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ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

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UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

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687TH MEETING

ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

(ACRS)

+ + + + +

WEDNESDAY

JULY 7, 2021

+ + + + +

The Advisory Committee met via
Teleconference, at 9:30 a.m. EDT, Matthew W. Sunseri,
Chairman, presiding.

COMMITTEE MEMBERS:

MATTHEW W. SUNSERI, Chairman

JOY L. REMPE, Vice Chairman

WALTER L. KIRCHNER, Member-at-Large

RONALD G. BALLINGER, Member

VICKI M. BIER, Member

DENNIS BLEY, Member

CHARLES H. BROWN, JR., Member

GREGORY H. HALNON, Member

VESNA B. DIMITRIJEVIC, Member

JOSE MARCH-LEUBA, Member

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DAVID PETTI, Member

PETER RICCARDELLA, Member

ACRS CONSULTANT:

STEPHEN SCHULTZ

DESIGNATED FEDERAL OFFICIAL:

KENT HOWARD

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Meeting Adjourned 153

P R O C E E D I N G S

9:31 a.m.

1
2
3 CHAIRMAN SUNSERI: It's 9:31. The meeting
4 will now come to order. This is the 1st day of the
5 687th meeting of the Advisory Committee on Reactor
6 Safeguards. I'm Matthew Sunseri, the Chair of the
7 ACRS.

8 I'll now call the roll to verify a quorum
9 and that communications are in place. We'll start
10 with Ron Ballinger.

11 MEMBER BALLINGER: Here.

12 CHAIRMAN SUNSERI: Vicki Bier?

13 MEMBER BIER: Here.

14 CHAIRMAN SUNSERI: Dennis Bley?

15 MEMBER BLEY: I'm here.

16 CHAIRMAN SUNSERI: Charles Brown?

17 MEMBER BROWN: I'm here.

18 CHAIRMAN SUNSERI: Vesna Dimitrijevic?

19 MEMBER DIMITRIJEVIC: Here.

20 CHAIRMAN SUNSERI: Greg Halnon?

21 MEMBER HALNON: Here.

22 CHAIRMAN SUNSERI: Walt Kirchner?

23 MEMBER KIRCHNER: Here.

24 CHAIRMAN SUNSERI: Jose March-Leuba?

25 MEMBER MARCH-LEUBA: I'm here.

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1 CHAIRMAN SUNSERI: Dave Petti?

2 MEMBER PETTI: Here.

3 CHAIRMAN SUNSERI: Joy Rempe?

4 (Pause.)

5 CHAIRMAN SUNSERI: Alright. Still having
6 trouble.

7 Pete Riccardella?

8 VICE CHAIRMAN REMPE: I'm here.

9 CHAIRMAN SUNSERI: And myself. So, we
10 have a quorum to go ahead and go forward and everybody
11 was loud and clear.

12 The ACRS was established by the Atomic
13 Energy Act and is governed by the Federal Advisory
14 Committee Act.

15 The ACRS section of the US NRC public
16 website provides information about the history of the
17 ACRS and provides documents such as our charter,
18 bylaws, federal register notices for meetings, letter
19 reports and transcripts of all full and subcommittee
20 meetings, including the slides presented at the
21 meeting.

22 The Committee provides its advice on
23 safety matters to the Commission through its publicly
24 available letter reports.

25 The Federal Register Notice announcing

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1 this meeting was published on June 15th, 2021, and
2 provides an agenda and instructions for interested
3 parties to provide written documents or request
4 opportunities to address the Committee.

5 The designated federal officer for this
6 meeting is Mr. Kent Howard. During today's meeting,
7 the Committee will consider the following: Our first
8 topic will be a SECY rulemaking on the revision of
9 inservice testing and inservice inspection program
10 update frequencies required in 10 CFR 50.55a. This
11 will be an information briefing.

12 The second topic is a Vogtle License
13 Amendment Request, risk-informed approach to address
14 Generic Safety Issue-191, "Assessment of Debris
15 Accumulation in Pressurized-Water Reactors," and
16 that's via a letter report.

17 And then the third topic is Reg Guide 1.9,
18 Revision 5, Application and Testing of Onsite
19 Emergency Alternating Current Power Sources in Nuclear
20 Power Plants. And this will also be a letter report.

21 A phone bridge line has been opened to
22 allow members of the public to listen in on the
23 presentations and Committee discussions. Excuse me
24 for a second.

25 (Pause.)

1 CHAIRMAN SUNSERI: Okay. Joy is still
2 trying to be connected. We have received no written
3 comments or requests to make oral statements from the
4 members of the public regarding today's sessions.

5 There will be an opportunity for public
6 comment. We set aside time in the agenda for comments
7 from members of the public listening to our meeting.
8 Written comments may also be forwarded to Mr. Kent
9 Howard, the designated federal officer.

10 Somebody has their line open, so I would
11 appreciate if you could mute that. A transcript of
12 the open portion of the meeting is being kept and it
13 is requested that speakers identify themselves and
14 speak with sufficient clarity so -- and volume so that
15 they may be readily heard.

16 Additionally, participants should mute
17 themselves when not speaking. It's very critical for
18 that.

19 So, I have a couple of announcements to
20 make before we get into the formal agenda today and
21 I'm going to turn my camera on for this.

22 (Pause.)

23 CHAIRMAN SUNSERI: There we go. Alright.
24 It's understandable that a committee that has been in
25 existence for almost 70 years, such as the ACRS, will

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1 outlive some of its former members.

2 On behalf of the ACRS, I wanted to pay
3 respect to two former members that passed away in
4 June.

5 Dr. Ivan Catton served two terms starting
6 in 1989. He was chair of the Thermal Hydraulics
7 Subcommittee and the Fire Protection Subcommittee.

8 Former member Dana Powers credits Catton
9 for advancing an ACRS objective to move fire
10 protection to a more risk-informed basis. Dr. Catton
11 was also a professor emeritus at UCLA. He will be --
12 his expertise will be missed.

13 Dr. Max Carbon served two terms beginning
14 in 1975. During his tenure, he served as chair of the
15 Committee and also chair for several subcommittees.
16 Carbon is most recognized for his work on advanced
17 reactors.

18 Dr. Carbon came to University of
19 Wisconsin-Madison in 1958 to establish a nuclear
20 engineering program as part of a growing post-war
21 research emphasis on designing more efficient nuclear
22 power plants for generating electricity.

23 He subsequently became the head of that
24 program and was also professor emeritus at the
25 University of Wisconsin-Madison.

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1 Each time that I had the honor to
2 recognize contributions from former members like Dr.
3 Catton and Carbon, I'm inspired to work a little
4 harder to ensure that the nuclear engineering legacy
5 that they helped create lives on and I hope you are
6 equally inspired.

7 Alright. Secondly, I wanted to announce
8 that Dr. Peter Riccardella's time as an ACRS member is
9 coming to an end in August and this will be his last
10 full committee meeting.

11 When I joined the ACRS a few years ago,
12 Pete took me under his wing, showed me the ropes, so
13 to speak. And throughout the course of my tenure
14 here, he has been more than a colleague and I'm proud
15 to call him a friend.

16 So, I have some inside information that
17 says that this won't be our last opportunity for
18 members to bid Pete, you know, fond wishes going
19 forward and for now let's just all raise our hands
20 here in recognition of his last meeting.

21 If you can just go to the "raised hand"
22 feature, we'll see how many hands we can get raised up
23 in celebration of Pete and his career here. Like I
24 said, we will have an opportunity to bid him farewell
25 in a more explicit session, if you will.

1 So, look at all those hands, Pete.
2 Congratulations. You have a lot of good colleagues
3 out there.

4 MEMBER RICCARDELLA: Thank you, Matt. I
5 appreciate it.

6 CHAIRMAN SUNSERI: Yeah. You'll get
7 another opportunity later. I just wanted to call
8 attention to this now, you know.

9 Alright. So, let's put those hands down
10 and we will get into the meeting. As it turns out,
11 our first agenda topic is the rulemaking on the
12 inservice testing and Dr. Riccardella will be leading
13 this session.

14 So, Pete, I'll turn it over to you --
15 well, before I do that, let me pause. I got a little
16 ahead of myself.

17 Let me pause here and ask, are there any
18 other members that have any questions about the agenda
19 or anything else you want to bring up before this
20 meeting gets started?

21 VICE CHAIRMAN REMPE: Pete, this is Joy
22 and I apologize for my technical problems this
23 morning, but I am on. I joined when you were making
24 the initial announcements. Thank you.

25 CHAIRMAN SUNSERI: Okay. Great. Alright.

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1 So, we have 100 percent attendance. Alright. So, not
2 hearing from anyone else, I will now turn the meeting
3 over to Dr. Riccardella.

4 Pete, go ahead.

5 MEMBER RICCARDELLA: Thank you, Matt.
6 Good morning. My name is Pete Riccardella. I am the
7 subcommittee chairman for this item on our agenda and
8 the purpose of this information briefing is for the
9 NRC to brief the full committee on the rulemaking plan
10 for revision of inservice testing and inservice
11 inspection program update frequencies required in 10
12 CFR 50.55a.

13 As stated by Matt in his introduction,
14 there will be an opportunity for public comment during
15 this meeting and we can set aside 10 minutes in the
16 agenda for comments from members of the public
17 listening to this meeting online.

18 I would like to reiterate that it is
19 requested that the speakers identify themselves and
20 speak with sufficient clarity and volume so that they
21 can really be heard.

22 At this time, I ask the attendees on the
23 Teams meeting, and on the bridge line, to keep their
24 devices on mute to minimize disruptions and unmute
25 only when speaking.

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1 We will now proceed with the meeting. I
2 call on Anna Bradford, division director of the
3 Division of New and Renewed Licenses, to make
4 introductory remarks.

5 Anna, are you there?

6 MS. BRADFORD: Yes. Thank you, Dr.
7 Riccardella. Can you please confirm you can hear me?

8 MEMBER RICCARDELLA: We can. We hear you
9 loud and clear.

10 MS. BRADFORD: Alright. Thank you. Also,
11 I want to thank the Chairman for those comments that
12 you made.

13 I think it's important that we remember
14 the long and distinguished history of this committee
15 and its members. So, thank you for that.

16 As mentioned, my name is Anna Bradford.
17 I'm the director of the Division of New and Renewed
18 Licenses in the Office of Nuclear Reactor Regulation.

19 Among our many other activities, we have
20 the technical lead when it comes to ASME code
21 activities and we appreciate the opportunity to brief
22 the ACRS on this rulemaking plan SECY paper today and
23 this SECY paper describes a proposed rulemaking that
24 would decrease the required frequency of inservice
25 testing and inservice inspection program updates in 10

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1 CFR 50.55a codes and standards.

2 This effort began with the EMBARK Venture
3 Studio project, which developed ideas for transforming
4 how the NRC might streamline the way it regulates
5 using 10 CFR 50.55a where the ASME codes and code
6 cases are incorporated by reference.

7 The EMBARK team developed three
8 recommendations, which the staff will briefly discuss
9 today.

10 All the recommendations will be
11 implemented, but only one, which is the relaxation of
12 the IST/ISI program updates, is a change to the
13 regulatory framework and, therefore, is the focus of
14 this rulemaking plan.

15 This relaxation is not likely to have any
16 impact on safety and will provide flexibility and cost
17 savings.

18 Engagement with external stakeholders
19 during the EMBARK project indicated that there is a
20 strong interest in the industry and this proposed
21 rulemaking, and I thank you for your interest and I
22 look forward to the discussion today. Thank you.

23 MEMBER RICCARDELLA: Thank you, Anna. Is
24 someone going to give us a brief description of what
25 the EMBARK program is or the EMBARK team?

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1 This is the first time, I think, the
2 Committee has had any exposure to it.

3 MS. BRADFORD: Yeah. This is Anna
4 Bradford again. The EMBARK team was a small
5 organization that was set up within NRR to think about
6 -- I'll call it -- these are all my words -- new and
7 creative ways that the agency can do its business
8 while still maintaining safety, whether it's
9 streamlining rules and regulations, whether it was
10 changing internal processes, changing external-facing
11 processes.

12 And so, this was just one of many
13 activities that they thought about to see if there
14 were ways that we could do our work better.

15 MEMBER RICCARDELLA: Thank you.

16 MS. BRADFORD: Yeah.

17 MEMBER BROWN: This is Charlie Brown.
18 Dennis, correct me if I'm wrong, I think we discussed
19 this at one other meeting and one of the responses we
20 got from the EMBARK approach, it was also to try to
21 encourage people to at least use some common sense in
22 terms of not overinterpreting stuff.

23 Am I incorrect in that was one of the
24 focuses of their previous discussions?

25 MEMBER BLEY: You are correct. We were --

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1 we had a session on EMBARK and on the Be Risk, At
2 Risk, whatever the title of that is.

3 CHAIRMAN SUNSERI: Be riskSMART.

4 MEMBER BROWN: Oh, that's right.

5 MEMBER BLEY: Be riskSMART. It was Be
6 riskSMART that you're talking about, Charlie.

7 MEMBER BROWN: Yeah, that's right. I'm
8 sorry. Thank you very much for fixing my brain here.
9 Okay. Pardon me. Go on.

10 MEMBER RICCARDELLA: Okay. So, I guess we
11 have a -- the presenter is Mark Yoo.

12 Are you there, Mark?

13 MR. YOO: Yes. Yes. Good morning,
14 everyone. My name is Mark Yoo. I was one of the
15 technical staff that helped develop this SECY paper.

16 Listed here are the other working group
17 members that contributed significantly to this effort
18 and are also here today to support today's discussion.

19 Next slide, please. Today's agenda will
20 start with the background information supporting the
21 SECY paper.

22 I'll be discussing the regulatory issue
23 and the proposed rulemaking where I'll also go more
24 into the scope, process and schedule, and also
25 conclude with the staff recommendations.

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1 Next slide, please. So, SECY paper 21-
2 0029 titled "Rulemaking Plan on Revision of Inservice
3 Testing and Inservice Inspection Program Update
4 Frequencies Required in 10 CFR 50.55a" was issued
5 March 15th, 2021.

6 It requests Commission approval to
7 initiate a rulemaking to amend 50.55a to extend the
8 interval of inservice testing and inservice inspection
9 program updates.

10 The current update interval is 120 months
11 and this request would extend this interval to 240
12 months for licensees that update to the most recent
13 edition and addenda of the ASME OM Code and BPV Code
14 Section XI incorporated by reference into 50.55a.

15 The SECY paper also requests the
16 Commission to delegate signature authority to the EDO.
17 The EDO would redelegate this rulemaking activity to
18 the NRR office director.

19 This would be similar to the delegation of
20 signature authority to the EDO by the Commission for
21 incorporating, by reference, revised editions and
22 addenda of national codes and standards that are
23 routine in nature and represent the update of basic
24 codes and standards that have already been approved by
25 the Commission for incorporation by reference.

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1 It also requests Commission approval and
2 delegations for a potential subsequent rulemaking to
3 extend the update interval from 240 months to 288
4 months, and I'll provide additional details regarding
5 this later in this presentation.

6 Next slide. 10 CFR 50.55a contains NRC
7 requirements for the use of certain codes and
8 standards for the design, construction and operation
9 of nuclear power plants.

10 50.55a incorporates, by reference, various
11 ASME codes including the ASME Operation and
12 Maintenance Code, or the OM Code; ASME BPV Code,
13 Section XI, Division 1; ASME BPV Code, Section III,
14 Division I.

15 ASME updates these codes on a regular
16 basis through a consensus standards development
17 process. The NRC's current practice is to incorporate
18 each new edition as it is published, which is roughly
19 every two years.

20 50.55a(f)(4) provides the inservice
21 testing standard requirements for operating plants.
22 50.55a(g)(4) provides the inservice inspection
23 standard requirements for operating plants.

24 Per these regulations, licensees are
25 required to update their OM Code and Section XI "Codes

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1 of record" to the latest edition incorporated by
2 reference into 50.55a every 120 months. A licensee
3 Section III "Code of record" is generally maintained
4 throughout the life of the plant.

5 Next slide, please. Through an NRR EMBARK
6 Venture Studio project, the NRC formed a team to
7 evaluate possible options to streamline the Agency's
8 treatment of ASME codes.

9 The project team developed ideas to
10 streamline regulating using 50.55a that would improve
11 the clarity of 50.55a, improve process efficiency for
12 the use of ASME Code and Code Cases, and increase
13 flexibility to licensees implementing their IST and
14 ISI programs.

15 The project team conducted multiple
16 outreach activities internal to the NRC as well as to
17 external stakeholders. External interactions included
18 three public meetings.

19 The project team documented its efforts,
20 including the recommendations they chose to advance
21 for further action in a final report, which can be
22 found at this ADAMS accession number here.

23 Next slide, please. Here are the three
24 recommendations: 1, relax the requirement to update
25 IST and ISI programs every 120 months; 2, institute

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1 direct final rules for unconditionally approved code
2 cases and; 3, decrease frequency of ASME Code edition
3 rulemakings.

4 The scope of the SECY paper discussed the
5 proposed rulemaking for just Recommendation 1. The
6 staff believes that the extension of the IST and ISI
7 program update interval would provide improved
8 flexibility and burden reduction to licensees while
9 maintaining safety.

10 The SECY paper includes a rulemaking plan
11 for just Recommendation 1 because it was determined
12 that this recommendation is outside the scope of
13 delegation of authority for routine ASME Code updates
14 and, therefore, requires Commission approval.

15 The staff will implement Recommendations
16 2 and 3, which are within the staff's delegation of
17 authority for rulemaking.

18 Next slide, please. The project team also
19 considered eliminating incorporation by reference of
20 ASME BPV Code Section III and XI and ASME OM Code from
21 50.55a and endorsing the codes through a regulatory
22 guide, but, at this time, no decision has been made to
23 remove anything from 10 CFR 50.55a.

24 Next slide, please.

25 MEMBER KIRCHNER: Can I ask a question

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1 here, Pete? This is Walt. On that last slide I'm
2 just trying to think through the implications.

3 If you move the reference from the
4 regulations, i.e., 50.55a, and do it through a reg
5 guide, what alternative would be acceptable to the
6 staff to provide an equivalent level of -- how should
7 I say it? I'm not trying to endorse the ASME, but
8 they are the -- they are the gold standard when it
9 comes to boiler and pressure vessels and their upkeep
10 and maintenance and inspection.

11 So, if you go to a reg guide, what's the
12 implication of that? What alternative would be
13 acceptable to the staff to provide the equivalency?

14 MR. YOO: Dave Rudland, would you like to
15 speak to that?

16 MR. RUDLAND: Sure. This is Dave Rudland.
17 So, there are a lot of international codes and
18 standards that are out there that are, you know,
19 fashioned either similar to or, in some cases,
20 identical to ASME Code and an applicant could propose
21 to use any codes and standards.

22 If we were to remove these from the
23 regulations and endorse them to a regulatory guide, we
24 would have to review and approve whatever the
25 applicant proposed.

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1 And as we move towards different types of
2 reactors, that may be a possibility. I don't know at
3 this time, but a complete review would have to be done
4 similar to what we do in putting ASME Code into the
5 regulations.

6 MEMBER KIRCHNER: So, doesn't that then
7 introduce uncertainty into the regulatory process
8 rather than -- I hear all the arguments about
9 flexibility and international supply chains, et
10 cetera, et cetera, et cetera, but this is a -- we're
11 licensing reactors in the United States.

12 MR. RUDLAND: No, I agree.

13 MEMBER KIRCHNER: It almost works against
14 your intent under the EMBARK Venture Studio to
15 streamline things. It may actually introduce
16 complexity and uncertainty and more work for the
17 staff.

18 You'll have to be an expert on other
19 codes. You would have to review the other codes, et
20 cetera. I'm just concerned that this is not
21 necessarily an improvement.

22 MR. RUDLAND: No, I agree that there will
23 be additional work that would need to be done and an
24 additional burden on the staff to come up to speed on
25 those through the review process.

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1 Again, this is something that we were
2 considering, but, in discussions, we haven't made a
3 decision on how to move forward on it yet, but I think
4 we do realize that there would be additional burden
5 that would be required.

6 MEMBER KIRCHNER: Well, I should have
7 caveated my comments by saying that's just one
8 member's opinion.

9 MR. RUDLAND: Yeah.

10 MEMBER KIRCHNER: So, I'm not speaking for
11 the Committee.

12 MEMBER RICCARDELLA: Walt and David, this
13 is Pete. Dave, you know this has been one of my
14 concerns for a long time going back to my early days
15 as a member of the Committee, was the amount of time
16 that it takes to get new code editions approved and
17 also code cases approved.

18 And remember I had several meetings on
19 that maybe six, seven years ago and it seemed to me
20 that the -- what was the bottleneck was the fact that
21 it had to be rulemaking. It had to go into a rule.

22 So, I'm not sure if a regulatory guide is
23 the right vehicle to do it, but somehow for routine
24 things like approving code editions -- and, by the
25 way, the NRC staff sits on all of these consensus

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1 committees and they usually, you know, their members
2 approve of these changes before they get issued and
3 yet it still sometimes takes four or five years to get
4 them incorporated into 50.55a.

5 So, you know, I don't think the intent
6 would be to change anything relative to ASME Code
7 versus international codes, it's just it -- why does
8 it -- couldn't you have some rule language that was
9 more generic that accepted changes on a more
10 streamlined basis than having to go through formal
11 rulemaking?

12 MR. RUDLAND: Yeah. I think that was one
13 of the objectives of the original EMBARK effort was to
14 investigate that because I think we also realized, you
15 know, the amount of time it takes us to incorporate by
16 reference these issues.

17 And as you'll see, as Mark mentioned a
18 second ago, I mean, there are several recommendations
19 that were made to try to streamline that really that
20 we have a certain regulatory process that we have to
21 go through.

22 And the focus is basically on code cases
23 and the streamlining of our code case approval process
24 because we know that that's how most of the major
25 changes to the code are implemented, you know, are

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1 initially implemented before they're put into a code
2 edition.

3 MEMBER RICCARDELLA: Yeah.

4 MR. RUDLAND: So, that was our overall
5 goal of this is really to focus on those things that
6 we knew would help streamline the process.

7 MEMBER RICCARDELLA: Yeah. So, Walt, I
8 don't think the intent is to allow alternatives to the
9 ASME Code, it's just to somehow streamline the
10 approvals of the updates and the code cases of the
11 ASME Code.

12 MR. RUDLAND: But to be clear, the
13 applicant always has the opportunity and has the
14 ability to be able to submit whatever they want, you
15 know. And they don't, you know --

16 MEMBER RICCARDELLA: Right.

17 MR. RUDLAND: -- and they don't -- if we
18 were to take it out of the regulations, they would
19 have that ability to choose a different code or a
20 different methodology that would be reviewed for our
21 approval.

22 MEMBER BLEY: This is Dennis Bley. I
23 wanted to jump in. Two things. The first is while
24 that's true, in many areas we've seen applicants don't
25 do that because it can take them a very long time to

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1 get through the review process.

2 And even in other areas we've seen that
3 code approvals take so long and in other areas it's up
4 to 20 years sometimes and we just lag behind for no
5 particular reason.

6 My second question, really, I've been
7 hearing "EMBARK" over and over, and when we first
8 learned of EMBARK Venture Studios, my impression was
9 that was a way to bring new software approaches and
10 graphical approaches into making things more
11 presentable, and this is nothing like that.

12 So, I'm kind of -- if somebody else could
13 take a little time before the day's over and tell us
14 how and why EMBARK Venture Studios was involved in
15 this and is this a precursor to things we're going to
16 see in the future, it would be helpful.

17 MS. BRADFORD: Dr. Bley, this is Anna
18 Bradford. One thing I wanted to mention about the
19 ASME Code, someone had mentioned that NRC
20 representatives sit on all the committees.

