean, it has - it does in some sense,
12 but not at the detail, I think, that we're talking
13 about.

14 MR. BOWMAN: The document is admittedly a
15 very high-level look at what the strategies will need
16 to look like.

17 We'll get a lot closer when we get the
18 templates together and we've already started setting
19 up workshops with industry to look at their proposals
20 for what they are developing for the strategies. And
21 that's where I anticipate that those kind of
22 considerations will come into play.

23 The only thing I would say is that
24 immediately going to the end-of-the-world scenarios,
25 if you will, might cost you the benefit that you would

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1 gain from a scaled approach, if you will.

2 So, there are some things that need to be
3 checked immediately like that the reactor has indeed
4 shut down and that you've got some form of removal of
5 decay heat going, either the auxiliary feedwater
6 started by itself, or you've gone down and started it,
7 for example.

8 MEMBER STETKARR: It might be more
9 important to check DC voltages, for example.

10 (Laughter.)

11 MEMBER BLEY: It might be that way. We
12 already have redundant, diverse installed equipment,
13 very good emergency operating procedures, and we're
14 set up for those less severe cases.

15 We're in pretty good shape for those
16 unless you get something really bizarre happening.
17 With something bizarre happening, that's where this
18 becomes very helpful.

19 That's what this stuff is for. It's the
20 really tough cases.

21 MR. BOWMAN: Right.

22 MEMBER BLEY: Go ahead.

23 MEMBER BROWN: Just a springboard of one
24 observation - actually, two. It seems to me that
25 Lessons Learned we've already got out of this is that

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1 at Fukushima it was that all the infrastructure for
2 the AC power was taken out. The whole switchyard,
3 everything else was gone, and the fuel taken out for
4 the diesels, whatever that circumstance worked.

5 That's the extreme case far beyond the
6 design basis of anybody's anticipation. So, they were
7 scrambling from the very beginning to try to get to
8 the endpoint of what they wanted or what they needed
9 to do.

10 So, it seems to me if we're taking Lessons
11 Learned, how are we going to apply this FLEX concept?
12 I'm just echoing the other two, but here's what we
13 already saw. Why are we starting from the simple
14 stuff as opposed to the harder stuff?

15 MR. BOWMAN: This one -

16 MEMBER BROWN: Well, let me finish, okay?

17 MR. BOWMAN: Okay.

18 MEMBER BROWN: And the second point is that
19 from an experience standpoint in the old days, the
20 Navy actually took an approach where we assumed we
21 lost all the interconnection, entire sources to very
22 necessary pieces of equipment. Either pumps, whatever
23 it was. Had casualty power connections where we
24 literally could take cables and run them from extreme
25 sources all the way down right to the pump, disconnect

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1 it and hook them up.

2 You bypassed everything and it actually
3 worked. I mean, we tested them and made sure they
4 worked.

5 In other words, it's just a philosophy
6 standpoint, you know. Those are just my thoughts on
7 that.

8 And I read through your primary and
9 secondary and alternate methods of electrical
10 connections and everything else, but they still didn't
11 seem to get to the root of what might be necessary.

12 MEMBER SIEBER: My experience is the same
13 as yours, Charlie, with Navy plants. You could do a
14 lot of jumper and lifted leads-type things to --
15 provided the systems were simple enough and you could
16 get to them.

17 On the other hand, I don't see too much of
18 that in here because that takes - in a submarine or
19 aircraft carrier you don't need a lot of cable,
20 because it's all right there.

21 In a power plant, you may be talking, you
22 know, hundreds of yards of cable to be able to do
23 this. And maybe the prime source of electrical power
24 whether it's a battery or diesel or something is
25 operable. But if the interconnections between that

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1 and where it's needed are gone, you know, it takes
2 knowledgeable people and it takes - it takes
3 electrical supplies in order to be able to do that.

4 I didn't see - I didn't get out of all
5 that I read if that capability is really there, you
6 know. If somebody sends me a diesel and says, here
7 you are, and I've got a lot of infrastructure ruined,
8 I may not be able to use it and it's not clear to me
9 that all that's been thought out.

10 MR. BOWMAN: The capability to locally
11 connect power to the -

12 MEMBER SIEBER: To a few things, yeah.

13 MR. BOWMAN: -- components that need it
14 for a limited number of components is -

15 MEMBER SIEBER: Right.

16 MR. BOWMAN: -- is a requirement in, I
17 think, 322, Paragraph 13 that discusses that. It
18 maybe doesn't lay it out as well as you did with the
19 discussion of bringing in cables, but that's the
20 intent there.

21 MEMBER BROWN: They're installed. I mean,
22 the cables are locally available so to do that in the
23 old days in the Navy ships.

24 CHAIRMAN SCHULTZ: Did you have a question?

25 MR. BLOOM: So, you're saying you don't see

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1 that they're going to bring the cables in, but
2 actually that is part of it. They either have the
3 cables or hose connections or - and they're talking
4 about standardizing these connections across the
5 country so that some place, you know, as we talked
6 about, these offsite - something can come from the
7 east coast to the west coast and still be able to use
8 those same connection fittings.

9 MEMBER BROWN: Well, my point being is your
10 comment says secondary - you said there's primary
11 connection points - and I'm on Page 27 and 28. It's
12 under - past Item 14 in Section 322.

13 MR. BLOOM: Right.

14 MEMBER BROWN: It talks about a primary and
15 secondary connection point. Says a secondary
16 connection point may require reconfiguration. For
17 example, a breaker. Removal of a breaker.

18 MR. BLOOM: Right, yeah.

19 MEMBER BROWN: That assumes there is
20 certain infrastructure available that you can go to
21 that location and get the power all the way out to
22 whatever piece or component that you needed to get it
23 to.

24 And I was just - my thought process was
25 that maybe you needed to think a little bit closer to

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1 the component itself as opposed to a more remote
2 location.

3 Not saying that's a bad thing to do. It's
4 just that it's depending on where those switchgear are
5 located, you may not have the ability to plug in and
6 then get the stuff to the local component.

7 So, anyway, I had to get my two cents
8 worth in here somewhere.

9 MR. BLOOM: Thank you. Thank you.

10 MEMBER BROWN: And I can only tell you I
11 got - I was saved in one specific circumstance with my
12 equipment when we lost everything, and the only thing
13 we had was manual control of a number of components,
14 as well as mechanical gauges, to see what was actually
15 going on.

16 MR. BLOOM: Right.

17 MEMBER BROWN: And if it hadn't been for
18 that, we would have been toast. I can't give you the
19 specifics.

20 MR. SKEEN: Well, this is Dave Skeen. Just
21 let me jump in here for a minute. This is great
22 discussion and I think the questions that the ACRS is
23 asking are very good.

24 Let's take this back as - it's the
25 integration piece. How does Recommendation 8 fit in

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1 here? How should we consider if I have a loss of DC,
2 you know, how would I handle that situation?

3 I think these are really good points that
4 you guys are making, but just to move us on so that we
5 don't get stuck on this one issue.

6 We'll be back. I think we have a full
7 committee meeting coming up in July. So, we'll put
8 that down on our list to come back and make sure we
9 talk to you about that.

10 CHAIRMAN SCHULTZ: Thank you, Dave. Let's
11 go on, Eric.

12 MR. BOWMAN: Okay. Slide 7 I think we
13 already covered, unless you've got -- during the
14 discussion of the prior slide. Unless you've got any
15 specific questions on that, could you go to Slide 8?
16 One of the areas where we -

17 MEMBER STETKAR: One quick thing on Seven.
18 I'm sorry.

19 You guys obviously have studied this, you
20 know, word by word, probably letter by letter and have
21 it memorized.

22 As I read through it, in many cases if you
23 read the stuff up front, kind of the general
24 principles, it leads you to concepts that once you get
25 in the back of the document are either elaborated or

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1 different than up front.

2 And, for example, access to the ultimate
3 heat sink. Up front it says, well, you have to assume
4 that the pumps aren't available, but the water is in
5 the bucket. That's a fundamental assumption.

6 You say, well, gee, there are events that
7 can drain the bucket. Seismic failures of downstream
8 dams is one example. That sounds like an awfully
9 optimistic assumption for several plants that rely on
10 dams.

11 When you finally get to the back it says,
12 well, yeah, you ought to think about seismic failures
13 of downstream dams.

14 Do you have any problems with - the basic
15 philosophy will be read by everyone. There are many
16 examples up front of the general principles that could
17 be optimistic for some sites and some particular
18 hazards and just this, you know, the ultimate - the
19 presumed availability of water in the bucket.

20 MR. BOWMAN: That presumption was the
21 reason why we used the phrase "loss of normal access
22 to the ultimate heat sink" within the order as opposed
23 to "loss of the ultimate heat sink."

24 Dave, you can correct me if I'm wrong, but
25 we had a Tier 3 action item to look at things such as

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1 the downstream dam failures that result in loss of the
2 water in the bucket, if you will.

3 The presumption is that for this order,
4 we're dealing with a situation where if there has been
5 a major seismic event, it could have prevented - or
6 whatever the beyond-design basis external event, it
7 prevents you from using the normal means of using the
8 ultimate heat sink.

9 The piping may or may not be there
10 depending on whether it's robust. The pumps, we
11 presume that you aren't going to have power to the
12 pumps because you're in an extended loss of AC power
13 situation, but the river is still there, is the
14 presumption that we made.

15 MEMBER STETKAR: The river may not be there
16 if the river looks a lot like a lake.

17 MR. BOWMAN: Yeah, I understand, but the
18 dealing with that type where there's no water left in
19 the bucket has been deferred to a further action item.

20 MEMBER STETKAR: Well, but - now, I'm more
21 confused than I thought I was because up front what
22 they say is consistent with what you just said.

23 However, in - if I go back and look at the
24 seismic guidance in the document, it does acknowledge
25 the fact that seismic events may have drained the

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1 water from your ultimate heat sink and you may or may
2 not have a low point cistern or cavity or something
3 that may have some remaining inventory, but that you
4 may need to think about, you know, providing other
5 water supplies. It does actually address that.

6 MR. BOWMAN: Yes. I believe what it was
7 addressing there is some sites have ultimate heat sink
8 piping that would given a lack of power, drain back to
9 the ultimate heat sink. I'd have to look over it.

10 MEMBER STETKAR: Well, let me ask you then

11 -

12 MR. BOWMAN: Oh, yeah, they do mention the
13 downstream dam.

14 MEMBER STETKAR: They do mention downstream
15 dams. Actually, you know, I'm trying to give you an
16 out on this one.

17 They do mention the downstream dams and
18 the fact that some sites may need to consider the fact
19 that the water, at least not all of the water that you
20 originally had, is still in the bucket.

21 Mention of seismic failures of upstream
22 dams is totally absent from this document. And I was
23 going to address that in flooding. But since we got
24 off on seismic failures of dams, I might as well bring
25 it up now.

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1 Why is this document and the staff ISG
2 silent on failure - seismic failures of nearby dams
3 that can also simultaneously result in flooding damage
4 to the site and seismic damage to the site?

5 NEI 12-06 does address seismic failures of
6 downstream dams. Not up front in the philosophy, but
7 back in the details. As far as I can tell, it's
8 silent on that other issue.

9 In fact, it says that -

10 MR. BOWMAN: It's also silent on
11 seismically-induced fires.

12 MEMBER STETKAR: It is.

13 MR. BOWMAN: Seismically-induced fires and
14 flooding were NTF Recommendation -

15 MEMBER STETKAR: It's not silent on
16 seismically-induced internal flooding from breakages
17 of piping systems, circulating water systems, service
18 water systems, et cetera, inside the plant. It is
19 absolutely not silent on that. It says you have to
20 consider that.

21 It is silent on seismically-induced fires.
22 More importantly it's silent on seismically-induced
23 external flooding, which is important because all of
24 the external flooding guidance is based on warning
25 time. And it says for dam failures, you have hours to

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1 days of warning time because you don't have to assume
2 another simultaneous event, according to the ground.
3 That is specifically mentioned there.

4 MR. SKEEN: This is Dave Skeen again.

5 You made a good point on the upstream dam
6 failures as far as having external flooding, and that
7 is being addressed in the flooding portion.

8 GI-204 which was going to look at upstream
9 dam failures, has been incorporated into the flooding
10 reanalysis piece. So, all sites have to reanalyze
11 their flooding hazard based on dam failures as well.

12 MEMBER BLEY: This FLEX is general to take
13 care of all the things that can happen. And then
14 saying, well, that one is stuck over here and another
15 one is stuck over there, kind of takes it out of this
16 picture of being flexible to handle all possible
17 things.

18 And just that upstream dam failure isn't -
19 isn't a simultaneous event. It's a consequent event
20 like the darn tsunami was. It's not something
21 separate. We're not getting two ten to the minus 5th
22 or 6th events. We're getting one that causes the
23 other.

24 MR. SKEEN: Right.

25 MEMBER BLEY: One shouldn't close your eyes

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1 and say simultaneous, because it's not effectively
2 simultaneous. It's really consequent.

3 MR. SKEEN: Right. I think we understand
4 that.

5 The thinking on the upstream dam failures
6 is there is time even from an upstream dam failure,
7 right? You have some time to deal with an event from
8 an upstream dam failure.

9 MEMBER BLEY: We had an hour to deal with
10 tsunami.

11 MR. SKEEN: They didn't know the tsunami
12 was coming or they didn't know that a tsunami of that
13 height was coming.

14 But if you reanalyze your flood hazard for
15 your site, you know, if I lose a damn, I'm going to
16 have a flood of X amount of height, whatever it's
17 going to be at the site. And it's going to be here
18 within an hour, two hours, four hours, whatever it is.
19 I have some time to plan for that.

20 So, there's some actions I can take before
21 the flood actually gets there in that case.

22 MEMBER STETKAR: Actions at the same time
23 that there's a lot of rubble around your feet and
24 you've got damage to a lot of equipment inside your
25 plant.

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1 MEMBER BLEY: And you've got the civilian
2 folks worrying about all the damage to towns and
3 hospitals and everything else. And to ensure that
4 this communication, I don't know if it would come from
5 the civil engineers or who, the Corps, that that would
6 get her really promptly when all this other stuff is
7 going on is clearly an untested presumption, I think.

8 MR. SKEEN: Yeah. No, good point. It's a
9 good comment. We'll take that back. Thanks.

10 MEMBER SIEBER: Is it not a fact though
11 that the failure of upstream dams was part of the
12 original design basis of these plants?

13 I know the plants that I worked in, that
14 was the case.

15 MEMBER BLEY: Well, we saw one very
16 recently where we went through it and there was some
17 consideration of the first upstream dam, which was
18 small, but not the one right above it that would
19 overtop the first one.

20 So, it's quite limited and not tested
21 thoroughly.

22 MEMBER SHACK: They were sort of done
23 separately. You had the flood -

24 MEMBER BLEY: Absolutely separate.

25 MEMBER SHACK: -- you had the seismic, but

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1 when you did the flood you assumed you had all the
2 equipment.

3 MEMBER BLEY: Right.

4 MEMBER SHACK: It wasn't, you know, half of
5 it wasn't gone because the seismic event already
6 occurred. And so, you know, that's really the thing.

7 But I'm not sure that that really isn't
8 addressed in the FLEX, but -

9 MEMBER STETKAR: I think it's really - I
10 think it's not addressed.

11 MEMBER BLEY: I'm not sure either.

12 MEMBER STETKAR: I have a laundry list of
13 a few things.

14 MEMBER SIEBER: I think that some plants
15 probably are okay, and others are not.

16 CHAIRMAN SCHULTZ: That's what we're not
17 sure about, but that is what we feel was the intent of
18 this activity.

19 MEMBER SHACK: I mean, the FLEX isn't
20 really set up to sort of go by a scenario-by-scenario
21 thing. I mean, there is this notion that there's a
22 lot of lost equipment, you know.

23 And I think a lot of that could be
24 accommodated within, you know, if you're looking at
25 your design basis flood, it's not going to get any

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1 deeper because the seismic event caused it.

2 MEMBER STETKAR: Let me give you an
3 example. In protection of the flood - of the FLEX
4 equipment for flooding it says, well, you can locate
5 that equipment below your expected flood level
6 provided that you have ample warning time to relocate
7 it to higher ground, you know. And you have to go
8 through an analysis of your plant to find out whether
9 you have ample warning time.

10 Now, for dam failures it says you have
11 hours to days for that ample warning time. For other
12 things, you might have longer.

13 You probably don't have a ample - a lot of
14 warning time necessarily, and it explicitly says you
15 don't have to consider other events in that particular
16 area.

17 So, I can have the equipment, you know, at
18 some location because, by definition, I don't have to
19 consider a seismically-induced flood that might hamper
20 my ability to in fact move the stuff to higher ground
21 even if I have enough warning time.

22 And that, to me, is part of this sort of
23 compartmentalizing things that FLEX is pretty darn
24 good about not doing that. And believe me, I was
25 looking for it pretty carefully.

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1 And seismic-induced failures of dams,
2 seismic-induced fires is the other one I was going to
3 bring up, are the two areas. And I'm concerned about
4 the downstream stuff, but I think it does once you
5 delve into the details, address that.

6 It seems not to - it certainly doesn't
7 address seismic-induced fires. And it doesn't address
8 upstream dam failures.

9 MR. BOWMAN: I think it's a very good
10 comment. In the NTTF report there was a separate
11 long-term study recommended for seismically-induced
12 flooding and fires. And to a great extent, that's why
13 we didn't look to include it in the FLEX guidelines.

14 The FLEX guidelines and our ISG for the
15 FLEX guidelines are based on the order which requires
16 maintenance of the strategies. So, presumably once
17 it's gone back and reevaluated if it impacts the
18 flooding design basis, then that will have to change
19 the level of protection that's being provided by the
20 licensees.

21 MEMBER STETKAR: I understand that, but -

22 MR. BOWMAN: The one exception that we did
23 take for their - go to the next slide - for the
24 extreme hazard evaluation is we specified that a
25 licensee would have to consider the flooding design

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1 bases for adjacent sites, license sites, early site
2 permits, et cetera.

3 MEMBER STETKAR: Probably because of that
4 recent issue that has been alluded to already this
5 morning.

6 MR. BOWMAN: Right. But there are - where
7 there were specific recommendations from the NTTF for
8 that and things like in the Recommendation 7, there
9 were recommendations for seismically-qualified spray
10 piping for spent fuel pools, we tried not to include
11 a requirement under this order because it would have
12 been outside the scope of what we had authority to do
13 granted by the Commission.

14 MEMBER STETKAR: It's just there's some
15 things that I think, you know, although perhaps
16 details of those types of assessments are pushed off
17 the Tier 3 as far as the staff is concerned, the
18 industry is moving forward with FLEX today.

19 MEMBER SHACK: Yeah, if FLEX addresses more
20 than this order.

21 MEMBER STETKAR: That's right. And If, for
22 example, they follow the guidance that says I don't
23 have to consider, my pet example here, seismically-
24 induced failures of dams because of the way this is
25 and develop strategies and locations and protections

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1 of equipment that they paid real capital for and
2 trained operators and developed procedures, and then
3 somebody comes back and says, oh, gee, we finally got
4 around to evaluating seismically-induced flooding or
5 seismically-induced fires and now you have to go
6 fundamentally change something that you've done
7 already, there's going to be an awful lot of
8 reluctance to do that.

9 So, at this point in the process with
10 fairly minor changes to the guidance that sort of
11 prompts people that might have that vulnerability to
12 at least think about it, we all, both the industry and
13 the regulator, might avoid an awful lot of difficulty
14 down the road and develop, you know, sort of basic -
15 basically more sound guidance at this time.

16 CHAIRMAN SCHULTZ: And not only sound
17 guidance, but sound changes as they would be warranted
18 in the future. We don't really want to revisit this
19 in five years.

20 MR. BLOOM: No, but like there's the effort
21 of 2.1 which is to do - redo, you know, figure out
22 what design basis for flooding and seismic is.

23 And we've already discussed with them
24 several times that when those are redone if a plant
25 has to change, then they have to go back and change

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1 the FLEX. And that might not be for five years from
2 now before 2.1 is done.

3 And so, they already understand that
4 changes down the line in things like flooding and
5 seismic are going to have to be effective. And
6 they're going to have to maybe move equipment that
7 they have put in place today in one location, move it
8 to higher ground, move it to a more robust location.

9 So, they already know that. And, you
10 know, the stuff on seismic-induced, you're right. We
11 didn't consider it, but we'll bring that up as a point
12 now. As I think about it today.

13 CHAIRMAN SCHULTZ: And the Committee has
14 also endorsed that approach with regard to changes
15 from the reevaluation of hazards. But again here,
16 extreme external hazards, we're looking at an approach
17 to protect against an event like Fukushima which is
18 unexpected. Not an adjustment to the design basis,
19 but something that's unexpected.

20 This is our opportunity to put a program
21 in place that will - and we're approaching it with the
22 process that is being put in place with FLEX. We just
23 don't want to have such an event, an extreme external
24 event and find that we could have gone a little
25 further here, and we didn't.

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1 One site was out of synch with other
2 sites, you know. Those types of things we really want
3 to avoid. This is something we need to get right at
4 this time.

5 MR. BOWMAN: Okay. Unless there were any
6 other questions about the -

7 MEMBER STETKAR: Yes. If I read Appendix
8 B, Table B1 in the I document, they provide - Table B1
9 is their list of possible external hazards which is
10 derived from primarily PRA guidance.

11 And the table systematically goes through
12 each external hazard and does either an allocation -
13 in other words it says, well, we're going to treat,
14 you know, Hazard X, bundle it with Hazard Y or it's
15 bounded by Hazard Y or things like, or it's screened
16 out.

17 Now, a number of those hazards are
18 screened out because of the basis that they are not a
19 natural phenomenon. Those include accidental aircraft
20 impacts, industrial military facility accidents,
21 pipeline accidents, releases of chemicals, ship
22 impacts, toxic gases, transportation accidents,
23 turbine-generated missiles, vehicle impacts and
24 vehicle or ship explosions.

25 I understand the focus on extreme external

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1 - I haven't seen any with the word "environmental" yet
2 hazards, but this is saying that somehow we can screen
3 out that big natural gas pipeline over there because,
4 well, if that blows up, that's not a God-induced
5 event.

6 MR. BOWMAN: I think you are -

7 MEMBER STETKAR: Why can we -

8 MR. BOWMAN: -- exactly right, and we are
9 on the same page on that.

10 MEMBER STETKAR: Ah.

11 MR. BOWMAN: Revision B of NEI 12-06 did
12 not include the natural phenomena criteria for the
13 screening. And at a prior meeting with industry, they
14 had indicated that they would be going back to the
15 Revision B version of the table.

16 MEMBER STETKAR: Oh, is that right? Okay.

17 MR. BOWMAN: The screening did not - the
18 use of the not a natural phenomenon for the various
19 sections in here did not change the outcomes of the
20 screening.

21 MEMBER STETKAR: Yeah.

22 MR. BOWMAN: So, we did not take exception
23 to it in the ISG because it wasn't really a
24 substantive change anticipating that the next version
25 will go back to excluding the screening on account of

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1 being natural phenomena because the order itself does
2 not apply merely to natural phenomenon as the
3 requirements are worded.

4 If they don't - it may be something -
5 there may be a few other nonsubstantive areas within
6 the document that don't read a hundred percent how I
7 would have written it that we didn't address in the
8 ISG because it's not substantive.

9 We may wind up commenting on that in the
10 final ISG, but the Revision B version -

11 MEMBER STETKAR: The revision, okay. I
12 didn't read B because the revisions -

13 MR. BOWMAN: -- is the more appropriate
14 one.

15 MEMBER STETKAR: -- were coming out faster
16 than I can -

17 MR. BOWMAN: Roger that.

18 MEMBER STETKAR: -- read.

19 MR. BOWMAN: Completely understandable.

20 MEMBER STETKAR: And in B, they did have
21 some technical justification for screening out each
22 one of those, or did it just say "screening"?