21 That's true, but that doesn't mean that we
22 agreed with everything that the ASME Code ended up
23 approving because, as you probably know, there are
24 usually votes on those items.

25 So, there may be items that the ASME Code

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1 itself approved, but we did not agree with when it
2 comes to a regulatory approach or application.

3 So, just because we sit on those
4 committees didn't mean we agreed with everything and,
5 therefore, we should be able to just, you know, stamp
6 everything "okay" once they revise the codes. I did
7 want to make that point.

8 MEMBER BLEY: Yeah.

9 MS. BRADFORD: I also would say that the
10 things that you all have mentioned as concerns, we had
11 similar thoughts, you know. So, in providing
12 flexibility, you might also provide uncertainty.

13 And probably years ago when we said, hey,
14 let's adopt the ASME Code into our regulations, we
15 probably thought that was a streamlining approach, you
16 know, that, hey, then if someone says they comply with
17 the Code, then we don't have to do too much review and
18 we're done; but now we're realizing that maybe, you
19 know, some flexibility needs to be offered at least in
20 the process for it.

21 We are not moving forward with this right
22 now. This is just something that we considered in our
23 discussions and we are very interested to hear your
24 all's thoughts, too, because, like we said, we had
25 similar concerns.

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1 The EMBARK studio, Dr. Bley, I think you
2 mentioned you thought they were concerned with sort
3 of, I'll call, graphics or making our presentations
4 better.

5 That's true, that's one small thing they
6 worked on, but they really worked on a wide range of
7 activities just as I mentioned before. How can we
8 streamline our processes? How can we make things more
9 user-friendly? How can we improve our rulemaking
10 processes when we adopt things like the ASME Code?

11 So, there was really -- they really looked
12 at a wide scope of things to see if they could be
13 improved.

14 Many of them were based on staff
15 suggestions, things that staff saw when they were
16 working on things. Hey, why do we have to endorse
17 50.55 in a rulemaking? Couldn't we just do it through
18 a reg guide? Well, let's think about that and explore
19 it and think about whether or not that would be cost
20 beneficial.

21 So, I think you're going to hear of ideas
22 coming through EMBARK that's really going to touch on
23 a wide variety of areas. I don't know if that helps.

24 MEMBER BLEY: Thanks, Anna.

25 MS. BRADFORD: Okay.

1 MEMBER BALLINGER: Dave Rudland, this is
2 Ron Ballinger. You've mentioned code cases off and on
3 and you've mentioned that it was possible in the
4 future for a non-ASME code application.

5 Since the NRC endorses many of these code
6 cases, if an applicant wants to use a code like the
7 French code, for example, how do the code cases
8 complicate things?

9 MR. RUDLAND: Code cases are alternatives
10 to the code. They're approved alternatives to the
11 code, right?

12 So, if we have -- once we have
13 incorporated those by reference, they can use those as
14 an alternative without a review and approval.

15 If something comes in that's not approved
16 or not in the regulations, then they have to come in
17 with an exemption or amendment to use that and we
18 would have to review it in its complete state.

19 MEMBER BALLINGER: Yeah. So, what that
20 means is if somebody wants to use a foreign code,
21 there's actually an increase in complexity to have to
22 deal with it.

23 MR. RUDLAND: Yes. Yes, that is true.
24 Very true.

25 MEMBER RICCARDELLA: As there would be

1 today. I mean, there's no difference in that, I don't
2 think, Ron.

3 MEMBER BALLINGER: True. And I don't
4 think anybody is -- I think everybody is using the
5 ASME Code.

6 MEMBER RICCARDELLA: Yeah. Yeah, but I
7 had personal -- a lot of personal experience with this
8 when we were developing weld overlays to repair
9 stress-corrosion cracks in boiling water reactors and
10 pressurized water reactors.

11 And we had code cases that addressed a lot
12 of the details that went into this weld overlay design
13 and analysis and they were all agreed upon by the
14 staff. And yet, we hadn't gotten them formally
15 incorporated into 50.55a or whatever the specific
16 thing that endorses code cases are.

17 And so, each time I'd have to come in with
18 an RAI and we'd go through literally months of
19 interactions with the staff to approve this RAI that
20 was basically just implementing the code case that had
21 been already agreed to by the -- at least by the staff
22 members who are on the committees and, yet, they still
23 hadn't gone through the formal rulemaking process.
24 That was -- that seemed to be the issue is getting
25 through the rulemaking process.

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1 MR. RUDLAND: And so, Pete, the thing that
2 came out of this EMBARK was a more efficient process
3 to incorporate unconditionally approved code cases at
4 quicker pace. I mean, that was one of the things we
5 knew we needed to address. So, that's one of the
6 things that came out of the EMBARK effort that will be
7 incorporated as part of this complete effort that
8 we're talking about today.

9 MEMBER RICCARDELLA: Well, that's great,
10 Dave.

11 MEMBER HALNON: Yeah, this is Greg Halnon.
12 I got just a question or maybe it's an opportunity
13 because I agree with everything that people said, but
14 it's also my understanding that the staff members from
15 the NRC that are on these committees are typically on
16 there to represent their own personal experience and
17 expertise rather than the NRC as an agency.

18 So, is there an opportunity to not do a
19 series review of these things, but actually change
20 what the members of the Committee from the NRC are
21 actually there for and have them represent the Agency
22 and --

23 MR. RUDLAND: So, Greg, let me correct
24 you. The staff go to these committee meetings, but
25 they are representing the NRC.

1 MEMBER HALNON: Okay.

2 MR. RUDLAND: In any committee the NRC has
3 one vote and we vote as, you know, as a group.

4 MEMBER HALNON: Yeah, but I guess the
5 question, though, is if the NRC on these committees
6 disagree with a nuclear code standard that they say it
7 can't be used for the nuclear industry as written,
8 then why even issue it?

9 I mean, what else is going to be allowed
10 to be used? I mean, I realize everything else is
11 going to be by exception.

12 MR. RUDLAND: Well, again, typically the
13 way it works is that if there's an issue, you know, we
14 write a condition that needs to be followed. The ASME
15 also is not, you know, we're not the ASME's only
16 client.

17 So, they have a lot of international folks
18 that use the code also, and so they want to publish
19 them so that they can use it regardless of what we
20 think of the code.

21 MEMBER HALNON: It gets back to the NRC
22 being the gold standard, the ASME being the gold
23 standard. I guess my point is if those don't come
24 together and agree that an issued code is appropriate
25 for the United States, why would another country even

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1 want to use it then?

2 MEMBER RICCARDELLA: Well, Greg, you know,
3 on these committees there are often cases where the
4 code cases or the code changes get a negative vote
5 from the NRC staff member.

6 That happens a lot, and what happens is
7 then you -- the Committee goes back and they negotiate
8 and they look at specific -- the specific issues that
9 cause that negative vote and they change it, and
10 eventually they come -- something comes out that the
11 NRC staff does agree to.

12 I wasn't talking about code cases that had
13 negative votes from the staff members. I'm talking
14 about code cases where they ultimately -- all the
15 issues got resolved and the NRC staff member voted
16 positively, and then it still takes five years before
17 it gets incorporated into the regulations.

18 MEMBER HALNON: Yeah, Peter, and I'm
19 supporting your discussion there and that is the
20 information would be to allow that review to go in
21 parallel, or at least the NRC process to go in
22 parallel, with the code committee's process.

23 MR. RUDLAND: And that's something that,
24 again, that we're trying to do for these
25 unconditionally approved code cases.

1 And I've been involved with ASME since the
2 '90s and I, you know, they've always been very
3 collegial between staff and those on the Committee.

4 And as Pete inferred, you know, the work
5 is always done to try to remove any negatives before
6 the code cases are published or the code actions are
7 published.

8 And we strive to do that as a staff also
9 because we don't want those conditions in there
10 either.

11 MEMBER RICCARDELLA: Okay.

12 MR. RUDLAND: So, you know, I think that
13 the effort is in that direction, it just doesn't
14 always -- it doesn't always work out.

15 MEMBER HALNON: Yeah, I just -- I question
16 an American society issuing a code in America that
17 America can't use. I don't get it, but that's fine.
18 We can move on.

19 MR. YOO: Okay. Next slide, please, Dave.
20 So, SECY-00-0011 discussed a request that is similar
21 to what is being requested now.

22 In the SECY paper in 2000, the staff
23 recommended eliminating the 120-month IST and ISI
24 update requirements if a licensee updates to a
25 baseline IST and ISI requirements with voluntary

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1 updates to NRC-endorsed Code editions.

2 The voluntary updates would be done
3 without prior NRC approval and the staff, at that
4 time, selected the 1995 edition with the '96 addenda
5 of the ASME OM and BPV Codes.

6 After discussion with the staff, the ACRS
7 recommended to the Commission to reject the staff
8 recommendation and retain the 120-month update
9 interval.

10 The Commission went with the ACRS'
11 recommendation and, via SRM, disapproved the staff's
12 recommendation and approved the option to retain the
13 120-month update interval.

14 Next slide, please.

15 MEMBER RICCARDELLA: What was the date of
16 that? Refresh my memory. What was the date of that
17 ACRS recommendation?

18 MR. YOO: I can find that real --

19 MEMBER RICCARDELLA: It was quite a while
20 ago, right?

21 MR. YOO: Yeah. The SECY was issued in
22 year 2000. I can find that.

23 MEMBER RICCARDELLA: Okay. No, that's
24 okay.

25 MEMBER BALLINGER: I believe it's April

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1 2000.

2 MEMBER RICCARDELLA: Yeah. I think that,
3 you know -- well, for one thing, that didn't propose
4 just extending the period. It proposed eliminating it
5 and I think you do have to have this requirement for
6 updates.

7 But, you know, in the early days in the
8 1990s, the codes were still being developed and were
9 getting changed very frequently, and I think we've
10 gotten to the point now where the codes are more
11 stable and there's not as many changes and that kind
12 of goes along with extending the update period, I
13 think.

14 MR. YOO: Correct. Yeah. And so, the
15 staff met with ACRS in December of 1999 and the ACRS
16 made their decision in February of 2000.

17 MEMBER RICCARDELLA: Uh-huh. Yeah, the
18 ACRS doesn't make decisions, they make
19 recommendations.

20 MR. YOO: Or recommendation. I apologize.

21 MEMBER RICCARDELLA: Okay.

22 MR. YOO: Next slide, please. And so,
23 licensee IST and ISI programs describe licensee's
24 implementation of the ASME OM Code and ASME BPV Code,
25 Section XI requirement respectively.

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1 Licensee IST and ISI programs play an
2 important role in ensuring the safe operation of
3 nuclear power plants.

4 ASME continually updates the OM and BPV
5 Codes as technology evolves or new technical
6 challenges arise.

7 Per 10 CFR 50.55a, a licensee must update
8 their IST and ISI programs to the latest edition and
9 addenda of the ASME OM and BPV Code, Section XI, that
10 had been incorporated by reference, every 120 months.

11 They must do this within 18 months of the
12 start of their 120-month interval. The 120-month
13 interval corresponds to the 10-year ISI interval in
14 ASME BPV Code, Section XI, IWA-2430.

15 Next slide, please. In recent years, ASME
16 has made significant improvements to the OM Code to
17 address valve performance issues revealed by nuclear
18 power plant operating experience and through NRC and
19 industry valve testing programs; however, the
20 development of major modifications to the ASME Codes
21 typically takes more than a decade.

22 For example, ASME updated the OM Code and
23 the 2009 edition to improve the IST requirements for
24 active motor-operated valves. This was done in
25 response to a Generic Letter that the NRC issued in

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1 1989. So, this was a 20-year process.

2 ASME also updated the 2017 edition of the
3 OM Code to include improved IST requirements for
4 active air-operated valves. This was done in response
5 to a Regulatory Issue Summary that the NRC issued in
6 2000. So, this was a 17-year process.

7 These two major modifications took longer
8 than a decade to complete or, in other words, longer
9 than the current 120-month program update frequency.

10 This trend gives the staff confidence that
11 it is possible to extend the program update interval
12 without significantly affecting how frequently
13 improvements in the Code are required to be adopted by
14 licensees.

15 MEMBER BALLINGER: Yeah, this is Ron
16 Ballinger. For me, Bullet No. 2 is a big deal because
17 things have greatly improved in terms of how we build
18 these things and what we use for materials. So, I
19 think that's a major plus.

20 MR. YOO: Yeah. So, another point we
21 wanted to make was that the discovery of new
22 degradation mechanisms has showed great -- has slowed
23 greatly in recent years.

24 As degradation mechanisms were discovered,
25 ASME Section XI has evolved in the detection, analysis

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1 and mitigation of active degradation.

2 In the 1980s, nuclear power plants
3 experienced many degradation mechanisms such as
4 intergranular stress-corrosion cracking, flow-
5 accelerated corrosion, that challenged ASME to adapt
6 and provide examination, analysis and mitigation
7 techniques to ensure continued, safe operation.

8 However, the last degradation mechanism
9 that was discovered -- last major degradation
10 mechanism that was discovered was primary water
11 stress-corrosion cracking occurring in pressurized
12 water reactor pipe and head welds. This was
13 discovered in the early 2000s.

14 This shows that the discovery of new major
15 degradation mechanisms has slowed greatly in recent
16 years as PWSCC was identified over a decade ago. This
17 trend gives the staff confidence that new major
18 degradation mechanisms will be discovered less
19 frequently.

20 Next slide, please. So, the staff also
21 recognizes the long history and established process of
22 developing improvements and updates to the ASME Codes.

23 The ASME Code process has evolved to meet nuclear
24 community's needs.

25 In the current ASME Code process,

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1 discovery of new degradation mechanisms or performance
2 issues are typically first addressed by ASME using
3 Code cases before incorporating into an edition.

4 ASME's use of Code cases has become
5 focused on new technology and methods with ASME
6 publishing ISI Code cases roughly quarterly and IST
7 Code cases on a rolling basis as they are completed.

8 The NRC reviews new and revised Code cases
9 and incorporates them into the regulations with
10 conditions, if necessary.

11 As noted previously, one of the EMBARK
12 Venture Studio recommendations was to incorporate by
13 reference noncontroversial Code cases using an
14 expedited process.

15 And, again, this would allow licensees to
16 use new approaches and technologies more promptly
17 without coming to the NRC for approval.

18 To address emergent degradation of
19 performance issues that have posed a significant
20 safety concern, the NRC can mandate the use of certain
21 Code cases to require additional analyses,
22 examinations and quality assurance activities to
23 supplement the applicable ASME Code edition. And this
24 is something that the NRC has done in the past.

25 Next slide, please. The proposed

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1 rulemaking scope would double the time between updates
2 for licensee's Codes of records for IST and ISI
3 programs from 120 months to 240 months. And this
4 would be licensees that have updated to the most
5 recent edition and addenda of the ASME OM Code and BPV
6 Code, Section XI, that have been incorporated by
7 reference in 10 CFR 50.55a.

8 Again, the current 120-month ISI program
9 update interval corresponds to the current 10-year ISI
10 interval in ASME BPV Code, Section XI.

11 For clarity and consistency, the staff
12 proposed the 240-month interval, or two ISI intervals,
13 in order to extend the Code of record update interval
14 while maintaining alignment with the ISI interval.

15 The proposed rulemaking would primarily
16 affect the requirements for IST standards and ISI
17 standards found in 10 CFR 50.55a(f)(4) and (g)(4)
18 respectively.

19 Next slide, please. This SECY paper also
20 requests approval for a potential future rulemaking to
21 extend the update frequency requirement from 240
22 months to 288 months. And this is because ASME is
23 considering extending the current ISI interval from 10
24 years to 12 years.

25 If that extension is made, the staff would

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1 recommend extending the IST and ISI program update
2 cycle to 288 months. Again, two ISI intervals or 24
3 years.

4 Therefore, the staff requests that the
5 Commission also approve this additional rulemaking and
6 delegation of authority in this rulemaking plan to the
7 EDO, but I want to emphasize that the staff is not
8 currently proposing to conduct that rulemaking and
9 ASME has not yet extended the ISI interval.

10 Next slide, please. The typical
11 rulemaking process includes development of a
12 rulemaking plan, regulatory basis, proposed rule and
13 final rule.

14 The staff recommended omitting preparation
15 of a regulatory basis and proceeding with the proposed
16 rule development.

17 As documented in the EMBARK Venture
18 Studios report, the staff had previously had
19 significant interaction with members of the public,
20 including industry stakeholders, on this regulatory
21 issue and proposed recommendations and, as discussed,
22 the staff proposes a clear and narrow scope of
23 rulemaking.

24 And, again, the staff recommended that the
25 proposed rule and the final rule be delegated to the

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1 EDO, who would redelegate to the Director of NRR.

2 Next slide, please. The SECY paper is
3 currently --

4 MEMBER BLEY: Excuse me. This is Dennis
5 Bley. I was just thinking about that last one and I
6 assume those of you involved in this effort are
7 keeping abreast of Part 53 and they, too, were
8 streamlining the process some and what's happened --
9 and I'm not sure this is a negative. It's probably a
10 positive, but what's happened is because they skipped
11 some of the normal processing, they're having monthly
12 meetings with stakeholders and with the ACRS, which is
13 not clear to me what the tradeoff is there and I
14 wonder if you've been thinking about that.

15 MR. TAYLOR: Hey, Mark, this is Rob
16 Taylor. Can I take that one?

17 MR. YOO: Yes, please.

18 MR. TAYLOR: So, Dennis, thank you for the
19 question. As the deputy office director for New
20 Reactors, both of these projects are actually within
21 my shop. I'm very familiar with both activities.

22 I would say that Part 53, because it's
23 such a substantial crosscutting regulatory project
24 that we're trying to implement with an entirely new
25 framework, it has its own set of complexities.

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1 I think this is more narrowly focused.
2 It's an important thing that we're doing, but I think
3 we'll be like, okay, we're skipping the regulatory
4 basis piece.

5 We do that in other rulemakings when it's
6 pretty straightforward what we're trying to do, or
7 when we think it's pretty straightforward, so I think
8 we'll be okay in this particular case with skipping
9 it. So, I don't see them as exactly the same between
10 the two projects.

11 MEMBER BLEY: I wouldn't either, but
12 thanks, Rob. That makes more sense to me.

13 MR. TAYLOR: No problem.

14 MR. YOO: Okay. Next slide. Okay. The
15 SECY paper is currently with the Commission. The
16 schedule includes delivering the proposed rule to the
17 NRR office director 12 months after receipt of the
18 Commission's SRM. The final rule will be delivered to
19 the NRR office director 12 months after the comment
20 period for the proposed rule closes.

21 Depending on the timing of the
22 Commission's direction, the staff will consider
23 combining this rulemaking activity with the next
24 routine ASME Code edition or Code Case rulemaking if
25 it results in a more timely, efficient and an

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1 effective implementation of the Commission's
2 direction.

3 Next slide, please. To summarize, the
4 staff's recommendations in the SECY paper, the staff
5 is requesting that the Commission --

6 MEMBER BLEY: I'm sorry, Mark. Can I
7 interrupt you again? On your last slide -- can we go
8 back to the last slide? It's an interesting idea.

9 So, I take it this means you will be
10 absolutely prepared to move ahead with this rulemaking
11 the next time you get a rulemaking for the Code. So,
12 you're just saving it until that point; is that right?

13 MR. YOO: Victoria Huckabay, would you
14 like to speak to that?

15 MS. HUCKABAY: Yes. This is Victoria
16 Huckabay. So, what we're saying in the rulemaking
17 plan is that if it is -- if we find that the timing
18 permits and if it's efficient to do so from the
19 standpoint of the amount of effort involved, we may
20 combine this rulemaking, if it's approved by the
21 Commission, with the next routine ASME Code edition or
22 Code Case rulemaking.

23 Right now, you know, if we were to speak
24 theoretically as to where we are today, for instance,
25 right, well, let's just say if for some reason we

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1 receive the SRM from the Commission just in the next
2 few days, which we're not necessarily expecting, but
3 if it were to happen, right, we are currently not in
4 the position to do this sort of combining because we
5 have two ongoing rulemakings, the 2019-2020 Code
6 edition rulemaking and the Code Case Revision 39
7 rulemaking, which both happen to be in the final rule
8 stage and we are not working on the next Code Edition
9 or Code Case rulemaking just yet.

10 So, right now this may not be a good time,
11 but if we receive an SRM, let's just say, you know, in
12 the next few months, then there may be a good
13 opportunity to do so.

14 So, it just really depends on the timing
15 of where we are with the next routine Code Edition
16 rulemaking or Code Case rulemaking and when the SRM
17 arrives.

18 MEMBER BLEY: Okay. Thanks.

19 MR. YOO: Next slide, please. Okay.
20 Again, to summarize the staff's recommendation, the
21 staff is requesting that the Commission approve
22 initiation of a rulemaking to extend the interval for
23 the IST and ISI program updates from 120 months to 240
24 months for licensees that have updated to the most
25 recent edition of the ASME OM Code and BPV Code

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1 Section XI that have been incorporated by reference in
2 10 CFR 50.55a.

3 It would also approve a future potential
4 rulemaking to extend the interval from 240 months to
5 288 months if ASME increases the ISI interval to 12
6 years, approve the staff's request not to develop a
7 regulatory basis for these rulemaking, and delegate
8 signature authority for these actions to the EDO.

9 Next slide. That concludes our
10 presentation. Are there any additional questions?

11 MEMBER RICCARDELLA: This is Pete. Could
12 we go back to the last slide, please. Those last two
13 bullets, I understand that you don't need a regulatory
14 basis.

15 When I looked into this several years ago,
16 one of the key things -- one of the big bottlenecks
17 and things that were slowing down the process were the
18 -- was the required OGC review. In other words, the
19 staff, the technical people had it all worked out and
20 then it took it a year, 18 months to get OGC review
21 and approval.

22 Does this last bullet maybe obviate the
23 need for that?

24 MR. YOO: So, OGC has been part of the
25 working group that developed the SECY paper and

1 they've been active in, you know, every step of the
2 process.

3 MEMBER RICCARDELLA: Um-hmm.

4 MS. BRADFORD: Dr. Riccardella, this is
5 Anna Bradford again. We would, of course, still get
6 OGC review because rulemakings are so fundamental and
7 important --

8 MEMBER RICCARDELLA: Yeah.

9 MS. BRADFORD: -- to what we do that we
10 definitely want their involvement and approval for
11 these, but I don't think it would take anywhere near
12 a year to 18 months for just OGC to review it.

13 MEMBER RICCARDELLA: Yeah. It has in the
14 past, I think.

15 MR. TAYLOR: Pete, just let me add we've
16 changed a lot of approaches. We have a great working
17 relationship with OGC.

18 That hasn't always been the case, but now
19 we bring OGC in on the projects on the front end as
20 opposed to providing the projects to them on the back
21 end. So, they're with us the whole way on some of
22 these important activities.

23 MEMBER RICCARDELLA: Okay.

24 MR. TAYLOR: So, it streamlines their
25 review substantially on the back end, but it does --

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1 occasionally it does take a little bit of time because
2 we are putting new rules in place and we need to be
3 very careful that we don't have unintended
4 consequences when we do that.

5 MEMBER RICCARDELLA: Yeah. I was just
6 wondering if the rule could actually be written with
7 more flexibility such that it admits future changes to
8 the ASME Code if approved by the EDO, for example,
9 without changing the rule.

10 MS. BRADFORD: I'm not sure I understood
11 that, Dr. Riccardella. Can you explain a little bit
12 more that thought?

13 MEMBER RICCARDELLA: Just to make the rule
14 say that we accept the ASME Code, these editions --
15 these specific editions/addenda, plus future revisions
16 to those codes, those same codes if approved by the
17 EDO.

18 I thought, you know, that would be my
19 interpretation of what's meant by that last bullet.

20 MR. TAYLOR: Pete, this is Rob Taylor.
21 So, we have to be careful that we can't -- so, I think
22 part of your answer is okay, but part I'm worried
23 about. We can't preapprove things in rulemaking
24 because that cuts the stakeholders and the public out
25 of the discussion.

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1 So, any updates to the ASME Code that we
2 want to incorporate into 50.55a, either via the Code
3 Cases or the editions, has to go through the
4 rulemaking process so that we give the public the
5 opportunity to engage.

6 The ability to delegate the authority from
7 the Commission down to the EDO already exists for most
8 Code Case update activities.

9 The unique nature of this one is because
10 there was a policy decision before by the Commission
11 on it, we felt we needed Commission approval to go
12 forward with this activity before -- that it didn't
13 fall within the purview of the delegated authority
14 that was given to the EDO. I hope that makes sense.

15 MEMBER RICCARDELLA: Yeah. Alright.

16 CHAIRMAN SUNSERI: Hey, Pete, Vicki's got
17 her hand up. You might want to recognize her.

18 MEMBER RICCARDELLA: Okay. Vicki?

19 MEMBER BIER: Sure. I have, I hope, a
20 quick question. You mention that the rate at which
21 new degradation mechanisms is -- are being discovered
22 is slowing down quite a bit. So, there isn't an
23 anticipation that there's going to be some urgent new
24 items showing up, you know, five years from now or
25 whatever.

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1 I assume that if that did happen, that
2 could be handled on a sort of case-by-case basis based
3 on the urgency of the issue; is that correct?

4 MR. RUDLAND: Vicki, this is Dave Rudland
5 from the staff. Yeah, the way that would be typically
6 handled, as the Code is handling it now, is that
7 they're developing analysis, methodology, mitigation
8 strategies through the development of Code Cases and
9 we're not proposing to change anything about -- right
10 now about our Code Case approval process. So, we'd be
11 able to approve that at the same pace that we are
12 right now.

13 And if it was something that we thought
14 was safety-significant, we could mandate a particular
15 Code Case directly into the regulations.

16 MEMBER BIER: Okay. Thank you.

17 MEMBER RICCARDELLA: Okay. So, are there
18 any other questions or comments from the members?

19 MEMBER BLEY: Pete?

20 MEMBER RICCARDELLA: Yeah.

21 MEMBER BLEY: This is Dennis. Is the
22 staff looking for a letter from us at this time? I
23 think this meeting -- no, you already had the
24 subcommittee meeting, so this is the final meeting on
25 it.

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1 MEMBER RICCARDELLA: Actually, we didn't
2 have a subcommittee. We decided to turn the
3 subcommittee --

4 MEMBER BLEY: Oh, this is it?

5 MEMBER RICCARDELLA: We decided to turn
6 the subcommittee into this information briefing and I
7 think the, you know, just calling it an "information
8 briefing" indicates that, I think, the plan is not to
9 write a letter, but that's open for Committee
10 consideration.

11 MEMBER BLEY: What are your thoughts?
12 You've been involved in this more than the rest of us.

13 MEMBER RICCARDELLA: I don't think we need
14 to write a letter on this topic. I think that the
15 staff is making progress in an area that needed to be
16 made and I don't think there are complexities that
17 require us to write a letter, but I'm open to input
18 from the Committee on that.

19 MEMBER BLEY: No, I think I agree with
20 you, but I wanted to hear what you thought.

21 MEMBER BALLINGER: This is Ron. I think
22 I may a little bit disagree. We wrote a letter a long
23 time ago in which we recommended not doing this, in
24 effect, and that became the policy.

25 MEMBER RICCARDELLA: Yeah. We recommended

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1 not eliminating the updates at all --

2 MEMBER BALLINGER: Right. Yeah.

3 MEMBER RICCARDELLA: -- as opposed to
4 extending them from 120 to 240.

5 MEMBER BALLINGER: Right. So, this -- I'm
6 wondering whether or not we should write a letter in
7 which we, you know, go over what we did in the past
8 and say, well, things have changed and this is why and
9 so now we approve.

10 MEMBER RICCARDELLA: Um-hmm.

11 MEMBER BALLINGER: We have done a letter
12 in the past, which this runs counter to.

13 MEMBER RICCARDELLA: Yeah. It might be
14 interpreted that way anyway, yeah. Yeah.

15 MEMBER BLEY: Maybe Rob Taylor could give
16 us a thought about whether the staff thinks it would
17 be useful to them.

18 MR. TAYLOR: So, of course. I'd be glad
19 to, Dennis. This is Rob Taylor again. Yeah, we don't
20 -- we're accommodating the ACRS' request here. So, we
21 certainly -- it's the ACRS' prerogative whether they
22 want to write the letter. The staff doesn't feel we
23 need one. We think we explained everything in the
24 paper.

25 That said, if the ACRS is going to be

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1 supportive of the staff, we wouldn't argue with that
2 at the end of the day, for sure. So, I mean, it's the
3 Committee's decision. The staff will be supportive
4 either way.

5 MEMBER BLEY: Okay. Thanks, Rob.

6 MS. BRADFORD: This is Anna Bradford. Can
7 I just add to what Rob said? I agree with what Rob
8 said.

9 I also do think, though, that people look
10 back to that letter from 20 years ago and say, well,
11 the ACRS was not supportive of changing this and,
12 yeah, it was a different kind of change, it was
13 eliminating altogether, but I think it might be
14 interpreted as the ACRS was not supportive of changing
15 the ten years, period.

16 So, again, of course it's up to the
17 Committee, but, you know, people do still look back at
18 that letter.

19 MR. RUDLAND: Yeah. Pete, this is Dave.

20 MEMBER KIRCHNER: Pete, going back to the
21 earlier conversation and Ron's point, probably the
22 ACRS back then -- I'd have to pull the letter up and
23 read it, but we certainly have a lot more knowledge
24 about these systems than we did 20 years ago. A lot
25 more experience, at least.

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1 MEMBER BALLINGER: Yeah. I mean, back
2 when -- in those early days we were dealing with alloy
3 600.

4 MEMBER KIRCHNER: Well, we had pressurized
5 thermal --

6 MEMBER BALLINGER: Yeah, all that stuff.

7 MEMBER KIRCHNER: -- shock, chloride
8 stress corrosion.

9 MEMBER BALLINGER: Yes.

10 MEMBER KIRCHNER: All those issues
11 suggested we don't know with high degree of confidence
12 --

13 MEMBER BALLINGER: But, in spite of that,
14 CDF and LERF for these kind of leaks, primary system
15 leaks, was still on the -- in the 10 to the minus 6
16 for -- at the 10-year ISI inspection.

17 Now, all these welds have been
18 dispositioned and they're using a different material,
19 so my suspicion is that the CDF for leakage in one of
20 these things, plus the improvement in leak rate
21 testing and all this kind of stuff will make the CDF
22 out of sight low (phonetic).

23 MEMBER RICCARDELLA: Yeah.

24 MEMBER KIRCHNER: So, reflecting on Anna's
25 comments, Pete, I was just thinking perhaps a very

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1 brief letter just acknowledging that the state of
2 knowledge and experience --

3 MEMBER RICCARDELLA: Um-hmm.

4 MEMBER KIRCHNER: -- in the last 20 years
5 allows the confidence to go from 120 months to 240 or
6 maybe to 288.

7 MEMBER RICCARDELLA: Um-hmm.

8 MEMBER BALLINGER: And we're only changing
9 the updates. We're not changing the fact that people
10 -- that if something happens --

11 MEMBER RICCARDELLA: Yeah.

12 MEMBER BALLINGER: -- we would find it --
13 we would find it much more quickly than we would have
14 15, 20 years ago.

15 MR. TAYLOR: I would simply say the staff
16 -- this is Rob Taylor -- the staff would be very
17 appreciative of such a letter.

18 MEMBER RICCARDELLA: Okay.

19 MEMBER PETTI: So, Pete, this is Dave. I
20 --

21 MEMBER RICCARDELLA: Scott Moore has his
22 hand up. Scott, do you have any information?

23 MR. MOORE: Yes, Chairman Riccardella.
24 The letter you're talking about is dated February 8th,
25 2000.

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1 For anybody from the public or anybody
2 else that's listening, it's available on the ACRS'
3 public website.

4 And for the members, I just emailed it to
5 all the members -- or I emailed the link to all the
6 members, so you should have it in your email.

7 MEMBER RICCARDELLA: Okay. Thank you.

8 MEMBER PETTI: So, Pete, this is Dave. I
9 tend to have the same thing that Ron had brought up
10 and supporting Walt. I think a short, sweet letter is
11 probably worth it.

12 MEMBER RICCARDELLA: Okay. Any --

13 MEMBER HALNON: This is Greg. I think
14 that any time you can support an output of the EMBARK
15 also would give the commissioners additional
16 confidence and moving forward on other transformations
17 as well.

18 MEMBER RICCARDELLA: Okay.

19 MEMBER BLEY: Yeah. Pete, this is Dennis
20 again. I've been convinced by this discussion.
21 Practical question, we don't have a full committee
22 meeting next month --

23 MEMBER RICCARDELLA: Yeah.

24 MEMBER BLEY: -- so would this roll over
25 to Ron or is this something we could actually pull off

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1 this week?

2 MEMBER RICCARDELLA: Boy.

3 MEMBER BALLINGER: I'm open to anything.
4 I don't think that Pete is going to not answer the
5 phone.

6 (Laughter.)

7 MEMBER BALLINGER: If he does, I know a
8 guy from east Boston that might be able to help.

9 CHAIRMAN SUNSERI: So, if we gave you time
10 to put something together and we would visit it Friday
11 afternoon, would that be doable?

12 I mean, this is going to be a very short
13 letter, right? I'll reemphasize "very short letter."

14 MEMBER RICCARDELLA: Okay.

15 CHAIRMAN SUNSERI: Alright.

16 MEMBER RICCARDELLA: You know that famous
17 quote I always say, it's --

18 (Simultaneous speaking.)

19 MEMBER RICCARDELLA: -- write a short
20 letter, so I'll write a long one.

21 CHAIRMAN SUNSERI: So, don't be Napoleon,
22 be -- do something that --

23 MEMBER BALLINGER: I don't think we should
24 underestimate -- there's another angle to this and
25 that is this letter would be useful for the -- believe

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1 it or not, the insurance companies, you know. They
2 really drive -- for nuclear plants, they really drive
3 a lot of things.

4 CHAIRMAN SUNSERI: Yeah, but it's -- you
5 know, I'm supportive of the letter, obviously, and we
6 can write it with Dennis. I just would think, though,
7 that as was mentioned here earlier today, we don't
8 approve these things, we just make recommendations.
9 So, you know, I'm not sure how that would affect what
10 the insurance companies do then.

11 MEMBER BALLINGER: Well, but what happened
12 was the last letter we wrote became policy.

13 CHAIRMAN SUNSERI: Only because the staff
14 chose to do that.

15 MEMBER BALLINGER: Yeah. Yeah.

16 MEMBER BROWN: Can I ask a question then
17 if we're going to do a letter or thinking about a
18 letter? Are the specific items we would be, quote,
19 agreeing with proceeding with the items listed on
20 slide 17?

21 The rest of it was discussion, but here
22 they at least say that's what they're recommending.
23 That's -- I presume that's what we would say we don't
24 have any objections to; is that correct?

25 MEMBER RICCARDELLA: That's how I

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1 understand it, Charlie.

2 MEMBER BROWN: Alright. Just wanted to
3 make sure we knew what we were specifically going to
4 deal with. At least it was summarized nicely on this
5 last slide, in my opinion.

6 MEMBER RICCARDELLA: Yes.

7 CHAIRMAN SUNSERI: So, let me just do a
8 quick straw poll then of the Committee and we don't
9 have to make this a vote, but I'll just ask it this
10 way: Is anybody opposed to pursuing a short letter on
11 this topic as just been discussed?

12 (Pause.)

13 CHAIRMAN SUNSERI: Okay. So, I think
14 that's our answer, Pete. And I guess you'll enlist
15 some help on this. Maybe sounds like Ron wants to
16 contribute.

17 Anybody else that wants to contribute, you
18 know, if you could put together the draft and we'll
19 plan on tackling it Friday afternoon.

20 MEMBER RICCARDELLA: Yeah. You know, I am
21 not that heavily involved in some of the other topics,
22 so maybe I will excuse myself from some of the
23 meetings and work on generating a draft of the letter.

24 MR. TAYLOR: Can I interject and add one
25 thing, Matt?

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1 CHAIRMAN SUNSERI: Sure, Rob. Go ahead.

2 MR. TAYLOR: Thanks. And thank you, guys,
3 for the good discussion. This has been very, very
4 interesting to hear your perspectives and we always
5 appreciate coming to the Committee.

6 I think that the idea of doing a letter
7 this week, if you're going to do it, would be very
8 valuable.

9 Of course the Commission will take up and
10 make their decisions on the time frame they choose to,
11 but we provided this a few months ago to the
12 Commission, so they could be deliberating on it.

13 And if you delay sending the letter, you
14 miss -- you may miss the opportunity to inform and
15 provide your recommendations.

16 So, finishing it this week, if you're
17 going to take it up, would be phenomenal. I think the
18 Commission would appreciate having the ACRS'
19 perspectives.

20 MEMBER RICCARDELLA: Okay. Yeah. Well,
21 I think particularly in light of the fact that we're
22 on record of a previous letter that sort of is -- was
23 opposed to this type of a change.

24 VICE CHAIRMAN REMPE: It also makes your
25 last meeting very memorable, Pete.

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1 (Laughter.)

2 MEMBER RICCARDELLA: Yeah.

3 CHAIRMAN SUNSERI: So, before you go to
4 public comments, Pete, here --

5 MEMBER RICCARDELLA: Yeah.

6 CHAIRMAN SUNSERI: -- I just want to see
7 if there's anything else because what we're going to
8 have to do, unfortunately, is we're going to have to
9 take a 10-minute break before we go to public
10 comments. That's because somebody muted the public
11 line and we're going to have to reset it.

12 So, instead of going through all of that
13 stuff with everybody on the record, we'll take a 10-
14 minute break while the public line gets reestablished
15 and then we'll call for public comments then.

16 But, Pete, I just want to make sure that
17 you have wrung out from the Committee any others --
18 any comments that you have before we do that. So, go
19 ahead.

20 MEMBER RICCARDELLA: Nope. I don't think
21 -- are there any other comments from the Committee?
22 I don't see any hands up or --

23 CHAIRMAN SUNSERI: Okay.

24 MEMBER RICCARDELLA: So, we'll take a
25 break now and reconvene at 10 minutes before the hour.

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1 CHAIRMAN SUNSERI: Right. So, this is
2 going to sound awkward, so let me just describe this.
3 So, we'll take a break, we'll reconvene, then we'll
4 ask for public comments, and then we'll take another
5 break, a longer break, to support our 11:30 session.

6 Alright. So, we will take a break until
7 10 til. Thank you.

8 (Whereupon, the above-entitled matter went
9 off the record at 10:40 a.m. and resumed at 10:50
10 a.m.)

11 CHAIRMAN SUNSERI: Okay. It is 10:50.
12 Pete, are you back?

13 MEMBER RICCARDELLA: I am back.

14 CHAIRMAN SUNSERI: So, do we have the
15 public line reestablished? I think I heard we do.

16 MR. DASHIELL: That is affirmative, Matt.

17 CHAIRMAN SUNSERI: Okay. Pete, go ahead
18 and call for your comments. I was contacted during
19 the break by NEI, Tom Basso. He wants to make some
20 comments, too, so there --

21 MEMBER RICCARDELLA: Okay.

22 CHAIRMAN SUNSERI: -- will be at least one
23 set. Go ahead.

24 MEMBER RICCARDELLA: So, are there any
25 members of the public that would like to make a

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1 comment at this time? Please do so.

2 MR. BASSO: Yeah. This is Tom Basso from
3 NEI, if I may.

4 MEMBER RICCARDELLA: Alright. Go ahead,
5 Tom.

6 MR. BASSO: Okay. Yeah. Good morning.
7 Again, my name is Tom Basso. I'm senior director of
8 Engineering and Risk at the Nuclear Energy Institute.
9 I also manage and coordinate the NEI Codes and
10 Standards Task Force.

11 I appreciate the opportunity to provide
12 the following comments that are in support of these
13 changes.

14 The NEI Codes and Standards Task Force
15 participated in the referenced public meetings with
16 the NRC EMBARK Studios and on December 3rd, 2019,
17 presented various recommendations on simplification of
18 10 CFR 50.55a, including extending the requirements to
19 update the inservice inspection and inservice testing
20 programs from every 10 years to up to 24 years.

21 From initial licensing of plants and
22 implementation of the inservice inspection and
23 inservice testing programs decades ago, the 120-month
24 update had more utility since it was a way to review
25 code inspection requirements and their impact and, in

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1 some cases, add or remove requirements based on newer
2 code versions; however, now there are less expansive
3 and impactful changes in the ASME Section XI and OM
4 codes. As plants and the codes have matured, the need
5 for a living ASME Code has been reduced.

6 Additionally, licensees can, and have,
7 implemented other mechanisms to quickly react to
8 emerging issues through industry groups to address
9 safety or regulatory concerns as compared to waiting
10 for the 120-month update or can, and have, implemented
11 Code improvements and relaxations by requesting use of
12 alternatives in accordance with 10 CFR 50.55a(z).

13 Licensees can always adopt later NRC-
14 approved ASME code editions, but should not be
15 mandated to do so since they would already be
16 following an NRC-approved ASME Code Edition that
17 ensures adequate protection.

18 Again, change is necessary for safety
19 purposes and can be specifically stated or conditioned
20 in 10 CFR 50.55a or through other generic regulatory
21 communications.

22 Updating the station's ASME inservice
23 inspection and inservice testing plans is a
24 significant and costly effort. An update not only
25 involves revising each program's plan, but numerous

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1 station maintenance and operating procedures,
2 databases and maintenance planning systems.

3 On average, an update consumes hundreds of
4 staff hours at approximately \$1 million per program,
5 resources that could be applied to more safety-
6 significant activities or station improvements.

7 NEI supports this change and appreciates
8 the staff pursuing expansion of the delegated
9 authority to make this rule change.

10 This would greatly benefit the industry
11 while maintaining adequate protection and safety of
12 the plants and the public.

13 NEI would recommend that ACRS document
14 their position on this change to encourage Commission
15 action in light of the previous ACRS position
16 documented in 2000. So, I'll appreciate that
17 discussion towards the end.

18 Just lastly, I didn't find the slides in
19 ADAMS and just was wondering if those could be made
20 available to the public and thank you.

21 MEMBER RICCARDELLA: Okay. Well, thank
22 you, Thomas. Are there any other members of the
23 public who would like to make a comment at this time?

24 (Pause.)

25 MEMBER RICCARDELLA: Hearing none, I guess

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1 we will close this session of the meeting and I will
2 take the action to prepare a draft letter for
3 committee consideration during this meeting.

4 CHAIRMAN SUNSERI: Thank you, Pete.
5 Appreciate that. Let me just ask our DFO, Kent
6 Howard, did you pick up on that comment about the
7 slides not being available?

8 So, if you could, let -- make those slides
9 -- post those in the normal location and let people
10 know where they're at.

11 MR. HOWARD: Not a problem, Matt.
12 Normally we attach them to the transcript, but I can
13 get them out. It's not a problem at all. So, we'll
14 have them up for you. Matter of fact, I can send them
15 directly, too, if necessary.

16 CHAIRMAN SUNSERI: Yeah. We want to send
17 them at least to the individual requesting them.

18 MR. HOWARD: Not a problem.

19 CHAIRMAN SUNSERI: Okay. So, any other
20 discussion on that topic?

21 MS. HUCKABAY: This is Victoria Huckabay.
22 If you don't mind, I will just briefly respond to Mr.
23 Basso. So, I just checked and --

24 CHAIRMAN SUNSERI: Normally we don'
25 respond to public comments on that. They just make

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1 those comments and so we --

2 MS. HUCKABAY: Not a comment, no, just
3 about the availability of the slides. I wanted to
4 provide the ADAMS accession number.

5 CHAIRMAN SUNSERI: Oh, okay. Thank you
6 very much.

7 MS. HUCKABAY: Is that okay?

8 CHAIRMAN SUNSERI: Yeah. Yeah. Sure.

9 MS. HUCKABAY: Okay. So, the ADAMS
10 accession number for the slides is ML21180A017. And
11 I am checking this morning to make sure that it is
12 available for all members of the public through a
13 public web-based search on the NRC website.

14 And if there are any issues with that,
15 we'll be working to rectify it this afternoon.

16 MR. BASSO: Thank you.

17 MS. HUCKABAY: Okay. That's all. Thank
18 you.

19 CHAIRMAN SUNSERI: Alright. So, at this
20 point, we are finished with that topic and at this
21 time I'd like to take a 30-minute break now, our
22 formal break, and we will reconvene at 11:30 Eastern
23 Time and take up the Vogtle License Amendment Request.

24 So, at this time, we are in recess until
25 11:30. Thank you.

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1 (Whereupon, the above-entitled matter went
2 off the record at 10:58 a.m. and resumed at 11:30
3 a.m.)

4 CHAIRMAN SUNSERI: It is 11:30. I am
5 reconvening the meeting. I'd like to make sure that
6 we have a quorum for this portion, so I'll call the
7 roll.

8 Ron Ballinger?

9 MEMBER BALLINGER: Here.

10 CHAIRMAN SUNSERI: Vicki Bier?

11 MEMBER BIER: Here.

12 CHAIRMAN SUNSERI: Dennis Bley?

13 Charles Brown?

14 Vesna Dimitrijevic?

15 MEMBER DIMITRIJEVIC: Here.

16 CHAIRMAN SUNSERI: Greg Halnon?

17 MEMBER HALNON: I'm here, Matt.

18 CHAIRMAN SUNSERI: Walt Kirchner?

19 MEMBER KIRCHNER: Here.

20 CHAIRMAN SUNSERI: Jose March-Leuba?

21 MEMBER MARCH-LEUBA: Yes, sir.

22 CHAIRMAN SUNSERI: David Petti?

23 MEMBER PETTI: Here.

24 CHAIRMAN SUNSERI: Joy Rempe?

25 VICE CHAIRMAN REMPE: Here.

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1 CHAIRMAN SUNSERI: Pete Riccardella?

2 MEMBER RICCARDELLA: Here.

3 CHAIRMAN SUNSERI: And I'll come back to
4 Dennis Bley?

5 And Charles Brown?

6 Okay. So, we're missing Dennis and
7 Charlie, but we do have a quorum. So, we will proceed
8 with the next session.

9 This is on a Vogtle License Amendment
10 Request and I will hand it over to Joy Rempe to lead
11 this session. Joy?

12 VICE CHAIRMAN REMPE: Thank you, Mr.
13 Chairman. On May 19th, a joint subcommittee composed
14 of members from our Accident Analyses and Thermal
15 Hydraulics Subcommittee and our Reliability and
16 Probabilistic Risk Assessment Subcommittee met to
17 review the staff's draft safety evaluation for the
18 Southern Nuclear Operating Company License Amendment
19 Request related to risk-informed resolution of Generic
20 Safety Issue-191 for the Vogtle electric-generating
21 plants, Units 1 and 2.

22 At the end of our meeting, subcommittee
23 members concluded that this topic was ready for
24 presentation to the full committee. Members also
25 recommended that the full committee provide a letter

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1 on this topic.

2 Because subcommittee members believed the
3 applicant and staff provided quality presentations
4 that thoroughly covered the topic during our meeting,
5 and because most full committee members were present
6 during our subcommittee meeting, members also
7 recommended that the staff alone could provide an
8 abbreviated presentation today.