23 MR. BOWMAN: They gave the screening
24 criteria, and I believe it was a Risk Base 1.

25 MEMBER STETKAR: Okay.

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1 MEMBER SHACK: Significant contributors.

2 MR. BOWMAN: Exactly. It followed the
3 prior PRA basis.

4 MEMBER STETKAR: All right, thanks.

5 MR. BOWMAN: Okay, let's see. Kind of
6 discussed a lot of this. I think we've covered almost
7 everything on this slide.

8 And if you can go to the tenth slide,
9 discussion of the site-specific FLEX capabilities, the
10 one thing that we've added to this that we haven't
11 discussed before is part of the programmatic controls,
12 which is the need for N+1 sets of the portable onsite
13 equipment and being a number of units on the site.

14 So, for a two-unit site there's a need for
15 three sets of equipment. And under this, one set of
16 equipment would be sufficient equipment to satisfy the
17 strategies for all of the functions; core cooling,
18 spent fuel pool cooling and containment capabilities
19 simultaneously.

20 MEMBER SKILLMAN: Eric, I'd like to ask for
21 where the utility has purchased this complex of
22 equipment, either portable pumps, generators, maybe
23 smaller diesels for specific purposes, what is the
24 plan to include that equipment in something that is
25 similar to or the maintenance rule 50.65?

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1 Here sits this equipment. Perhaps it's in
2 garages, it's under canopies or it's somewhere on
3 site, but it's not hooked up.

4 What is the plan to make sure that it
5 really is functional and able to produce the outcome
6 for which it's intended?

7 MR. BOWMAN: What we're looking at with the
8 Interim Staff Guidance is using the parallel augmented
9 quality requirements that are existent for the station
10 blackout equipment or the fire protection equipment.

11 There's a lot of the equipment that winds
12 up being so similar to fire protection equipment that
13 it just makes sense to use the fire protection AQ
14 program.

15 For example, the same types of mitigating
16 strategies for B.5.b or 50.54(hh)(2) resulted in
17 licensees buying fire trucks to use as the portable
18 pumping capabilities.

19 MEMBER SKILLMAN: Right.

20 MR. BOWMAN: And the maintenance
21 requirements, the performance testing requirements if
22 you think about it, something like that where it's a
23 portable pump that's supposed to be used only in
24 emergencies to provide water pressure to mitigate an
25 emergency, it strikes me that that's so parallel to

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1 what we already have the consensus standards on how to
2 be sure it's functional, that we should go to the
3 consensus standards and use those.

4 But at present, I don't believe we're
5 going to wind up with the equipment being subject to
6 the maintenance rule.

7 MEMBER SKILLMAN: What's the consensus
8 standard for diesel or portable AC power generator?
9 What's the consensus standard?

10 MR. BOWMAN: I'm not familiar with the
11 consensus standards for those. I'd have to look them
12 up.

13 So, let me just keep on going. You can
14 call Caterpillar and say, I need a 10 megawatt unit
15 or, you know, hundred kilowatts, whatever it is. And
16 24 hours later a massive 18-wheeler, extended 18-
17 wheeler shows up and here's this gizmo, but the
18 utility says, I want to own that.

19 Seems to me that there needs to be some
20 attention given to how this equipment is protected and
21 exercised. And it's not lost on me how difficult it
22 may be. In a prior conversation how you hook this
23 stuff up, that may take some practice. It might be
24 something you would do on the same frequency as your
25 emergency drills or your - turnout of your fire

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1 brigade, but there needs to be some - not just an
2 exercise of using this equipment, but the staff has to
3 have the confidence that when they do use the
4 equipment, it does what it's supposed to do.

5 MEMBER SKILLMAN: What happened with the
6 B.5.b. mitigating strategies is they became - in the
7 emergency preparedness rulemaking they became subject
8 to the periodic evaluated drills and exercise program.

9 So, I think it's every eight years there's
10 an evaluated drill to show that the staff has the
11 capability of implementing the mitigating strategies
12 and that stuff works.

13 MEMBER SKILLMAN: I'd like to challenge you
14 on this idea of a consensus standard for FLEX
15 equipment that may sit idle for long time periods.

16 At least my experience is if you let
17 equipment sit long enough, not exercised on some
18 respectable frequency, the potential that when you
19 call upon it for use, it will fail you. If you are
20 really intending to have it serve you, you need to
21 know it's fit for duty.

22 So, whatever the consensus standard is, I
23 suggest that be part of your written rulemaking or
24 your written guidance.

25 MR. BLOOM: And if you look in NEI Guidance

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1 11.5, it talks about maintenance and testing. And
2 then 11.6 talks about training.

3 So, they put stuff in their guidance and
4 we revised it a little bit because the way - they kind
5 of came at it with their own new thing, and we said,
6 no, we want you to make sure your maintenance and
7 testing is something that we already have accepted.
8 Don't create a new program from scratch.

9 So, all that is already included in both
10 the NEI guidance and our ISG.

11 MR. BOWMAN: We are taking into account to
12 a certain extent the results of Bulletin 2011.01 where
13 we looked at the requirements that were specified in
14 the NEI guidance for maintenance and testing of the
15 equipment pointed to standard industry practices,
16 which were really not very well defined.

17 We did see a lot of test running of the
18 equipment from what we had reports back. But the
19 frequencies and whether or not certain items were
20 actually test run under that, there was no really good
21 standard that you could point to.

22 What we have written down doesn't specify
23 exactly what consensus standard needs to be used. For
24 example, for the protection-like equipment such as
25 fire trucks, we have said a licensee should use the

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1 fire protection QA program, and many different
2 licensees of course are licensed to different
3 standards.

4 So, it's dependent on, as many things are,
5 when the license was granted and what standard they're
6 up to in their program.

7 So, I think getting to that level of
8 detail in the Interim Staff Guidance might be a little
9 bit too restrictive.

10 MEMBER SKILLMAN: Well, I would agree with
11 wording that points to consensus standards. I'm just
12 curious about consensus standards for portable AC
13 units. I just wonder what that would be.

14 MR. BOWMAN: I know there are some in the
15 NFPA codes. But whether or not they're really set up
16 to handle a portable generator that does something
17 that's not fire protection, I would doubt.

18 MEMBER SKILLMAN: Thank you.

19 MEMBER STETKAR: Couple of things before
20 you leave this slide. The N+1, I understand it, but
21 FLEX says, for example, if I have a two-unit site, I
22 need three.

23 MR. BOWMAN: Right.

24 MEMBER STETKAR: Or if I have one big one,
25 I only need two. Because one big - well, I'll read

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1 you the quote.

2 It says, it is also acceptable to have a
3 single resource that is sized to support the required
4 functions for multiple units at a site. For example,
5 a single pump capable of all water supply functions
6 for a dual-unit site. In this case, the N+1 would
7 simply involve a second pump of equivalent capability.

8 Now, I'm a two-unit site and I have three
9 pumps and two of them fail. I have one unit that's in
10 trouble. So, I need to mobilize my offsite friends
11 and say, get me a pump, please.

12 If I have a two-unit site and I only have
13 two pumps and two pumps fail, I now have two units
14 that are in trouble. So, I need to call my offsite
15 friends and say, I need more pumps now.

16 Is the staff okay with that second
17 scenario? In other words, N+1 in that second
18 scenario, I can buy two bigger pumps and leave myself
19 vulnerable to a multi-unit, more vulnerable to a
20 multi-unit event than if I have three smaller pumps.

21 MR. BOWMAN: Um, I would have to look at
22 the integrated plans to tell you whether or not - in
23 itself looking to just the single failure as opposed
24 to a multiple failure -

25 MEMBER STETKAR: Yeah, but, you know, this

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1 isn't a single-failure world anymore. We have actual
2 events that occur within the design basis world where
3 multiple diesel generators fail, for example.

4 So, it's - and thinking about flexibility
5 in terms of how often do I want to call in the real
6 external cavalry, under what circumstances, is
7 something that, you know, for the price of buying
8 another small pump might help us a lot going forward.

9 I'd hate to be the guy at the plant whose
10 both pumps fail and my strategy presumed that I only
11 had a single failure. So, out there someplace, you
12 know, 20 miles away I have a truck with one pump.

13 MR. BOWMAN: But it's a big pump.

14 MEMBER STETKAR: It's a big pump.

15 MEMBER SHACK: You need two large pumps.

16 MR. BOWMAN: It's a fair comment. We'll
17 take that comment back.

18 The place where I could see it most
19 comfortably fitting using one pump to provide all of
20 the functions -- I'd be hard pressed to say I'm
21 setting up a single pump to provide cooling
22 capabilities, but -

23 MEMBER STETKAR: You know, I'm not going to
24 try to presume anything, because I've actually seen a
25 plant where there are - no, I won't go - it's not a

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1 FLEX, but it's a mitigation system where they're
2 trying to use one pump for two units because of the
3 presumption that both units won't be affected
4 simultaneously.

5 It's a different application, but people -
6 given the opportunity, people will try to save money
7 on a pump.

8 MEMBER SHACK: We saw that in an EPU
9 recently.

10 MEMBER STETKAR: I was thinking of a
11 different example.

12 MEMBER SHACK: They had a big pump.

13 MEMBER STETKAR: That surprised me when I
14 saw that second, you know, I was reading through the
15 N+1 stuff and it all sounded good until I got to that
16 one sentence.

17 MR. BOWMAN: Okay. Next slide, please.

18 All right. These are the requirements for
19 programmatic controls - or the specifications of the
20 programmatic controls that are laid out in NEI 12-06.

21 As I mentioned, we point to the augmented
22 quality. The wording that's in the Interim Staff
23 Guidance is essentially the same as that wording
24 that's in Reg Guide 1.155 for station blackout with
25 very minor modifications.

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1 And the final portion of NEI 12-06, next
2 slide, on the offsite resources, it lays out the need
3 for licensees to be able to bring the equipment on
4 site - equipment or supplies on site. They set forth
5 a 24-hour response time for the equipment and discuss
6 having capability for NRC to do inspections and audits
7 of the equipment.

8 Within our Interim Staff Guidance, we set
9 forth a need for the licensees to have an oversight
10 program over the offsite resources in order to set up
11 essentially an enforcement mechanism.

12 If they haven't - if the offsite resource
13 depot hasn't done it and hasn't properly maintained,
14 it should be caught by the licensees before it gets
15 caught by us and we'll be able to point to the ability
16 to bring the equipment or resources on site as not
17 meeting the requirements of the FLEX program.

18 Last slide. As I had mentioned, the ISG
19 proposes to endorse NEI 12-06 with some exceptions.
20 And lays out also some of the reporting requirements
21 in a very, very high level of what the reporting
22 requirements are for the order.

23 We will be working with NEI on developing
24 templates for the status reports, as well as for the
25 integrated report.

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1 CHAIRMAN SCHULTZ: Any other questions?

2 (No response.)

3 CHAIRMAN SCHULTZ: Any other comments or
4 questions from the Committee?

5 (No response.)

6 CHAIRMAN SCHULTZ: Thank you very much for
7 your presentation. Very thorough and a good report
8 about the status and how the status is changing even
9 for you on a daily basis and will go forward with the
10 public comments that you're receiving.

11 In that regard, I'd like to now invite for
12 public comments on the preceding presenting. Any
13 members of the public in the meeting room first that
14 would like to make a statement for the benefit of the
15 staff or the Committee?

16 (No response.)

17 CHAIRMAN SCHULTZ: Seeing none here, I'll
18 ask to the open phone line or to the phone line.
19 We're checking to make sure that it's open for
20 comment. I think I hear that it is. The bridge is
21 open.

22 So, I'd like to ask if there are any
23 comments from members of the public on the telephone
24 line at this time, statements that would like to be
25 made to be heard by the staff or the Committee.

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1 (No response.)

2 CHAIRMAN SCHULTZ: Hearing none, I'll call
3 for a recess until 10:15.

4 (Whereupon, the above-entitled matter went
5 off the record at 10:03 a.m. and resumed at 10:21
6 a.m.)

7 CHAIRMAN SCHULTZ: We'll come back from
8 recess now. This is the ACRS meeting of the Fukushima
9 Subcommittee. The next presentation is associated
10 with the Interim Staff Guidance on spent fuel pool
11 instrumentation, the order that was issued in March.

12 The Panel that's here to make the
13 presentation will be introduced by Lisa Regner. Lisa,
14 welcome. Thank you.

15 MS. REGNER: Thank you. Good morning, good
16 morning. I appreciate being in front of you again.
17 I'm the project manager for the spent fuel pool
18 instrumentation enhancements.

19 I would like to take a minute to introduce
20 part of the team that's worked on this order and
21 Interim Staff Guidance.

22 To my right, your left, is Steve Jones,
23 the technical lead. His branch chief for balance of
24 plant, Greg Casto, is not here today. However, Steve
25 is the main driver on the balance of plant side for

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1 this order. And he's been just fabulous to work with
2 as has Steven Arndt to Steve Jones' left, and David
3 Rahn. We've had a lot of Steves. The NEI contact,
4 primary contact, is also a Steven. So, well
5 represented by Steves.

6 And I do have to say, also, there are new
7 reactor representatives both on balance of plant and
8 I&C that have - we've been a great team. This has
9 been one of the best teams I've worked with. So, I
10 just did want to give a quick plug to this team.

11 So, if there are any specific questions
12 related to new reactors, we do have representatives
13 here in the audience with us and I thank them for
14 being here. Terry Jackson and Eileen McKenna are the
15 branch chiefs from NRO.

16 So, this morning what I'd like to talk
17 about, I want to give you a short background that's
18 specific to the actions taken on spent fuel pool
19 instrumentation. I'll talk about the key features of
20 the proposed guidance that was submitted by Nuclear
21 energy Institute and how we got to that point. And
22 then I'll summarize some of the exceptions from the
23 staff's Draft Interim Staff Guidance.

24 And finally, I just want to mention a
25 request for hearing that was submitted specific to

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1 this order, and also the venting order, but we'll talk
2 about the specifics of the venting order in the
3 venting presentation this afternoon.

4 So, as you know in the Staff Requirements
5 Memorandum 0137, the Commission directed the staff to
6 take certain actions related to the spent fuel pool
7 instrumentation.

8 That recommendation in the Near-Term Task
9 Force was provided fairly - a fairly detailed
10 recommendation as you remember on safety-related
11 instrumentation to monitor key spent fuel pool
12 parameters such as level temperature and radiation
13 levels from the control room. So, there was some
14 pretty specific criteria in that recommendation.

15 The staff held two public - and I focus on
16 those, because those were some of the key features
17 that ended up being modified, as you know, in the
18 order.

19 The staff held two public meetings with
20 stakeholders in December 2011 and January. And in
21 addition to the Commission meeting, ACRS meetings and
22 Joint Steering Committee meetings with industry,
23 between industry and the NRC, these meetings provided
24 input and basically led the staff to the ultimate
25 order which did differ in a few areas from the Near-

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1 Term Task Force recommendation.

2 Another point I do want to make associated
3 with the order was that the Commission decided that
4 this order, the bases needed to be an administrative
5 exemption, which was pretty unique. And the basis for
6 that was to support that these enhanced spent fuel
7 pool instrumentation criteria were needed to support
8 effective prioritization of event mitigation and
9 recovery actions in the event of a beyond-design basis
10 external event.

11 MEMBER SKILLMAN: Lisa, would you explain,
12 please, a little further what administrative exemption
13 to the backfit rule means in this context?

14 MS. REGNER: Well, in any context the
15 Commission is giving - since we're an independent
16 agency, the Commission makes its own rules. They also
17 have - they are also allowed to exempt themselves from
18 certain rules.

19 And in this case, the Commission - and
20 when the Commission wants to require - make a
21 requirement, they must go through the backfit process,
22 which is basically a cost-benefit analysis, a detailed
23 cost-benefit analysis of whatever requirement they
24 intend to implement.

25 In this case, the Commission decided to

1 exempt itself, basically state that in this case the
2 safety enhancements from this order are significant
3 enough that we will not require ourselves to do this
4 cost-benefit analysis.

5 We don't have the time. We consider these
6 actions to be important enough that they should be
7 implemented immediately, immediately effective. And
8 some of the Bases here are outlined and this was all
9 in the order. In these very unprecedented
10 circumstances, this was a situation where we will
11 exempt these requirements from the backfit rule.

12 MEMBER SKILLMAN: Thank you.

13 MS. REGNER: Does that help?

14 MEMBER SKILLMAN: Yes, thank you. Thank
15 you.

16 MS. REGNER: And they determined that the
17 greater capabilities from this order were necessary.

18 Okay. So, this - you've seen this slide
19 before. This is a summary of the key performance
20 criteria from the spent fuel pool order.

21 I didn't plan on discussing these in
22 detail, but I do want to mention that almost all of
23 these criteria are included in the new reactor
24 designs.

25 We did include Vogtle -- the new Combined

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1 Operating License plants Vogtle and Summer in the
2 orders - well, Summer received a separate order that
3 was equivalent to the orders issued for the operating
4 reactors and for Vogtle just because they received
5 their COL after the initial March 12th date.

6 And really the only delta, the Combined
7 Operating License plants, the AP 1000s, have most of
8 this criteria about - the only significant delta was -
9 had to do with backup power supplies.

10 So, I just did want to make that
11 differentiation. We really have not worried about the
12 new reactors. Their criteria is just so - it's
13 exactly what we wanted for the old reactors.

14 MEMBER SKILLMAN: Lisa, there are the new
15 construction permits that have been given for the new
16 designs, but you still have a backlog in 10 CFR 52 of
17 the design certifications.

18 Will you go back and check for these
19 requirements on the design certs?

20 MS. REGNER: Oh, absolutely. The new
21 reactors is actually - they've issued RAIs how these
22 design certs are going to meet these new requirements.
23 So, they're taking action, yeah.

24 MEMBER SKILLMAN: Thank you, okay.

25 MS. REGNER: Yes.

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1 MEMBER BROWN: I do have a question on this
2 because I haven't asked this question before on any
3 other project. So, this is not necessarily related to
4 this.

5 So, the first question is - there's two of
6 them - indication on demand, does that mean - to me
7 that means it's not continuously displayed. You're
8 requiring continuous display to the operator. They
9 have to go call for that via whatever mechanism.
10 Either somebody walks out and looks at a meter or they
11 access the, you know, their computer-based system and
12 call the data up.

13 So, am I correct that that's -

14 MS. REGNER: That is allowed. That is -

15 MEMBER BROWN: Okay. The second - the
16 second item is it's calibration maintained through
17 power interruption. And I guess I had in my four
18 years here with all the instrumentation for the
19 reactor safeguard systems and others, I had always
20 made the assumption being an electrical guy, that if
21 you lose power and power comes back, everything works
22 just fine.

23 And now, I'm getting the impression that
24 you all allow systems - or NRC allows systems to be
25 installed across the board. It would sound like that

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1 if you lose power and power comes back, it may not be
2 operational. You have to go back and recalibrate it.

3 Am I getting that impression correctly, or
4 incorrectly? I'll look to you two guys, I guess, to
5 answer that.

6 MS. REGNER: Me too.

7 MR. RAHN: That's not a typical specified
8 requirement. Typically we're on the same wavelength
9 as you are is that one power is lost, you know,
10 primarily instrumentation is a sensor in the field and
11 some rack equipment and potentially displays in the
12 control room, primarily electronics.

13 And when power is restored, there's no
14 change in the calibration, you know. So, that's been
15 our design basis for all along.

16 MEMBER BROWN: Okay. So, is that
17 explicitly stated anywhere? I mean, that's why I was
18 kind of puzzled by having the statement that you have
19 to tell them that that's the basis for this stuff.

20 So, is there - it's not in any of the
21 rules I've seen. I mean, it just - is there a Reg
22 Guide or something that -

23 MR. ARNDT: I'd have to go and look. I
24 think it is specified in one of the Reg Guides, but
25 I'd have to go and physically look to see which one it

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1 is.

2 MEMBER BROWN: Okay. And you don't recall
3 any set of reactor monitoring trip the other
4 instrumentation that ever fell into the category of
5 having to be recalibrated when the power was
6 interrupted, in your experience?

7 I'm just trying to get a calibration here.

8 MR. RAHN: Not in my experience, no.

9 MEMBER BROWN: Okay.

10 MR. ARNDT: There was the one very famous
11 BWR example where the level instrumentation had issues
12 with changing parameters, but it wasn't a power issue.

13 MEMBER BROWN: Okay. All right. That was
14 all there.

15 MS. REGNER: I think the reason that we
16 specified this in this case is, you know, we're in a
17 very - we're in a new situation where we're trying to
18 define criteria for beyond-design basis external
19 events.

20 We're not requiring that safety-related
21 pedigree. And so, staff has tried to be as flexible
22 as possible to allow as many different types of
23 instrumentation as possible, but we also want it to
24 meet very specific criteria.

25 And even though sometimes it seems like an

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1 oh, duh criteria, we still do want to make sure that
2 we're not going to get a question, well, you didn't
3 send me - you've already gotten this a few times.
4 Well, you didn't state that.

5 MEMBER BROWN: I'm familiar with that.

6 (Laughter.)

7 MEMBER BROWN: I get that from you all
8 sometimes - no, I'm just kidding.

9 (Laughter.)

10 MEMBER BROWN: I'm sorry. Just a little
11 humor just to keep us going here, all right? Make
12 sure I'm clear on the humor standpoint, thank you.
13 You can go ahead.

14 MS. REGNER: Okay. So, some of the key
15 differences I wanted to touch on briefly between the
16 recommendation and the order were - there was a focus
17 on beyond-design basis external events that we did
18 focus on the parameter of level.

19 In these types of extreme conditions,
20 level was going to be the one parameter that we would
21 key in on to allow operators to make those immediate
22 decisions immediately in -

23 MEMBER BROWN: Why not temperature?

24 MS. REGNER: Well, if you're losing level -

25 MEMBER BROWN: If it's too hot, that's

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1 nasty.

2 MS. REGNER: What's that?

3 MEMBER BROWN: If it gets hot, that's
4 nasty, isn't it?

5 MS. REGNER: That is true. However, again,
6 the whole - the Lessons Learned from Fukushima was
7 that there were possibly resources diverted from
8 containment, core cooling and containment cooling and
9 used on spent fuel pool cooling when in fact there may
10 not have been that dire need.

11 MEMBER BROWN: Well, they didn't have any
12 instrumentation to monitor it. So, now you're not
13 going to provide it here either.

14 MS. REGNER: Correct.

15 MEMBER BROWN: So, they can continue to be
16 confused.

17 MEMBER ARMIJO: No, they are going to
18 provide it, Charlie.

19 MS. REGNER: No, wait.

20 MEMBER BROWN: No, they said -

21 MR. JONES: The point here is that -

22 MEMBER BROWN: This is only level.

23 MR. JONES: Right. Temperature is not
24 really directly linked to a safety concern in the
25 pools. And I think Fukushima bore that in that the

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1 pools were at saturation conditions for extended
2 periods of time and no evidence of a significant
3 release from the pools although the level decreased
4 substantially.

5 If the level had decreased somewhat more,
6 then there would have been more of a safety concern in
7 that. And that was driving a lot of the actions at
8 the site. And that was a concern we're responding to
9 in this order is to allow the response personnel on
10 site to determine how important it is to get more
11 water into the pool and protect the fuel.