9 And before we start this discussion, I'd
10 again like to request that participants mute your
11 computer phone lines -- or your computer microphones
12 and phone lines and, at this time, I'd like to call on
13 Caroline Carusone to provide opening remarks for the
14 staff presentation. Caroline?

15 MS. CARUSONE: Thank you. Good afternoon.
16 As Dr. Rempe mentioned, my name is Caroline Carusone
17 and I'm the deputy director of the Division of
18 Operating Reactor Licensing in the Office of Nuclear
19 Reactor Regulation. I'd like to thank the ACRS
20 members again for the invitation to present here.

21 There are decades of history related to
22 Generic Safety Issue-191 and Generic Letter 2004-02.
23 We're going to go through a brief background in our
24 presentation.

25 Risk-informed work, to date, indicates

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1 that the actions taken by licensees and the NRC have
2 reduced the risk of this issue significantly. The
3 remainder of my comments will focus on the plant-
4 specific risk-informed review.

5 In September of 2019, the NRC issued a
6 staff evaluation of Vogtle's systematic risk-informed
7 assessment of debris technical report. This provided
8 the basis for us to consider use of the technical
9 report for Vogtle in future licensing applications.

10 The NRC staff concluded that the technical
11 report contained information to address the NRC
12 Generic Letter 2004-02, except downstream effects.

13 In August of 2020, Southern Nuclear
14 Operating Company submitted a License Amendment
15 Request and an exemption to revise their licensing
16 basis to allow the use of risk-informed approach to
17 address safety issues discussing GSI-191. This was
18 supplemented in December of 2020 and again in February
19 of 2021.

20 The proposed License Amendment Request
21 would also add a new technical specification action to
22 address the condition of a containment sump made
23 inoperable solely due to the loss-of-coolant-accident-
24 generated debris exceeding the analyzed limits.

25 The proposed exemption would be from

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1 certain requirements of 10 CFR 50.46, requirements
2 associated with the emergency core cooling system
3 following a postulated loss-of-coolant-accident.

4 This review is different from typical
5 reviews in that we already reviewed the majority of
6 the technical information in the September 2019 NRC
7 staff evaluation. In that evaluation, we identified
8 areas that still needed to be addressed.

9 The licensee's August 2020 License
10 Amendment Request included specific responses to the
11 open issues in addition to other licensing requests,
12 including the technical specification changes and
13 exemption.

14 The NRC staff welcomes the letter report
15 from ACRS and we look forward to your comments,
16 recommendations and thoughts related to this topic.
17 And with that, I'll turn it over to Steve Smith of the
18 Technical Specifications Branch in the Division of
19 Safety Systems in NRR.

20 MEMBER MARCH-LEUBA: Caroline, this is
21 Jose March-Leuba. Can I ask you a process question?

22 MS. CARUSONE: Sure.

23 MEMBER MARCH-LEUBA: Yeah.

24 MS. CARUSONE: Yes.

25 MEMBER MARCH-LEUBA: Okay. So, typically

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1 when we ask for a Licensing Amendment Request, all
2 that is required is a safety evaluation report and the
3 LAR gets issued.

4 Whenever there is an exemption request, is
5 there a different process that you must follow to
6 approve it?

7 MS. CARUSONE: No, there's not a -- we
8 would also do the same. We would do a safety
9 evaluation and do that review as part of our decision.

10 MEMBER MARCH-LEUBA: So, there is no
11 Commission involvement or vote or something like that?

12 MS. CARUSONE: No.

13 MEMBER MARCH-LEUBA: Okay. Thank you.

14 MS. CARUSONE: I will just caveat to say,
15 you know, on specific topics -- topical areas that may
16 be of interest, we would, of course, do our due
17 diligence to inform appropriate parties if we saw
18 anything sort of atypical outside of what typical
19 staff review would be appropriate.

20 MEMBER MARCH-LEUBA: But basically the
21 staff has the authority to issue exemptions to the
22 rule?

23 MS. CARUSONE: Yes.

24 MEMBER MARCH-LEUBA: That's what you're
25 telling me?

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1 MS. CARUSONE: Yes.

2 MEMBER MARCH-LEUBA: Okay. Thank you.

3 MS. CARUSONE: Sure.

4 MR. SMITH: Okay. Good morning. Just let
5 me know that you can hear before I start rolling on
6 here.

7 MS. CARUSONE: We can hear you, Steve.

8 VICE CHAIRMAN REMPE: Yeah, but it's very
9 low. Could you turn your volume up or get a little
10 closer to your mic?

11 MR. SMITH: I can try to do that.

12 Is that better?

13 VICE CHAIRMAN REMPE: Yes, it is. Thank
14 you.

15 MR. SMITH: Okay. Alright. Thanks for
16 getting me straightened out there. The staff is
17 looking forward to presenting this topic and receiving
18 feedback from the ACRS. I think we had a good
19 conversation in May and we appreciated the feedback we
20 got then.

21 I just wanted to emphasize today that this
22 issue has been touched by a lot of the NRC staff,
23 including people at NRR, Research, ACRS and in the
24 regions, and the input from all of these groups is
25 considered in our Generic Letter 2004-02 reviews,

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1 including the Vogtle review.

2 During the presentation, I'm going to try
3 to emphasize the important history and lessons learned
4 for this topic. As Dr. Rempe noted, we discussed
5 this pretty thoroughly in May. So, some slides I'll
6 spend more time on and some slides a little bit less.

7 I'm ready for Slide 2. Alright. Thanks,
8 Andrea. Key messages. It looks like -- I can only
9 see part of that slide. Okay. There we go. Okay.
10 Thank you.

11 The phenomena associated with the effects
12 of debris on long-term core cooling have been well-
13 studied since the issue was originally identified in
14 the '90s and plants using the risk-informed methods to
15 resolve the debris issues are those that are most
16 challenged by debris.

17 And the evaluations that were performed by
18 those plants demonstrate that the actions taken have
19 significantly reduced the risk associated with the
20 GSI-191 phenomena.

21 I'm ready for Slide 3. Okay. This slide
22 shows the actions completed at the plants -- the major
23 actions taken, anyway.

24 All plants -- all PWRs install advance
25 design strainers and implemented administrative

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1 controls to manage the debris sources in containment.

2 A lot of the plants took additional
3 actions to reduce the potential impacts of debris on
4 recirculation. For example, some plants reduced
5 problematic insulation types, some improved their
6 post-LOCA chemistry to reduce chemical precipitates,
7 and most plants -- probably all plants actually added
8 monitoring and mitigative actions to their emergency
9 operating procedures.

10 And the little photo on the lower right
11 shows -- that shows one of the original strainers,
12 which is actually probably a pretty good one, and the
13 larger strainer that's, you know, on top of that inset
14 -- or kind of under that inset shows the new larger,
15 more complex geometry strainer installed.

16 I'm ready for the next slide. Slide 4.
17 Slide 4 just shows some examples of the physical
18 testing that was done. This shows the -- the upper
19 left photo is fuel assembly testing for blockage at
20 Westinghouse.

21 The one to the right of that is testing at
22 Alden Labs. It's a strainer test. Texas A&M
23 University on the lower left, that was some boric acid
24 precipitation testing that was done.

25 And then at University of New Mexico there

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1 was quite a bit of chemical effects testing done and
2 this just shows some vertical loops where they were
3 running similar, but, you know, they did variations.
4 So, they had three running in parallel so they could
5 see how changing things would affect chemical effects,
6 how they changed head loss.

7 Anyway, the physical testing that was
8 done, there were hundreds of lab tests conducted
9 related to debris generation, debris transport,
10 chemical effects and debris bed head loss on strainers
11 and fuel assemblies.

12 The tests were conducted by fuel vendors,
13 engineering firms, labs and universities, and the
14 results of the test program were used to develop NRC
15 and industry guidance and evaluate how specific plant
16 designs will perform under postulated LOCA conditions.

17 And this just showed -- this slide -- we
18 went through what this slide shows, so I'm ready for
19 the next slide. No. 5.

20 Slide 5 discusses computer modeling that
21 was done and computer modeling was early -- in the
22 early days, it was used for modeling recirculation
23 flows using CFD.

24 More recently, this shows some of the more
25 recent computer modeling that was done and it was --

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1 these were used to evaluate boric acid precipitation
2 and thermal hydraulic performance in the core and in
3 the alternate ECCS flow paths.

4 Most of the modeling was performed to
5 evaluate the potential effects of debris blockage in
6 the core, and industry analysis was performed for each
7 reactor design, and NRC did confirmatory analysis
8 using TRACE to provide assurance that the industry
9 work was acceptable. And this is the more recent work
10 we've done on in-vessel.

11 Slide 6. This slide is one that was taken
12 from the Vogtle -- actually, this slide and the next
13 one are ones that were taken from the Vogtle
14 presentation that was presented in the May
15 subcommittee meeting.

16 And the staff agrees that these provide a
17 good perspective and a good history for this issue and
18 a good perspective on how the Vogtle license amendment
19 request fits into this.

20 So, I'm going to talk for a while on this.
21 If anything comes up, you know, there's a question,
22 please interrupt me and I will try to answer
23 questions.

24 MEMBER KIRCHNER: Steve, this is Walt
25 Kirchner.

1 MR. SMITH: Yes.

2 MEMBER KIRCHNER: On the previous slide,
3 what methods were used for computation of fluid
4 dynamics to look at the boron precipitation problem?
5 Was that fluent or what --

6 MR. SMITH: We used -- actually, we didn't
7 use CFD and it wasn't me. I don't want to imply that
8 I was doing this work, but they -- actually, Research
9 used a modified version of TRACE to evaluate boric
10 acid precipitation.

11 MEMBER KIRCHNER: Yeah, I remember that.
12 Okay. That's not a CFD code in the normal sense, it's
13 a --

14 MR. SMITH: No.

15 MEMBER KIRCHNER: Okay.

16 MR. SMITH: I didn't mean to imply CFD --
17 the thermal hydraulic codes -- mostly for that slide,
18 those were thermal hydraulic codes we're looking at.

19 The CFD has been used for years and years
20 to evaluate the recirculation flows in the pools, you
21 know, something that's quite a bit probably simpler
22 than trying to model, you know, how boric acid is
23 going to build up in different regions of the core.

24 So, it's basically just looking at
25 velocity and turbulence in the pool during

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1 recirculation.

2 MEMBER KIRCHNER: Thank you.

3 MR. SMITH: Okay. So, this is the time
4 line slide we're on. I'll just start at the
5 beginning.

6 GSI-191 was initiated in the '90s to study
7 the potential for debris to affect recirculation.
8 After a lot of study, the NRC issued Generic Letter
9 2004-02 in 2004 and, as you can see here, industry had
10 already been working on the issue and issued NEI 0407,
11 which is a major guidance document for the PWRs.

12 It was actually issued before the Generic
13 Letter was issued, so there was a lot of industry work
14 going on in parallel with the NRC work.

15 In 2005, plants submitted their initial
16 responses to the Generic Letter. And in between 2005
17 and 2009 there was a lot of interaction between
18 licensees, vendors and the NRC regarding adequacy of
19 the methods used to evaluate the associated phenomena
20 and the adequacy of the plant responses.

21 And there's still -- it kind of -- the
22 interactions kind of died down after that time, but we
23 still go back and forth a little bit. The guidance is
24 much better now and we are definitely making a lot of
25 progress in closing those things out.

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1 Okay. At the time of the issuance of the
2 Generic Letter, the PWR ECCS strainers were small and
3 had relatively large holes like the one we saw a
4 couple slides ago, and it was likely that these would
5 either let a lot of debris through or get blocked by
6 debris or both.

7 I thought somebody was asking -- I guess
8 maybe just somebody might need to mute. Anyway, the
9 old strainers were either likely to let a lot of
10 debris through, bypass or penetrate or clog or both.

11 The design basis assumption for most of
12 the plants was just that 50 percent of the strainer
13 would be blocked. It wasn't a realistic assumption.
14 And as long as the remaining 50 percent could allow
15 adequate flow, the system was assumed to work.

16 As we know now, the old strainers at most
17 plants would have likely been blocked with debris had
18 a large LOCA occurred.

19 Between 2004 and 2008 a lot of work was
20 done to quantify the potential for chemical effects
21 and provide guidance for modeling the plant
22 evaluations. Chemical effects were not identified by
23 GSI-191, but were postulated later.

24 And early testing in vertical loops
25 indicated that the chemical effects, the precipitates

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1 that could occur, could have a very large effect on
2 head loss.

3 In 2008, the NRC staff, you know, based on
4 all the stuff we just talked about, the study and the
5 testing that was done, we issued a significant amount
6 of guidance to provide an accepted basis for the
7 evaluations of most areas associated. The only thing
8 that we really didn't cover at that time was in-vessel
9 effects.

10 In 2008, another important thing to happen
11 was NUREG-1829 was issued and that's important because
12 it established a basis for the prediction of break
13 frequency, which underlies justification for the risk-
14 informed evaluations.

15 And then to reduce plant risk in this time
16 frame, plants performed -- you know, we talked about
17 this earlier. They installed and tested new complex
18 geometry strainers and tests showed that these
19 strainers were effective at reducing head loss
20 compared to the vertical loop testing that was done.

21 They implemented the administrative
22 controls to manage debris and containment and some
23 plants performed modifications to reduce debris
24 sources.

25 In 2010, there was an SRM for SECY 10-0013

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1 issued and that stated that time should be allowed to
2 perform testing necessary to understand in-vessel
3 effects and, at that time, industry was also doing
4 testing on -- steam or two-phase jet testing to try to
5 reduce zones of influence for insulation.

6 That testing didn't really pan out. They
7 weren't able to show that large reductions would occur
8 for most of the materials. They did show that some
9 modifications like adding fans and putting double --
10 I guess, double jacketing around some systems would
11 reduce the zone of influence.

12 So, it was used by a few people, but not
13 many people went in and did those kind of
14 modifications.

15 The main thing that we worked on was the
16 in-vessel effects and basically the Commission told us
17 that we should take the time needed to let this
18 testing be done, consider a risk-informed safety
19 conscious resolution to GSI-191, and the SRM also
20 stated that measures taken to date ensure that
21 adequate defense-in-depth is being maintained.

22 So, that basically told us, you know, that
23 the plants had adequate defense-in-depth and we should
24 study this before we might try to make them do things
25 to close the issue out.

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1 And then in 2012, another SRM was issued
2 that allowed plants to select one of three options,
3 which we discussed in May. And I have a slide on
4 this. Like, after we get through the next time line
5 slide, we'll go over those options quickly.

6 And one of the options did include -- or
7 actually two of them included risk-informed
8 methodology. No one actually selected Option 3, which
9 was one of the risk-informed ones.

10 So, that SRM also reemphasized that
11 adequate defense-in-depth was being maintained due to
12 the actions taken by licensees to date.

13 STP, which was the risk-informed pilot
14 plant, submitted its initial LAR in 2013. There were
15 significant interactions with ACRS regarding the STP
16 methodologies and, in 2013, the first in-vessel
17 guidance for low-fiber plants was also approved by the
18 NRC.

19 In 2014, STP changed its methodology to
20 the RoverD method, which we'll -- we did review in
21 May, but we'll go over that quickly later today, what
22 the RoverD method is.

23 I'm ready for -- I'm up to Slide 7 on the
24 time line. Okay. In 2013, STP submitted an updated
25 LAR based on RoverD. This was ultimately approved by

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1 the NRC in 2017.

2 Prior to the issuance of the STP
3 amendment, Vogtle submitted its technical report for
4 NRC review and the NRC staff conducted two audits of
5 the NARWHAL and BADGER software used by Vogtle and
6 their risk-informed analysis.

7 In 2018, Vogtle submitted an updated
8 technical report and this report was approved by a
9 staff evaluation that contained limitations and
10 conditions.

11 Also during this time period the PWR
12 Owners Group submitted an updated in-vessel
13 methodology that was intended to use plant-specific
14 inputs and parameters to allow the calculation of
15 higher allowable in-vessel debris amounts.

16 The staff never approved that topical
17 report, but along with the work that was done for that
18 report and significant NRC confirmatory work, we
19 determined -- we used that to provide a good basis for
20 the NRC staff guidance. And we discussed that
21 guidance in the May meeting and Vogtle used that
22 guidance for their closeout.

23 That was one of the limitations and
24 conditions was that they had to address in-vessel
25 effects, so they did use that guidance in their

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1 closure.

2 In 2020, Vogtle submitted its LAR that
3 contained most of the regulatory information, which we
4 talked a little earlier, the licensing information,
5 the exemption, the tech spec changes, and it also
6 responded to the technical issues that were identified
7 and that did include the evaluation of the in-vessel
8 effects.

9 And the staff review of the LAR is
10 completed at this point, and that was a lot of
11 talking. So, I'm just going to take a pause and see
12 if there's any questions before we move on to Slide 8.

13 VICE CHAIRMAN REMPE: I don't have any
14 questions. It was a good history. I appreciate you
15 going through it.

16 MR. SMITH: Alright. Thank you. Alright,
17 we're ready for Slide 8, Andrea. This is the slide
18 that I talked about during the time line.

19 This gives us the overall status of
20 compliance and it gives the three options that were
21 presented in the SRM that were approved by the
22 Commission in its SRM 12-0093.

23 Option 1 was the lower fiber plants. 19
24 of those units have closed out.

25 Option 2 is an option that allowed the

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1 performance of additional testing and analysis and
2 included the risk-informed resolution, which Vogtle
3 was following.

4 And we think there's going to be 34 units
5 to just use a deterministic resolution, and eight
6 units, including STP, that are going to use risk-
7 informed methods to close the Generic Letter.

8 And Option 3 was to treat strainer
9 deterministically and in-vessel using risk analysis,
10 and no one selected this because the strainer is the
11 -- seems to be the long pole in the tent. It's harder
12 to evaluate the strainer. But most plants can use the
13 new in-vessel guidance to show that they won't have
14 issues with debris in the vessel.

15 I think the other thing I will say is that
16 we are getting close to closing out some of these 2a
17 deterministic plants. We have drafted letters for the
18 ones that have provided information for us and, I
19 think, in the near future we'll be getting some
20 letters out to some of those plants.

21 Slide 9. This slide just shows a pretty
22 simple overview of what the RoverD methodology or the
23 RoverD concept is. Basically the scenarios that meet
24 all the deterministic requirements and do not -- they
25 don't contribute to change in risk. So, those would

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1 be in the blue box on the bottom.

2 And then any scenario that fails any
3 deterministic criteria, they're assumed to contribute
4 to the change in risk caused by debris during
5 recirculation. So, that's where you get risk over
6 determination.

7 The risk is the top brown box and the
8 deterministically acceptable scenarios is the bottom
9 box and most of the scenarios go into the blue box on
10 the bottom.

11 Slide 10. This just gives an overview of
12 how the staff evaluated the Vogtle submittal. This
13 was discussed in more detail in the May subcommittee
14 meeting. I'll just wait for a minute and let you see
15 if you have any questions on that. We will go into a
16 little detail on a couple of these areas in the next
17 couple slides.

18 (Pause.)

19 MR. SMITH: Okay. I think we can move to
20 Slide 11. This just shows the five key principles of
21 risk-informed regulation that provide the basis for
22 the staff decision.

23 As I said before, a lot of technical
24 branches contributed to this review especially in the
25 area of Principle 4, which is the increase in risk

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1 would be small. So, that has a lot of deterministic
2 and risk review associated with it.

3 I thought I heard somebody trying to ask
4 a question, maybe. Okay. An evaluation of all five
5 principles is used to complete the integrated
6 decision-making process. So, the licensee has to show
7 that all these principles are met.

8 Alright. We're up to Slide 12. This is
9 just a -- I only brought one of these from the May --
10 we had two in the May presentation, but they both show
11 similar things.

12 This is a graphic illustration of why the
13 risk-informed evaluations are able to demonstrate very
14 low risk. The graph shows the amounts of fiber that
15 can be generated by a double-ending guillotine break
16 in their RCS. The maximum average and minimum for
17 each size range are shown.

18 So, just for example, for the main loop,
19 the big piping welds, the most that can be generated
20 by a double-ended guillotine break is over 2200 cubic
21 feet or -- yeah, cubic feet. I forgot if it was cubic
22 feet or pounds, but it is cubic feet.

23 And the minimum would be about just under
24 300 cubic feet with the average being around 1200, so
25 that's only the very biggest welds generate that

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1 amount.

2 The other thing to think about here is
3 even if a break does generate a very large amount of
4 fiber, the amounts are significantly decreased during
5 transport.

6 The large and intact pieces of fiber won't
7 transport, some small fiber won't transport, and the
8 remaining amount of fiber is split between whatever
9 strainers are operating at the time. So, only a very
10 large base can generate enough debris to cause a
11 strainer failure.

12 There were fewer large welds than small
13 welds and this was -- this was very similar -- we saw
14 a very similar trend with the STP fibrous debris
15 generation amounts, you know, as far as, you know, as
16 soon as you made the welds somewhat smaller, any
17 branch connection just didn't generate nearly as much
18 as these very large welds and, just from the Vogtle
19 analysis, most 20-inch break scenarios would not
20 result in a failure due to fibrous debris limits.

21 So, when you get down to 20-inch breaks,
22 which would be a partial break on a main loop because
23 there's no 20-inch branch lines, I guess, the -- you
24 would -- most of those breaks would not cause an
25 issue.

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1 So, very few -- very few welds are
2 susceptible to generating enough debris to cause a
3 failure of the scenario.

4 Then slide 13. This is a high-level look
5 at the Vogtle overall risk from the issue. This shows
6 that they did identify some breaks contribute to risk
7 due to strainer failures, due to in-vessel there were
8 no breaks that contributed to risk, and this just
9 shows their overall risk numbers that are very low.

10 Okay. Slide 14. This is more of a
11 graphical view. This demonstrates where the Vogtle
12 risk lies with respect to the guidance in Reg Guide
13 1.174.

14 The red star shows Vogtle's baseline
15 change in core damage frequency attributed to debris,
16 and then the blue star shows the maximum value of all
17 the staff's confirmatory calculations.

18 And although that was in Region 2, there
19 was a significant amount -- slightly into Region 2,
20 there was a significant amount of conservatism with
21 that particular calculation the staff did. So, we are
22 confident that the Vogtle risk is in Region 3.

23 Slide 15 is a summary of the Vogtle review
24 and the staff conclusions. And I think we've been
25 through this, but just quickly they acceptedly -- they

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1 acceptedly evaluated the impact of debris. They used
2 the RoverD methodology.

3 Most break scenarios do not contribute to
4 risk. The in-vessel evaluation methods are
5 conservative and all those scenarios meet the
6 deterministic acceptance criteria.

7 And their analyses and their evaluations
8 meet the key principles, all five key principles, of
9 the risk-informed regulations and the change in risk
10 is very small.

11 Slide 16 is a little bit more general.
12 This isn't focused on Vogtle, but this discusses the
13 important lessons learned from the risk-informed
14 evaluations.

15 The first bullet provides the context in
16 that the plants using the risk-informed methods are
17 the most challenged PWRs because they have large
18 amounts of fibrous debris.

19 The analysis performed for Vogtle and STP,
20 which are two of the very high-fiber plants,
21 demonstrate that the actions taken to date have
22 significantly reduced the risks associated with debris
23 and ECCS for circulation.

24 In addition to showing that risk has been
25 reduced, the Vogtle and STP methods have provided an

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1 increase in safety by eliminating significant amounts
2 of personnel dose that would have been required to
3 remove the fibrous insulation and replace it with
4 probably reflective metal insulation, and those are
5 the big technical lessons learned from this issue.

6 And that completes the staff's
7 presentation and I'd be glad to take any questions.

8 VICE CHAIRMAN REMPE: Thank you. From my
9 perspective, you hit the key points I wanted you to
10 hit today. So, I appreciate you providing such a
11 great summary.

12 Members, do you have any other questions
13 or comments? I think, again, the great job that you
14 did during the subcommittee meeting is why you're not
15 getting a lot of questions from the members.

16 At this time, I think we need to open the
17 line for public comment, right, Matt?

18 CHAIRMAN SUNSERI: That's correct.

19 MR. DASHIELL: The public line is open for
20 comments.

21 VICE CHAIRMAN REMPE: Great. So, are
22 there any members of the public who would like to
23 provide a comment? And if so, please state your name
24 first before providing that comment.

25 (Pause.)

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1 VICE CHAIRMAN REMPE: I think we've given
2 folks out there an adequate opportunity and there are
3 no comments, so let's close up the public line.

4 And then, Matt, I guess I should turn it
5 over to you because, if you wish, we do have a draft
6 letter ready for consideration by the full committee.

7 CHAIRMAN SUNSERI: Alright. Well, thank
8 you, Joy. That was a good session. I would suggest
9 that we move right into review of the draft letter.

10 We can at least get it read into the
11 record before lunch and then there's some time after
12 lunch that we can work on it.

13 So, if the staff is ready to pull the
14 letter up and display it for us and if you are ready
15 to walk us through that, Joy, that would be good.

16 (Whereupon, the above-entitled matter went
17 off the record at 12:05 p.m. and resumed at 3:00 p.m.)

18 CHAIRMAN SUNSERI: Alright. Welcome back.
19 This is Matt Sunseri. We will reconvene the meeting.
20 The next topic on our agenda is Reg Guide 1.9, Rev. 5,
21 Application and Testing of Onsite Emergency
22 Alternating Current Power Supplies in Nuclear Power
23 Plants.

24 Charlie Brown -- Member Brown will be
25 leading us on this discussion. At this point, I'll

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1 turn it over to Charlie.

2 MEMBER BROWN: Okay. Thank you very much,
3 Matt. Chris Cook, are you on the line?

4 MR. COOK: Yes, I am.

5 MEMBER BROWN: And I presume you are going
6 to do our opening remarks and Liliana is going to do
7 the presenting or am I wrong?

8 MR. COOK: You're absolutely correct.
9 That's how we'd like to proceed.

10 MEMBER BROWN: Okay. Do you have any
11 opening remarks you would like to make?

12 MR. COOK: I do. Should I begin?

13 MEMBER BROWN: Yes, sir. Take it away.

14 MR. COOK: You bet. Thank you. Well,
15 good afternoon, everyone. My name is Chris Cook and
16 I'm the branch chief of the Instrumentation, Controls
17 and Electrical Engineering Branch in the Office of
18 Research, Division of Engineering.

19 Thank you for the opportunity to provide
20 introductory remarks to help frame the purpose and
21 need for updating Reg. Guide 1.9.

22 Although GDC 17 and 18 discuss both onsite
23 and offsite power, the scope of this reg guide is
24 limited to only the onsite AC power sources.

25 One of the key drivers for this update is

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1 to endorse two IEEE standards, which we understand are
2 a high priority for use by IEEE standard committee
3 members and the industry.

4 Specifically, these are the updated
5 version of IEEE 387 on emergency diesel generators,
6 and the new IEEE 2420 on combustion turbine
7 generators.

8 Although it's only been a short time since
9 the team presented to the ACRS subcommittee, the team
10 has worked intensely on the material that they're
11 going to present to you today.

12 First, in the subcommittee meeting you
13 heard comments from NEI regarding their issue with
14 staff's use of a 30-day mission time.

15 Following the subcommittee meeting, the
16 staff revised that language in the Background section
17 of the reg guide.

18 Just yesterday, we took that revised
19 language to the CRGR and I'm happy to report that the
20 CRGR has no concerns with the revised language and
21 today's presentation will cover the revisions that
22 took place since the subcommittee meeting.

23 Second, I wanted to let you know that the
24 team fought very hard about the subcommittee's
25 comments regarding the approach staff took in Section

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1 C(1) for technology-neutral power sources.

2 We have prepared several slides to discuss
3 our approach and explain how we continue to see that
4 section as one acceptable way to meet the regulation.

5 This section approaches the foundational
6 regulatory requirements by identifying the necessary
7 regulations and by referencing the applicable reg
8 guides in the various subsections.

9 For example, the appropriate seismic
10 qualifications for onsite power sources are specified
11 by referring to Reg Guide 1.100.

12 I also wanted to emphasize that staff are
13 open to considering future industry standards as
14 guidance for technology-specific power source
15 applications just like we did for EDGs and CTGs.

16 However, until those standards are
17 available, we think that Section C(1) highlights the
18 regulatory framework and provides a useful foundation
19 for identifying the necessary considerations.

20 So, with that as a short introduction, I
21 now turn the floor over to Lili Ramadan to make her
22 presentation.

23 MEMBER BROWN: Thank you, Chris.

24 MS. RAMADAN: Good afternoon. Today's
25 agenda we will be introducing the reason for the

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1 revision to this regulatory guide.

2 We will be discussing existing guidance.
3 We will be pointing out the significant changes, the
4 proposed new guidance and going over public comments
5 and resolutions. Not all of them, but just a sample
6 of them.

7 Next slide. The current NRC guidance in
8 Regulatory 1.9 has not been updated since 2007. It
9 does not reflect all the possible types of different
10 onsite emergency power sources.

11 The main drivers for this update, as Chris
12 stated, is to endorse IEEE standard -- IEEE 387-2017
13 and the new IEEE standard 2420-2019, and introduce a
14 technology-neutral guidance to include other types of
15 emergency power sources for the onsite alternative
16 current electric power system.

17 This technology-neutral approach provides
18 a consistent regulation in an innovative and
19 transformative manner to demonstrate NRC's value of
20 openness to allow for efficiency and the review of new
21 technology applications.

22 This guidance also ensures that the
23 applicant and the staff are aligned regarding the
24 review criteria needed for all possible types of
25 different onsite emergency power sources and lays the

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1 foundational groundwork for the alternative power
2 supplies other than EDGs and CTGs.

3 Next slide. The current version of Reg
4 Guide 1.9, Revision 4, covers only the diesel
5 generator technology and endorses, with exceptions,
6 the 1995 version standard of IEEE 387.

7 Reg Guide 1.9 provides one method that the
8 staff finds acceptable from meeting the requirement of
9 onsite standby emergency AC power supply in accordance
10 with 10 CFR, Appendix A, General Design Criteria, GDC,
11 17 and 18.

12 Next slide. This Revision 5 endorses the
13 updated version of IEEE Standard 387 on EDGs where
14 emergency diesel generators are widely used as standby
15 emergency power sources for the onsite alternating
16 current power system.

17 Many of the testing and design
18 requirements from Revision 4 were removed since they
19 were incorporated in the IEEE standard 387-2017.

20 Next slide. This Revision 5 endorses the
21 new IEEE 2420 on CTGs where the use of emergency gas
22 turbine generator system is used to supply the standby
23 emergency AC power system.

24 It also incorporates the interim staff
25 guidance on the review of nuclear power plant design

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1 using gas turbine-driven standby emergency alternating
2 current power system. It provides the guidance needed
3 to ensure it is consistent with the intent of 10 CFR
4 Part 50 and Part 52.

5 Next slide. The proposed new guidance and
6 staff considerations and positions can be found in
7 Section C of the draft reg guide. We will refer to
8 C(1) as a section that addresses the new technology-
9 neutral power sources.

10 C(2), we will refer to C(2) as a section
11 that addresses the EDGs as the power source, and we
12 will address C(3) as the section that addresses CTGs
13 as the power source.

14 C(1) provides the foundational groundwork
15 for other alternatives for onsite standby emergency
16 power sources other than EDGs and CTGs that meet the
17 intent of 10 CFR Part 50 and 10 CFR Part 52
18 requirements. The basis stems from meeting the
19 criterion 17 and 18.

20 C(1) provides a reasonable assurance that
21 the Class 1E power system can perform its intended
22 function to provide secure and reliable power whether
23 it be from a nuclear power plant, a facility, a small
24 modular reactor or advance reactors.

25 It allows for the use of different

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1 technologies, but it ascertains the availability and
2 capability of the power sources treated in accordance
3 with Part 50 and Part 52 requirements.

4 In C(1), there are unique considerations
5 with each technology, but, again, those will be
6 evaluated at the time of application as is currently
7 laid out in C(1).

8 This just provides a current guidance to
9 ensure that the applicant and the staff are aligned
10 regarding the review criteria meeting the foundational
11 requirements through the referencing of applicable reg
12 guides in the various subsections of C(1).

13 MEMBER BROWN: Liliana?

14 MS. RAMADAN: Yes.

15 MEMBER BROWN: Granted that your comment
16 about the alternative power sources will have their
17 own unique characteristics and such, which will have
18 to be evaluated relative to the criteria you have
19 provided --

20 MS. RAMADAN: Correct.

21 MEMBER BROWN: -- however, there are also
22 a large number of plant application considerations
23 that it doesn't matter which alternative power source
24 you choose, you're going to have to -- it would have
25 to be addressed and those aren't identified at all.

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1 So, I mean, that's a little bit of a
2 difficulty in terms of saying that, you know, we can
3 just leave that open and hope somebody figures it all
4 out when they get there. It's a similar comment to
5 what I made in the subcommittee meeting.

6 I really didn't have a disagreement with
7 the fact that the new technologies, whether they be
8 solar, wind turbines, fuel cells, whatever somebody
9 comes up with, have their own unique characteristics,
10 they still have to interface with the plant.

11 The plant will look -- no matter what
12 plant we have, they will look like plants we have
13 today in terms of the functionality and there will be
14 pumps, motors, instrumentation, all kinds of other
15 goodies that require AC power just as it exists today
16 and you have to parallel and operate that new system
17 with those existing plants.

18 So, if you look at the existing CTG and
19 the EDG, sections 1 through 7, I believe, pretty much
20 everything in there describes the type of stuff that
21 interfaces with the plant.

22 All those new systems will undoubtedly
23 require cooling systems, so there's -- the only thing
24 unique is -- in a couple of cases is the fuel cell's
25 kind of unique, but it's still going to have to have

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1 some other type of interface to connect it to the
2 plant.

3 And those requirements to have that fuel
4 cell or solar system or wind turbine respond are not
5 contained in anything that's in the existing guidance
6 C(1) as you all have provided.

7 So, that's similar to the comment I made
8 earlier. I just wanted to make sure I was clear
9 relative to those particular thought processes. Okay?

10 MS. RAMADAN: Understood. It's a valid
11 concern, but, as we stated, and as we're trying to lay
12 the approach here in C(1), it's just an initial
13 groundwork -- foundational groundwork that states
14 these are the sections and the acceptance criteria
15 that we are looking for for whatever technology that
16 comes in these -- this is the -- just in alignment
17 between the applicant and the staff.

18 MEMBER BROWN: So, the ability to stop and
19 start this, to take heavy demand loads, to shed heavy
20 loads, and in order to parallel the existing plants
21 aren't even covered in the new capabilities you have
22 brought up that are listed in C(1). Not right now.

23 MS. RAMADAN: Not right now.

24 MEMBER BROWN: There's a number of other
25 ones as well. These new systems -- existing systems,

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1 the wire and iron generators, have a certain
2 characteristic set of harmonics.

3 None of the new systems that would even be
4 thought about these days require a lot of power
5 electronics, which generate their own characteristic
6 harmonics and we know it, but yet we don't say
7 anything.

8 So, I'm just mentioning that. I'm not
9 going to slow you down in your slide presentation. I
10 just wanted to let you know that that's what I've been
11 thinking. Okay?

12 MS. RAMADAN: Thank you.

13 MEMBER BROWN: Oh, yes, sir -- excuse me,
14 yes, ma'am.

15 (Laughter.)

16 MS. RAMADAN: That's okay.

17 MEMBER BROWN: Go ahead.

18 MS. RAMADAN: And C(2) and C(3) provide
19 the new and improved design and testing considerations
20 for EDGs and CTGs.

21 Next slide. As stated before, this
22 revision introduces a new technology-neutral concept
23 whereby C(1) again highlights the necessary regulation
24 framework to allow for the review of alternate onsite
25 power sources.

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1 C(2) highlights the most updated EDG
2 guidelines.

3 C(3) highlights the most updated CTG
4 guidelines.

5 This revision is the result of lessons
6 learned from license amendment review activities and
7 inspections, industry operating experience reviews,
8 design certification reviews, COL application reviews
9 and NRC staff analysis.

10 Next slide. Some of the --

11 MEMBER KIRCHNER: If I could, Liliana --
12 this is Walt Kirchner -- I would just concur with
13 Charlie in that functionally when -- you're opening
14 the door to alternate power sources, that's fine, but
15 functionally, at some point, you've got to parallel
16 them with the onsite AC power systems emergency
17 especially those buses that, you know, typically
18 they're providing a safety-related function in terms
19 of power.

20 That same functionality is required
21 whether it's a diesel generator or a combustion
22 turbine generator or de facto what you're saying is
23 we're allowing for an alternate offsite power source.

24 Not the normal offsite power source that
25 you assume is lost, but an alternate power source, but

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1 you still, from the AC power conditioning and load
2 acceptance, still have to functionally do the same
3 thing you do for a diesel-driven generator or gas
4 turbine generator.

5 So, I just concur with Charlie. It's
6 underdeveloped in -- it opens the door, but it doesn't
7 provide the kind of -- how should I say it -- level of
8 assurance that's required of the diesel generator or
9 the gas turbine alternative.

10 MS. RAMADAN: I appreciate the comment and
11 we agree it opens the door. And because we are
12 introducing a technology-neutral concept here, that's
13 the reason why it's very initial in its guidance and
14 it's just laying the framework, foundational
15 groundwork. As stated, it's just opening up the door.

16 When we receive that application, whatever
17 it is, and it falls into C(1), that's when we can get
18 into the nitty-gritty, so to speak.

19 MEMBER KIRCHNER: Yeah, but then you would
20 be arguing with people about what the level of the
21 nitty-gritty is necessary whereas if it was specified
22 before to be similar to what the diesels and the
23 combustion turbine generators have to meet or
24 interface with or how to prove their reliability, it's
25 just going to be a big food fight. That's one of the

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1 difficulties (audio interference).

2 Did we lose something?

3 MEMBER BALLINGER: I think the aliens have
4 arrived.

5 MEMBER BLEY: You created a bit of
6 feedback, Charlie.

7 MEMBER BROWN: Did we lose the staff?

8 MR. COOK: No, I'm still here, Member
9 Brown. This is Chris Cook.

10 MR. MILLER: Kenn Miller. I'm still here.

11 MEMBER BROWN: The pictures are gone.
12 That's why I ask. Is Liliana still there?

13 MS. RAMADAN: I am.

14 MEMBER BROWN: Oh, okay. We got it back.
15 I'm sorry, I have no idea what caused that. It was
16 not me.

17 MR. COOK: It wasn't me either, sir, but,
18 I mean -- so, this is Chris Cook of the staff. I
19 mean, so a lot of what we were trying to do was in
20 C(1), is to go through and not be technology-specific,
21 as we've been saying, and to then point to the
22 specific regulatory guidance that would be there
23 should someone want to use an alternate technology
24 that we've had and you've understood that.

25 So, it's just us trying to understand how

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1 best to, you know, what we were thinking was this was
2 a good way to start to get that sort of rubric out
3 there that people then could use to go forward on
4 that, lists all the different requirements as these
5 things come in that are unknown at this time.

6 MEMBER BROWN: Chris, if you look at the
7 EDGs and CTGs, the requirements 1 through 7,
8 definitions, the mechanical and electrical
9 characteristics, they are totally technology-neutral.
10 They only -- they are not design or technology-
11 specific at all. That's why -- I mean, paralleling is
12 not technology-specific. You have to be able to do
13 that. There's nothing in there for that.

14 Accepting and rejecting large loads is not
15 technology-specific. There's nothing in C(1) for
16 that.

17 The starts and stops that it can endure
18 over some period of time is not in there. That's not
19 technology-specific at all.

20 The voltage in harmonic, the voltage drops
21 and everything else, which are not technology-specific
22 because the plant can't stand too big of changes, are
23 not in there at all.

24 So, there's lots of stuff -- most of the
25 EDG and CTG stuff, with the exception of a few things

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1 like the type of fuel and how you have to store it,
2 heat it, open the valves, feed it in or whatever,
3 that's technology-specific, but that's not -- those
4 you wouldn't include, but about 80 percent or 70
5 percent or whatever I could come up with as I went
6 through the EDG spec line by line and most should be
7 incorporated in C(1) because they're not technology-
8 specific.

9 Anyway, that was -- I understand your
10 point, it's just that we've left out too much.

11 MEMBER BLEY: Charlie?

12 MEMBER BROWN: Yeah, Dennis.

13 MEMBER BLEY: Yeah. And I apologize to
14 the staff. I was not able to attend the subcommittee
15 meeting, but, in general, I agree with Charlie and,
16 you know, ways around this kind of problem could be
17 the things Charlie is talking about because there are
18 quite a few things that will have to apply to whatever
19 source that says there are also -- for many of these
20 there's going to be the issue of storage versus
21 production and how you deal with that.

22 It seems to me you need not only the kind
23 of things Charlie is talking about, but you need an
24 acknowledgment in this section that it's -- if not
25 early in development, something like that that says

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1 there are details that are going to have to be
2 developed and fared out to -- essentially to the level
3 of the guidance that exists for turbine generators.

4 MEMBER BROWN: Dennis is --

5 MEMBER KIRCHNER: Dennis, this is Walt.
6 I'm just -- I'll agree with you and I'll just -- I
7 should have done this, and I apologize to the staff,
8 because I thought about it after the subcommittee
9 meeting.

10 Let's take the intermittent sources off
11 the table for the moment because that has some of the
12 complexities that Dennis just mentioned, how you store
13 the energy, et cetera, so that you have a reliable
14 source when you need it, but let's pick on something
15 like fuel cell technology.

16 Fuel cells take a while to start up and,
17 et cetera, et cetera. So, and then you've got to
18 convert essentially a DC power source into an AC --
19 there are a number of options to do that, but -- and
20 I won't try and solve them here, but it falls back on
21 what Charlie was saying. You still need that
22 functional interface with the existing AC emergency
23 power system. That applies to all the above
24 alternates.

25 So, whether I come in with a hydrogen-

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1 driven fuel cell or whatever alternate technology-
2 neutral solution, I still got to do all those
3 functions that make it synchronize and accept the
4 load, et cetera, just like a diesel generator, just
5 like a combustion turbine. So, I'm just agreeing
6 vehemently with Charlie. I'll stop.

7 MEMBER BROWN: Okay. I think we've made
8 our point, Chris and Liliana. If somebody else has a
9 comment, speak up. We're not shy.

10 MS. RAMADAN: Member Brown --

11 MEMBER BROWN: Yes.

12 MS. RAMADAN: -- if I can state for C(1),
13 as sated before, we do reference applicable reg guides
14 in the various subsections of C(1) that point to other
15 regulations in order to get the specifics that you're
16 referencing to.

17 MEMBER BROWN: Those are not -- they don't
18 cover the type of stuff that I've just talked about.
19 I mean, it's -- if they did, then they wouldn't be
20 necessary in the diesel generator or the CTG part and
21 that's kind of the point.

22 Those are general regulations, so, I mean,
23 we can beat this to death right now, but we're
24 probably not going to have a little bit of a change in
25 positions, at least that I can tell.

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1 MEMBER HALNON: Charlie?

2 MEMBER BROWN: Yeah.

3 MEMBER HALNON: This is Greg. I'm trying
4 to follow you. I don't disagree with the concept that
5 any power source, you know, technology, whatever, it's
6 got to be able to interface with the plan
7 appropriately, but I'm not following the detail.

8 I see in C(1) right now that has to have
9 a discussion of the operability and functional
10 performance, address failure modes and effects and
11 discussing the interfaces and impacts, the onsite
12 emergency power system.

13 I see that and this -- so, whatever is
14 suggested or applied for will be -- we'll have to
15 address those issues and staff will have to review to
16 ensure that they're adequate.

17 So, where are you talking about putting
18 that detail in with all the other stuff?

19 MEMBER BROWN: Greg, that detail is in --
20 that level of information is in the EDG specs. That
21 interface involves load application and removals.

22 It involves paralleling that source with
23 the existing onsite, you know, the plant sources, if
24 you have to, for transferability.

25 It -- those are not -- those general words

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1 about you got to review and assess and discuss don't
2 address -- you have to make it up. You have to ensure
3 those other things are covered.

4 A simple solution to this would have been
5 to provide the guidance that you provided, but then
6 state that EDG and/or the CTG, whichever one you
7 wanted to pick, general, mechanical, electrical and
8 other characteristics that are there not for the
9 diesel and generator, they are testing requirements,
10 how you do this and how you do that, to ensure you
11 have reliability, paralleling, load removal and
12 application, voltage changes --

13 MEMBER HALNON: So, you're looking for
14 functional equivalency in some --

15 MEMBER BROWN: Functional equivalency,
16 that's right. And you don't have to -- you could just
17 reference the EDG.

18 I think it's -- I forgot the number of the
19 sessions. You don't want to repeat definitions, but
20 Sections 3 and 4, 5, 6 where they talk about
21 operability and testability.

22 You got a general statement on testability
23 where all it does is say it has to be able to be
24 tested. Review and discuss how you're going to test
25 all the stuff.

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1 MEMBER HALNON: Okay. So, you're looking
2 for an equivalent level of addressing the same issues
3 that we have for the traditional EDGs and CTGs.

4 MEMBER BROWN: Exactly, but those are
5 technology-neutral. That's the point that we've
6 missed the --

7 MEMBER HALNON: The interfaces are -- it's
8 like a black box power source, you know.

9 (Simultaneous speaking.)

10 MEMBER BROWN: In fact, yeah, you can put
11 a law down on the output of the diesel generator and
12 there's a bunch of stuff you have to meet. And that's
13 aside from the ability to get fuel into it or whether
14 it's got lube oil or all that other -- hydrogen fuel
15 cells need hydrogen. They're going to have to get it
16 from somewhere.

17 MEMBER HALNON: Okay.

18 MEMBER BROWN: How many hydrogen tanks do
19 you want ready to explode on the site? I say that
20 with tongue in cheek. I apologize.

21 MEMBER HALNON: No, I get that. I get
22 what you're talking about now. I see what you're
23 trying -- the equivalency is what I was trying to get
24 to, I think.

25 MEMBER BROWN: And that's right. And

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1 then you don't want to have to rely on people bringing
2 all that stuff back to the fort with these general
3 review discuss and assess.

4 And, you know, I didn't disagree with any
5 of the 13 attributes, but there are more and there are
6 some details about those, you know, the interface
7 details that you got to pay attention to.

8 The other thing people miss when you talk
9 about alternative sources -- and Dennis mentioned one
10 of them -- say somebody wanted to use solar cells.
11 That's fine, but they are intermittent. If there's no
12 sun, you don't have anything. Same thing with wind
13 turbines.

14 So, you've got to store that energy
15 somewhere. You can't -- you need that on demand.
16 Well, that requires batteries and you don't have to
17 call out batteries, but you say you have to address
18 storage, blah, blah, blah, as a unique-type thing
19 because there are only a few alternative sources you
20 can deal with.

21 MEMBER HALNON: Those are intermittent
22 fuel sources.

23 MEMBER BROWN: Exactly. And they're
24 weather-dependent. I mean, if I was a licensee, I
25 would never depend on those and they take huge

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1 acreage, but that's not for me to decide.