12 MEMBER BROWN: So, the point - okay. All
13 right. I'm just trying to understand.

14 I guess what you're telling me as long as
15 the pool is at 212 degrees and boiling, it's okay.

16 MR. JONES: Right. And that is -

17 MEMBER BROWN: And you only worry then if
18 the water level goes below the top of the fuel.

19 MR. JONES: Right.

20 MEMBER BROWN: You're only getting steam
21 cooling as opposed to a boiling water cooling.

22 CHAIRMAN SCHULTZ: But isn't temperature a
23 good leading indicator and isn't it diverse from level
24 measurement?

25 MEMBER ARMIJO: Oh, it's diverse.

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1 MR. JONES: It's not diverse in that it
2 doesn't give you the same information. I agree it's
3 a leading indicator. It might be useful for the first
4 several hours of an event as the pool heats up.

5 But once it reaches saturation, it doesn't
6 provide any new or different information for a long
7 period of time.

8 MS. REGNER: Again, the focus is on extreme
9 events where you've got large losses of the plant,
10 your primary focus is going to be on core cooling,
11 containment cooling. Not that you're going to ignore
12 the spent fuel pool, but, you know, one of the new
13 indicators that the industry has implemented is that
14 time to boil.

15 So, all operators have the ability - they
16 know immediately their time to boil. They keep that
17 information in the control room and that's going to be
18 days. Very typically days except in -

19 MEMBER STETKAR: Lisa, can you help us a
20 little bit and flip to the next slide?

21 MEMBER BROWN: I've got a question on that
22 one too.

23 MEMBER STETKAR: I knew you would, but -

24 MS. REGNER: Sure.

25 MEMBER STETKAR: I want to kind of address

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1 it in the context of what you're talking about.

2 Everybody knows the time to boil if the
3 waves are lapping at the top of this picture. People
4 don't know the time to boil if the waves are lapping
5 at the bottoms of the slots of the open weirs that are
6 open during refueling operations and any fuel
7 movements in the spent fuel pool. And certain plants
8 do have scenarios that you can very rapidly drain the
9 water down to the bottoms of those weirs, which are
10 typically a foot to two feet above the top of active
11 fuel.

12 Don't look surprised. They are. Steve
13 knows.

14 (Laughter.)

15 MEMBER STETKAR: The time to boil under
16 those conditions people don't know, because they've
17 never been asked to calculate that time. We'd ask
18 them and the answer comes back we don't know.

19 So, presuming - and you use the term
20 "extremely severe events." Presuming that we know
21 where the water will be in every extremely severe
22 event is not quite what we're trying to do here.

23 So, be careful about knowledge of the time
24 to boil, because that knowledge presumes that the
25 world behaves according to the way that we dictated in

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1 our rules that it will behave, and it doesn't.

2 MR. JONES: I think that's just another
3 example of why we focused on level, because we're
4 looking for indications of, you know, an extreme
5 seismic event, for example, where you may have a rapid
6 draindown occurring and the instrumentation should
7 provide that indication.

8 MEMBER ARMIJO: Well, if Fukushima had had
9 reliable water level instrumentation in the pools, we
10 wouldn't be sitting here today talking about spent
11 fuel pool instrumentation.

12 It would have been a non-problem, people
13 would have focused properly on the core, and the real
14 issue is - so, temperature measurements would be nice
15 to have in addition and all that, but I don't see the
16 issue of - I don't see a problem with relying just on
17 level.

18 Maybe - so, I may be in the minority here,
19 but it seems to me you're on the right track. I don't
20 understand your granularity.

21 MS. REGNER: Yeah, I apologize for this is
22 - that's my mistake. This is an old - this is an old
23 graphic.

24 If you look on Page 3 of the NEI 12-02 -

25 MEMBER BROWN: I'm looking at it. It says

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1 three and a half foot resolution minimum.

2 MS. REGNER: Resolution, yeah.

3 MEMBER BROWN: I looked at granularity and
4 that's like Stone Age technology.

5 MS. REGNER: It is.

6 MEMBER BROWN: That's not even Stone Age.

7 MEMBER ARMIJO: I don't understand why, you
8 know, if you can measure one foot resolution at the
9 top where it's really not too sensitive, you know,
10 you're in peril as you get closer to the top of the
11 fuel. And I would think there's where you'd really
12 want to know what -- how fast something bad is
13 happening, but -- or consistent resolution all the way
14 up and down. I just don't understand this step.

15 MR. JONES: I think the way the order is
16 set up, there's just three distinct levels we ask the
17 industry to be able to differentiate. And we wanted
18 to allow as much flexibility as possible in terms of
19 the instruments that were chosen to meet that
20 requirement.

21 The levels, we've probably mentioned this
22 before, but Level 1 is just a level that allows
23 operation of the normal fuel pool cooling system.

24 Level 2, the middle level there, is a
25 level that provides substantial shielding in that

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1 there's no restriction on operator access to the pool
2 under - other than any other physical damage that may
3 occur. And then the last level is the top with racks.

4 MEMBER ARMIJO: Where were these weirs that
5 John mentioned?

6 MR. JONES: They've above the top of the
7 rack of -

8 MEMBER STETKAR: They're anywhere from
9 typically a foot to two. Usually around two feet, but
10 -

11 MEMBER ARMIJO: for both Bs and Ps?

12 MEMBER STETKAR: Yes.

13 MR. JONES: In boiling water reactors
14 there's a set of two gates between the pool and - this
15 is in Mark I and Mark II containments. A set of two
16 gates between the pool area and the reactor vessel
17 area. And the bottom of those gates is about a foot
18 above the top of the storage racks in the pool.

19 In PWRs in most cases, the fuel transfer
20 tube is located in a transfer canal area. And there's
21 a gate separating the canal from the spent fuel pool.
22 And the bottom of that gate, again, is typically about
23 a foot above the top of the storage racks.

24 I guess what I wanted to get into is one
25 element of the ISG calls for whatever instrumentation

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1 is deployed to have no - I lost the word.

2 I guess what I mean to say is there's no
3 confusion by the instrumentation. In other words, the
4 resolution has to be fine enough that you know that
5 you've either exceeded Level 2 - you're either at a
6 range around Level 2, or you're at a range around
7 Level 3, but the fuel has not been exposed.

8 You won't get dual indications that both -
9 you're at Level 2 or 3.

10 MEMBER BROWN: Well, what is 3? I mean,
11 you mentioned both the same place. so -

12 MR. JONES: No.

13 MS. REGNER: No.

14 MR. JONES: I'm sorry. This chart is
15 incorrect. So, disregard that 3.

16 MEMBER BROWN: It's the same that -

17 MR. JONES: Three is down at the top where
18 it says "top of rack."

19 MS. REGNER: Top of rack is Level 3. Just
20 above top of rack, yeah.

21 So, these levels - and the reason NEI
22 illustrated this is because they wanted to make a very
23 strong point that the industry is not going to wait
24 until Level 3.

25 MEMBER BROWN: Of course not.

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1 MS. REGNER: Right. And so, this -

2 MEMBER BROWN: But the three and a half -

3 MS. REGNER: They basically said, that's
4 nice, staff, that you've, you know, that you've
5 allowed, you know, that you're Level 3 derives actions
6 such as pull out, you know, where you're injecting
7 water and you no longer divert, you no longer - you've
8 now shifted your focus to the spent fuel pool, was the
9 staff's original intent that Level 3 is the place
10 where you have to focus on the spent fuel pool, use
11 any means available to provide makeup to the spent
12 fuel pool.

13 MEMBER BROWN: But a three and a half foot
14 resolution if it's moving at some speed, all of a
15 sudden it's there. I mean, that's ten feet. That's
16 three little marks - two little marks.

17 MS. REGNER: Well, NEI's point was we're
18 not waiting until Level 3. We're going to be pulling
19 out the stops at Level 2. We're going to be, you know
20 - go ahead.

21 MR. JONES: Well, I think the distinction
22 is that the rate of change should be available between
23 Level 2 and Level 3. And if you have a fast rate of
24 level change, the response organization can recognize
25 that you need to maybe think about deploying spray or

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1 some other capability associated with -

2 MEMBER BROWN: Well, if you lose -

3 MR. JONES: -- the mitigating -

4 MEMBER BROWN: -- three and a half feet in
5 a minute, that's -

6 MS. REGNER: Then you'll be -

7 MR. JONES: I don't think that's possible.

8 MEMBER BROWN: I have no idea. I mean,
9 it's just three and a half feet and the next thing you
10 know you're down another three and a half feet.

11 MEMBER ARMIJO: But, you know, if the rate
12 of change -

13 MEMBER BROWN: That's just insane.

14 MEMBER ARMIJO: -- from Level 1 to Level
15 2 if that was very high, people wouldn't wait until it
16 got to Level 2 before you start doing something.

17 MS. REGNER: And that's providing the
18 information that -

19 MEMBER ARMIJO: It's really reliability and
20 resolution so that you know the rate of change. And
21 the Level 2 just kind of tells you, you can't do
22 anything manual if you go below that. Is that the
23 kind of idea -

24 MS. REGNER: That was where you're going to
25 have radiological -

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1 MEMBER ARMIJO: You can't send a guy in
2 with a dipstick or anything like that.

3 MS. REGNER: -- challenge.

4 MEMBER STETKAR: Let me ask - this
5 discussion is really good, but let me go back to the
6 results from risk assessment in the - at certain
7 plants, the results of seismic risk assessment say
8 that the most vulnerable issue for spent fuel pool and
9 pressurized water reactors, Sam, because they are more
10 vulnerable to this -

11 MEMBER ARMIJO: Okay.

12 MEMBER STETKAR: -- is indeed seismic
13 failures of the fuel transfer tube during refueling
14 operations or fuel movements.

15 And some plants in other countries at
16 least, regularly ship spent fuel off site. So, you've
17 got those weir gates open and things open - not
18 necessarily the fuel transfer tube at that time, but
19 susceptibility of draining the pool down to the
20 bottoms of those weir gates under seismic events.

21 The question is everybody - why do we need
22 to design this based on a design basis loss of spent
23 fuel pool cooling event? We're trying to learn things
24 that we ought not to - well, but this design presumes
25 that.

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1 With the level of resolution of three and
2 a half feet below Level 2, you are presuming that
3 level will not ever rapidly drain down to two feet
4 above the top of the fuel.

5 MR. JONES: I don't see -

6 MEMBER STETKAR: Let me follow this right
7 here.

8 MR. JONES: Sure.

9 MEMBER STETKAR: One of the problems that
10 we had a Fukushima was that people got very, very
11 confused and very, very concerned and spent an awful
12 lot of effort and resources, because they didn't know
13 the status of the spent fuel pool perhaps diverting
14 resources away for more important things that they
15 ought to have been doing. Don't know. That's
16 speculation.

17 If I do have a situation where I rapidly
18 drain the level down to two feet above the top of the
19 fuel and I don't know where it is, we're in the same
20 situation as we were in Fukushima. Oh, my God, we
21 don't know where level is. I need to mobilize some
22 people and go immediately start makeup to that spent
23 fuel pool when indeed I may still have time if I knew
24 that indeed I had still a couple of feet of water
25 above the spent fuel.

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1 And that's one of the concerns that I have
2 about why are we eliminating that piece of information
3 with equal to or greater resolution as we get closer
4 to the top of the fuel for the operators just because
5 we presumed that we're just going to have kind of a
6 boiloff or very slow leakage rate, you know, from an
7 existing water level.

8 MS. REGNER: Basically -

9 MEMBER STETKAR: How much more does it cost
10 the applicant to install equal to or better than
11 resolution instrumentation between Level 2 and Level
12 3 compared to between Level 1 and Level 2 if you're
13 just going to do it today?

14 MR. REGNER: The staff asked itself and NEI
15 asked us, told us, their actions would be no
16 different. Knowing that you're at the top of the
17 rack, you've already got your bootstraps methodology,
18 you know. You're implementing any resource available.
19 It wouldn't change their actions.

20 If we knew if we could watch the level go
21 all the way down to the bottom of the spent fuel pool,
22 it wouldn't change their response. They would be
23 using any methods available to inject water.

24 MR. JONES: Yeah, I think if you - if you
25 have indication at Level 3 and there's no indication

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1 for Level 1 and 2, you know you've lost half your pool
2 inventory and you don't know where it went,
3 apparently, or you wouldn't be bothering with the
4 instrumentation.

5 So, at that point I think that there's a
6 clear indication you need to prepare for either spray
7 or makeup depending on a broader assessment of where
8 the water is going.

9 If you know it all ended up in
10 containment, then I think you have a good indication
11 that you only need to worry about makeup. But if
12 there's, you know, if the water is somewhere else,
13 then you need to worry about implementing the spray.

14 But I think there is sufficient
15 information from this and it is consistent with the
16 design instrumentation for the passive reactors that
17 we're looking at.

18 MEMBER STETKAR: It's okay, because they've
19 probably not thought about that condition either. I
20 know they haven't.

21 MR. JONES: Well, we do have a, you know,
22 there is a longstanding bulletin related to reactor
23 cavity seal integrity. And that is part of the
24 licensing basis for the new reactors.

25 So in that sense -

1 MEMBER STETKAR: But they typically say
2 they have leakproof seals or they've done analyses to
3 show that the leakage rate is very small such that
4 indeed if you were connected, you'd drain down this at
5 the presumed slow rate. So, you'd be aware of it.
6 You'd be able to look at that rate and make decisions
7 in terms of priorities of what's going on, on your
8 plate in this scenario and say, well, looks like we're
9 draining down at a certain rate. We ought to start
10 mobilizing things, but I need to pay attention to
11 something else over here first.

12 MR. JONES: Right. I think we do have
13 indications from the 1984 Haddam Neck event that
14 prompted that bulletin on the timing of how long it
15 takes to lose a substantial amount of water. That was
16 about a 20-minute duration to drain down to the
17 transfer tube level.

18 MEMBER STETKAR: Wow. That was bad.

19 MEMBER BROWN: Why would you want - if you
20 expect a certain level in the spent fuel pool, I mean,
21 what's Level 1, the normal operating level? I've
22 forgotten the numbers.

23 How much water is there above the top of
24 the rack in typical -

25 MR. JONES: In boiling water reactors,

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1 that's going to be more than 25 feet above the top of

2 -

3 MEMBER BROWN: PWRs?

4 MR. JONES: In PWRs it can be substantially
5 less, but the suction supplied -

6 MEMBER BROWN: Normal operation. I don't
7 mean during fuel transfers. Just during -

8 MR. JONES: Well, during normal operation
9 you're going to be at about 25 feet of water above the
10 top of -

11 MALE SPEAKER: 22 to 25 feet.

12 MEMBER BROWN: Okay. So, that ballpark.

13 MR. JONES: Yeah, typical tech spec is 23
14 feet. That's in the standard technical
15 specifications.

16 MEMBER BROWN: Okay. So, a guy when he
17 goes to check it, would expect to see it at 23 feet,
18 right? If he had instrumentation there he'd look and
19 say, oh, it's 23 feet. I'm happy.

20 MR. JONES: Uh-huh.

21 MEMBER BROWN: Why wouldn't he start
22 wondering if he went and saw it was 22 feet?

23 MR. JONES: Sure.

24 MEMBER BROWN: So, I mean, all this jibber-
25 jabber about waiting until you get down to ten feet

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1 above the top of the rack seems to be kind of - I
2 don't want to - oh, by the way, I would call it
3 mindless.

4 I mean, if I was an operator and saw it go
5 down a foot, I'd say, hmm, what's going on?

6 MR. JONES: Right.

7 MEMBER BROWN: So, I mean, arguing about or
8 discussing back, gee, I'm not going take action until
9 I get down to ten feet above the top of the rack, that
10 doesn't make any sense to me. And that's why, you
11 know, some resolution is reasonable.

12 I didn't see any. I may have missed it
13 when I read the two documents, a requirement for some
14 alarm if it goes one foot below the top of the fuel
15 pool just to alert you that something is going on.

16 I didn't see any reference to that at all.
17 It might have been in there, because I -

18 MR. JONES: Existing level instrumentation
19 provides -

20 MEMBER BROWN: Pardon?

21 MR. JONES: Existing level instrumentation
22 provides for a narrow range change in level alarm in
23 the control room. It's not - doesn't have the same
24 qualification as what we're asking for here.

25 It is nonsafety, but that is available.

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1 MEMBER BROWN: Why wouldn't you be
2 interested particularly in an extreme event having a
3 better understanding of what that level may be after
4 you've had, you know, buildings fall in or, you know,
5 water smash into your buildings or earthquakes doing
6 whatever?

7 It just - this is a very coarse - it just
8 appeared to me to be a very coarse proposal by
9 industry via the NEI documents and without additional,
10 hey, guys, we ought to jack it up via the ISG.

11 My personal opinion, I would have said the
12 heck with one foot granularity or three and a half
13 foot. And, by the way, we want you to have an alarm
14 if it goes down one foot below on this stuff, not just
15 on the nonsafety stuff, because it's trivial to do, by
16 the way.

17 Once you put it in, it's trivial. This
18 is, I mean, there is just - there is just no -

19 MR. JONES: I guess there's some
20 consideration on what specific type of instrumentation
21 was being used to maintain flexibility there.

22 I think radar is one potential level
23 indication and that has a falloff in resolution as we
24 get further away from -

25 MEMBER BROWN: But we're on a float switch.

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1 It's nice and easy.

2 MR. JONES: Yes, that was one of the items
3 also was a float switch. The float switch has some
4 concerns with, you know, interference with the float
5 and mounting concerns when you get down near the fuel.

6 MEMBER BROWN: This is not churning water.
7 Float switches for steam generator water level which
8 had been tried, that didn't create -- depending on
9 where you mount it can be a problem, but this is -
10 this is a swimming pool -

11 MR. JONES: Right. We're worried about --

12 MEMBER BROWN: -- with nobody in it.

13 MR. JONES: We're worried about debris
14 falling in from -

15 MEMBER BROWN: Yeah, but once it's fallen
16 in, it's, you know.

17 MR. JONES: Well -

18 MEMBER SKILLMAN: The level goes up.

19 MEMBER ARMIJO: I think you got the
20 message.

21 (Laughter.)

22 MS. REGNER: Yes.

23 MEMBER ARMIJO: This granularity thing and
24 resolution thing seems artificial and -

25 MS. REGNER: And a lot of - we did receive

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1 internal comments. This is ludicrous, you know. Any
2 kind of resolution or accuracy that's that gross is -
3 especially the digital I&C guys, they are probably
4 nodding vigorously going, yes, we agree with you.

5 And, you know, the balance of plant side
6 had -- the purpose again is we want gross level
7 indication. We want to know if the methods that we're
8 using to inject are working.

9 Is level going up? Is level going down?

10 MEMBER BROWN: Well, if I have to wait for
11 three and a half feet to find out if it's going up,
12 it's not very useful.

13 MEMBER ARMIJO: You don't specify that it
14 should be gross if that's the only way to do it. You
15 only can get gross measurements that might be good
16 enough.

17 MS. REGNER: Absolutely, right.

18 MEMBER ARMIJO: But you should, you know,
19 I'm not an instrumentation or a sensor guy, but it
20 seems to me that there's - this one-foot resolution is
21 not that - it's pretty primitive.

22 MS. REGNER: Right, and we -

23 MEMBER ARMIJO: But you need some level of
24 resolution that should be consistent up and down the
25 length of the pool and you should have some way of

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1 knowing the rate of change, as well as just the
2 absolute change.

3 CHAIRMAN SCHULTZ: The logic for making the
4 change isn't understood.

5 MEMBER ARMIJO: Yeah.

6 MS. REGNER: And I do want -

7 CHAIRMAN SCHULTZ: Because we're interested
8 not only in - I would think we'd be interested not
9 only in the level that is going down, but that we're
10 in recovery.

11 MS. REGNER: Yes, exactly.

12 CHAIRMAN SCHULTZ: And that's going to be
13 in terms of -

14 MS. REGNER: And we feel that that's what
15 we're -

16 CHAIRMAN SCHULTZ: -- diversion of
17 attention -

18 MS. REGNER: Right.

19 CHAIRMAN SCHULTZ: -- recovery is very
20 good to know.

21 MS. REGNER: Right, right.

22 CHAIRMAN SCHULTZ: And you won't have it if
23 you have that kind of instrumentation below ten feet.

24 MS. REGNER: We'll take that comment. I do
25 also want to say that these are the minimum. These

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1 are minimum, obviously.

2 MEMBER BROWN: You wouldn't ask him to do
3 any better than the minimum if they don't have to?

4 MS. REGNER: Yes, yeah.

5 MEMBER BROWN: Oh, come on.

6 MS. REGNER: Yeah, I think - well, they
7 have to use the design of whatever instrument that
8 they're installing.

9 MEMBER BROWN: They can go out and buy one
10 at RadioShack that works better than this.

11 CHAIRMAN SCHULTZ: Charlie, let's -

12 MEMBER BROWN: We ought to term that -
13 Sam, I agree with you. We ought to stop this
14 discussion. I think the point's been made.

15 Steve, I'm not trying to -

16 MR. JONES: No, that's okay.

17 MEMBER BLEY: Since you got all this going
18 on, I'd toss in, you know, there are folks in other
19 industries like chemical processing industries who
20 rely on some very simple and pretty good indicators
21 that are maybe old-school, but they work pretty darn
22 well.

23 MS. REGNER: Uh-huh.

24 MEMBER BLEY: And they're more mechanical
25 than they are electronic and fancy.

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1 MEMBER BROWN: How about a gauge -

2 MEMBER STETKAR: Mirrors and -

3 MEMBER BROWN: Exactly. Done that before
4 too.

5 (Simultaneous speaking.)

6 MEMBER RYAN: I guess I've got a question.
7 I heard a little bit about it as you've been talking.
8 You mentioned the radiological conditions at the top
9 of the fuel, of course.

10 At some point it just seems to me, and I
11 guess I agree with the comment made earlier that the
12 closer you are to the top of the pool making choices,
13 the much less important the radiological conditions
14 become.

15 And to me, I would think about that aspect
16 of the problem just as much as I would think about the
17 flow rate out the bottom of the pipe. Because, you
18 know, that's something that could be a big deal for a
19 plant where a lot of fuel is stored or reracked twice
20 or three times versus a brand new pool.

21 So, I think you haven't talked much
22 about it. It's obviously you thought a little bit
23 about it and you talked some about it today, but I
24 would think that there is going to be someplace along
25 this, you know, draining water where you're not going

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1 to be able to get in to do anything.

2 If you don't have a remote setup already,
3 you're in trouble.

4 MR. JONES: Right. That's the reason
5 there's a requirement for a primary permanently
6 installed instrument. And it needs to be qualified to
7 withstand the radiation and temperature and humidity
8 effects associated with boiling.

9 MEMBER RYAN: But that one instrument is
10 between you and real trouble. So, I just -

11 MR. JONES: Well, there's a portable
12 instrument also, or there may be a second -

13 MEMBER RYAN: Who's going to put that in?

14 MR. JONES: -- permanently fixed
15 instrument.

16 MEMBER RYAN: Okay, but who's going to take
17 the portable instrument in?

18 MS. REGNER: They would take action - part
19 of their procedures would be that when they're losing
20 level if they've got a portable backup
21 instrumentation, that would need to be installed
22 before -

23 MEMBER RYAN: They may have covered all the
24 basis, but, you know, maybe it's that I haven't heard
25 enough of the detail how that's going to happen. But

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1 when you've got a multifaceted emergency going on, you
2 know, I just wonder are you going to have all the time
3 and all the people to do all the things that you've
4 got to do?

5 And if this one gets short-sheeted, you
6 might end up without having a lot of systems in depth
7 to deal with this particular problem. So, I just
8 thought for that as a food for thought.

9 MR. JONES: The ISG does include a resource
10 limitation and time limitation on deployment of the
11 portable instrument -

12 MEMBER BROWN: Yeah, but it says -

13 MR. JONES: -- prior to -

14 MEMBER BROWN: -- 60 minutes. And you
15 just made a comment earlier in the thing, and I've
16 forgotten what it was in relation to, something being
17 open if you're in some condition when this happened,
18 you could drain it down to two feet or so below in 20
19 minutes.

20 In 60 minutes deploy a backup if it
21 requires to trained operators, I mean, that -

22 MR. JONES: If you're in that first
23 situation, we really don't need that instrumentation
24 too much. We'll - I think that that -

25 MEMBER BROWN: I don't know unless the

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1 gates close and it's supposed to be higher.

2 MR. JONES: Right.

3 MEMBER BROWN: I'm not a refueling guy. So

4 -

5 MEMBER STETKAR: Steve, the only concern is
6 that, you know, we're addressing spent fuel pool
7 within the context of this ISG and this discussion.
8 And the poor operators at the plant have to address
9 this in the context of everything else that's
10 happening. And I think it's important to keep all of
11 that in perspective.

12 They need to know where they have time
13 available so that they can focus their priorities and
14 attentions onto other things where they may have much
15 less time available.

16 And the only danger about presuming
17 certain rates of change or certain options or certain
18 resolution is that you don't want to foreclose that
19 information to the operators just because you're
20 looking at only a spent fuel pool issue here.

21 Because that again comes back to the
22 problem they had at Fukushima. They devoted resources
23 because of lack of information where perhaps, you
24 know, those resources might have been much better
25 used.

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1 So, things about resolution and presumed
2 rates of change and things like that, you know, might
3 sound well if you're thinking about only particular
4 scenarios for only the spent fuel pool, but might not
5 do so well when you pull back on it.

6 MEMBER ARMIJO: Well, it just seems to me
7 that for the spent fuel pool level, there's really
8 only three things that the operator really needs to
9 know.

10 He needs to know what the level is. He
11 needs to know what the rate of change of that level
12 is. And he needs to know that those measurements are
13 reliable and he can depend on it.

14 And the earlier he knows that information,
15 the better off he is and then periodically gets
16 updates.

17 But getting information when it's at the
18 top of the fuel, you're already - if you wait that
19 long, you're in trouble - well, yeah, worse than
20 trouble.

21 So, it just seems, you know, this
22 resolution argument I think just is a distraction and
23 the focus should be early indication that the pool
24 level is stable or dropping. And that the
25 measurements are absolutely reliable.

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1 If you've got that, that's all you need.

2 MEMBER STETKAR: I think the three levels
3 make a lot of sense. Level 2 is where the sirens
4 ought to go off to kind of get your attention.

5 MEMBER ARMIJO: Radiation sirens will
6 start.

7 MEMBER STETKAR: Well, no, they won't
8 necessarily.

9 MEMBER ARMIJO: Well, you know, that's nice
10 to know, John.

11 MEMBER STETKAR: The three discrete levels
12 seem to make a lot of sense. It's just the
13 information to the operator about -

14 MEMBER BROWN: Well, you want to wait 13
15 feet before you -

16 MEMBER STETKAR: No, no.

17 MEMBER BROWN: Well, that's the second
18 level. That's ten feet above.

19 MEMBER STETKAR: The information to the
20 operator as you transition through that drainage, as
21 Sam said, you know, confidence in the readout and, you
22 know, ideally some measure of the rate of change would
23 help also so that you -

24 MEMBER BROWN: Well, yeah.

25 MEMBER STETKAR: You take a look at it,

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1 it's going down slow, it's at some level. You take a
2 look at it a little later, it's still going down slow.
3 It's a little lower level.

4 That still gives you information that you
5 can tend to, you know, Problem A and still have some
6 margin -

7 MEMBER RYAN: I guess I struggle a little
8 bit with the information you're going to get early on
9 maybe unrelated to things that start happening at a
10 different rate a little bit shortly thereafter.

11 I mean, if your rate of change jumps up
12 all of a sudden, then anything you had planned up to
13 that point is kind of out the window.

14 MEMBER ARMIJO: Don't get me wrong. I want
15 water level all the way down to the floor. But I'm
16 just saying the earlier you get good, solid
17 information, the better. That's all I'm saying.

18 MEMBER BROWN: In the NEI emphasis it says,
19 gee, but when you get to the Level 3 right at the top,
20 you can't stop - you can't defer putting water once
21 you get to this point. That seems to me totally
22 mindless. I mean, how you could ever wait until
23 you're to the top of the fuel rack before you start,
24 oh, now it's time to take action as we're starting to
25 uncover the fuel.

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1 MS. REGNER: Those were the staff's
2 original -

3 MEMBER BROWN: No, that's in the NEI.

4 MS. REGNER: Well, and they took that from
5 us. NEI did state very, very clearly what you're
6 calling actions at Level 3, we're taking at Level 2.

7 MEMBER BROWN: Or even ten feet is too
8 late, as far as I'm concerned. If you saw it dropping
9 a couple of feet, you know, from the top of the thing,
10 you ought to start doing something, unless it took
11 three months to do that. That would be another -

12 (Simultaneous speaking.)

13 MEMBER BROWN: But with this type of
14 resolution, you're not going to get any of that -
15 inaccuracy, you're going to get any of that
16 information.

17 MS. REGNER: We understand you are not
18 happy with --

19 MEMBER BROWN: There will be some comments.

20 MS. REGNER: -- the resolution of -

21 CHAIRMAN SCHULTZ: I think we've got as
22 much out of this slide as we can.

23 MEMBER ARMIJO: We beat that one to death.

24 CHAIRMAN SCHULTZ: We should move to the
25 next.

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1 MS. REGNER: Okay. So, the NEI guidance
2 document submitted, I do want to provide a little
3 background how we got there.

4 There was an accelerated schedule,
5 extensive stakeholder involvement. We had three
6 public meetings in addition to steering committee
7 joint meetings.

8 And we did really need to focus on the
9 ultimate purpose of the order as we've talked about
10 before, you know, reactions, actions to provide
11 information to emergency responders so that they can
12 make appropriate decisions on cooling the core,
13 cooling containment and keeping the spent fuel pool
14 level at an appropriate level.

15 NEI planned to submit their proposed
16 guidance in mid-May. The staff's schedule required us
17 to issue a Draft Interim Staff Guidance at the end of
18 May.

19 So, since that was decided - it was
20 determined that that was going to be too late for us,
21 we decided - the staff decided that it would develop
22 its own guidance. And this document was instrumental
23 and it was the driver in allowing us to have good
24 discussions during these three public meetings, and
25 ultimately resulted in an NEI document that was

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1 essentially aligned with the staff's wishes.

2 The staff's guidance is available in
3 ADAMS. It's publicly available, but we did sunset it
4 mostly because, again, the NEI, we did decide to
5 endorse the staff's guidance.

6 It did provide some more important details
7 for engineers, designers that we didn't have in our
8 document. And we didn't want to cause confusion
9 either.

10 So, we did decide to endorse that and I'll
11 talk about some of the design features in the
12 guidance.

13 Thanks. So, generally it's to enhance the
14 ability of the personnel operators and emergency
15 responders to monitor spent fuel pool level under
16 conditions that restrict access to the pool. So, to
17 allow them the ability to make appropriate decisions.

18 This instrumentation is to be available
19 until offsite resources arrive, deploy and stabilize
20 spent fuel pool conditions.

21 So, we do have certain areas where we do
22 tie to the mitigation strategy's interim staff
23 guidance, because those - that equipment will also as
24 Steve talked about, as Steve Bloom talked about in
25 mitigation strategy's presentation prior to me, one of

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1 their primary goals as well is to maintain spent fuel
2 pool cooling.

3 So, there are resources that they have
4 that will be deployed to assist stabilizing the spent
5 fuel pool.

6 The backup channel - and we talked about -

7 MEMBER BROWN: So, the primary channel only
8 needs to be available to offsite resources or
9 available to stabilize? I mean, that kind of makes
10 the statement that it can fail once you have offsite
11 resources. I know that I'm just nitpicking the word.

12 MS. REGNER: It's more once the pool is
13 stabilized.

14 MEMBER BROWN: Then the stuff - we don't
15 need the indication anymore?

16 MR. JONES: I think the concept is that
17 they'd be able to replace the indication, not
18 necessarily that it's not - certainly doesn't - it's
19 not intended to be designed with a failure life of
20 seven hours.

21 But in terms of like, for instance,
22 alternate power supplies, battery life is based more
23 on being able to achieve offsite resources to replace
24 the batteries.

25 MEMBER BROWN: I don't know what to make of

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1 that. It's just - if it's operational, it's
2 operational. I mean, if it's not, then you have a
3 backup. I mean, you want spent fuel pool level to be
4 available even once you have offsite resources
5 available if you needed them to put water in.

6 MR. JONES: Right, but we - there are some,
7 I guess, more time critical aspects of the design.
8 One of them is, for example, if the pool has been
9 boiling and you're losing level, the radiation levels
10 start getting fairly high and the instrument is
11 expected to be designed to withstand that radiation
12 level for a certain period of time. We needed to
13 define some time window.

14 And by the way, we're referring to, you
15 know, a time after a beyond-design basis event. We're
16 looking more in a range of seven days of operation.

17 MEMBER BROWN: Well, switching wires that
18 go off to a -

19 MR. JONES: I agree that's a better -

20 MEMBER BROWN: -- another piece that's a
21 little bit remotely located, you don't have to worry
22 about radiation damage.

23 MR. JONES: Actually, one preference is -

24 MEMBER BROWN: That just seems to be
25 backwards.

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1 MR. JONES: Yeah.

2 MR. RAHN: Just as an aside from my
3 experience as a designer of instrumentation for power
4 plants, typically we're loath to put things that hang
5 over the spent fuel pool in the spent fuel pool.

6 You always run the risk of somebody
7 dropping a float while they're repairing a switch or
8 something down to the bottom of the pool. They like
9 to have instruments that are passive and, you know,
10 something that's not going to fall off and dropped
11 down to the bottom of the spent fuel pool.

12 So, I think the concept of guided wave
13 radar and some of those other things that were being
14 spoken about earlier, the thought there being is that
15 there's less of a risk of something falling into the
16 pool. Just keep in mind -

17 MEMBER BROWN: Something's got to be aimed
18 down at the water.

19 MR. RAHN: Yeah, but keeping in mind this
20 thing is going to be installed for the life of the
21 plant. So, it's there all the time. There's always
22 a risk of when maintaining it or calibrating it or
23 doing something with it to inspect it -

24 MEMBER ARMIJO: You can always fish stuff
25 out of the bottom of the spent fuel pool. Everybody

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1 in the fuel business has dropped something at one
2 point in time -

3 (Laughter.)

4 MEMBER ARMIJO: -- and fished it out. I
5 think the most important thing is -

6 MR. RAHN: You try to design to avoid it.

7 MEMBER ARMIJO: Sure. Of course. That's
8 one of the many requirements, but your first
9 requirement should be it's going to be absolutely
10 reliable and you're going to test the hell out of it
11 and you're going to use it routinely.

12 If it's just going to be sitting unused in
13 an extreme event, then that's a wrong way to go. It
14 just seems to me this is a pretty straightforward
15 engineering issue and we're probably beating it to
16 death.

17 But really pressing to make sure it's
18 reliable, to me, is the highest priority on this
19 thing.

20 MS. REGNER: And that was one of -

21 MEMBER ARMIJO: Look for all sorts of
22 failure modes.

23 MS. REGNER: Yeah, yeah. One of our main
24 goals was to keep it simple to allow for as much
25 flexibility as possible especially for that backup

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1 instrumentation.

2 There are a lot of things that the staff
3 would like, but ultimately we're not - we weren't able
4 to justify in terms of requirements.

5 So, agree. Definitely agree that there
6 are some that are preferable, but that's not our job
7 to define the type of instrumentation that they have
8 to install, or even that we prefer.

9 We have to provide the criteria that has
10 to be met.

11 MEMBER BROWN: Why don't they use simple
12 words like it's got to be simple.

13 MEMBER RYAN: I think we've plowed this
14 down, Charlie.

15 MEMBER BROWN: I know it, but we seem to
16 keep losing the bubble. I mean, now you're worried
17 about something falling to the bottom, not the fact
18 that it's so complex that it needs a magnetron or a
19 klystron to make sure it works aiming radar waves down
20 into the spent fuel pool. It's just, well, we can't
21 tell people. We can't tell people it has to be
22 simple.

23 Yes, you can. You're giving them orders
24 right now to put it in. You can give them orders to
25 tell them what you want it to look like.

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1 MR. RAHN: Yeah. Eventually you need
2 acceptance criteria for what -

3 MEMBER BROWN: Yeah, and there aren't any.

4 MEMBER SKILLMAN: I'd like to ask a
5 question please.

6 In the interactions that you've had with
7 industry, have any of the licensees come back and said
8 instead of adding something new, we are going to
9 utilize what we currently have, but we are going to
10 strengthen it or modify it so it meets the concept of
11 this order that we are going to use what is presently
12 installed and make it robust for this beyond-design
13 base?

14 Has that discussion ever occurred?

15 MR. REGNER: We've had discussions where
16 there are plants that already meet a majority of
17 these. They may not necessarily meet the backup power
18 criteria. So, they may have to make minor
19 modifications, but the assumption would be that they
20 would use existing instrumentation.

21 MR. JONES: Well, overwhelmingly the
22 installed instrumentation is very narrow range.
23 Usually only covers a range of one to two feet at the
24 very top of the pool. And in many cases, it's a level
25 switch.

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1 There are a couple plants that have like
2 Lisa that's referring to, that have deeper, bubbler-
3 type instruments or something to that effect, but
4 they're not redundant.

5 So, there is a need for second instrument
6 to meet these requirements. So, really I wasn't
7 expecting a lot of utilities to come in with a
8 discussion on that point.

9 With regard to the new, the AP 1000 in
10 particular, their design is for an extended boiloff
11 period during the 72 hours with no offsite resource
12 deployment. And in that case, they do have safety-
13 related instruments that provide the level indication
14 down to the level they are asking for.

15 And the main issue there, again, was just
16 the backup power supply capability. That's just
17 powered from the plant batteries. They have no backup
18 to that. And this order would require an additional
19 means of powering that instrumentation.

20 MEMBER SKILLMAN: Thank you.

21 MS. REGNER: Okay. So, independence is
22 chief by physical separation. Different buses are to
23 be used if AC or DC power sources are used. Again,
24 this is all guidance specified in the NEI document.

25 All channels have to have the ability to

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1 connect to a backup power supply independent of normal
2 plant AC/DC power systems.

3 The portable generators or batteries need
4 to support operation for at least three days or until
5 offsite resources are deployed. That's consistent
6 with the mitigation strategies.

7 Accuracy, as mentioned, the accuracy must
8 be maintained following an interruption in power. The
9 display, they are allowed - we, again, tried to give
10 them as much flexibility as possible in the display
11 location.

12 They can put display in the control room,
13 obviously, or at the alternate shutdown panel, or
14 other accessible location. The accessible location,
15 you know, ideally it would be in the control room, but
16 the NEI document talks about the availability of
17 trained personnel to determine level without
18 unreasonable delay meets this requirement.

19 And I will point out that that's one of
20 the exceptions that the staff took. I'll talk about
21 that a little bit more.

22 The accessible location must be away from
23 possible radiological effects of the loss of level in
24 the spent fuel pool protected by severe weather and
25 outside any very high radiation areas or locked high-

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1 rad areas. They can do multiple display locations as
2 long as it doesn't affect the primary display.

3 The NEI document also provides for
4 programmatic features on maintenance operation,
5 testing, calibration, any kind of abnormal response.

6 And finally testing and calibration does
7 allow for surveillance and testing within 60 days of
8 a planned outage, planned refueling outage. And that
9 an instrument, one instrument, can be out of service
10 for up to 90 days as long as actions are taken to
11 protect the second level channel.

12 Any questions on -

13 MEMBER ARMIJO: In the requirements, is
14 there a level versus time requirement or rate of
15 change requirement?

16 MS. REGNER: No.

17 MEMBER ARMIJO: Is there a data recording
18 requirement that, say, you're in the midst of an event
19 and somebody says, gee, the level was a foot higher a
20 few minutes ago, and somebody says, well, I don't
21 think so? There's no data logging. There's no - so -

22 MS. REGNER: The, you know.

23 MR. JONES: The order didn't require it.

24 MS. REGNER: Right, right.

25 MEMBER ARMIJO: But it's the sort of thing

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1 you'd want to know if you were in an event like that,
2 how fast it's dropping, how fast it's changing.

3 MS. REGNER: I don't think we tend to get
4 that prescriptive in orders or guidance. It may need
5 to be. We can definitely take that comment as we
6 develop -

7 MEMBER ARMIJO: Well, the industry guides
8 could probably write it themselves, you know -

9 MS. REGNER: Oh, right.

10 MEMBER ARMIJO: -- what meets their needs.
11 But I would expect something like that would -

12 MS. REGNER: Yeah, I would as well. And we
13 can consider adding that into the technical
14 instruction for - temporary instruction. I'm sorry.

15 MEMBER STETKAR: I think part of that
16 issue, Sam, and I'll quote from the NEI document here,
17 it says, however, it is recognized that spent fuel
18 pool level will not change rapidly during a loss of
19 spent fuel pool cooling scenario.

20 So, the entire fundamental basis of this
21 is that it is, by definition, a slowly-evolving event.
22 So, why do you need rate of change?

23 MEMBER ARMIJO: That's mindset.

24 MEMBER STETKAR: That's one of the
25 problems. It's a mindset.

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1 MEMBER ARMIJO: It's a mindset.

2 MEMBER STETKAR: Everybody knows what's
3 going to happen and it's designed for what everybody
4 knows.

5 MEMBER ARMIJO: It's like to be the case,
6 but if it's raining down -

7 MEMBER STETKAR: I mean, that's the
8 industry document which I recognize is highly informed
9 from interactions with the staff, but - and that's
10 essentially the justification for why we don't need
11 rate of change information or strip charts or
12 something.

13 MEMBER BROWN: Yeah, but if you have an
14 early enough alarm that gets so far - if an alarm goes
15 off when you've dropped a foot, then that immediately
16 clues people to start looking at the numbers.

17 Then they can see, then they can monitor
18 the indication to determine it on their own.

19 MEMBER SIEBER: Dropping that fast, though,
20 what are you going to do?

21 MEMBER BROWN: If you don't put in an alarm
22 fairly soon, then you don't get that. That's all.

23 MEMBER SKILLMAN: I'm just glad the
24 altimeters in airplanes don't give me 30,000 and then
25 when I go under 20, I get an alarm.

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1 (Laughter.)

2 MEMBER SKILLMAN: I really like rate of
3 change and I like increments. And for granularity, I
4 like microscopic granularity.

5 MEMBER SIEBER: You'd actually get the
6 alarm at 50 feet.

7 (Laughter.)

8 MEMBER BROWN: You'd like to know when the
9 ground's getting close, right?

10 MS. REGNER: Okay. So, the staff issued
11 the Draft Interim Staff Guidance on June 7th for
12 public comment. We'll accept and respond to comments
13 received by July 7th.

14 As I mentioned, NEI 12-02 is largely
15 aligned with the staff guidance, and we have decided
16 to endorse NEI 12-02, and that's Revision B, with some
17 exceptions.

18 We do not consider those exceptions to be
19 significant, but obviously we have not received a
20 significant number of public comments. Our final ISG
21 will be informed by public comments, stakeholder
22 comments, ACRS comments.

23 NEI has told me that they do intend to
24 work towards staff's full endorsement with no
25 exceptions. They do plan to submit comments and

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1 revision, a new revision of NEI 12-02 on July 6th or
2 before.

3 So, we are continuing to work - they are
4 continuing to work on meeting the staff's guidance and
5 needs.

6 So, some of the - some of the different
7 exceptions are - the first one is instruments must be
8 able to resist beyond-design basis external events.

9 That wasn't as clearly specified in the
10 NEI guidance as we wanted. Things like the ability of
11 the instrument itself not to be protected, you know,
12 there was a good bit of discussion on protection of
13 the instrument from, say, missiles, debris, but there
14 was no specific discussion of the design, procurement,
15 qualification of that instrument to be able to resist
16 shock, vibration, seismic motion, submergence and a
17 reasonable spectrum of missiles following, you know,
18 and these will be very plant-specific as discussed by
19 the mitigation strategies team for beyond-design basis
20 external events.

21 And some of the ways that that can be
22 qualified are by design and testing -

23 MEMBER BROWN: I just want to read one
24 thing to put into your JLD. It was under the level of
25 - wide-range pool level instrumentation, Section 2.3.

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1 Indications may be continuous or discrete
2 over the ranges identified in each subsection of 2.3.
3 And this is kind of referring to that diagram.
4 Sufficient to provide at least the minimum resolution
5 specified, three and a half feet or one foot. The
6 minimum resolution applies to the separation distance.

7 Right away you're saying it can be
8 discrete as opposed to continuous. And so, from one
9 point to the next I have to have no indication for
10 three and a half feet in that last ten-foot range
11 which is - so, you've amplified or emphasized the
12 acceptance of that resolution range and that you don't
13 need to see anything for another three and a half
14 feet.

15 So, you don't make it any better. That's
16 for sure. And you certainly amplify what they have in
17 their NEI guidance which I could use strong words to
18 follow, but I will refrain - restrain myself, I really
19 should say.

20 But this is the location - this is the
21 point at which my personal opinion that you've gone to
22 the point of mandating by order requiring the industry
23 to do something. And if there are concerns in terms
24 of having - being able to operationally take care of
25 certain circumstances, you back off and don't provide

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1 any specificity in terms of what they - in order to
2 allow the operators to really do what they need to do.

3 I mean, whether it be something simple or
4 the accuracies, resolutions, et cetera, and/or alarms.
5 I mean, so it would seem to me once you get to the
6 point where you're mandating, you're telling them
7 that's what an order does, you've exempted yourself
8 from the requirement of all the backfit stuff, said
9 you were going to go do this.

10 You should provide some guidance in terms
11 of what you expect to provide for the operators in
12 order to allow them to take the actions they need, not
13 just to leave it up in the cloud computing world of
14 some kind.

15 I think, you know, you said, gee, it's not
16 our business to tell people. You don't have to tell
17 them how to design it, but you can certainly tell them
18 with guidance that you should have alarms and/or such
19 suitable to allow early detection of reduced spent
20 fuel pool level, et cetera, et cetera. And to be able
21 to determine on a reasonable basis that you have a
22 rate of level change that allows the operators to take
23 actions within a time such and such.

24 There are many ways to phrase that without
25 telling people exactly what they'd have to do. In

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1 addition, you can say the equipment must not be
2 susceptible to - must be simple, in other words, such
3 that it does not require high levels of maintenance or
4 access to keep it online because you want it to work
5 in the extreme design, you know, outside the design
6 basis conditions where access may not be there.

7 And so, those types of guidelines can
8 easily be incorporated into your ISG to give the
9 industry the guidance of what you want to ensure that
10 you're able to maintain this equipment useable under
11 extreme, difficult conditions without being - telling
12 them exactly what instrument or whatever to do.

13 MS. REGNER: We'll take that -

14 MEMBER BROWN: So, that's just -

15 MS. REGNER: It makes sense. Thank you.

16 MEMBER BROWN: Just put it in here.

17 MS. REGNER: Okay.

18 MEMBER BROWN: We've got the transcript.

19 MS. REGNER: Okay. So, I think I just
20 wanted to finish up that some of the qualification
21 methods were designed for testing and they could use
22 any one of these; substantial history, basically
23 operational experience again in the environments
24 expected, high temperature saturation conditions and
25 high radiation rates or if the components are

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1 inherently resistant to shock and vibration loading.