2 Fuel cells are local and they can be
3 handled, but you got to be able to provide hydrogen
4 tanks onsite for how long. How long does that
5 hydrogen source have to last and how easy can you get
6 replenishment into the site?

7 Those are application-specific, you know,
8 to the technology itself. Don't care about that other
9 than that you obviously have to address them, but it's
10 all the other stuff that's in the EDG and CTG
11 standards that really connect whatever that source is
12 to the plant as it stands and handle its transients,
13 responses, lights-out situations, how fast does it
14 start.

15 I don't remember all the details on the
16 commercial plants. I do know the Navy nuclear plants,
17 we had a 10-second -- the lights go out and within 10
18 seconds the diesel generator was up and accepting load
19 just fine.

20 And that's similar to what I've read in
21 the standards and the specs I've seen in the
22 commercial world since I've been on the Committee.

23 MEMBER HALNON: And that's just one of
24 them.

25 MEMBER BROWN: And then when you apply a

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1 big load to it, you don't want the voltage to drop to
2 50 percent of the voltage. Otherwise, all your loads
3 drop out.

4 MEMBER HALNON: Yeah.

5 MEMBER BROWN: So, it's that type of stuff
6 that's in the existing ones that when somebody comes
7 in with an alternative, you don't want to have to tell
8 them you left this out. They should know that already
9 that that's what you -- what's the expectations?

10 MR. MILLER: Member Brown, this is Kenn
11 Miller. Can I ask a question?

12 MEMBER BROWN: Yeah.

13 MR. MILLER: Again, my name is Kenn
14 Miller. I'm in the Electrical Engineering Branch with
15 Lili and, Member Brown, you've used the term "spec"
16 and "standard" and I think you're meaning -- you're
17 referring -- when you say those terms, you're meaning
18 the same thing and you're referring to IEEE 387 and
19 IEEE 2420.

20 MEMBER BROWN: Exactly. Yeah. Pardon me
21 for that, yes.

22 MR. MILLER: No, I just want to make sure
23 I'm catching that right.

24 MEMBER BROWN: Yeah, that's correct.

25 MR. MILLER: And I think the answer to

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1 your point is -- and, again, going back to what we did
2 with this reg guide, was given that we have detailed
3 standards for diesels and turbines already, and that's
4 why we have endorsements of those standards and those
5 do go into the details that you're describing, and,
6 yes, those details will apply to any chosen technology
7 that a licensee might choose to try to apply, but in
8 the absence of a standard that we typically endorse we
9 chose to stay at the regulatory level.

10 And the regulatory -- the regulations, you
11 know, describing the onsite power source envelope all
12 of the characteristics you're talking about.

13 And until the industry will come forward
14 with an approach, which would probably be followed by
15 the IEEE picking up a standards development process to
16 address those kinds of issues, and then we would
17 gladly endorse that standard as part of the regulatory
18 guidance document.

19 But at this time given that we don't have
20 that, we chose to go with the route of specifying the
21 regulations and we do -- and, as has been said, we do
22 point at some of the reg guides that deal with some of
23 the other issues dealing with onsite power supplies.

24 So, I think that's the answer to the
25 question and, in fact, we're not disagreeing with you

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1 that those are all issues that would have to be
2 addressed by an applicant if they were going to decide
3 to try to apply a different technology.

4 And, frankly, they should have the
5 knowledge to know that the requirements that are
6 specified in the two standards that are endorsed are
7 equally applicable and that they should, you know,
8 they'll have to deal with that and we will have
9 questions going through that process to deal with it.

10 MEMBER BROWN: Why don't you say that?

11 MR. MILLER: Because we don't have a
12 standard yet to do it.

13 MEMBER BROWN: You do.

14 MEMBER BLEY: Charlie?

15 MEMBER BROWN: Yes, Dennis.

16 MEMBER BLEY: The end point of that logic
17 is that you delete everything except C(1) and it
18 applies to everybody and we don't want to do that.

19 If you look at C(3), which is looking at
20 combustion turbines, it turns out that in that
21 standard we didn't have the data gathering
22 requirements that exist for the EDGs. So, you brought
23 that stuff over, put it in your reg guide, and that's
24 kind of where we're coming from is the things that we
25 can bring over and put in the reg guide now might save

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1 you a lot of trouble later.

2 And this is -- you're so out of whack
3 between C(1) versus C(2) and C(3), we understand the
4 reasons, but you don't need to be as far out of whack
5 as it is.

6 And, like I said, you could get rid of
7 C(2) and C(3) by the same argument and just live with
8 C(1) for everybody.

9 MEMBER BROWN: Okay. Any other comments?

10 (Pause.)

11 MEMBER BROWN: Thanks, Dennis. Okay.
12 Liliana, are you there?

13 MS. RAMADAN: Yes. Yes. Okay.

14 MEMBER BROWN: Okay. Kenn, Chris, I
15 appreciate the input, and Liliana also. The purpose
16 of these meetings is to have this kind of discussion,
17 so that's much appreciated. And we hope we've
18 expressed our thought processes clearly enough that
19 you understand where we're coming from, but I suspect
20 we can move on right now.

21 (Pause.)

22 MEMBER BROWN: Okay. Liliana?

23 MS. RAMADAN: Yes, sir. Slide 9.

24 MEMBER BROWN: Yeah.

25 MS. RAMADAN: Alrighty. Okay. In slide

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1 9, some of the -- we just provided a sample of the
2 supplements and clarifications to IEEE 387 and some of
3 -- they were addressed in C(2), the EDG section, and
4 specifically we looked at the testability and
5 synchronization capabilities that were supplemented to
6 address the testing of the EDGs while it parallels to
7 the grid.

8 If the offsite power grid experiences
9 transients, we're saying that the diesel should be
10 protected.

11 Also, in C(2) under the Design and Testing
12 Consideration section, in the language, we deleted the
13 language where it states, "simulate the parameters of
14 operation," and we replaced it to include the
15 allowance for testing of EDGs at the manufacturer to
16 envelope the parameters of operation under normal
17 standby condition, and we were specific on the
18 environments to include temperature and humidity.

19 Lastly, in C(2) the staff agreed to
20 include the EDG Owner Group recommendations to allow
21 for accelerated maintenance as appropriate.

22 Next slide. I wanted to point out that
23 there was a minor editorial typo in this slide. Where
24 it says, "addressing testing of EDGs," it should
25 actually read "CTGs." So, I just wanted to point

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1 that out in case you received an older version.

2 MEMBER BROWN: That's on slide 10?

3 MS. RAMADAN: Yeah. Some people had
4 received an earlier version. I just wanted to point
5 that out.

6 MEMBER BROWN: Where it says "EDG" right
7 under the first bullet, it should be "CTG"?

8 MS. RAMADAN: Yes.

9 MEMBER BROWN: That makes sense since the
10 standard is the same.

11 MS. RAMADAN: Yes.

12 MEMBER BROWN: Thank you.

13 MS. RAMADAN: So, under the Design and
14 Testing Considerations in the CTG section, we clarify
15 the exhaust system needing to purge before startup or
16 during shutdown.

17 In addition, the design of the CTGs was
18 supplemented to consider the local environment
19 conditions to account for the significant pressure
20 loss associated with air intakes.

21 And lastly, the recommended parameters
22 were clarified to add additional items to be monitored
23 to indicate the need for an overhaul.

24 Next slide. This new guidance
25 supplemented both IEEE standards to include the

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1 verification of all subsystems such as fuel oil, lube
2 oil, cooling, starting and piping systems credited for
3 operation.

4 Other important changes that needed to be
5 noted, as stated before, many of the testing and the
6 design requirements from Revision 4 were removed.
7 Since they were incorporated in the updated IEEE 387,
8 the title of Reg Guide 1.9 changed to be more
9 reflective of a technology-neutral approach.

10 Next slide. In summary, we received 51
11 comments from NEI, IEEE and the members of public.
12 One of the significant changes we made was the
13 background section to combine the two sections on EDGs
14 and CTGs into one.

15 The rest of the comments we felt were
16 minor and were incorporated by editorial changes.
17 Several other comments did not require changes because
18 they were determined to be beyond the scope of this
19 regulatory guide.

20 Next slide.

21 MEMBER BROWN: Before you leave that, if
22 you would, I wanted to make sure I understood. When
23 I looked at the version you provided us for the full
24 committee meeting, there's a background which talks
25 about the onsite emergency alternating current power

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1 sources, the bold heading.

2 And then you -- the combination you're
3 talking about, you would have a CTG and EDG and you
4 combined both of those on page 8.

5 MS. RAMADAN: Yes.

6 MEMBER BROWN: That's the combining you're
7 talking about, right?

8 MS. RAMADAN: Yes, sir. Yes.

9 MEMBER BROWN: Okay. Thank you. That's
10 all. I just wanted to make sure I had that calibrated
11 right.

12 CHAIRMAN SUNSERI: Hey, Charlie, this is
13 Matt. You have a couple of hands up. I don't know if
14 they're from before or if they're --

15 MEMBER BROWN: Oh, okay.

16 CHAIRMAN SUNSERI: Kenn Miller and Dennis
17 Bley.

18 MEMBER BROWN: Your all's hands up for a
19 reason?

20 (Simultaneous speaking.)

21 MR. MILLER: This is Kenn. Mine was up
22 from earlier. I forgot to take it down. Sorry about
23 that, Member Brown.

24 MEMBER BROWN: Okay. I've never learned
25 how to do raising hands on this Teams. I got to pay

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1 attention to that. Thank you, Matt. Alright. Go
2 ahead, Liliana. Thank you.

3 MS. RAMADAN: Okay. So, slide 13. Some
4 of the comments of interest were from NEI and their
5 reference in the public comment table there No. 1, 2,
6 3 and 5.

7 MEMBER BROWN: And 7.

8 MS. RAMADAN: Um.

9 MEMBER BROWN: Forget 7. Just deal with
10 1, 2, 3 and 5.

11 MS. RAMADAN: In particular, in an NEI
12 letter dated February the 18th, NEI wrote to the NRC
13 during the public comment period their concern on --
14 their greatest concern in the statement and the
15 discussion section where it was stated that the onsite
16 emergency AC power source should be capable of
17 operating for a minimum of 30 days. And NEI did not
18 agree that that was a generic minimum requirement
19 regarding mission time for the emergency AC power
20 sources.

21 So, after two iterations, in resolution,
22 the staff removed the reference to 30 day. The staff
23 interpreted this requirement in GDC 17 to mean the EDG
24 mission time refers to the amount of time the EDG is
25 required to operate to supply power to safety systems

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1 that mitigate the effects of accidents and events
2 delineated in the licensee safety analysis and to
3 power the equipment necessary for long-term core
4 cooling.

5 Therefore, the EDG mission time is
6 dependent upon the mission time of the equipment the
7 EDG is designed to support during the loop conditions.

8 MEMBER BROWN: Can I comment on that?

9 MS. RAMADAN: Yes.

10 MEMBER BROWN: I understand what you were
11 quoting, but 10 CFR 50.46(b)(5) states: Long-term
12 cooling. After any calculated successful initial
13 operation of the ECCS, the calculated core temperature
14 shall be maintained at an acceptably low temp value
15 and decay heat shall be removed for the extended
16 period of time required of the long-lived
17 radioactivity remaining in the core, which is -- could
18 be a long, long time.

19 Second, you also reference Reg Guide 1.27,
20 which is the ultimate heat sink regulatory guidance,
21 and the No. 1 guidance item in that says, the UHS
22 should be capable of providing sufficient cooling for
23 at least 30 days to permit simultaneous safe shutdown
24 and cooldown of all nuclear reactor units that it
25 serves and to maintain them in a safe shutdown

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1 condition, and (2) in the event of an accident in one
2 unit, to limit the effects of that accident safely, to
3 permit simultaneous and safe shutdown and cooldown of
4 any remaining units, and to maintain them in a safe
5 shutdown condition. Procedures should be available
6 for ensuring a continued capability of the UHS to
7 provide sufficient cooling for 30 days -- after 30
8 days.

9 So, in reality, you will not get any
10 extended capability if you don't have AC power. So,
11 the mission time while -- you could look at the
12 mission time that was previously specified as not an
13 unreasonable starting point for anything. And if
14 somebody concludes they don't need that, that's fine.
15 I'm just pointing out that there's some
16 inconsistencies with not saying anything in their
17 ultimate heat sinks, which all the plants require
18 regardless of what they are. So, you've got to keep
19 them up for 30 days and then provide for extended
20 cooling after that, in your reg guide.

21 So, I'm just pointing that out. It's a
22 little bit counterintuitive to the objections that
23 were raised. That's just me based on my review.

24 MEMBER HALNON: Yeah, Charlie. This is
25 Greg. There's a long, long history with mission time

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1 and the inspection space for the operating plants.
2 And just about any time an inspector comes onsite and
3 talks about mission time, it's not always clear in the
4 licensing basis which mission time you're talking
5 about, individual mission times and stuff.

6 And unless we're willing to take it on in
7 this reg guide, there will be backfit issues going on
8 for years after this might be in there.

9 So, my sense is that NEI is not wanting to
10 take that issue on as the generic issue and that they
11 want each of the individual plants to deal with it
12 appropriately based on the language in their safety
13 analysis report.

14 And the problem is is that, as you know,
15 many of the 1970 vintage safety analysis reports might
16 be three volumes and the 1980 -- late-'80 -- mid-'80
17 version or even now are 15, 20, 25 notebooks.

18 MEMBER BROWN: Well, Greg, just to comment
19 on that, the Rev 4 had this same guidance in it, 30-
20 day guidance, in the Discussion section.

21 MEMBER HALNON: And that's the problem.

22 MEMBER BROWN: So, this has been around
23 for almost 15 years.

24 MEMBER HALNON: Right. And I would say
25 that the argument in the industry has been along that

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1 long, too, because the licensing bases don't always
2 either state 30 days or (audio interference).

3 So, I think that they wanted to try to
4 stay away from a generic issue coming up in this and,
5 you know, like I said, unless we're willing to take on
6 this as a generic issue now, I think that probably the
7 language that they came up with is where the industry
8 is at right now anyway.

9 MEMBER BROWN: Well, I would take a
10 slightly different path on that. I think any -- the
11 guidance is the guidance and 30 days, as long as it's
12 couched in the terms of being a reasonable starting
13 point absent any other analyses that justifies a
14 different mission time, that leaves it open such that
15 you have the ability, but you've at least got a
16 starting point that you have to look at.

17 MEMBER HALNON: Yeah. That's a valid way
18 of looking at it as well.

19 MEMBER BROWN: And if I was going to
20 suggest anything, that would be -- that would be the
21 approach I think we should take. I don't want to
22 dictate anything, but you got to start somewhere.

23 And if you look at the existing reg guides
24 and the requirements for ultimate heat sinks and the
25 10 CFR, you know, 50.46, whatever it is, (b) (5), words

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1 about long-term cooling, it makes sense to have a
2 starting point and then have somebody tell you why
3 they don't need it, and that's fine.

4 So, anyway, that was just -- as I was
5 reviewing this stuff and I -- admittedly, I'm not --
6 don't have your commercial world experience at dealing
7 with these critical issues. So, anyway, that's just
8 my thought process.

9 MR. MILLER: Member Brown, this is Kenn
10 Miller.

11 MEMBER BROWN: Yes.

12 MR. MILLER: I think your assessment was
13 pretty on target and I think the approach we took with
14 the change here was to refer to that license basis
15 that that's the way that we saw it.

16 And also to speak to the Rev 4 version
17 versus the Rev 5 version, the initial version that you
18 saw at the subcommittee, I would say the language from
19 5 was a little bit softened from 4 because it said,
20 "up to 30 days," I believe, and it said, "typical."

21 So, you know, the words were intending to
22 make it -- provide some more wiggle room, so to speak,
23 there, but now we've got the, you know, we've got the
24 sentence basically referring to the license basis of
25 the plant, we reference 50.46(b)(5) and, as you've

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1 said, we've got the reference to Reg Guide 1.27.

2 So, all of that's there. We're just
3 stopping short of stating the 30 days. And, again,
4 this is in the Background section of the reg guide,
5 too, but -- and, as was previously specified, you
6 know, I think this is a topic that's been kicked
7 around with all the licensees and regulators for quite
8 a while and we're probably not done dealing with it.

9 MEMBER BROWN: Well, I've never seen a
10 thorn I didn't want to stick in my finger.

11 (Laughter.)

12 MR. MILLER: We appreciate your comments,
13 Member Brown, as well as the rest of --

14 MEMBER BROWN: No, I understand those
15 other points and I agree, but I -- and it's always
16 been in the background. I mean, but people read the
17 background. Those are part of the reg guide.

18 MR. MILLER: Yeah.

19 (Simultaneous speaking.)

20 MEMBER BROWN: -- guidance to licensees.

21 MR. MILLER: Yes, I agree. And I agree
22 that the background gets picked up by the inspectors
23 as well.

24 MEMBER BROWN: My personal opinion, and
25 it's not a Committee opinion, obviously, is that

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1 starting points are much better than vagueness and
2 it's -- you always worry about how robust is your
3 emergency power system.

4 And you'd like to be dependent on nothing
5 but being able to truck in fuel of some kind, whatever
6 it may be, whether it be sunlight or wind or hydrogen
7 for the alternate sources.

8 So, alright. Thank you. And thanks,
9 Greg. Liliana, are we back to the slides again?
10 Yeah. I think you're on slide 13 right now.

11 Are you ready to go to the next one or did
12 you finish that one?

13 MS. RAMADAN: I'm almost done. I'm in the
14 last bullet --

15 MEMBER BROWN: Okay.

16 MS. RAMADAN: -- where this -- just
17 another comment of interest. The staff continues to
18 believe that the EDG needs to have adequate internal
19 protection while it's in test mode in order to sustain
20 its mission while it parallels to the grid.

21 Next slide. Comments from -- we also
22 received comments from IEEE. They were almost
23 identical to that of NEI and they were addressed
24 accordingly.

25 We also received comments from the members

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1 of the public to include clarification on the use of
2 the term "accident." And currently in this revision
3 it -- the language is -- it's consistent with the
4 terminology regarding the term "accident" as it is
5 endorsed in IEEE standard.

6 This endorsement does not add any new
7 regulatory positions regarding the design basis
8 events, anticipated operational occurrences, the loss
9 of offsite power with accident conditions.

10 There was also a need to clarify the
11 bypassing of noncritical trips to the EDG and
12 bypassing of noncritical trips during accident is
13 expected and it is important to take measures to
14 ensure that the spurious actuation of other trips.

15 It does not prevent the EDGs from
16 performing their function during accident mode of
17 operation. And all these comments were resolved in
18 the Public Comment table that was provided.

19 Next slide.

20 MEMBER BROWN: Before you go on, have you
21 all -- the public, did you resolve or go over these
22 comments with NEI and/or anybody else or are these
23 just -- we had that comment in the last subcommittee
24 that they had not seen your all's resolutions.

25 Have they now seen your all's resolutions?

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1 MS. RAMADAN: We provided NEI the ADAMS
2 number last week to ensure --

3 MEMBER BROWN: Okay.

4 MS. RAMADAN: -- that they had the
5 opportunity to review our resolution to their
6 concerns.

7 MEMBER BROWN: And that was the updated
8 resolution that you provided to the full committee for
9 review --

10 MS. RAMADAN: Yes.

11 MEMBER BROWN: -- for the Committee?

12 MS. RAMADAN: Yes.

13 MEMBER BROWN: Okay. Alright. Thank you.

14 VICE CHAIRMAN REMPE: So, could I ask a
15 question on that? Did NEI get back to you with their
16 response or --

17 MS. RAMADAN: NEI has not requested any
18 other meeting, that I am aware of, after their review
19 of the public comment table and the resolutions to
20 that.

21 VICE CHAIRMAN REMPE: Thank you.

22 MS. RAMADAN: Next slide. Slide 14.

23 MEMBER KIRCHNER: Liliana, before you go
24 on -- this is Walt Kirchner. The second -- I can't,
25 in parallel, get up the comment resolution with the

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1 slides and find it, but the second comment from NEI
2 regarding environmental testing, so my -- is my
3 understanding correct that the expectation by the
4 staff is that that environmental testing will be done
5 as part of the procurement spec for the diesel rather
6 than inservice in the plant, which would be, I think,
7 as NEI was hinting, would be an extraordinarily
8 expensive undertaking.

9 MS. RAMADAN: Correct. It would require
10 the manufacturer to validate the design.

11 MEMBER KIRCHNER: So, yeah. So, you would
12 do that through the procurement -- auditing or
13 inspecting the procurement.

14 MS. RAMADAN: Correct.

15 MEMBER KIRCHNER: Correct. Yes. Thank
16 you very much.

17 MS. RAMADAN: Okay. Slide 14.

18 MEMBER BROWN: You did 14.

19 MR. MILLER: You mean 15.

20 MS. RAMADAN: 15. I'm sorry. I'm sorry.

21 MEMBER BROWN: I'm trying to stay on
22 schedule here.

23 (Laughter.)

24 MS. RAMADAN: Okay. Will do. Okay. This
25 last slide OGC has reconfirmed its NLO on the proposed

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1 revision presented at the ACRS subcommittee, which we
2 just had on the 25th, and on the latest proposed
3 language that came out of the feedback of the
4 subcommittee. OGC's position reaffirms that there is
5 no backfit concern with Revision 5 of Reg guide 1.9.

6 The regulatory guides are guidance
7 documents. They are not mandatory requirements.
8 Licensees can choose whether they want to commit to
9 the guidance and regulatory positions in this reg
10 guide.

11 Therefore, the staff is not imposing any
12 requirement upon the licensees when this reg guide
13 gets published.

14 As Chris mentioned earlier, just yesterday
15 the staff presented NEI's continued backfit concerns
16 to CRGR and the proposed resolution we had.

17 CRGR had no concerns with the revised
18 language in the current draft reg guide and today we
19 are briefing the full committee and expect a letter
20 with no objections in order to issue this new guidance
21 mid-July. And that concludes my presentation.

22 MEMBER BROWN: Okay. Thank you. Are
23 there any other comments from the committee members
24 right now?

25 (Pause.)

1 MEMBER BROWN: Hearing no response, can we
2 get the public line open?

3 MR. DASHIELL: Public line is open for
4 comments.

5 MEMBER BROWN: Okay. Thank you very much.
6 Is there anybody on the public line that would like to
7 make a comment? If so, state your name, organization
8 and provide your comment.

9 MS. PIMENTEL: Yes. Good afternoon. My
10 name is Francis Pimentel and I'm a senior project
11 manager at NEI.

12 MEMBER BROWN: Can you speak up, please?

13 MS. PIMENTEL: I coordinated some --

14 MEMBER BROWN: Could you speak up? You're
15 pretty --

16 MS. PIMENTEL: Can you hear me?

17 MEMBER BROWN: You're not very loud.

18 MS. PIMENTEL: Okay. Is this any better?

19 MEMBER BROWN: I think that might be a
20 little better. Thank you.

21 MS. PIMENTEL: Okay. So, I coordinated
22 industry comments on draft Revision 5 to Reg Guide 1.9
23 and we appreciated the consideration and incorporation
24 of many of our comments; however, looking at the
25 newest revision it still appears that three of our top

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1 priority one concerns were not addressed.

2 One relating to introducing and defining
3 the term "mission time" as it applies to emergency
4 diesel generators.

5 And two other comments related to the
6 supplements to the IEEE standard 387-2017 regarding
7 the testing environment (audio interference) --

8 MEMBER BROWN: Are you still there?

9 MS. PIMENTEL: -- these were our comments.
10 I'm still here. Can you hear me?

11 MEMBER BROWN: Yeah, we lost you there for
12 a minute.

13 VICE CHAIRMAN REMPE: Right when you said
14 "testing environment," we lost you.

15 MEMBER BROWN: Okay. So, regarding the
16 testing environment and the design considerations for
17 testability and synchronizing capability.