2 We also wanted a more explicit discussion
3 on the differences between resolution and accuracy.
4 For instance, if the accuracy of -- the design
5 accuracy of the installed instrument is much, much
6 higher than - we didn't actually specify accuracy
7 here, but they must meet the design accuracy of any
8 installed instrumentation.

9 And that goes for resolution as well. If
10 that resolution is much, much higher than what we've
11 specified, obviously they have to meet that
12 resolution.

13 Modifying guidance, the guidance that they
14 refer to to establish Level 2, again, those are dose
15 rates that would impede access to the pool deck.

16 They had referenced in the NEI document,
17 kind of the extreme guidance documents. One is an EPA
18 dose limit for workers performing emergency services.

19 We didn't want them to use those limits
20 such that Level 2 would be determined where a worker
21 would go to the deck to install an instrument and
22 receive that maximum dose. We didn't want that
23 situation.

24 MEMBER RYAN: It might be helpful if you
25 told us what that level was.

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1 MS. REGNER: I'm sorry?

2 MEMBER RYAN: What is that level? It might
3 be helpful to tell us what it is.

4 MS. REGNER: Well, that's what I'm talking
5 about is the -

6 MEMBER RYAN: Well, I want the number.
7 What is the level?

8 MR. JONES: With a, let's see, protective
9 guideline dose of 5 rem would probably be the one.

10 MEMBER RYAN: I know what it is. I'm not
11 sure everybody else does.

12 MR. JONES: Right. And the shielding of
13 the water is pretty effective. So, that would be only
14 about two to three feet above the top of the fuel.

15 MEMBER RYAN: Okay.

16 MR. JONES: So, that's a little too low.

17 MEMBER RYAN: But you're saying you don't
18 want to use that criteria. You want to use -

19 MR. JONES: We want to use a fraction of
20 that criteria, specifically.

21 MEMBER RYAN: All right.

22 MR. JONES: So that a worker does not
23 expend that entire allowance for absorbed dose just
24 doing that -

25 MEMBER ARMIJO: Is that that 20 percent

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1 number that you had in the -

2 MS. REGNER: And then at the other end of
3 the spectrum they also talk about Reg Guide 1.13,
4 which is our normal dose rates. And so, that's too
5 low. So, we'll have - go ahead.

6 MR. JONES: I mean, it's on the low end of
7 the scale, but it's okay. I mean, it would be ten
8 feet above the top of the fuel and that would probably
9 be a dose around two and a half to three millirem per
10 hour dose rate.

11 CHAIRMAN SCHULTZ: So, are we - we are
12 talking about establishing a generic Level 2
13 indication above the top of the racks; is that
14 correct?

15 But that has - these bullets suggest that
16 hasn't been done yet. You're still working to
17 determine that. I don't know what "exactly" means.

18 MR. JONES: It's not a generic -

19 CHAIRMAN SCHULTZ: Ten feet sounds
20 reasonable to me.

21 MR. JONES: It's not a generic value. It's
22 a plant-specific value that the licensees will -

23 CHAIRMAN SCHULTZ: Why a plant-specific
24 value?

25 MR. JONES: Because I guess it directly

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1 relates with -

2 CHAIRMAN SCHULTZ: Is it really that
3 particular?

4 MR. JONES: -- how they design the
5 instrument that's installed.

6 CHAIRMAN SCHULTZ: With indications at one
7 foot, one foot, one foot? It seems to me that a
8 generic value could be more valuable than having
9 plant-specific in this type of scenario that we're
10 talking. It was extreme external events issue that
11 happens -

12 MEMBER RYAN: Steve, I kind of join your
13 thought there. I mean, I've been struggling with how
14 do you really focus a requirement on a particular
15 instrument or a range of instruments in this position
16 measuring this when, you know, we kind of lost the
17 focus.

18 The whole point is to keep occupational
19 explosion of people low. So, I'd much rather deal
20 with those criteria that worries about what the people
21 are doing, where they are and what activities they're
22 involved in. And I'll deal with the dose management
23 from that side of the coin as opposed to saying the
24 area must have a dose rate of so many millirem per
25 hour or whatever it is and, you know, if you exceed

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1 that, you now can't go in.

2 So, I'm struggling with why we've turned
3 the question around a little bit to focus on the
4 instrumentation and the measurements rather than what
5 the plan activities or the emergency activities might
6 be and how that needs to be controlled.

7 CHAIRMAN SCHULTZ: My point would be in the
8 event - in the event of such an event. If such an
9 event happens, why would we want to be quibbling about
10 -

11 MEMBER RYAN: Yeah.

12 CHAIRMAN SCHULTZ: -- that plant specific
13 is eight feet or ten feet? It's a distraction.

14 MEMBER ARMIJO: Any why waste effort -

15 CHAIRMAN SCHULTZ: We want to avoid
16 distraction.

17 MEMBER ARMIJO: -- calculating these
18 things when you could just say it's going to be ten
19 feet, period.

20 MS. REGNER: Well, they would submit their
21 plans. I mean, these different level indications
22 would be provided in their integrated plan in February
23 and approved by the staff.

24 So, they would be set for their plant, but
25 you've also got different fuel loadings for each

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1 plant. And so, the staff felt that there - we'd
2 rather provide a generic type of criteria associated
3 with the dose rates specific to that plant rather than
4 saying ten feet plus or minus one.

5 MR. JONES: I guess the issue here is
6 whether we're performance based or we go to a strictly
7 deterministic value.

8 Deterministic ten feet would be great, I
9 think. But in order to have a performance based, the
10 performance goal is, like you mentioned, is to
11 minimize or control the dose an operator at the edge
12 of the pool would receive during both installation of
13 portable equipment and/or deployment of any mitigation
14 equipment. And that's why the Level 2 is linked to
15 what that dose rate is.

16 In other words, is there a major concern
17 with dose rate such that the emergency management team
18 needs to know that they need to have extra
19 radiological protections or consider an alternate way
20 of mitigating the event in the pool or not?

21 And that's really why there's a decision
22 point at Level 2. And how the licensee determines
23 that, we left it performance based rather than being
24 simple and deterministic.

25 Ten feet is a nice deterministic number.

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1 We have it in our guidance all over the place.

2 MEMBER STETKAR: Steve, did you get
3 pushback from the industry on this requesting that
4 performance-based flexibility, or is that something
5 that -

6 MR. JONES: The performance basis is in the
7 SRMs related to these activities.

8 MS. REGNER: We were criticized by the
9 Commission for being too prescriptive in our original
10 order, yes, uh-huh. And that is for personnel
11 performing operation in the vicinity of the pool, yes.

12 MEMBER BROWN: Yeah, I heard him standing
13 at the edge.

14 MS. REGNER: Okay.

15 MEMBER BROWN: I picked up on his comment
16 there. Thank you.

17 MR. REGNER: So, we, as I discussed before,
18 we do need to discuss a little bit more the criteria
19 in terms of receiving display readings to operators
20 and emergency responders. There's a delta there
21 between, I think, what NEI expects and what the staff
22 expects.

23 We're a little more focused on having
24 someone available stay at any kind of remote display
25 or be promptly accessible to that display. So, we

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1 need some more specific criteria in that area.

2 Finally, NEI's guidance was very light on
3 the detailed integrated plan template. Their
4 integrated plan template was three bullets basically
5 that talked about the - they wanted to provide the
6 method, dates and need for relief.

7 The staff has provided a very detailed
8 integrated plan template from which we can make a
9 determination whether they're meeting the requirements
10 of the order.

11 CHAIRMAN SCHULTZ: Before we go to the next
12 slide, Lisa, I wanted to revisit - you mentioned that
13 there is a desire on the part of industry to come to
14 concurrence with the NRC -

15 MS. REGNER: Yes.

16 CHAIRMAN SCHULTZ: -- or the staff before
17 we get to August 31st.

18 MS. REGNER: Yes.

19 CHAIRMAN SCHULTZ: And could you describe
20 a little bit more about what opportunity there is
21 there?

22 You mentioned that they were going to
23 produce another document by July 6th, but then is
24 there another opportunity for iteration?

25 MS. REGNER: Yeah, well, they have -

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1 CHAIRMAN SCHULTZ: It would be so nice if
2 the document could be -

3 MS. REGNER: Yes, yes, exactly.

4 CHAIRMAN SCHULTZ: -- as fully endorsed as
5 possible by the staff.

6 MS. REGNER: And we would prefer that as
7 well. It makes things very, very simple.

8 CHAIRMAN SCHUTLZ: Simple is good.

9 (Laughter.)

10 MS. REGNER: Exactly. Simple - that's the
11 message I'm getting. I've got that down here.

12 We do have a public meeting tomorrow,
13 which it will be the next opportunity for all
14 stakeholders, but particularly NEI. They have
15 indicated an interest in being there tomorrow and
16 asking some clarifying questions of the staff.

17 So, I think, you know, if the past
18 meetings are any indication, this will be another
19 fruitful interaction where the staff can - they - NEI
20 can understand a little bit more clearly what the
21 staff's looking for and can also provide us with some
22 informal comments.

23 We do - one thing I do want to mention is
24 formal comments will not be accepted at tomorrow's
25 meeting, but again that back and forth clarification

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1 always is very helpful.

2 So, they will provide formal comments to
3 us, as I mentioned before, plus their revision to
4 their document on July 7th. We'll take a look at that
5 and we are certainly open to having more meetings if
6 we need to.

7 I don't have any set up at this point. We
8 had pretty much figured that the next set of public
9 meetings would be more compliance - as Steve mentioned
10 during the mitigation strategies, these compliance-
11 type meetings. What did he call them? Sorry, but
12 bottom line is we're open to more public meetings if
13 they're necessary.

14 But we are very close. There are no deal
15 breakers. I think NEI understands where we're coming
16 from. So, barring any major changes in direction
17 from, you know, from the ACRS and external
18 stakeholders, we're close.

19 CHAIRMAN SCHULTZ: And you're working
20 toward - then down at the last bullet, you're working
21 toward this, you'd like to have a detailed integrated
22 plan template with the order.

23 MS. REGNER: Uh-huh.

24 CHAIRMAN SCHULTZ: Integrated as part of
25 the order.

1 MS. REGNER: Yes. Yes, sir. Their plan is
2 to take our detailed integrated plan, modify it as
3 they feel is necessary to provide clarity, further
4 guidance to those that will actually be submitting
5 this integrated plan designing the instrumentation,
6 the engineers, to put it in a language that's a little
7 more clear for those people.

8 Of course, they're working with the
9 engineers. And so, you know, NEI has much closer
10 contact with the actual designers. And so, they're
11 getting a lot of good feedback and helping us with
12 those differences as well given the alternate criteria
13 that we're expected.

14 CHAIRMAN SCHULTZ: Thank you.

15 MS. REGNER: Finally, I did - this is just
16 for information. We did receive a request for
17 hearing. Pilgrim Watch claims that the order is
18 insufficient.

19 They submitted a request for hearing on
20 April 2nd challenging the adequacy of the order.
21 Beyond Nuclear also filed as a co-petitioner, but I
22 believe they've withdrawn that request at least for
23 the venting order. It may be for this order as well.

24 But regardless of whether Beyond Nuclear
25 is in it or not, Pilgrim Watch is still requesting a

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1 hearing. They claim that the order doesn't go far
2 enough in that it lacks a requirement for licensees to
3 reequip their spent fuel pools to low-density, open-
4 frame design. And they also want assemblies older
5 than five years removed to dry cask storage.

6 So, oral arguments were heard on that June
7 7th and we would hope for a decision from the Atomic
8 Safety and Licensing Board within 45 days.

9 So, that's just for information. And that
10 concludes this presentation. Are there any other
11 questions?

12 CHAIRMAN SCHULTZ: Other comments or
13 questions from the Committee?

14 MEMBER SKILLMAN: I would. I'd like to
15 make a comment. I want to respect what Charlie Brown
16 offered.

17 Even though it was fairly extensive, I
18 think the hidden message is one that I agree with.
19 But I'd like to amplify why I feel as I do.

20 The spent fuel pools are one of the few
21 three-for-one machines you have on a site. The spent
22 fuel cooling water is a shield, it is a scrubber and
23 it's a heat removal device. And the more you have,
24 the better.

25 These pools are normally 500,000 gallons,

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1 600,000 gallons, 400,000 gallons. Most were designed
2 30 years ago, they and their instruments. There was
3 very little standardization among the various
4 designers that put these pools together. Some of them
5 were not safety related.

6 As my colleague Mike Ryan will tell you,
7 some of the pools were managed by the fuel vendors,
8 not by the owners of the plants. And so, there's huge
9 variability among the fleet.

10 New instrumentation that's available is
11 economical, it's accurate, it's multifunctional, it's
12 easily installed. And so, there are some real
13 opportunities here to really fulfill the thrust of
14 this order perhaps much more economically than most
15 people are considering.

16 From where I sit, the operators
17 particularly when they're moving into severe accident
18 management need total level rate of change. And as
19 the water level gets closer to the top of what was
20 once active fuel, a degree of precision.

21 That's where the precision is most
22 important, for the operator to know whether they're
23 off six inches or 12 inches or three feet.

24 So, I would just like to agree basically
25 with Charlie's comments that in my view, fulfilling

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1 this order need not be as draconian as some may think
2 that it is.

3 I think there are a lot of economical
4 opportunities to really protect this fuel, but to give
5 the operators enough information early on that they
6 can prioritize their actions and prioritize what might
7 be their precious time for what could be other more
8 pressing issues. Thank you.

9 MEMBER SIEBER: I guess I would like to add
10 a little bit to this. I think reliability sometimes
11 comes about in simplicity.

12 For example, a simple bubble that you put
13 in a pool, put some compressed air, have a gauge on
14 it, that's a pretty simple instrument. You can put in
15 a bunch of them and get reliability by multitudes.
16 The problem with it is it's not temperature
17 compensated.

18 And this number of one and a half or three
19 feet for the alarm point sort of corresponds to what
20 the temperature is between a normal spent fuel pool at
21 a hundred degrees, and one that's just beginning to
22 boil.

23 And so, if you put a simple instrument in
24 there, you need that latitude because you really don't
25 know where the real level is.

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1 And it seems to me if - I got to think
2 back 40 years or more - that we used to actually
3 determine the level of the spent fuel pool every
4 shift. That was part of the operator rounds.

5 The operator had to go into the spent fuel
6 storage area, not only read the gauge, but also look
7 at the pool. And our procedures did not wait until
8 you could see the top nozzles of the fuel assembly
9 before you would do something about it. Our
10 procedures took action if the pool level was down 12
11 inches. And I can remember making those checks
12 myself.

13 So, the fact that we talk about this
14 leeway at the bottom or between the top of the fuel
15 and where the alarm goes off really just notifies you
16 that if you haven't done anything now, you're in such
17 deep trouble that you ought to think about evacuation.

18 And if you - if the plant procedures don't
19 pay attention to that alarm but say on a periodic
20 basis you got to measure the level and record it, from
21 those readings you can determine the trend and you can
22 determine whether you have an adequate supply of water
23 or not, you can determine whether it's leaking or not.
24 And part of that measurement for us, was to take the
25 temperature.

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1 So, I think that when you look at the
2 extremes that are expressed in NEI's thing and in the
3 order, the licensee should understand that they've got
4 to - this specifies the minimum. They can put in more
5 sophisticated stuff. They ought to take action at an
6 earlier time. And to me, that's sort of, you know,
7 built into the process

8 You look at what it is you have to do in
9 order to be able to manage the plant with the
10 resources that you have. And that's when - so, you
11 set setpoints that are well in advance of what your
12 minimum constraints are so that you can take action in
13 a considered way as opposed to having everything
14 turned into an emergency.

15 So, I sort of interpret what's been said
16 by everybody in a little bit of a different way. It
17 has to do with what's the simple instrument? How
18 accurate is it? And where should you set the alarm?

19 You're in deep trouble if you wait until
20 the water level is at the top. And you ought to be
21 taking periodic readings even during normal
22 operations. So, thank you.

23 CHAIRMAN SCHULTZ: Other comments by the
24 Committee?

25 (No response.)

1 CHAIRMAN SCHULTZ: I'd like to thank the
2 staff for a detailed presentation, and a very timely
3 one considering where we are in the development of the
4 order and public comment period.

5 And for that purpose, I'd like to open the
6 discussion for any statements from members of the
7 public within the room.

8 MR. DIAS: I actually have a question.
9 This is Antonio Dias with the ACRS staff.

10 From the previous slide I understand the
11 Level 2 to be established based on what's loaded in
12 the pool. Am I right? That would apply guidance at
13 Level 2?

14 Well, depending on what stage they are in
15 the operating of the reactor, you know, especially
16 during outage, you know, they basically offload the
17 whole fuel and they put it in the pool.

18 So, Level 2 then would be adjusted
19 according to that, but the instrumentation requirement
20 says that above Level 2 the resolution is one foot.
21 Below Level 2 the resolution is three and a half feet.

22 So, how are they going to handle that
23 resolution variation as the pool changes its
24 constitution during a cycle?

25 MS. REGNER: I don't think it was meant to

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1 change.

2 MR. JONES: Well, the resolution is really
3 just minimum. So, it depends on the design of the
4 instrument.

5 MR. DIAS: Above Level 2 is expect one-foot
6 resolution. Below Level 2 we expect three and a half
7 feet resolution. And Level 2 will be changing.

8 MS. REGNER: No.

9 MR. JONES: No, Level 2 will be - each
10 licensee will define how Level 2 is determined. It
11 could just be it's ten feet based on Reg Guide 1.13.
12 Or it could be that they do a simplified dose
13 calculation for specific fuel load. And we'll have
14 the opportunity to review that and accept or reject
15 that calculation, but it will be a set point.

16 MR. DIAS: So, even though you try to
17 conform to what the Commission was saying that you
18 should allow more, you know, specific information
19 instead of being dictatorial and specific, it looks
20 like at the end we're going to come back to that
21 anyway.

22 MR. JONES: We're trying to be performance-
23 based.

24 MS. REGNER: Yeah.

25 MR. JONES: A licensee can propose ten

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1 different Level 2s, but all the difficulty designing
2 it to accommodate ten different Level 2s -

3 MR. DIAS: Uh-huh.

4 MR. JONES: But if they choose to do that -

5 MR. DIAS: So, they're going to have to
6 choose the most limiting one anyway.

7 MR. JONES: Right.

8 MR. DIAS: Okay.

9 CHAIRMAN SCHULTZ: With that, are there any
10 public comments from the -

11 MR. KRAFT: Yeah, if you don't mind.

12 CHAIRMAN SCHULTZ: Yes, Steve.

13 MR. KRAFT: Thank you, Dr. Schultz. I'm
14 Steven Kraft from the Nuclear Energy Institute. I'm
15 the third Steve in the system here. In 1951 it was
16 the most popular male name, I was told. So, there you
17 go.

18 (Laughter.)

19 MR. KRAFT: I listened very carefully to
20 all the comments. And second to jocular side, I
21 tried to get the essence of them. And a lot of your
22 points are very right on. They're in conflict with
23 each other across the table. You guys don't always
24 agree. That's the essence of an advisory committee.

25 We'll take those back ourselves and relook

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1 at them. And I think tomorrow's meeting will offer us
2 an opportunity for some discussion.

3 The resolution below ten feet was exactly
4 what Lisa said, and that is the intent to add water as
5 soon as you can once you see it starting to drop.

6 Now, we felt so strongly about that and we
7 got into quite an argument with the staff over at what
8 point - in fact, if you go back to that chart which
9 was an earlier version of the chart, you'll notice
10 that we made Two and Three the same point.

11 When you read the strict in the order
12 about Level 2 versus Level 3, Level 3 is not a point.
13 Level 3 is a condition. The condition when you got to
14 add water.

15 It's not a point. We lost that argument.
16 We went to the Steering Committee meeting with that
17 argument, and we lost that argument. So, it has
18 become a point. And that point is the top of the
19 rack.

20 The issue we heard was one that Dr.
21 Stetkar kept raising was, well, maybe you'll have more
22 time. We don't want to distract the operators.

23 Those of you with practical experience,
24 put yourself back in the control room. You've got a
25 runaway reactor, you've got a spent fuel pool behind

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1 your back. What could be possibly more distracting
2 than thinking you're going to have that accident in
3 the pool?

4 So, you're going to put water in as soon
5 as you can. Now, the as soon as you can is the issue
6 because it goes to resources people, FLEX equipment
7 and everything else. Which is why we ask for the kind
8 of flexibility that we have. So, that's point to keep
9 in mind.

10 I will go back to the industry and we'll
11 relook at that 3.5 foot. And, again, it is a minimum
12 resolution. And I can tell you with the discussion we
13 had last week with the designers who are working on
14 this, they are looking at more continuous technology.
15 They're fully aware of the new technology.

16 I'm not an instrument person. I'm not a
17 digital person. I was very impressed with the sort of
18 things I was hearing. Simplicity, absolutely. Dr.
19 Brown, come with me to a meeting and tell the vendors
20 that.

21 (Laughter.)

22 MR. KRAFT: Bubbler systems are the second
23 popular one. And it goes to utilities who maybe have
24 bubbler systems in their, you know, maybe a sump or
25 something and they're used to maintaining them.

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1 They're required to blow them out periodically to
2 clear the holes, you know. This is not a minimal kind
3 of thing.

4 Wave guide radar is another popular one,
5 you know, but there are electronics issues, radiation.
6 Everything has, you know, a balance. So, we are
7 looking very simple, are looking as minimal as
8 possible.

9 And the other issue I'll point out, you're
10 absolutely right when you ask about getting to the
11 fuel deck. There are companies that will not do the
12 portable because they cannot either convince
13 themselves they can get access, or they don't want to
14 bother to do the analysis to prove the NRC they could
15 have access, because that - that's an option.

16 And that's why I think there's a leaning
17 in the NRC ISG towards the second channel being
18 partially installed, because you don't quite know
19 where you can put your display, right? Unless you run
20 into the control room with the display, which not
21 everyone wants to do not because they don't think the
22 control room isn't a good place, but they want to -
23 it's a penetration issue for the control room.

24 We had quite a healthy discussion at one
25 point about where this information is needed. The

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1 biggest problem we had at Three Mile Island people-
2 wise when I was there, was there was no technical
3 support center.

4 So, there were times we had to clear the
5 control room a hundred people so we could actually
6 think because the people doing the calculations were
7 in the control room looking for information.

8 So, maybe this information doesn't belong
9 in the control room. Maybe it belongs in the TSC,
10 maybe it belongs in both places.

11 I'm just saying these are these questions
12 that we're looking at and I really like the idea of
13 pushing the simplicity and pushing the - simplicity
14 and ease and operator and being very explicit with the
15 operators, what you have.

16 The reason we have statements in our ISG -
17 sorry - our guidance and we'll go back and improve
18 them about the levels, was really to exceed to NRC
19 staff demands that Level 3 be where you just don't
20 wait any longer, but we will improve that to make sure
21 the guidance says, look, don't wait. As soon as you
22 can.

23 I mean, that's really what people are
24 going to do. So, I just make that point that there is
25 a very practical approach being taken here by the

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1 people doing the work.

2 So, I'd just like to assure you that's
3 what we're doing. Thank you.

4 CHAIRMAN SCHULTZ: Thank you for your
5 comment. Are there other comments from members of the
6 public in the room here?

7 (No response.)

8 CHAIRMAN SCHULTZ: Seeing none, any
9 comments from the telephone line, those members of the
10 public who are listening in?

11 (No response.)

12 CHAIRMAN SCHULTZ: Hearing none, I'll close
13 this section of the meeting and we'll have a lunch
14 break until 1:00 p.m.

15 (Whereupon, the above-entitled matter went
16 off the record at 12:03 p.m. and resumed at 1:02 p.m.)