18 So, in regards to comments 1 and 2 in --
19 regarding mission time, we appreciated that the
20 original language talking about a 30-day mission time
21 minimum requirement was removed from the draft reg
22 guide; however, we disagree with the language that it
23 was replaced with and recommend that all reference to
24 emergency diesel generator mission time be deleted
25 based on the following: The proposed new language

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1 provides a first-of-a-kind definition of "mission
2 time" by the NRC and conflicts with an already
3 established definition supported by the NRC in NEI 99-
4 02, Rev 7, Regulatory Assessment Performance Indicator
5 Guideline for all SSCs as follows: Describe "mission
6 time" as the mission time models in the PRA for
7 satisfying the function of reaching a stable plant
8 condition where normal shutdown cooling is sufficient.
9 Note that PRA models typically use a mission time of
10 24 hours. However, shorter intervals, as justified by
11 analyses and modeled in the PRA, may be used.

12 The proposed new language conflicts with
13 this established definition and is in direct contrast
14 to the industry's move to a more risk-informed
15 process.

16 Also, this new concept shouldn't be
17 introduced as part of the background discussion. We
18 believe it would be more appropriate to engage on this
19 issue with the PWR Owner's Group, which has thoroughly
20 researched and addressed the issue in PWROG 2014 NT
21 report, emergency diesel generator mission time.

22 Our past experience indicates that the
23 addition of an EDG mission time to this reg guide will
24 result in inspectors asking licensees questions
25 regarding diesel generator mission time, which has

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1 proven to result in long and costly resource-intensive
2 processes with no gain for either party.

3 And the concept of an EDG mission time
4 isn't applicable as in this report no Westinghouse,
5 B&W or CE plants are licensed with these reg guides
6 and no plant USFAR discussed an EDG mission time.

7 In addition, the safety analyses performed
8 by Westinghouse do not assume an EDG mission time.
9 Therefore, the concept of a mission time, as
10 identified in the reg guides discussed above, is not
11 applicable to any PWR Owner's Group plant's current
12 licensing basis.

13 In regards to C(2)(i), in the NRC
14 presentation earlier it stated that the new revision
15 included clarified language to state that the design
16 of the EDG encompasses the temperature and humidity
17 band of operation.

18 Also, during the presentation it was
19 spoken that the testing was to be done at the
20 manufacturer; however, the actual document doesn't
21 refer to the manufacturer and still states that the
22 designs that allows testing of the diesels to envelope
23 the parameters of operation, e.g., manual start,
24 automatic start, load sequencing, load shedding and
25 operation time, normal standby conditions and

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1 environment, e.g., temperature and humidity, that
2 would be expected if an actual demand were placed on
3 the system.

4 Therefore, our original comments regarding
5 temperature and humidity in the environment still
6 remains unresolved.

7 As stated in our previous comments, IEEE
8 387-2017 provides adequate guidance to assure diesel
9 generator safety function is not lost due to
10 environmental conditions.

11 It's our position that the reference to
12 temperature and humidity be removed from C(2)(i)
13 because it presents potential for misinterpretation,
14 it is a design criteria rather than a surveillance or
15 testing consideration and is redundant to the
16 standards. And, as stated in NEI's comments, the NRC
17 has already agreed to incorporate corrections based on
18 our position as previously documented.

19 The NRC response to Reg Guide 1.9 Rev 4
20 comment in a letter to NEI's Mr. Adrian P. Heymer from
21 NRC's William Reckley, included the staff agrees that
22 the use of the word "simulate environment" in
23 Regulatory Position 1.5 is subject to different
24 interpretation and the staff intends that the effects
25 of the environment, temperature and humidity, should

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1 be considered in establishing the rating of the
2 diesel.

3 And the NRC also states later in the
4 letter that the staff agrees to include the
5 clarification in the next revision of Reg Guide 1.9
6 regarding the issue.

7 And our third priority comment was in
8 regards to position C(2)(iii) where we still disagree
9 with the proposed addition of position C(2)(iii) to
10 supplement IEEE standard 387-2017 for 4.4 Table 1
11 because the proposed items are in reference to the
12 preferred power source, otherwise known as the offsite
13 power, and is outside the scope of the IEEE 387
14 standard.

15 With respect to C(2)(iii)(a) reference is
16 made to the power quality of the preferred power
17 supply, offsite power, when the diesel is parallel to
18 the grid or in test mode.

19 The NRC proposes the consequences of
20 transient or degraded conditions, quote, should be
21 considered for loading impact on the diesel. Any
22 design associated with the preferred power supply
23 should be considered part of the remote protection
24 system and, as such, would be outside the scope of
25 IEEE standard 387.

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1 The design considerations applied here
2 would more appropriately be in the scope of other IEEE
3 standards, say, 308 and IEEE Standard 741 and possibly
4 Standard 765.

5 The position, as written, doesn't provide
6 the clarity of what's expected. Item 47 is a design
7 consideration for diesel-generated testing capability.

8 And for Position C(2)(iii)(b), the diesel
9 responding to an accident, loss of offsite power, or
10 both, while the diesel is in test mode and parallel to
11 the grid, is an example of a protection signal that
12 originates outside of the diesel scope for remote
13 protection systems.

14 IEEE Standard 387-2017 principle design
15 criteria is to ensure that the design of the diesel
16 will respond to the signal -- external signal, but is
17 not within the scope of IEEE 387 to design the remote
18 protection system.

19 That concludes our comments. Thank you
20 for giving us the opportunity to provide these.

21 CHAIRMAN SUNSERI: Charlie, you still
22 there? Any other public comments?

23 MEMBER BROWN: Yeah, I'm still here. I
24 didn't get my -- my mouse ran away from me. It saw a
25 piece of cheese.

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1 I wanted to get the NEI's name again. I
2 missed her name.

3 MS. PIMENTEL: Francis Pimentel.

4 MEMBER BROWN: Could you spell your last
5 name for me?

6 MS. PIMENTEL: Yes. P as in Paul, I, M as
7 in Mary, E, N as in Nancy, T as in Tom, E, L as in
8 Lisa.

9 MEMBER BROWN: Okay. Thank you.

10 VICE CHAIRMAN REMPE: Charlie, this is
11 Joy.

12 MEMBER BROWN: Yes.

13 VICE CHAIRMAN REMPE: I had trouble
14 hearing for whatever reason. Did the NEI persons
15 indicate they're still going to the CRGR on their
16 concerns?

17 MEMBER BROWN: No, they didn't.

18 VICE CHAIRMAN REMPE: Are we allowed to
19 ask them if they are planning to do so?

20 MEMBER BROWN: Francis, that was a comment
21 that came up during the subcommittee meeting a couple
22 of weeks ago that you all were sending a letter to the
23 CRGR.

24 Did you all do that?

25 MS. PIMENTEL: We are in the process of

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1 preparing a letter. We were looking to see what
2 comments during this meeting, you know, were going to
3 be discussed on -- and we will be finalizing that
4 letter within the next week.

5 MEMBER BROWN: Okay. Thank you. Anybody
6 else?

7 MR. BASSO: This is Tom Basso.

8 MEMBER BROWN: Yes, go ahead, Tom.

9 MR. BASSO: Yeah, this is Tom Basso. Tom
10 Basso, B-A-S-S-O --

11 MEMBER BROWN: Okay.

12 MR. BASSO: -- from NEI. I'm the senior
13 director of Engineering and Risk. So, as Francis
14 said, we are still reviewing the responses.

15 We did get -- we did get the
16 comment/responses late Thursday evening. So, with the
17 holiday we were not able to get with our members and
18 industry SMEs until yesterday and this morning in
19 prepping for the meeting today.

20 I've since reached out and requested if a
21 public meeting would be appropriate to see if we can't
22 work through these comments that we've made today
23 versus going to the CRGR.

24 And so, that's why we did not have a
25 public meeting. It was too short of a time frame for

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1 us to get out the draft and the comments to our
2 members and have them review it and develop a
3 response. That's the only comment I have. Thank you.

4 MEMBER BROWN: Okay. Thank you very much,
5 Tom. Thank you, Joy, for triggering that. I forgot
6 that one.

7 Is there anybody else on the public line
8 that would like to make a comment?

9 MR. MATHARU: Yes, Chairman Brown. This
10 is Gurcharan Matharu. I work for the USNRC, but as a
11 consequence of providing comments as a member of the
12 public, I have to partake as a member of the public in
13 this review process.

14 So, I have a couple of comments if you
15 don't mind giving me a couple of minutes.

16 MEMBER BROWN: Go ahead.

17 MR. MATHARU: So, I was part of the
18 original (unintelligible) that orchestrated the 30-day
19 mission time that you previously discussed (audio
20 interference) the very basis that we have in-house
21 views in the past and, like you identified, it's been
22 in some of the NRC inspection reports and NRC
23 documents for quite a few years. So, it's not a new
24 position.

25 And as you also pointed out, it's a good

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1 starting point to discuss something that's supposed to
2 be an infinite amount of time that the diesels may be
3 required to function based on 10 CFR 50.45.

4 As far as the NEI comment and the 24-hour
5 mission time, we have thought about that also long and
6 hard, and I am not sure whether we can use risk-based
7 or risk-informed. Our thought process was we are
8 risk-informed and we are looking at it on a
9 deterministic basis for the mission time for the
10 diesel and looking at the operator experience there
11 are events that are related to loss of offsite power
12 due to hurricanes, severe weather. And it's hard for
13 me to perceive a diesel generator for 24 hours and
14 offsite power being recovered when the whole grid or
15 (unintelligible) system in the vicinity of the nuclear
16 power plant is devastated.

17 And we've got a lot of experience after
18 Sandy, the tornados and the hurricanes that damaged
19 the network around Browns Ferry or Hurricane Katrina.
20 So, it kind of (unintelligible) for me to hear 24-hour
21 mission time. That's a PRA number that has got no
22 basis. I just want to clarify that.

23 And, Charlie, you requested, I guess, the
24 reviews and the NRC research project team to provide
25 comments and the resolution to the -- all the c

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1 commenters.

2 I believe if you have not, as a member of
3 the public, seen the comment responses that will
4 developed with comments, these are relating basically
5 to bypassing the noncritical protective features
6 during shutdown mode which are critical for
7 maintaining shutdown cooling. And (unintelligible)
8 those comments, I would really appreciate NRC members
9 to submit those comments to public reviewers also.
10 Appreciate that. Thanks very much.

11 MEMBER BROWN: Thank you. I'm sorry,
12 would you please repeat your name and spell it for us?

13 MR. MATHARU: Yes. The last name is
14 Matharu, M-A-T-H-A-R-U.

15 MEMBER BROWN: First name?

16 MR. MATHARU: First name is Gurcharan.
17 I'll spell it for you. G-U-R-C-H-A-R-A-N.

18 MEMBER BROWN: That's G-U-R-C-H-A-R-A-N?

19 MR. MATHARU: N as in Nancy, correct.

20 MEMBER BROWN: Okay. Thank you. Did you
21 get that, court reporter? Did you get that?

22 (Pause.)

23 MEMBER BROWN: Okay. Thank you. Are
24 there any other public comments that we -- people on
25 the line that would like to make comments?

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1 (Pause.)

2 MEMBER BROWN: Okay. Hearing none, you
3 can close the public line.

4 MR. DASHIELL: The bridge line is closing.

5 MEMBER BROWN: Thank you very much. Let
6 me see where I am. I had some other thought before we
7 got this long and now I've lost it.

8 (Pause.)

9 MEMBER BROWN: Okay. One last round of
10 the members. Based on hearing anything, do you --
11 does that job your memories? Do you have any
12 additional comments or are you all -- is everyone
13 finished?

14 MEMBER HALNON: Charlie, this is Greg. I
15 think that the comments made the point on the
16 confusion and different points of view of mission
17 time. Those two words have caused a lot of
18 consternation in the industry.

19 And if I would recommend anything, would
20 be to look at not using those words, if it's very
21 possible to do it, because there's different
22 definitions and different uses for that both in risk
23 area, deterministic in the old SARs, new SARs, all
24 kinds of stuff. So, anyway, that just kind of made
25 the point there.

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1 MEMBER BROWN: Okay. We'll have an
2 opportunity to discuss that. Obviously the committee
3 will have to come to an agreement on what we would
4 want to say in the report, if anything.

5 Alright. Hearing --

6 VICE CHAIRMAN REMPE: This is Joy. I'm
7 still wondering if the staff, in light of the fact
8 that it sounds like the CRGR review is going to occur,
9 I mean, the staff made some changes since our
10 subcommittee meeting and I'm just kind of wondering if
11 the staff still wants to go forward as planned, is
12 what I'm --

13 MEMBER BROWN: They made the comment, from
14 what I understand, that they made the changes they
15 made and the changes we see where they eliminated the
16 30 days and stuff like that. And they changed the
17 environmental stuff somewhat, but not enough for NEI's
18 satisfaction. That CRGR came back and said, okay.

19 Now, NEI said they were going to prepare
20 a letter, but they were going to try to work with NRC
21 to work this out, the staff.

22 VICE CHAIRMAN REMPE: Right. Yes. I'm
23 just kind of wondering again, like, the staff said
24 they didn't get back to NEI -- I mean, or they hadn't
25 heard back from NEI yet and I just am wondering if

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1 they're going to make more changes.

2 MEMBER BROWN: I'm not sure we can tell
3 them what to do right now. I just -- that's the
4 status where it is right now, but the NEI -- oh, gee.
5 I didn't write it down.

6 Oh, Tom Basso commented that they were --
7 or maybe it was Francis. I can't remember which, but
8 they just got them on 7/1. That was last Thursday.

9 VICE CHAIRMAN REMPE: I heard what they
10 said, but apparently this is probably the first time
11 the staff's heard it, too.

12 MEMBER BROWN: That may well be. That may
13 well be.

14 VICE CHAIRMAN REMPE: Okay. Yeah, that
15 doesn't affect anything that we've heard today.

16 MEMBER BROWN: We can't provide an answer
17 or a discussion on that basis on the comments like
18 that in the meeting.

19 VICE CHAIRMAN REMPE: Okay. Thank you.

20 MEMBER BROWN: It's not our practice.
21 Anymore members have comments?

22 (Pause.)

23 MEMBER BROWN: Okay. Matt, with that --
24 oh, before I do that, I would like to -- the staff is
25 still online, aren't they? Lilitiana, Kenn?

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1 MR. MILLER: Yes, this is Kenn. I'm still
2 on.

3 MS. RAMADAN: I'm still on.

4 MEMBER BROWN: And NEI, I want to thank
5 you all for the comments and for the robust discussion
6 we had on these subjects.

7 I think that's the purpose of these
8 meetings is to have a -- make sure we hit the top-
9 level issues and then thoroughly vet them while we are
10 deciding what we -- what path we may take.

11 So, I do appreciate your all's preparation
12 and the ability to provide your all's insights as to
13 why you did what you did as part of the meeting.

14 MR. MILLER: Member Brown, this is Kenn
15 Miller. What we will say, too, that we appreciate
16 ACRS' review of this and the input you have provided.
17 We appreciate it.

18 MEMBER BROWN: Thank you very much. I
19 love to get saddled with controversial reg guides.

20 (Laughter.)

21 MEMBER BROWN: Always fun. Matt, with
22 that, I guess I can turn it back to you for closeout.

23 CHAIRMAN SUNSERI: Okay, Charlie. Thank
24 you. And I presume you have a draft letter that you
25 are ready to share?

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1 MEMBER BROWN: Yes. Yes. It will be
2 interesting to discuss.

3 CHAIRMAN SUNSERI: Right. Right. Right.
4 Okay. So, what I suggest we do is we take a short
5 break here while we transition over and ask Sandra to
6 bring that letter or report up for our review and we
7 will take a 15-minute break here. So, we will
8 reconvene at 25 before the hour. That's 4:35. 25
9 before the hour. Okay?

10 MEMBER BROWN: That's about 15 minutes,
11 right?

12 CHAIRMAN SUNSERI: Yeah. Yeah.

13 MEMBER BROWN: It's a little more than
14 that. Okay. Alright. Thank you.

15 CHAIRMAN SUNSERI: Alright. I have it
16 right here in my notes and I didn't even look at it,
17 but, yes, the transcript stops here. Thank you.

18 (Whereupon, the above-entitled matter went
19 off the record at 4:18 p.m.)
20
21
22
23
24
25

**Vogtle Unit 1 and 2
Risk-informed Resolution of
Generic Letter 2004-02**

ACRS Full Committee Meeting
July 7, 2021

Key Messages

- Underlying technical issues thoroughly examined for decades
- All plants reduced the potential for sump strainer blockage by installing improved strainers and taking other actions
- In-vessel downstream effects are determined to be low safety significance compliance issues
- Risk-informed submittals have contributed significantly to the state of knowledge of the effects of debris on long-term core cooling and its associated risk

Actions Completed at Plants

- Improved strainers
- Modified or replaced insulation
- Other physical mods
- Admin Controls



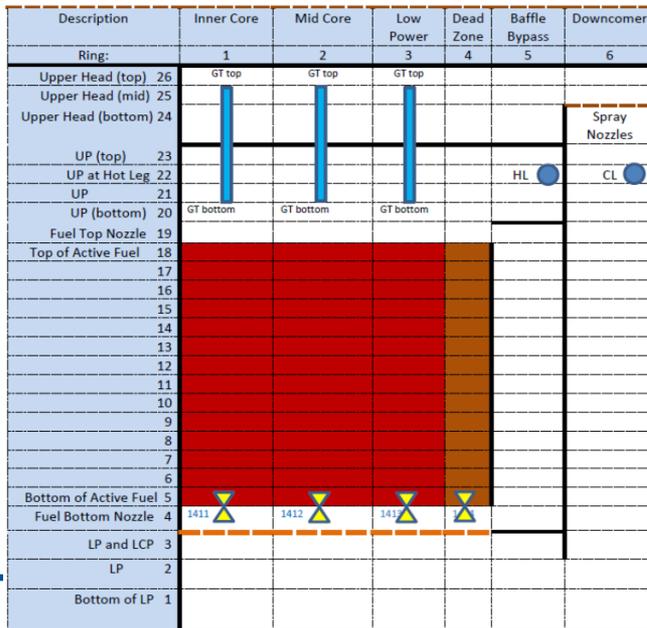
Physical Testing

- Debris generation and transport
- Chemical effects
- Strainer
- Fuel and reactor core
- Boric acid precipitation

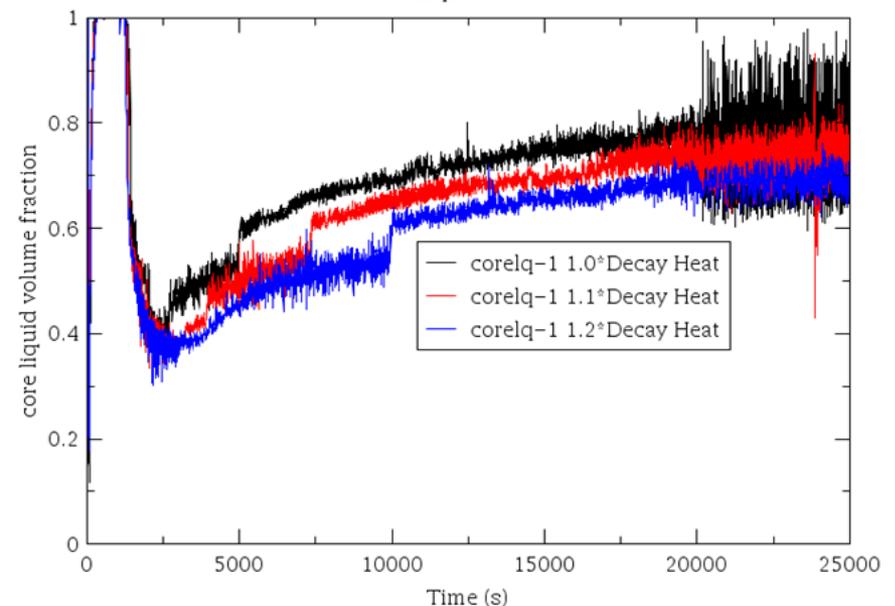


Computer Modeling

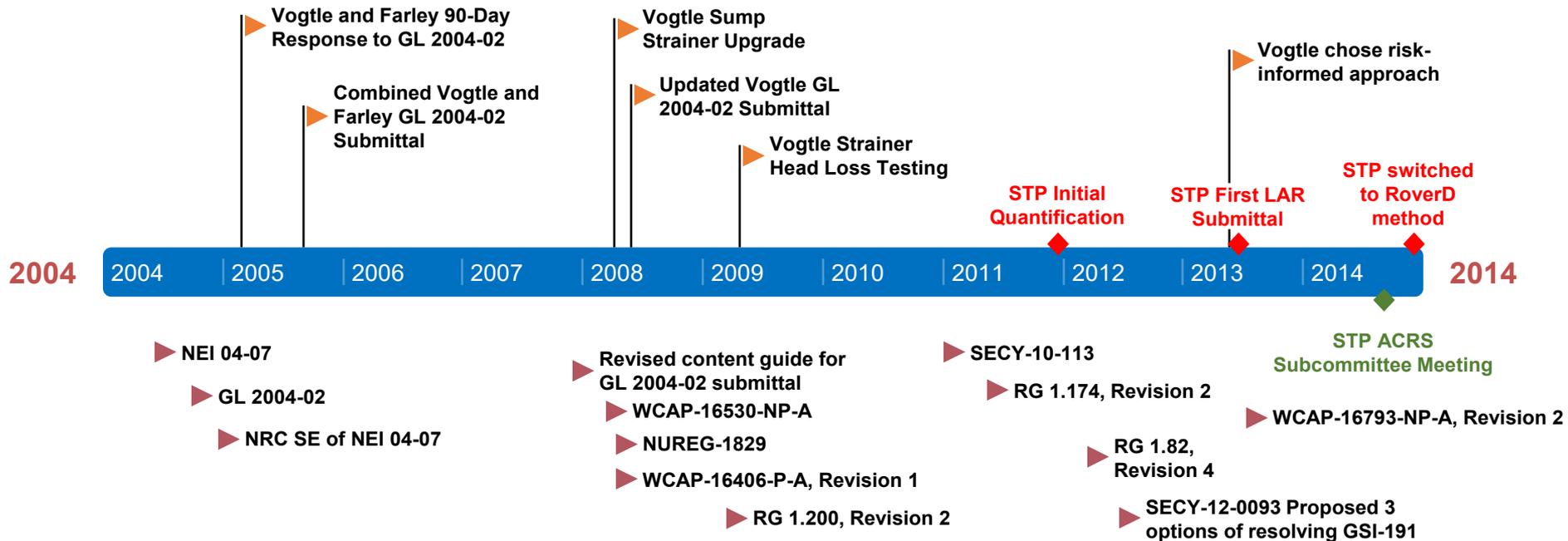
- Thousands of computer model runs performed by utilities, vendors, engineering firms, and academia
- Supplemental and confirmatory analysis performed by NRC (Office of Research - TRACE)