17

AFTERNOON SESSION

1:02 p.m.

CHAIRMAN SCHULTZ: I'll bring us out of recess for the meeting. This is the ACRS Subcommittee focusing on Fukushima.

The next presentation we have for the meeting today is on the reliable hardened vent - excuse me - the reliable hardened containment vents and the order that was produced in March and the Interim Staff Guidance that has been prepared.

Robert Fretz is going to lead the discussion this afternoon. Robert, I turn it over to you.

MR. FRETZ: Thank you, Dr. Schultz. I appreciate the opportunity to address the Subcommittee on this issue of reliable hardened vents in the ISG that we've drafted up for in relation to this.

I'd like to introduce myself. My name is Bob Fretz and I'm a project manager with the Japan Lessons Learned Project Directorate. And with me is Rao - I'm going to butcher the name, but Karipineni, I believe.

MR. KARIPINENI: That's right.

MR. FRETZ: I got that right. So, he's a reactor systems engineer within the Containment and

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1 Ventilation Branch in NRR.

2 We are here today to discuss the Draft
3 Interim Staff Guidance related to the recent order
4 requiring reliable hardened events at BWR facilities
5 with Mark I and Mark II containments.

6 And our agenda is, I guess, rather quite
7 simple. We have a short presentation in order to
8 introduce the topic and to provide some background
9 information related to the development of the ISG.
10 And then we'll discuss the various aspects of the
11 draft ISG. And there is one item at the end regarding
12 the hearing related to the order itself.

13 In late 2011 the Commission directed the
14 staff in the SRM to SECY-11-0137 to take certain
15 actions related to reliable hardened vents.

16 The Commission supported the staff's
17 recommendation to order licensees of BWRs with Mark I
18 and Mark II containment designs to require reliable
19 hardened vents.

20 In addition, the Commission supported the
21 recommendation to perform a more long-term evaluation
22 of reliable venting for other containment designs.
23 And that's been categorized as a Tier 3 activity and
24 we briefed you on that earlier.

25 In February, the staff provided response

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1 to the Commission in SECY-12-0025. And in the
2 Commission paper, the staff recommended that an order
3 be issued to all licensees of these BWR facilities
4 with the Mark I and Mark II containments.

5 The Commission paper also included a draft
6 copy of the order itself. In the SRM that followed,
7 the Commission approved the issuance of the orders, as
8 well as provided comments on the draft order itself.

9 The orders were subsequently issued on
10 March 12th, 2012. And in the order, the order stated
11 that the staff would provide additional guidance in
12 August of this year.

13 A Draft Interim Staff Guidance was
14 published in the Federal Register on the 7th of this
15 past month. And in developing that first draft of the
16 Interim Staff Guidance, the staff has met and
17 interacted with the public, as well as the industry on
18 a number of occasions.

19 We had public meetings on May 2nd, as well
20 as May 23rd. And we just had a public meeting
21 yesterday with the various public stakeholders on the
22 19th of June. So, we've had at least three
23 interactions with the members of the public relating
24 to actually ISG itself.

25 So, we've gotten a number of valuable

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1 comments from the industry, as well as members of the
2 public.

3 The March 12th order, in the order the
4 staff noted that one of the lessons learned from
5 Fukushima was that reliable hardened vents at BWR
6 facilities are important to maintain core and
7 containment cooling.

8 The order also required that licensees
9 promptly begin implementation of short-term actions
10 relating to reliable hardened vents.

11 And the order also noted that the focus of
12 this action was that these improvements will assist in
13 strategies relating to the prevention of core damage.

14 The issue of filter containment vents -
15 MEMBER ARMIJO: Bob, could you move back a
16 little bit before we get into filtered vents?

17 MR. FRETZ: We sure can.

18 MEMBER ARMIJO: In Page 1 of your ISG there
19 is an assertion that there is a wide variance in
20 reliability of U.S. hardened vents that exist already
21 in the Mark 1s. And I don't have any doubt that
22 there's a wide variance in the designs, but has there
23 been any engineering analysis of the various designs
24 out there that leads to the conclusion that there's
25 wide variance in reliability?

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1 MR. FRETZ: My belief is that statement
2 essentially is evolved around noting that there are
3 various designs, you know, out there, a number of
4 designs.

5 MEMBER ARMIJO: So, it's kind of a -

6 MR. FRETZ: We made a broad conclusion, I
7 guess, that there is a variety of, I guess, the
8 reliability could be -

9 MEMBER ARMIJO: Oh, yes, and I'm not
10 debating that. But has there been within the family
11 of hardened vent designs that are out there, has the
12 staff taken a hard look or reasonable look at those
13 designs that say identify one or a few hardened vent
14 designs that are actually likely to be pretty
15 reliable?

16 MR. FRETZ: I'm not aware of the actual -
17 the analysis that was done in the '90s, you know,
18 following the issuance of the generic letter.
19 Obviously most of these were put in following the
20 issuance of the generic letter.

21 As far as anything recently, I guess one
22 of the things that's hampered te staff is just really
23 just a lack of information available to it regarding
24 all of the various designs.

25 We are aware there are a number of

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1 different configurations out there. I know that in
2 discussions with the BWR owners group, they have
3 classified the various plants and various different
4 types of categories related to that, but we do not
5 have any really specific information even on a plant-
6 specific basis that's really readily available to the
7 staff to really be able to make that type of
8 determination at least as far as recently.

9 MEMBER ARMIJO: So, until we do this, we
10 can't really make a determination, but it's possible
11 that something out there already could meet the
12 requirements for reliable hardened vent.

13 MR. FRETZ: Yes, when the staff developed
14 the requirements, you know, for the order that we
15 issued in March, we understood that obviously many of
16 these requirements paralleled those of the generic
17 letter. And that we felt that - or at least we
18 acknowledged the fact that, yes, there could be some
19 licensees that were - in some ways very few
20 modifications were really needed to actually meet the
21 order.

22 But, again, without specific knowledge on
23 each one of the sites, each one of the plants, we
24 could never make that determination on a particular
25 plant.

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1 MEMBER ARMIJO: Okay.

2 MR. FRETZ: But we do acknowledge that that
3 was a possibility.

4 CHAIRMAN SCHULTZ: So, the differences that
5 were identified, is what I heard you say, is
6 associated with the differences in designs that are -

7 MR. FRETZ: Yes.

8 CHAIRMAN SCHULTZ: - in the different
9 plants.

10 MR. FRETZ: We are - we are aware that,
11 yes, there are different designs out there. Some use,
12 you know, ruptured disk, some don't, some have
13 different configurations. Some have, you know,
14 penetrations in different locations. Valves are
15 located in different locations. Some could be in the
16 torus room, some are not.

17 I mean, we basically have that general
18 awareness. At least, you know, right now that's our
19 understanding that there are a number of different
20 configurations out there.

21 CHAIRMAN SCHULTZ: But now we're working to
22 get it back into the focus of on the design
23 objectives.

24 MR. FRETZ: Yes, yes. The purpose of the
25 order is, and also with the submittal that's expected

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1 in February is that we would be able to take a look at
2 the various designs out there and be able to make a
3 determination on each one of those various systems and
4 its intended reliability. And we could make an
5 evaluation of the various systems, you know, based
6 upon meeting the order requirements.

7 CHAIRMAN SCHULTZ: On reliability and
8 function.

9 MR. FRETZ: On reliability, yes.

10 CHAIRMAN SCHULTZ: Thank you.

11 MR. FRETZ: Okay. In SECY-12-0025 the
12 staff noted that, you know, further analysis and
13 interaction with stakeholders would help inform
14 whether or not it would require additional
15 requirements related to the filtered venting.

16 The staff held off on imposing any
17 requirements because it felt that there were a number
18 of policy issues that needed to be resolved before we
19 could impose any regulatory requirements at this time.

20 So, we committed to the Commission to
21 deliver a policy paper in July of this year to talk
22 about that whole issue of - and all the various policy
23 ramifications related to the whole issue of filtered
24 venting.

25 CHAIRMAN SCHULTZ: And with regard to this

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1 issue, we're talking about today, the hardened vents
2 for the Mark I and Mark II.

3 Does the fact that there's separation
4 here, is that causing any issues or problems that have
5 been identified as part of the Interim Staff Guidance
6 that's being provided?

7 MR. FRETZ: Well, obviously we try to make
8 sure that there is a distinction when we hold our
9 public meetings. I know that the whole issue of
10 filtration seems to get mulled up with the whole issue
11 in the Interim Staff Guidance.

12 So, a number of members of the public who
13 do participate, one of the - many of the comments we
14 do get from them is, oh, these orders are not
15 sufficient, you know. And so, we try to keep them
16 focused in the interim.

17 In fact, we did take a - we kind of in
18 early May, we discovered that when we had a public
19 meeting that had both subjects as a discussion point,
20 that we were being marred in a number of discussions
21 and it wasn't really proving to be helpful.

22 So, really ever since then our public
23 meetings have noted that when we talk about filtered
24 events, we would discuss filtered vents as a separate
25 issue. And then we'd hold another public meeting

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1 related to the ISG in an effort to try to, you know,
2 make sure that one of the issues was discussed
3 separately, but I guess that's not prevented the
4 public from at least, you know, commenting on the
5 order itself and talking about the issue of
6 filtration, you know, even during the ISG meeting.
7 So, it's just something that's come up.

8 CHAIRMAN SCHULTZ: So, the first meeting
9 was combined or since then you've had what you might
10 call co-located, two meetings that are back to back or
11 separated in time where -

12 MR. FRETZ: No, they were totally separate.

13 CHAIRMAN SCHULTZ: Totally separate.

14 MR. FRETZ: We had a meeting on May 14th
15 that just talked about filtered venting. And the
16 meeting on the 23rd of May was purely on the - really
17 the first cut or the first draft of the Interim Staff
18 Guidance.

19 There was a Category 2 meeting with the
20 BWR Owners Group and we had a good exchange of
21 information with the Owners Group relating to the
22 actual first draft - or the first draft of the ISG.

23 And so, you know, since then we've really
24 been focusing on the ISG itself, you know.
25 Yesterday's meeting was purely on the Interim Staff

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1 Guidance where we met members of the public. Members
2 of the industry were there at our meeting, too. So, we
3 had a good exchange of information.

4 And, again, that was a meeting that was
5 held primarily because the public comment period began
6 on June 7th and is closing on July 7th as well. So,
7 we are using an opportunity to show the public how to
8 make comments, you know.

9 One of the things that we do is we work
10 through regulations.gov and we are trying to
11 demonstrate to them how to provide comments and so
12 that the staff would be able to evaluate the various
13 comments.

14 And so, it was a very helpful meeting.
15 So, we've been really focusing the last couple
16 meetings on the ISG itself.

17 CHAIRMAN SCHULTZ: Good. Appreciate the
18 background. Thank you.

19 MR. FRETZ: Thanks.

20 Okay. Getting to the actual content of
21 the Interim Staff Guidance, as I maybe touched on a
22 little bit earlier this order, a little different
23 approach because it wasn't relating to all licenses
24 and all licensees. It was only a subset of 31
25 licenses.

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1 Instead of working primarily through the
2 Nuclear Energy Institute, we worked through the BWR
3 Owners Group to essentially work out the various
4 details of the Interim Staff Guidance.

5 And also, the other two orders, the
6 industry did offer to provide a guidance document or
7 some sort of a guideline or standard that the staff
8 could endorse.

9 In this case, the industry elected not to
10 prepare a guidance document for us to look at and
11 endorse.

12 So, therefore, the actual ISG itself is a
13 staff product. And so, again, this is something that
14 we undertook.

15 MEMBER BLEY: Bob -

16 MR. FRETZ: Yes, sir.

17 MEMBER BLEY: - was that an industry
18 choice that you work with the Owners Group, or was it
19 something you guys decided -

20 MR. FRETZ: Well, early on we -

21 MEMBER BLEY: Seems to make sense, but I'm
22 not -

23 MR. FRETZ: Early on we did touch upon the
24 - we asked was the industry interested in preparing a
25 document. And they didn't really seem to think that

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1 that would be really beneficial.

2 And so in some respects even in our
3 earlier discussions, there was - the NRC staff and the
4 industry were generally aligned with the requirements
5 of the order. And so, there wasn't a large number of,
6 just say, disagreements between the staff and the
7 industry with respect to the various requirements.

8 Obviously as the ISG has been developed,
9 we've had a number of discussion points and we're
10 still taking comments on those, but it's mostly in
11 terms of clarification, but generally there's been
12 alignment between the staff and the industry.

13 So, whether that was the reason, I don't
14 know, but they felt that they didn't really tink it
15 was beneficial for them to prepare a document.

16 But, again, the content of the ISG follows
17 generally the other staff guidances that have been
18 prepared where we have sections on the various
19 definitions, administrative requirements. The heart
20 of the guidance is the performance requirements. And
21 then we follow on with the reporting requirement.

22 Essentially the idea was to follow the
23 format of the order itself and so whether the staff
24 would present its position and maybe additional
25 clarifying information related to each one of the

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1 order requirements.

2 Now, with respect to the performance
3 requirements themselves, there are essentially four
4 major sections within the order for the various
5 performance requirements.

6 The first area involve Sections 1.1.1 to
7 1.1.3 where essentially we provide three major design
8 performance objectives.

9 And then to follow that are nine essential
10 design features that the staff felt needed to be there
11 for, you know, demonstrating reliability. And
12 following those design features, we provide some
13 requirements for quality standards, as well as some
14 programmatic requirements.

15 And so, essentially the various
16 performance requirements are separated in those
17 various categories.

18 MEMBER ARMIJO: Bob, in your definition you
19 use the term "seismically rugged design." Is that a
20 term that the industry folks understand as far as a
21 definition, what it means, what it doesn't mean?

22 MR. FRETZ: Yeah, I believe that the
23 industry generally understands what we mean by that,
24 seismically rugged design.

25 MEMBER ARMIJO: Okay.

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1 MR. FRETZ: Again, the reason why I paused
2 was that during our public meeting yesterday that a
3 number of members of the public were a little bit
4 concerned about our definition in the quality
5 standards.

6 I think they believed that the entire
7 system should be a safety-related system. And the
8 staff believes that the hardened venting system
9 doesn't necessarily have to be safety-related, you
10 know, beyond its second containment isolation barrier.

11 MEMBER ARMIJO: Okay.

12 MR. FRETZ: So, again, we believe that the
13 industry understands what we mean by that.

14 MEMBER SIEBER: Since you're at this point,
15 maybe I could ask a question. I read through this ISG
16 and I was wondering about whether the design should be
17 such that it could resist the impact of a deflagration
18 or detonation.

19 Am I correct that it's not in there?

20 MR. KARIPINENI: Yeah, you are generally
21 correct. The system as we said very up front, is
22 meant for pre-core-damage situations.

23 It's not meant for post-core-damage or
24 mitigations any further. And, therefore, that
25 requirement doesn't appear here basically.

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1 MEMBER SIEBER: Yeah, on the other hand if
2 you get core damage, that's when you get generation of
3 a lot of hydrogen. That's when Fukushima decided to
4 vent.

5 And obviously at least to me you're
6 looking at the aftermath of that, and the description
7 of it they had probably a deflagration, pretty severe.

8 And my experience in power plants with
9 generator seals letting go, you get a fire every time.
10 I've seen hydrogen cylinders with a broken valve.
11 Once it happens you don't need - it doesn't seem like
12 you need an ignition source. It just happens and the
13 impacts are pretty severe.

14 And the chance of the containment vent
15 being used is if you have high pressure in
16 containment. And you would get that through LOCA.
17 And if it leads to core damage, there's all the
18 hydrogen.

19 So, I'm just wondering, you know, what are
20 we avoiding?

21 MR. FRETZ: Well, the whole issue of
22 whether or not presence of hydrogen was a subject of
23 a number of discussions we know within the staff prior
24 to the issuance of the order.

25 And we - in fact, one of the original

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1 drafts of the order had the requirements for
2 consideration of hydrogen. But because of - I guess
3 the desire was to make sure that the distinction was
4 made that this reliable hardened vent was a hard vent,
5 it was essentially there for pre-core-damage, you
6 know, was there to help prevent the core damage. That
7 that requirement for hydrogen deflagration was taken
8 out.

9 That said, that whole issue of hydrogen
10 and essentially even other requirements such as
11 whether or not the hard vents should be required to be
12 ready for severe accident service will be the subject
13 of this second Commission paper that we do plan to
14 provide to the Commission. So, we will touch upon
15 that subject.

16 MEMBER SIEBER: Unless that in the back of
17 everybody's mind is, you know, you can make a
18 sheetmetal duct seismically qualified, you know. I
19 mean, you really wouldn't have to load much pressure.

20 And on the other hand if there is a
21 detonation or deflagration, you can - Fukushima tells
22 us you can do a lot of damage to the reactor building.

23 And I would suspect that high containment
24 pressures in a core accident or core melt situation is
25 going to have that hydrogen in it. That's what makes

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1 the pressure high in containment and that's what
2 causes you to need to vent it.

3 And so, I'm puzzled by why there isn't a
4 design requirement that says that the vent should be
5 able to take that kind of service.

6 So, you say it doesn't say that, and I
7 offer my thoughts to the Committee.

8 MR. FRETZ: Okay. We understand that, you
9 know, the only thing I could add is was we are going
10 to be looking at that as -

11 MEMBER SIEBER: Yeah, but they may have to
12 do it twice.

13 MR. FRETZ: Understand, understand. Again,
14 we would view it as a considerable discussion. Maybe
15 some call it the bait within the staff regarding
16 whether or not to impose requirements relating to
17 hydrogen. And, again, I was decided that we would not
18 at this time put any requirements in the order
19 concerning requirements to handle hydrogen. Just
20 something that was decided.

21 So, but your - we will note your comment
22 there.

23 MEMBER SIEBER: Okay, thank you.

24 MR. FRETZ: And I guess we're really at the
25 point of the presentation that we can take additional

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1 questions related to the ISG. The last item I had on
2 there was essentially related to a hearing that we
3 could talk about afterwards.

4 MEMBER ARMIJO: You talk about venting from
5 the dry well, as well as from the wet well.

6 Would the staff look at different
7 requirements from a venting for the hardened vent from
8 a dry well as opposed from the wet well?

9 MR. KARIPINENI: No, we did state that our
10 preference is that venting be from the wet well.
11 However, the licensee have the option to use the dry
12 well if they provide some justification of why they
13 want to do it that way.

14 MR. FRETZ: Essentially the order was
15 silent on location of where the venting would take
16 place. So, but again because of the - taking
17 advantage of the torus, you know, scrubbing from the
18 torus, we think obviously -

19 MEMBER ARMIJO: You don't want to have
20 filtered vents. You should try and vent through the
21 torus.

22 MR. FRETZ: Yes, so obviously - and the
23 staff has noted that its preference is through the we
24 well.

25 MEMBER ARMIJO: Yeah, at some point are we

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1 going to hear from the industry on this issue of the
2 vents, hardened vents and the filtered vents and
3 everything else, or is it once you get all the
4 feedback, you know?

5 I at least for one, would like to hear
6 from the staff and the industry on how - the technical
7 answers.

8 MR. FRETZ: We're talking about the
9 filtered venting?

10 MEMBER ARMIJO: Either one. The hardened
11 vents themselves, the whole wide variety of existing
12 hardened vents. Which are the ones that are okay?
13 Which are the ones that have to be upgraded in some
14 way? Which of the ones are just rotten and really
15 need to be completely replaced?

16 And then similarly that, you know, just to
17 see how it's going to get resolved.

18 MR. FRETZ: Well, the staff is actually
19 looking at this, you know, this whole issue and maybe
20 proposing changes to the schedule.

21 Again, our desire is to interact with the
22 - again this committee at least on that whole issue of
23 filtration, as well as we are taking a look at the
24 letter that they sent to us. And we do want to engage
25 the industry at some point in time with respect to

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1 some of the alternatives that they have discussed in
2 their letter.

3 And so, we want to find a little bit more
4 about, you know, what they're learning from heir
5 analysis related to these alternative measures.

6 And so, our desire is actually to actually
7 have further engagement with the industry on this
8 matter.

9 MEMBER SKILLMAN: Bob, I'm Dick Skillman
10 and I want to kind of build on Jack Sieber's question.

11 MR. FRETZ: Sure.

12 MEMBER SKILLMAN: As I listen to what you
13 have said, I get the impression that the functional
14 performance requirements for hardened vents has been
15 or have been reduced to perhaps the most convenient or
16 the most easily implementable functional performance
17 requirements as opposed to requirements that may have
18 been much more hard-hitting and much more effective in
19 dealing with post-accident hydrogen.

20 Another way to have offered this
21 recommendation or this order would have been to write
22 that the hardened vents must meet EECS requirements.

23 And that would have put in motion an
24 entirely different set of functional performance
25 requirements that may have been much more aggressive

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1 and much more comprehensive for consequential effects
2 like the hydrogen that Jack is talking about.

3 So, here's my question: Is what the
4 industry is signing up to through the ISG a lowest
5 common denominator or the most easily implemented set
6 of functional performance requirements to address
7 hardened vents, or are the functional performance
8 requirements sufficiently taught and toothy and
9 technically aggressive to resolve this issue for once
10 and for all for the Mark Is and Mark IIs in the United
11 States?

12 MR. FRETZ: I don't know if we're going to
13 close the chapter on the whole issue of hardened
14 vents, I think, until the commission weighs in on the
15 whole issue of filtration.

16 With that said with respect to this order,
17 one of the things that we really, really wanted to
18 tackle in coming up with the various requirements for
19 the orders was one of the things we learned from
20 Fukushima was the whole idea of accessibility.

21 One of the concerns that the staff had in
22 some of the configurations are the valves that are
23 located in the torus room. And obviously one of the
24 things we do mention in there is that any licensee
25 with valves in the torus room would really have to

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1 provide, we think, significant justification in order
2 to keep those valves in there just so that, again, one
3 of the concerns we have, again, with some of the
4 existing configurations is being able to get to the
5 valves, you know, without any kind of need for
6 scaffolding or ladders or even just heat stress
7 concerns or your radiological concerns.

8 And so, we feel that the order
9 requirements related to that are more rigorous than,
10 let's say, that was there for the - or what was even
11 suggested in the Generic Letter and what was
12 eventually implemented by many of the licensees.

13 And so, we feel that there are some areas
14 that provide, we would think, significant
15 improvements. And it wouldn't necessarily be, I
16 guess, the most easily attainable. That wasn't really
17 the - the intent was to have something that was easily
18 attainable. It was really, again, to focus on venting
19 that was just there to, you know, for the prevention
20 of core damage.

21 And so, again, some of the other
22 requirements that we are looking at are just even
23 elevated release points. Some of the venting systems
24 out there do not have elevated release points.

25 And so, we feel that many licensees will

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1 have to take a hard look at some of the places where
2 some of their venting ultimately leaves the plant.
3 And so, but again there were some order requirements
4 we believe has some teeth to it.

5 MEMBER SKILLMAN: Thank you.

6 MR. FRETZ: Okay.

7 CHAIRMAN SCHULTZ: Other comments or
8 questions related to this portion?

9 I just wanted to go back for a moment to
10 the allowance or the lack of specification with
11 respect to dry well or wet well. And I wanted to have
12 - what I heard said was that a wet well vent in terms
13 of meeting its specifications would likely do so
14 through design requirements.

15 But if a licensee would want to propose or
16 support or justify a dry well vent, that would be
17 considered.

18 And so, I wanted to get some additional
19 clarification by what is meant by that. What kinds of
20 considerations are you expecting for that case that
21 would be made to support a dry well vent?

22 MR. KARIPINENI: The wet well suppression
23 pool, wet well vent pressurization in a Mark I design,
24 it eventually gets relieved into the dry well through
25 the vacuum breakers.

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1 And, therefore, in one sense if there was
2 no core melt, the scrubbing is taking place. You're
3 actually blowing down into the suppression pool and
4 the pressurization gets released into the dry well.
5 And if you pull out of a vent from there, the
6 scrubbing is happening.

7 But the question is are these vacuum
8 breakers fully functional? Are they going to work?
9 These are the kind of bases that the licensees would
10 have to address and provide sufficient justification
11 if they want to use a dry well - dry well vent.

12 CHAIRMAN SCHULTZ: Any other comments at
13 this point? We'll go to your next slide and --

14 MR. FRETZ: Okay, sure.

15 CHAIRMAN SCHULTZ: -- have the opportunity
16 to reflect and come back with more questions later.

17 MR. FRETZ: Again, the purpose of this
18 slide is really just for information only. On April
19 2nd the Pilgrim Watch filed a request for a hearing
20 essentially challenging the adequacy of the order
21 itself.

22 Pilgrim Watch contends that the order is
23 insufficient because it did not require filters for
24 the direct torus vents. At least that's what they
25 call them at Pilgrim.

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1 And as well as they contend that the order
2 should require passive actuation features by means of
3 ruptured disks, I believe, in conjunction with
4 filtration, you know, strategies.

5 Earlier this month the ASLB heard all
6 arguments relating to the request. And it's my
7 understanding that the Board limited the scope of the
8 proceedings to the actual Pilgrim facility itself and
9 not the entire fleet of BWR facilities.

10 And, again, that's really all the
11 information I really have related to this. We just
12 wanted to let the Subcommittee know that there is --
13 this hearing request is really out there. So, it's
14 again something that we wanted to note.

15 That's the end of our prepared discussion.
16 We're more than happy to discuss anything related to
17 the Interim Staff Guide.

18 MEMBER SHACK: Well, the dry well vent is
19 just - that just sort of seems - the reason for doing
20 that is you just think there are some people that
21 won't be able to meet these requirements with a wet
22 well vent. I mean, it just seems to me kind of almost
23 obvious that it's preferable to do the wet well vent
24 with the scrubbing even though this is only intended
25 pre-core-damage.

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1 MR. FRETZ: Right.

2 MR. KARIPINENI: The intent is some of the
3 licensees actually ended up both with a wet well vent
4 and the dry well vent. In those circumstances if they
5 believe that they can maybe more easily satisfy the
6 requirements of this hardened vent by venting from the
7 dry well and be able to provide sufficient
8 justification for that also to the staff, that is
9 acceptable. That's the reason we put that -

10 MEMBER BLEY: I didn't follow that all the
11 way. Could you repeat it again maybe a little louder?

12 MR. KARIPINENI: Yes. Some of the
13 licensees have a vent from both the dry well and the
14 wet well.

15 MEMBER BLEY: Already installed.

16 MR. KARIPINENI: Already installed, yeah.

17 MEMBER BLEY: And in those cases, they may
18 prefer to continue using the dry well vent and do the
19 modifications for whatever reason they find it
20 preferable. It's acceptable to us if they provide the
21 justification.

22 MEMBER BLEY: Do you know why they see it
23 as preferable?

24 MR. KARIPINENI: I didn't -

25 MEMBER BLEY: Well, you said some of the

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1 licensees find it preferable. And I wondered why.

2 MR. KARIPINENI: Well, in meeting all these
3 requirements of the hardened vent here, they may find
4 that when making them seismically rugged all the other
5 requirements we have for interfacing with other
6 systems, how we want to isolate these other systems.

7 When you consider all these aspects in the
8 requirements here, they may believe that it's easier
9 to do that from the dry well vent they already have.

10 MEMBER BLEY: Let me ask you another
11 question about this. From the way you described that,
12 I'm envisioning now that they have a vent pipe coming
13 from both the wet well and the dry well that somewhere
14 come together -

15 MR. KARIPINENI: That eventually may come
16 together somewhere.

17 MEMBER BLEY: So, if they decide to go this
18 way for all these requirements, it might be that they
19 block off the we well vent. Is that a likely outcome
20 so that they don't have an interaction between two
21 unlike beefed up systems?

22 MR. KARIPINENI: Yeah, that interaction as
23 long as the wet well vent containment isolation valves
24 are fully closed, that doesn't give any hardship. But
25 there are sometimes some ductwork and ventilation

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1 system connected to the pipe coming off the wet well.
2 They will have to do all this other stuff we are
3 asking in the guidance document here.

4 MEMBER BLEY: My concern is when - I forget
5 where you said you put the filtered vent. It's in
6 another case that's being examined.

7 MR. KARIPINENI: Right.

8 MEMBER BLEY: So, if we march ahead with
9 this one and we have people getting rid of what they
10 already have, which is a pretty good filtered vent -

11 MR. KARIPINENI: This is the planning work
12 they would be doing based on the ISG we have given and
13 giving us some schedules and all that.

14 But by the time they would actually do any
15 work and all that, the filter vent would become more
16 clear. And if that really requires some changes to
17 what they are doing, that's how they will have to do
18 that portion is this -

19 MEMBER BLEY: Just feels like we're setting
20 ourselves up for a potential conflict down the road
21 here when these two come back together.

22 MR. FRETZ: No, but we definitely are not,
23 I mean, I think one of the original reasons - or at
24 least one of the reasons for trying to tackle this
25 whole issue by the summertime was to attempt to at

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1 least minimize the - we'll call it the do-over that
2 the industry might have to do if for some reason we
3 decide to provide additional requirements related to
4 these hardened vents. And so -

5 MR. KARIPINENI: Plus hydrogen.

6 MR. FRETZ: And then also including
7 hydrogen as well as severe accident service and the
8 like. And so, again in the communication we've had,
9 at least the industry at least as represented by NEI,
10 they've told us that they would actually prefer us to
11 take a little bit longer look at some of the various
12 alternatives that they're approaching. That they
13 would rather have us look at these alternatives as
14 opposed to being quickly out there. And if that meant
15 a do-over, they didn't seem to mind.

16 So, again, that's the type of feedback
17 that we're getting from the industry. So, again I
18 know that the desire was to try to come up with a more
19 holistic type of, you know, at least have the issue
20 done at a single time, but again the idea was I guess
21 we did split it out and -

22 MEMBER ARMIJO: Well, the Japanese had
23 filtered hardened vents at the Fukushima plants and
24 they could vent from either the dry well or the wet
25 well.

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1 MR. FRETZ: Right.

2 MEMBER ARMIJO: The power was they couldn't
3 power them, they couldn't make them work. They had to
4 try and do it manually.

5 But in the U.S., do we have a requirement
6 or is it general practice that we can vent from either
7 the hot well or the wet well?

8 MR. KARIPINENI: No.

9 MEMBER ARMIJO: Or just one venting
10 location that -

11 MR. KARIPINENI: It's my belief that one
12 venting is adequate.

13 MEMBER BLEY: But it sounds like many
14 people put in the option to do both.

15 MR. KARIPINENI: I'd be careful when I say
16 "many." I'm not too sure what percentage, but I know
17 there are some plants that did that.

18 MEMBER ARMIJO: So, you're saying as far as
19 the NRC staff is concerned, venting from one location
20 whether it's a wet well or the dry well, is
21 acceptable.

22 MEMBER BLEY: For this.

23 MR. KARIPINENI: Under the present -

24 MEMBER BLEY: I mean, they split the
25 problem into two pieces. For this problem, the answer

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1 is yes. But there is this other problem sitting there
2 that's going to crop up in a year or two or whenever.
3 I don't know what the schedule is.

4 MEMBER ARMIJO: Severe accident mitigation.

5 MEMBER BLEY: Yeah, yeah. So, we might be,
6 you know, getting rid of something that would take
7 care of everything for something that won't.

8 MEMBER ARMIJO: Right, right.

9 CHAIRMAN SCHULTZ: I'm still concerned and
10 the question that I approach that if a unit has
11 capabilities of both types, why we would be satisfied
12 with imposing an additional set of requirements that
13 would cause someone to choose for the multipurpose,
14 let's call it, or for the general purposes would in
15 fact be the wrong choice to go to the dry well and
16 perhaps either leave behind the wet well vent or just
17 make the dry well venting a preferable choice.

18 I think that would suggest that at least
19 we ought to re-look at the requirements that we've
20 imposed and talk about it. Provide more time to talk
21 about it and make sure that the logic of that approach
22 is well vetted.

23 MR. KARIPINENI: Just to philosophically
24 address that question a little bit, if a plan has only
25 a wet well vent, we're not asking them to go put a dry

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1 well vent.

2 So, for those plants that have both of
3 them -

4 CHAIRMAN SCHULTZ: I understand that part.

5 MR. KARIPINENI: -- this won't be an
6 issue. Why are we imposing a hardened vent from both
7 of them? I may want to take the other one out
8 completely.

9 CHAIRMAN SCHULTZ: I understand that.

10 MEMBER ARMIJO: But somebody put in both,
11 venting from both for some good reasons which we
12 probably don't understand yet. And at some point, I'd
13 like to hear from designers of record on those systems
14 that say why did they do that and why is it a good
15 thing.

16 Maybe it is.

17 MR. KARIPINENI: That's what - when Bob
18 originally said the wide variety of designs.

19 MEMBER ARMIJO: Yeah.

20 MR. KARIPINENI: And that's one of the
21 major design that differs from others.

22 CHAIRMAN SCHULTZ: Bob, you mentioned that
23 you had two relatively full discussions with the BWR
24 in this group and the public meetings that you've held
25 to date.

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1 I know you've held three you've mentioned.
2 So, I would guess the first one was more information
3 exchanged than determination of approaches.

4 How have those discussions gone or where
5 do you think you are with coming together with an
6 approach that the Owners Group would find appropriate
7 given the circumstances?

8 MR. FRETZ: Well, I guess my assessment is
9 again I mentioned earlier I believe there's general
10 alignment with the industry or at least with respect
11 to the content of this order itself, you know.

12 As you've noted, it's limited and it's
13 limited to the whole scenario of pre-core-damage, you
14 know, containment and pressure control and heat
15 removal.

16 So, again, I believe there is - I think
17 there's general alignment with us in the industry at
18 least with the requirements that we've presented.

19 CHAIRMAN SCHULTZ: Could you go back one
20 slide just to show those requirements to the Committee
21 again?

22 MR. FRETZ: Absolutely. That's the -

23 CHAIRMAN SCHULTZ: Perhaps just to walk
24 through and elaborate with regard to the requirement
25 sections, what is there in terms of contents -

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1 MR. FRETZ: Sure.

2 CHAIRMAN SCHULTZ: -- in a little more
3 detail?

4 MR. FRETZ: Essentially the - I guess we'll
5 just as part of an overview for the - the three design
6 performance objectives essentially are focused on that
7 the hardened containment venting system was designed
8 to minimize reliance on operator actions, that they be
9 designed to minimize the operator's exposure to
10 occupational hazards such as extreme heat stress while
11 operating the system, as well as that the operator
12 should - or the design of the system should minimize
13 the radiological consequences that would actually
14 impede personnel actions needed for the event
15 response.

16 So, not only that to operate the system,
17 but also that the system itself when operated would
18 not impeded any kind of action response. The routing
19 of the piping itself would not be put in locations of
20 the plant where there would be problems, you know, for
21 them to operate other equipment.

22 So, those are essentially the design
23 objectives. I mean, we can go into a little bit more
24 detail if you'd like. Rao can handle that more. We
25 scraped some of the highlights of the requirements.

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1 MR. KARIPINENI: One of the requirements we
2 put in is that the system be capable of being put into
3 operation by push buttons or switches from either the
4 control room or from another remote location that is
5 readily accessible.

6 And the additional requirement and the
7 regard is that it should be fully functional without
8 any additional operator's help or moving in any
9 portable equipment or anything of that nature for 24
10 hours unless the licensees come back and justify a
11 lower time than 24 hours to us, how they can come and
12 make all these things within that period of time, you
13 know.

14 Maybe they can come back and tell us they
15 have 12 hours or 18 hours is acceptable and this is
16 how we can justify that, that it is acceptable, but
17 right now the guidance document asks for 24 hours.

18 There is exceptional venting capacity and
19 we said capacity to vent steam energy coolant to one
20 percent of the license or, slash, rate of thermal
21 power unless a lower value is justified by analysis by
22 the licensees.

23 This requirement is originally in the
24 SECY-89-017 when we did the hardened vent back in the
25 '88-'89 time frame.

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1 The SECY paper to the Commission gave a
2 draft order should the Commission elect to issue an
3 order and the requirements were put in there which was
4 one percent of the rate of thermal power. And that is
5 retained in this document also.

6 MEMBER SHACK: That's one of the ones they
7 probably already meet because it was in the original -

8 MR. KARIPINENI: Well, the only difference
9 is they said they are met. We don't know how they met
10 it. Now, we have -- we asked for calculations and
11 everything that we could review and show that in fact
12 it is the case.

13 MEMBER STETKAR: Well, are there any
14 situations that you can think of thinking about
15 beyond-design basis external hazards and things like
16 that, where a licensee might want to vent to get
17 pressure down because the FLEX equipment is only low-
18 pressure makeup and you might need to vent a greater
19 amount of energy than nominally three hours after
20 successful reactor shutdown?

21 MR. KARIPINENI: The licensees have made a
22 request recently.

23 MR. FRETZ: In our meeting on the 23rd of
24 May, the Owners Group did make a short presentation on
25 something that they are considering and it's along

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1 those lines is that in the Safety Evaluation - I'm
2 going off the top of my head now, but it's the Safety
3 Evaluation for the emergency procedure guidelines from
4 the BWR Owners Group was that there was a statement in
5 there that said that venting would be done as a last
6 resort.

7 And there was concern that - and then
8 basically the existing guidelines allow for venting
9 between - I believe it's like 35 pounds and 60 pounds
10 which is I guess their current limit.

11 And so, the EPGs, it's my understanding
12 from the industry was, at least they made a statement
13 on the 23rd, was that there might be a need in
14 conjunction with the implementation of some of the
15 FLEX requirements of actually venting to a pressure
16 lower than 35 pounds in order to allow backups to the
17 RCIC system.

18 MEMBER STETKAR: And they're all low
19 pressure.

20 MR. FRETZ: And they're all low pressure to
21 allow these other lower pressure strategies. And so,
22 again, I guess the purpose of at least from their
23 point of view, at least my understanding of their
24 point of view was that they were looking at this and
25 that they would - essentially the staff's response was

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1 that when you're essentially ready to come back to us,
2 come back to us and let us know, you know, what the
3 requirement is.

4 MEMBER STETKAR: Well, I guess what I'm
5 asking is proactively have you thought about this and
6 kind of, you know, because we ought to think about
7 this sort of in a integrated sense.

8 MR. KARIPINENI: That's right. As far as
9 the performance requirements, this is what we have.
10 And this order is related to making it a hardened
11 reliable vent, it's not really - it really doesn't get
12 into the operational part of how you want to do it in
13 your plant. And that's where the issue is.

14 They were asking for something that was
15 not really part of this document. Therefore, we ask
16 for more information to submit it and tell us more
17 about it.

18 MEMBER STETKAR: I understand. We heard
19 the term "stovepipe" this morning and I'd hate to see
20 us look at this particular document and the
21 requirements of this particular document in isolation
22 from what we heard, for example, six hours ago.

23 CHAIRMAN SCHULTZ: What falls under
24 programmatic requirements, if this doesn't? What
25 falls under programmatic requirements or shouldn't

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1 programmatic requirements include this?

2 MR. FRETZ: I think the intent of the
3 programmatic requirements is to include issues exactly
4 like this. And so that the licensees that they had a
5 plant-specific need, you know, to vent at a lower
6 pressure, then we would have to take a look at some of
7 these things. And then they might have to come to the
8 NRC for prior approval.

9 So, I guess we - I guess that is a
10 consideration.

11 MEMBER STETKAR: But, I mean, the NRC staff
12 is in the process of endorsing the NEI document on
13 FLEX. the NEI document is clear that all the makeup
14 capacity is low pressure.

15 It highlights the need to be able to
16 carefully and reliably depressurize for boiling water
17 reactors under conditions where HPSI and RCIC are not
18 available.

19 It's really clearly stated in there. And
20 that's something that, you know, the staff actually
21 has endorsed. So, we're - or is I the process of
22 doing that anyway.

23 MR. KARIPINENI: And adding some more to
24 the discussion, what the licensees is proposing, the
25 injection is actually into the vessel by dropping the

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1 containment pressure slightly, the wet well pressure
2 in this case, to gain a few PSI.

3 It's not like they are gaining a whole
4 lot. If the vessel is at 50 or a hundred PSI at that
5 time they want to do the injection, the containment is
6 at 20 or 30 instead of 50, what they are gaining is
7 not as much as you think, but that still is some gain
8 for them.

9 MEMBER STETKAR: It's eventually a timing
10 issue though because eventually, you know.

11 MR. KARIPINENI: That's right, yeah.

12 MEMBER STETKAR: Pressure being pressure
13 and energy being energy, you eventually have to get up
14 to it.

15 MR. FRETZ: But I believe we did hear you -
16 I mean, there is something we do and make sure we do
17 pay attention to is the whole issue of stovepiping.

18 MEMBER STETKAR: You hate to hear this
19 within the context of this particular set of, you
20 know, this particular order we're okay because we've
21 defined that context this way.

22 MR. FRETZ: I think that's something we
23 need to probably ensure definitely and take a hard
24 look before we implement both - actually issue both of
25 the guidances to make sure that there's the right

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1 amount of harmonization between the various orders,
2 the ISGs and, you know.

3 Even implementation of FLEX, you know,
4 there's some FLEX-like considerations that are in here
5 and I believe one of the challenges we have is to make
6 sure that we are, you know, more harmonized in the end
7 with at least a consistent staff position on the use
8 of FLEX and the FLEX requirements for providing
9 sustained operations for the system.

10 So, we definitely understand the challenge
11 there.

12 CHAIRMAN SCHULTZ: You're third in the
13 agenda today. And so, we heard a little bit about
14 this in the previews this morning. And that's why
15 we're sensitive to it.

16 MR. FRETZ: Absolutely.

17 CHAIRMAN SCHULTZ: So, it's very important
18 that as we wanted to do this in an integrated fashion,
19 that in fact we carry it out, the whole program for
20 Fukushima response, we carry it out in such a way.

21 CHAIRMAN SCHULTZ: With regard to the
22 quality standards, you spoke to that somewhat, Bob,
23 but could you expand a bit? Because you mentioned it
24 in the context that there was some dialog in the
25 public meetings associated with what has been

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1 prescribed.

2 And if you could fill in some additional
3 detail there, that would be helpful.

4 MR. FRETZ: Well, essentially in the base
5 requirement, I guess 2.1 and 2.2 provide quality
6 requirements for the hard containment venting system.

7 And the first statement is actually a real
8 simple one, but that the vent path up to and including
9 the second containment isolation barrier shall be
10 designed consistent with the plant's licensing basis
11 or design basis for the plant.

12 Essentially it's up to a second isolation
13 valve. It's a Cat 1 system. It's seismically
14 designed. It's safety related. And, again, that was
15 essentially in order to preserve the design
16 requirements for the containment itself and the
17 containment isolation barriers and the GDCs related to
18 that.

19 So, the second requirement, 2.2, is that
20 all other components essentially beyond the second
21 containment isolation barrier, that the intent was
22 that the system not necessarily be safety-related, but
23 that we wanted licensees to design this to be
24 seismically rugged. And that with the ideas that the
25 system be capable of functionality, you know,

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1 following a seismic event.

2 And then so the idea there was that we
3 wanted it to be designed in that way, but not
4 necessarily have to have the pedigree that's
5 associated with Appendix B, you know, type
6 requirements.

7 And so, that's essentially the staff's
8 intent with those two requirements. And, Rao, you can
9 add anything on that if -

10 MR. KARIPINENI: And in regards to the
11 seismic, we applied the same criteria to any electric
12 power supply cables, pneumatic supply lines or
13 anything of that nature also. Same criteria.

14 CHAIRMAN SCHULTZ: I'm trying to recall,
15 Robert, I'm sure I have it here, but is there any
16 difference in your scheduling approach to the going
17 forward responses from the licensees given that you're
18 asking for additional equipment from owners of Mark II
19 containments?

20 The programs we saw and discussion we saw
21 this morning was that by early next year there was
22 going to be a design-related plan coming back from the
23 licensees in general. We're talking about each of
24 these orders.

25 They were all aligned together in terms of

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1 the responses. And then every six months there would
2 be an update.

3 And my question is that given some of the
4 licensees will need to design and add equipment, is
5 there any expected differences in your schedule for
6 the implementation for Mark II?

7 MR. FRETZ: Well, essentially the design,
8 I mean, the implementation follows I guess a very
9 similar schedule approach in that by the end of
10 February they do have to provide a submittal.

11 We do recognize that at that time many
12 licensees will not have finished their - any of their
13 design details related to the system. And, in fact,
14 the way the order was written in allowing two
15 refueling outages essentially that, you know,
16 essentially the first two refueling outages that
17 follow the February submittal was that really the
18 purpose of the first outage was to perform the
19 walkdowns, you know, help finalize the design for
20 that.

21 So, we do recognize that I guess there
22 could be some changes related to the system, but
23 essentially the February submittal was to at least
24 provide us their first cut on their intentions to, you
25 know, as far as implementing the system.

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1 That they would at least provide us the
2 general design schematics and essentially their
3 intent.

4 CHAIRMAN SCHULTZ: That's what I expected.

5 Do you have a time frame when you would
6 expect the final design to be in place that you'd be
7 able to see and review what is finally proposed before
8 it's installed?

9 MR. FRETZ: Well, so that's - I don't know
10 how much thought we put into that. But as far as the
11 - we know that obviously we would need to have that
12 before they begin construction, you know, which
13 essentially would be their second outage of
14 opportunity.

15 So, obviously the staff would need to be
16 responsive before then at least in providing its
17 evaluation with respect to the licensee submittal.
18 And so -

19 MEMBER SIEBER: You typically do that
20 through inspection, right?

21 MR. FRETZ: Excuse me?

22 MEMBER SIEBER: You do that, verify the
23 design meets requirements through inspection.

24 MR. FRETZ: Yes. The staff's intent is to
25 verify through the utilizing inspection program for

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1 the follow up at least the as-built and the as-
2 installed. We will do that.

3 I guess we do recognize that there could
4 be changes to the submittals following those
5 walkdowns.

6 So, obviously that will provide some sort
7 of a staff scheduling, challenges we believe at the
8 time so that - to make sure that we don't impose any
9 really unnecessary delays in having licensees proceed
10 with the actual construction in the second outage.

11 So, timing will be - well, to be
12 essentially - one of the purposes of the status
13 reports is to get an idea of the various schedules
14 that each of the licensees of the plants will be
15 under.

16 So, that information will help us phase in
17 or at least schedule our work related to reviewing
18 their submittals to make sure that we do things in the
19 right order. That those who need the - that are
20 essentially first line, you know, they're at least for
21 through the door based upon their outage schedule,
22 that we would look at their submittals first.

23 So, that's something that will be a
24 challenge for the staff.

25 CHAIRMAN SCHULTZ: Other questions or

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1 comments?

2 MEMBER SKILLMAN: Yes. Bob, a few minutes
3 ago you mentioned that it is your intention that the
4 action on the orders be harmonized. And we have here
5 three Tier 1 orders. One's for FLEX, one's for spent
6 fuel pool instrumentation. This is for hardened vents
7 only for a certain group of plants. These are just
8 the Mark I and Mark II Bs.

9 Would you explain a little further what
10 you envisioned when you used the word "harmonization,"
11 please?

12 MR. FRETZ: Well, essentially one of the
13 concerns as we already said, well, the biggest area in
14 need of harmonization is how this order relates to the
15 order on mitigating strategies and the licensee's
16 response by using the FLEX program.

17 And so, they have, you know, we do
18 recognize that there will be a time that this whole
19 idea that everything has to be coordinated with
20 respect to providing backup power. And if they use
21 the air-operated valves, they have to provide some
22 sort of way to provide backup nitrogen supplies or air
23 supplies to the air-operated valves.

24 And so, obviously those two orders or at
25 least each licensee's FLEX program would have to

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1 address any kind of requirements providing backup
2 power or backup air, you know, for these containment
3 venting systems, you know, in the event of a long-term
4 station blackout.

5 So, we will definitely at least my order,
6 or this order, as well as the order for mitigating
7 strategies will have to be definitely take a hard look
8 at how licensees respond to that, as well as this
9 order.

10 MEMBER SKILLMAN: One of the difficulties
11 we had after TMI 2 was building the recovery systems.
12 It took us seven years. And we constantly bumped into
13 the, if you will, the contradiction and the
14 regulations for what we might have wanted to do with
15 waste disposal systems or vent systems or ultimately
16 the fuel handling equipment. We actually did the
17 vertical defueling.

18 There were political battles about what
19 the quality requirements needed to be, what the
20 instrumentation requirements needed to be. And this
21 went on for years, not just for a year or two.

22 What thought has been given to ensuring
23 that the specificity of the orders does not compromise
24 what the staff intends to accomplish?

25 For instance, if down in FLEX there are a

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1 certain set of requirements that dictate a certain
2 quality level and we look at this order for hardened
3 vents that may have different quality requirements,
4 those two sets of requirements can collide.

5 And instead of getting on with modifying
6 the plants, the staff's energy gets dissipated in arm
7 wrestling and battling with the industry.

8 So, the question is what thought has been
9 given to ensuring that before this broad range of
10 activities begins to move forward, there really is a
11 coordination so that the effort is expended on fixing
12 the problem instead of battling over the words?

13 MR. FRETZ: I can definitely understand
14 where you're coming from, you know, having been in the
15 industry myself with respect to conflicting goals and
16 the source of that.

17 I guess the desire, I guess speaking for
18 going back to when we were formulating the
19 requirements for the orders, one of the thoughts was
20 that we did recognize that there were existing systems
21 already out there. We knew that was a given. And
22 that I guess the desire of the staff was essentially
23 to try to fashion an order that was more performance
24 based.

25 And the idea was that we would provide

1 requirements related to the performance of the system
2 and essentially allow licensees to design a system.
3 So, we didn't want to specify, you know, exactly where
4 or how they routed their piping, for instance.

5 And so, we wanted to leave it up to
6 licensees to be able to design the system and
7 essentially provide performance requirements.

8 And so, we are always challenged with I
9 guess how specific or the specificity of the order
10 itself.

11 And so, again that was the original
12 philosophy going into at least this order. And so, I
13 guess one of the things in going back and I guess
14 coming to closure, you know, in August is that we'll
15 definitely have to take a look at those areas where we
16 might be bumping up against the other order related to
17 mitigating strategies to make sure that there are no,
18 I guess, out-of-harmony situations with respect to
19 quality requirements for the various systems and the
20 backup systems.

21 And so, I guess we do recognize that's
22 something we do need to look at. I hope I answered
23 your question.

24 MEMBER SKILLMAN: Thank you. You did, yes.
25 Thank you.

1 MEMBER STETKAR: Have you heard any -
2 excuse me, I'm going to choke to death here - feedback
3 from NEI regarding that type of disconnect or
4 inconsistency, let's say, I mean, from -

5 MR. FRETZ: We've had a few questions.

6 MEMBER STETKAR: -- your house.

7 MR. FRETZ: We've had a few questions
8 during the public meetings related to, I think, the -
9 again, I got to go with the word "harmonization" with
10 the FLEX system and the 24-hour requirements that we
11 have in there.

12 I mean, it's one of those things that the
13 staff wants to have sufficient backup because there's
14 this - let's see. I don't want to say it's a battle,
15 but it's one of those things where the -- one of the
16 concerns that came out of Fukushima was that - and one
17 of the requirements we have in there, at least the
18 design objective, was to minimize the reliance on
19 operator actions.

20 And if the system, let's say, runs out of
21 battery power or runs out of infinite air or nitrogen,
22 you know, gets depleted rather quickly, you're within
23 a few hours trying to tie up nitrogen bottles.

24 And I guess the concern was that the
25 operators could be distracted while maintenance crews

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1 were out there trying to restore power sources shortly
2 after the accident begins.

3 And so, we did put a requirement in there
4 for at least in the ISG, the desire of the staff was
5 to require 24 hours worth of minimal operator actions.

6 But that said, we do recognize that there
7 is this FLEX strategy, you know, being proposed by the
8 industry. And licensees will adopt those strategies.

9 And so, we do have to recognize that, you
10 know, the various FLEX strategies, you know, are very
11 useful to providing the backup power.

12 So, it's one of these things where you're
13 in this potential conflict that you have in trying to
14 provide a reliable system, one that minimizes operator
15 actions. And, you know, with the need to, let's say,
16 run in there and bring in the FLEX equipment, you
17 know.

18 I imagine that in a very large or
19 challenging situation in a plant, there could be a lot
20 of FLEX activities going on there. And the concern at
21 least is, you know, in some quarters is that we do try
22 to minimize those distractions to the operators.

23 And so, it's trying to provide this
24 balance, you know, minimize the operator actions, but
25 also recognizing that the FLEX strategy is a pretty

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1 sound approach to a lot of things.

2 And so, it's something I guess we have to
3 work out.

4 MEMBER STETKAR: Thanks.

5 CHAIRMAN SCHULTZ: You may be able to help
6 us with something we've had a question on previously.
7 You mentioned the specification for the venting
8 capability at one percent decay heat.

9 With regard to the circumstances where
10 we're considering here beyond-design basis extreme
11 events, are there conditions where you might envision
12 that a venting at higher decay values would be
13 necessary?

14 Or to turn it around, what was the
15 determination or conditions that led you to support
16 maintaining the one percent decay heat as a value to
17 hold?

18 MR. KARIPINENI: The one percent decay
19 heat, the general idea there was that within three
20 hours decay heat is down to one percent. And the
21 containment pressure, containment failure part of it,
22 we do not want to fail the containment at pressures
23 exceeding what it is designed for.

24 Coupled with the three-hour situation, the
25 release, one percent venting at the containment design

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1 pressure, you would have prevented the containment
2 failures is the issue there.

3 And also if you're relieving one percent
4 heat and if one percent decay heat is what's going on,
5 you would not have allowed of the containment to go
6 any higher in pressure.

7 And the requirements, as I said before,
8 came from original SECY-89-17 that was done for this
9 original hardened vents. And I was doing research
10 into that a little bit because I wanted to understand
11 fully more about what happened.

12 And today research has told me that some
13 of the requirements came from NUREG/CR-4920 that was
14 done by Brookhaven National Labs, assessment of severe
15 accident prevention and mitigation features for a BWR
16 I containment. And they said that's where they came
17 from, but I haven't exactly fully come to the bottom
18 line of it yet.

19 CHAIRMAN SCHULTZ: That was 4920?

20 MR. KARIPINENI: 4920.

21 CHAIRMAN SCHULTZ: Thank you.

22 MEMBER SHACK: Was Nourbash one of the
23 authors?

24 (Laughter.)

25 MR. KARIPINENI: I don't have the author's

1 name here.

2 CHAIRMAN SCHULTZ: That's very helpful.

3 Thank you. Thanks.

4 Other comments or questions from the
5 Committee?

6 (No response.)

7 CHAIRMAN SCHULTZ: Hearing none on this
8 topic, I'd like to open up the discussion for public
9 comments. First, looking from the audience in the
10 room, are there any public statements or comments that
11 would like to be made?

12 (No response.)

13 CHAIRMAN SCHULTZ: Hearing none, are any
14 participants on the telephone line? We're looking to
15 see if that is open. I believe it is.

16 Is there anyone there who would like to
17 make comments on behalf of this presentation and
18 discussion? In fact, at this point I'll open it up to
19 comments associated with any of the topics that we've
20 discussed today.

21 (No response.)

22 CHAIRMAN SCHULTZ: Hearing none, I'd like
23 to thank you for your presentations today. They've
24 been very helpful to discuss this topic in detail.
25 And you've heard comments from the Committee that have

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1 focused on a number of key areas for your thought and
2 discussion going forward both in the public meetings,
3 and also with regard to your further development of
4 the guidance documents.

5 MR. FRETZ: Thank you for the opportunity.

6 CHAIRMAN SCHULTZ: Thank you very much.

7 Any committee discussion related to the
8 topics in general that we've discussed today that
9 anyone would like to bring to the table?

10 MEMBER ARMIJO: Other than what we've
11 already said.

12 CHAIRMAN SCHULTZ: We've had a lot of good
13 discussion today, and I appreciate that.

14 I would like to indicate to the staff that
15 we do have then the full committee meeting in July.
16 It's scheduled for July 11th and it will address all
17 three topics.

18 We have scheduled on the docket for the
19 first presentation of the day, but we have scheduled
20 it for an hour and a half rather than the time we've
21 devoted to it today, but there are members of the full
22 committee who are not here today who would certainly
23 benefit from it and we will have reflected on the
24 discussions today.

25 We believe that we would certainly like to

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1 hear on each of the ISGs that are being prepared for
2 the implementation of the orders. And I would expect
3 based on what we've heard today, that we'll probably
4 allocate equal time of that hour and a half to each of
5 the three.

6 If we change our minds on that, we'll talk
7 with the staff and make amendments to the presentation
8 times allocations. But I'm expecting right now that
9 we'll want to hear from each of the three in short
10 form. So, appreciate that very much.

11 Any other discussion or information to
12 present?

13 (No response.)

14 CHAIRMAN SCHULTZ: With that, I'll close
15 the meeting. Thank you for your presentations and
16 attention.

17 (Whereupon, at 2:18 p.m. the meeting was
18 adjourned.)

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Status of Fukushima Lessons Learned Actions

David Skeen, Director
Japan Lessons Learned Project Directorate

Advisory Committee for Reactor Safeguards
June 20, 2012

2012 ACRS Briefings on Fukushima

1. 2/19/12 Full Update NTTF Items
2. 5/22/12 SubC 2.3 Walkdowns
3. 5/23/12 SubC Tier 3 Items
4. 6/6/12 Full 2.3 and Tier 3
5. 6/20/12 SubC Order related ISGs

Brief History of the Development of the Lessons Learned

- July 2011
 - Near-Term Task Force (NTTF) report issued
- September/October 2011
 - NTTF recommendations prioritized by NRC staff
- February 17, 2012
 - Draft orders and requests for information provided to the Commission
- March 12, 2012
 - Tier 1 orders and requests for information

Schedule Overview – Orders

Milestone	Operating Reactors	Combined License Holders	Construction Permit Holders
NRC Issued Guidance	August 31, 2012	August 31, 2012	August 31, 2012
Licensees' 1 st Update	October 31, 2012	October 31, 2012	October 31, 2012
Licensees Submit Plan	February 28, 2013	August 31, 2013	August 31, 2013
Licensees' Periodic Updates	Every six months	Every six months	Every six months
Latest Completion	December 31, 2016	Prior to initial fuel load	Prior to receipt of operating license

Mitigation Strategies Order Interim Staff Guidance

June 20, 2012

Steven Bloom and Eric E. Bowman

Topic Agenda

- Background
- NEI 12-06 Guidance
- Draft JLD ISG-12-01

Background – Order EA-12-049

- In SRM-SECY-11-0137, the Commission directed the staff to take certain actions related to SBO mitigation capabilities.
 - Supported the NTF recommendation to pursue an Order to provide reasonable protection for equipment provided pursuant to 10 CFR 50.54(hh)(2) from the effects of design-basis external events and to add equipment as needed to address multiunit events.
- The Steering Committee revised the direction of the recommendation to have licensees develop mitigation strategies for beyond-design-basis external events (BDBEE).

Background – Order EA-12-049

- Order EA-12-049, required that licensees develop a three-phase approach for mitigating beyond-design-basis external events to maintain or restore core cooling, containment, and spent fuel pool cooling capabilities
 - Initial phase - installed equipment and resources
 - Transition phase - sufficient, portable onsite equipment and consumables
 - Final phase – sufficient offsite resources to sustain functions indefinitely
- SRM-SECY-12-0025 approved the issuance of the Order on Mitigation Strategies for Beyond-Design-Basis External Events
- Mitigation Strategies Order issued March 12, 2012

NEI 12-06 Guidance Document

- On May 4, NEI submitted for NRC review and endorsement NEI 12-06, Diverse and Flexible Coping Strategies (FLEX) Implementation Guide, Revision B
- On May 13, NEI submitted Revision B1, following a public meeting with the NRC

NEI 12-06 Guidance Document

- NEI document provides licensees guidance on how to implement FLEX for their site
- Each site is to follow an assessment process
 - Initial conditions and boundary conditions
 - Establish plant-specific baseline coping capability
 - Determine applicable extreme external hazards
 - Define site-specific FLEX capabilities
 - Programmatic controls
 - Offsite resources

Baseline Coping Capabilities

- Establish minimum coping capabilities consistent with unit-specific evaluation of the potential impacts and responses to an extended loss of ac power (ELAP) and loss of normal access to the ultimate heat sink (LUHS)
 - Use engineering analysis
 - Develop plant procedures and guidance

Applicable Extreme External Hazards

- Identify site-specific extreme external hazards
 - Seismic
 - Flooding
 - ISG specifies consideration of adjacent flooding design bases
 - Storms – hurricanes, high winds, tornadoes
 - Snow and ice storms, cold
 - Extreme high temperature
- Site Access Impacts

External Hazards Assessment

- Relationship to ELAP and LUHS
- Challenges
- Protection of FLEX Equipment
- Deployment of FLEX Equipment
- Procedural Interfaces
- Off-site Resource Utilization

Define Site-Specific FLEX Capabilities

- Aggregation of FLEX capabilities for the site based on hazards
 - Protection of equipment
 - Deployment of equipment
 - Procedural interfaces
 - Off-site resources
- Need to have N+1 sets of portable on-site equipment (to accomplish the 3 key safety functions)

Programmatic Controls

- FLEX equipment will be commercial grade, stored in appropriate locations based on the external events at the site
- Procedures developed for FLEX implementation to support EOPs, EDMGs, and SAMGs
- Maintenance and testing of FLEX equipment
- Training and staffing

Off-site Resources

- Each site will have arrangements necessary to address scope of equipment necessary for the final (off-site) phase
 - Mobilization of equipment to the site
 - Deployment of this equipment
 - Storage, maintenance and testing
 - Inspection and auditing by NRC

JLD ISG-2012-01

- Endorsement of NEI-12-06 with exceptions
- Reporting requirements
 - Overall integrated plan
 - Status report
 - Full implementation letter

Spent Fuel Pool Instrumentation Order Draft Interim Staff Guidance

June 20, 2012

Lisa Regner, Greg Casto,
Steven Jones, Steve Arndt, and
David Rahn

Topic Agenda

- Order EA-12-051
- NEI 12-02, Revision B
- Draft JLD-ISG-12-03
- Request for Hearing

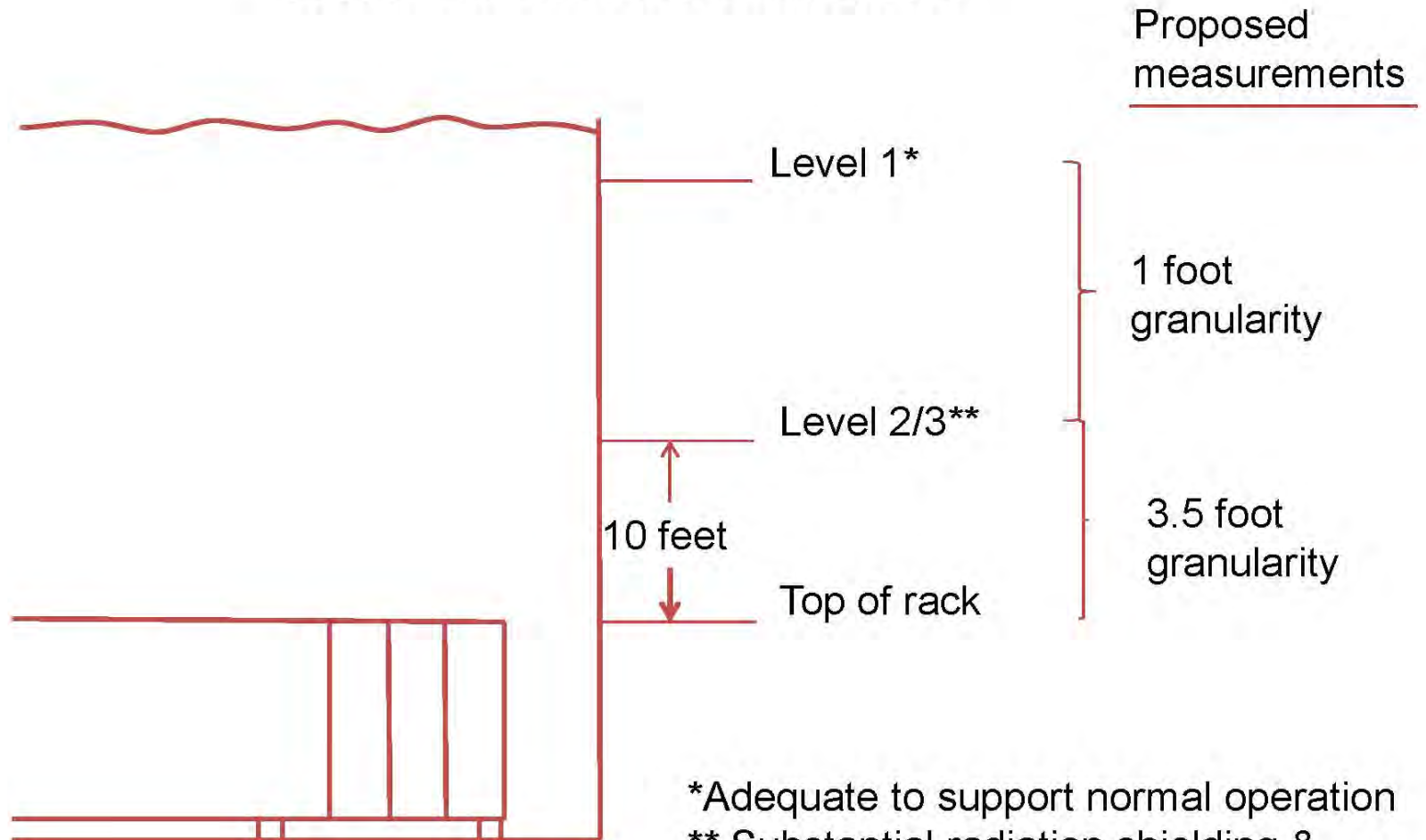
Order EA-12-051

- SRM-SECY-11-0137
- SRM-SECY-12-0025
- Bases for Administrative Exemption
 - unprecedented initiating cause and failure sequence
 - exceptional circumstances
 - need to enhance the knowledge of key decision makers to support effective resource allocation for severe external events
 - represents a significant enhancement to protection of public health and safety

NRC Instrumentation Criteria

Criteria	NRC Plan
Instruments	<ul style="list-style-type: none"> • Permanent fixed primary level instrument • Backup level instrument (portable or fixed)
Monitoring Availability	<ul style="list-style-type: none"> • Continuously available, indication on-demand • Calibration maintained through power interruption
Display Locations	<ul style="list-style-type: none"> • Control Room, Alternate Shutdown Panel, or other • Portable device usable from accessible location
Supports Prompt Identification of these Pool Conditions	<ul style="list-style-type: none"> • Level adequate for operation of forced cooling • Level threatening access – inadequate shielding • Level at just above top of stored fuel
Qualification	<ul style="list-style-type: none"> • Augmented quality (e.g., fire protection QA) • Optimize missile protection using existing structures • Seismic Category I mounting of equipment • Demonstrated to function in harsh environment • Equipment resistant to radiation and vibration
Power Supply	<ul style="list-style-type: none"> • Non-safety power plus alternate (battery replacement or external power connection)

Level Indications



*Adequate to support normal operation
** Substantial radiation shielding & Actions to implement makeup water should no longer be deferred.

NEI 12-02 Guidance Document

- NEI 12-02, Revision B, submitted on May 11 for NRC review and endorsement
- Instrument Design Features
- Program Features

NEI 12-02 Design Features

- General
 - available until off-site resources stabilize SFP
- Back-up Channel features
 - may be fixed, portable, or a combination
 - wireless technology allowed
 - Deployment within 60 minutes, 2 trained operators
- Arrangement
- Mounting
- Qualification

NEI 12-02 Design Features

- Independence
- Accuracy
- Display
- Program Features
- Testing and Calibration

Draft JLD-ISG-2012-03

Endorsement of NEI-12-02 with exceptions:

- Specify that instruments must be able to resist beyond design basis external events
- More explicit discussion on differences between resolution and accuracy
- Modify guidance used to establish Level 2 (dose rates limit access to pool deck)
- Specified that level readings are to be available when required / promptly accessible
- Provided detailed integrated plan template

Request for Hearing

- Contention claims that the Order is insufficient because it does not require licensees to:
 - lower the capacity of SFPs
 - use open frame designs
 - remove fuel that is 5 years and older to dry casks
- Oral arguments on the issues of standing and contention admissibility held June 7

Reliable Hardened Containment Vents Order Interim Staff Guidance

June 20, 2012

Robert Fretz, Robert Dennig
and Rao Karipineni

Topic Agenda

- Background
- Draft JLD-ISG-12-02
- Request for Hearing

Background

- In SRM-SECY-11-0137, the Commission directed the staff to take certain actions and provided additional guidance related to reliable hardened vents.
 - Supported recommendation to order licensees to include a reliable hardened vent in BWR Mark I and Mark II containments
 - Supported recommendation to perform a long-term evaluation (Tier 3) on reliable hardened vents for other containment designs.

Background

- SRM-SECY-12-0025 approved the issuance of the Order
- Order EA-12-050 issued on March 12, 2012
- Order requires reliable hardened vents at BWR facilities with Mark I and Mark II containments
- Draft ISG published in *Federal Register* on 6/7
- Interim Staff Guidance (ISG) to be issued no later than August 31, 2012

Purpose

- Order requires a reliable hardened vent for BWR Mark I and Mark II containment designs to prevent core damage

Filtered Containment Vents

- Severe accident service and filtration to be treated as a separate issue in the July 2012 Commission Paper

Draft ISG Content

- Overview/Background Sections
- Definitions
- Administrative Requirements
- HCVS Performance Requirements
 - Order Requirement
 - NRC Staff Position
- Reporting Requirements

Draft ISG Content

- HCVS Performance Requirements
 - Sections 1.1.1 – 1.1.3 “HCVS Design Performance Objectives”
 - Sections 1.2.1 – 1.2.9 “HCVS Design Features”
 - Sections 2.1 – 2.2 “HCVS Quality Standards”
 - Sections 3.1 – 3.2 “Programmatic Requirements”

Request for Hearing

- Pilgrim Watch filed a request for hearing under 10 C.F.R § 2.309 on April 2, 2012, challenging the adequacy of the Order.
- Pilgrim Watch contends that the Order is insufficient because it lacks requirements to:
 - Install filters in the direct torus vents (DTVs)
 - Be passively actuated by means of a rupture disc
- Oral arguments held on June 7
- ASLB limited the scope of the proceeding to the Entergy Pilgrim facility, and not to all power reactors subject to the orders.