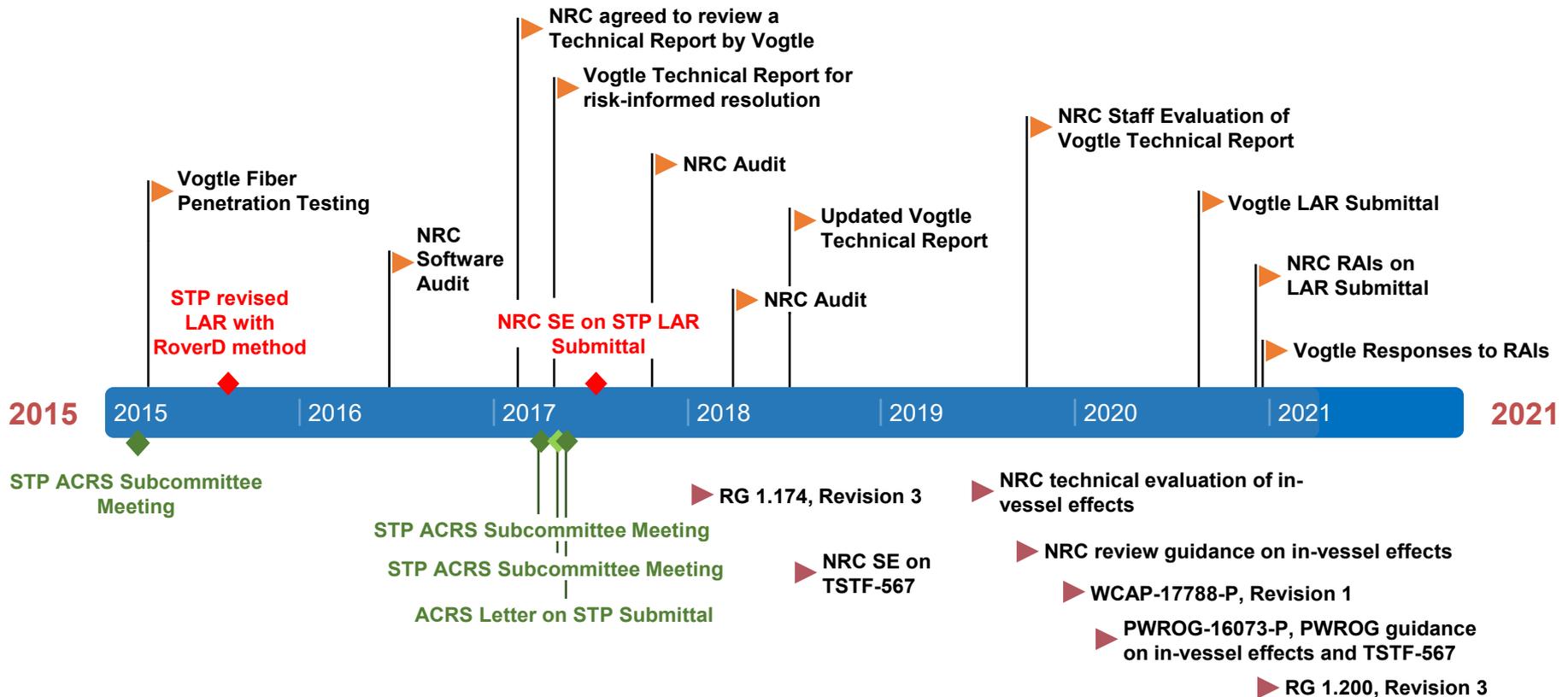
Hot Leg Break
Core Liquid Fraction



Timeline for STP and Vogtle Risk-Informed GL 2004-02 Resolution



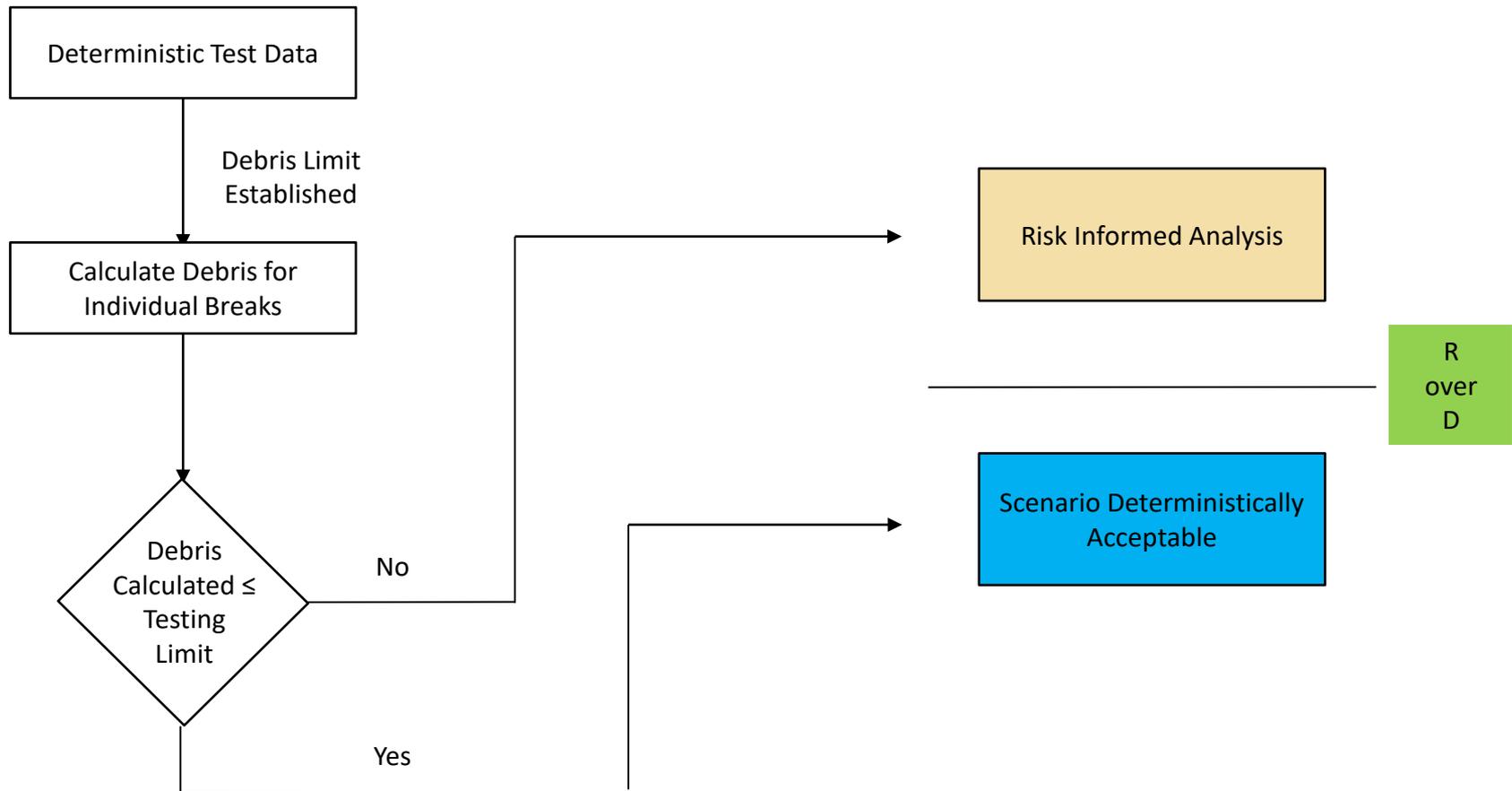
Timeline for STP and Vogtle Risk-Informed GL 2004-02 Resolution (Cont'd)



Overall Status of Compliance

- 3 Staff Requirements Memorandum options from SECY-12-0093
 - Option 1 – Closed out using existing guidance – 19 Units, Low Fiber Plants
 - Option 2 – Perform additional testing and analysis, including risk-informed resolution
 - 2A Deterministic – 34 Units
 - 2B Risk-Informed – 8 Units, STP has closed the issue
 - Option 3 – Treat strainer deterministically and in-vessel using risk analysis – No one selected this option

Risk over Deterministic Methodology (RoverD)

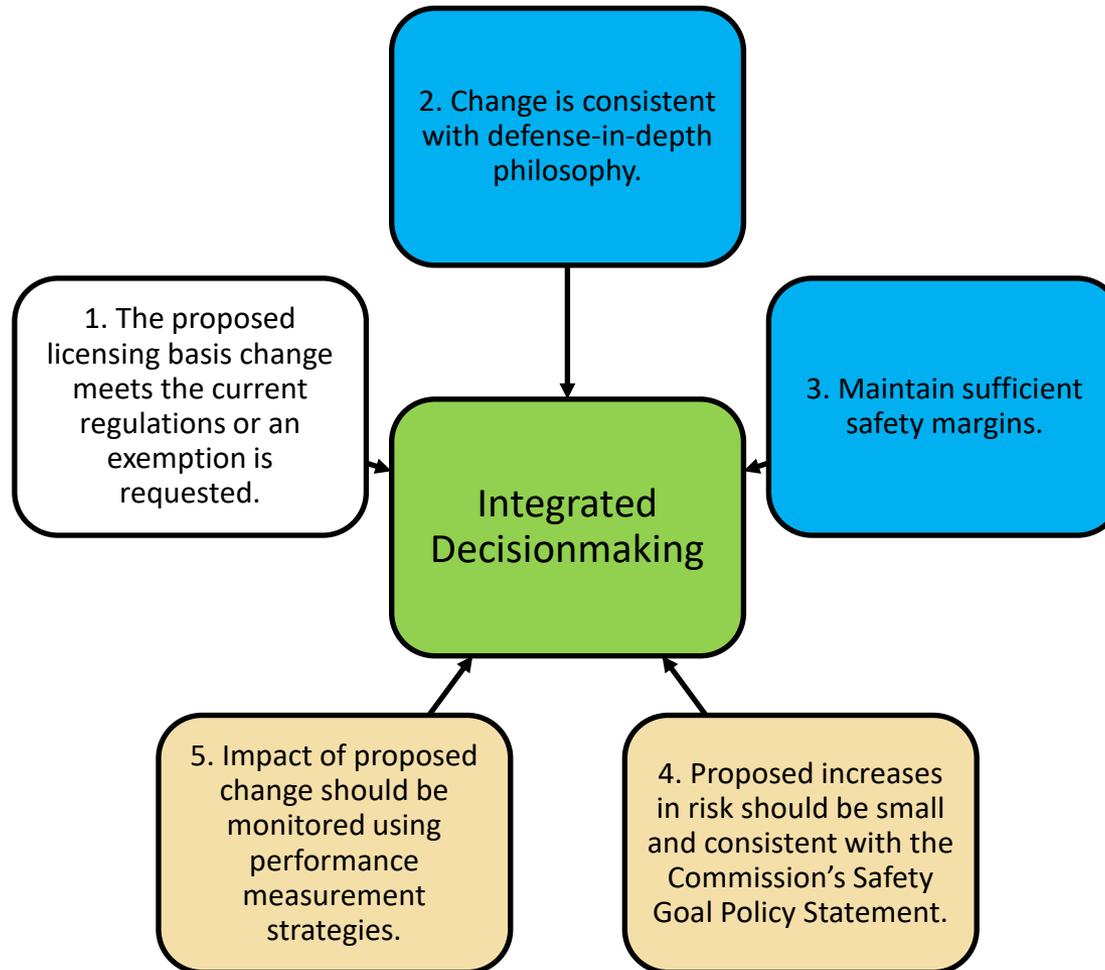


Evaluation of Vogtle Submittal

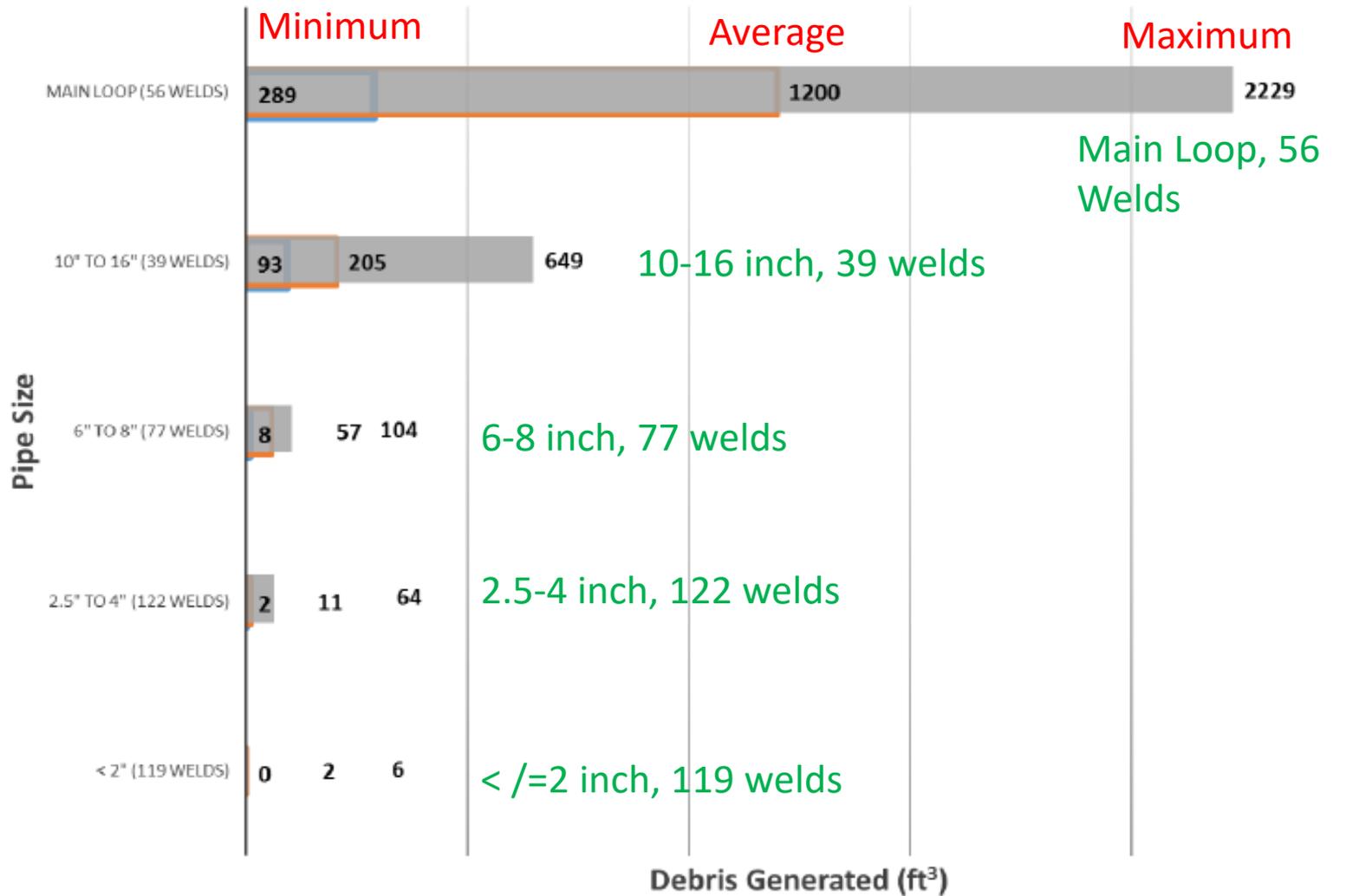
- Technical report contained most of the technical information (Staff Evaluation ML19120A469)
- LAR addressed regulatory aspects of change and technical issues left open after review of the technical report (Staff SE is complete)
- Staff evaluated the 5 key principles of risk-informed regulation per RG 1.174
- Staff used approved guidance to evaluate risk and deterministic aspects of the submittals

Staff Methodology

Five Key Principles of Risk-Informed Regulation



Range of Debris with Average by Pipe Size, DEGB

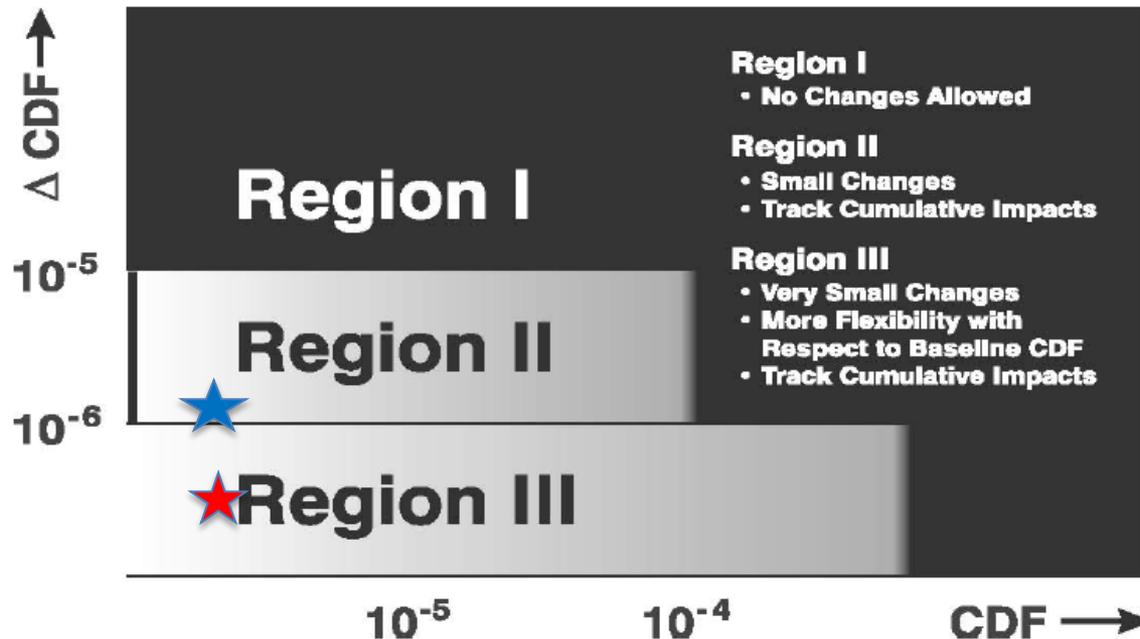


Principle 4 – Risk Is Very Low

- Licensee evaluated the impact of debris on the
 - Strainer
 - Some breaks contribute to risk
 - In-Vessel
 - No breaks contribute to risk
 - CDF and LERF
 - Majority of breaks bounded by test results and do not contribute to plant risk
 - A few large, unlikely breaks generate much larger debris amounts and contribute to plant risk
- $\Delta\text{CDF} < 10^{-6}$
- $\Delta\text{LERF} < 10^{-7}$

Summary of Systematic Risk Assessment

- Results fall in Region III acceptance guidelines in RG 1.174, for very small risk increase
 - $\Delta\text{CDF} < 10^{-6}$
 - $\Delta\text{LERF} < 10^{-7}$



- ★ Maximum of staff's confirmatory calculations
- ★ Vogtle's base assessment

Summary of Vogtle Review

- Vogtle acceptably evaluated the impact of debris
- Vogtle appropriately considered both risk and deterministic aspects in the submittal
- Most break scenarios are addressed using conservative deterministic methods for strainer acceptance criteria
- Vogtle's in-vessel evaluation method and simulations are conservative and meet deterministic acceptance criteria
- Vogtle's analyses meet the key principles of risk-informed regulation
- Vogtle's PRA results show that the change in risk is very small

GSI-191 Lessons Learned from Risk-Informed Submittals

- The plants most challenged by the effects of debris on sump recirculation are using risk-informed methods to resolve the issues
- The risk-informed analyses demonstrate that actions taken by licensees and the NRC have significantly reduced the risk of this issue
- Use of risk-informed methods to address the issue have resulted in increases in safety from a reduction in personnel exposure and considerable savings in resource expenditures

Questions?

Backup Slides

General Licensee Actions to Address Debris Effects on Long Term Core Cooling (LTCC)

- Installed larger strainers
- Removed unnecessary debris sources
- Removed/replaced some problematic materials, or reinforced with banding and jacketing
- Implemented administrative controls
 - Control materials in containment
- Implemented procedural/operational changes
- Improved chemical effects attributes

Types of strainers

- Uniform Flow
 - PCI stack disk strainer
- Non-Uniform Flow
 - AECL* & GE stacked discs/plates
 - Enercon Top hat
 - CCI pocket strainers



References

- NEI 04-07 and Staff SE
- Staff guidance on coatings, chemical effects, and headloss
- RG 1.174
- RG 1.82
- Draft RG 1.229
- NRC staff review of STP Risk-Informed LAR
- WCAP-16530 Chemical Effects
- WCAP-16406 Ex-vessel Downstream Effects
- In-vessel staff review guidance

Systematic Risk Assessment

- Sensitivity and Uncertainty Analyses (focused on Δ CDF)
 - Performed consistent with NUREG-1855 guidance
- PRA quality was verified
- The licensee's use of high likelihood configurations was found to be acceptable and bounding of low likelihood configurations
- NRC Staff Confirmatory Calculations
 - Used conservative inputs
 - Results do not challenge Region III of the RG 1.174

Primary References

- (1) ML18193B162 – SNC Technical Report Submittal dated July 10, 2018.
- (2) ML19120A469 – NRC Staff Evaluation of the Technical Report dated September 30, 2019.
- ML21068A109 – Amendment Package for Vogtle GSI-191.
- ML21071A050 – Exemption Package for Vogtle GSI-191.

Limitations & Conditions

- Modify RHR strainer height and maintain plant configuration consistent with the Technical Report
- Maintain evaluation consistent with TR
- Evaluate in-vessel effects
- Address Key Principle 1 – change meets regulations
- Address Key Principle 5 – monitoring of impact of change
- Define key elements of the analysis in the FSAR
- Define elements of the analysis that would require NRC review prior to change
- Approach to ensure periodic update of risk-informed assessment
- Reporting and corrective action strategy in case the acceptance criteria of RG 1.174 are exceeded
- Correct coatings transport error and evaluate effect on risk



U.S.NRC
UNITED STATES NUCLEAR REGULATORY COMMISSION
Protecting People and the Environment

ACRS Full Committee Meeting:

Rulemaking Plan on Revision of Inservice Testing and Inservice Inspection Program Update Frequencies Required in 10 CFR 50.55a

July 7, 2021



NRC Staff

- **Presenter:**
 - Mark Yoo, RES: Technical Staff
- **Working Group Members:**
 - Sheldon Clark, OGC: Attorney
 - Victoria Huckabay, NMSS: Rulemaking PM
 - David Rudland, NRR: Technical Lead
 - Thomas Scarbrough, NRR: Technical Staff
 - Ian Tseng, NRR: Technical Staff



Agenda

- Purpose of the SECY Paper
- Background
- Regulatory Issue
- Proposed Rulemaking
 - Scope
 - Process
 - Schedule
- Staff's Recommendation



Purpose of the SECY Paper

- SECY-21-0029 was issued March 15, 2021.
- Request Commission approval to initiate a rulemaking to amend 10 CFR Part 50.55a to extend the interval of inservice testing (IST) and inservice inspection (ISI) program updates.
 - Current 120-month update interval would be extended to 240 months, after updating to the most recent Codes and addenda incorporated by reference in § 50.55a.
 - Requests Commission to delegate signature authority to the EDO.
- Request Commission approval and delegations for a **potential** subsequent rulemaking to extend update interval from 240 months to 288 months.

Background

- 10 CFR 50.55a incorporates by reference various codes and standards, including:
 - ASME Operation and Maintenance Code (OM Code)
 - ASME Boiler and Pressure Vessel (BPV) Code, Section XI, Division 1
 - ASME BPV Code, Section III, Division 1
- Per § 50.55a(f)(4) and (g)(4), licensees are required to update their OM Code and Section XI “Codes of record” every 120 months.
- Section III “Code of record” is generally maintained throughout the life of the plant.



Background

-
- Effort began as an NRR EMBARK Venture Studios (EVS) project.
 - Developed ideas to streamline regulating using § 50.55a to:
 - Improve the clarity of § 50.55a
 - Improve process efficiency for the use of ASME Codes and Code Cases
 - Increase flexibility to licensees in implementing their IST and ISI programs
 - Conducted multiple outreach activities with internal and external stakeholders.
 - Recommendations documented in EVS Report (ML20153A752).



Background

-
- Identified 3 recommendations to pursue:
 1. Relax the requirement to update IST and ISI programs every 120 months.
 2. Institute direct final rules for unconditionally approved code cases.
 3. Decrease frequency of ASME Code editions rulemakings.
 - SECY requests rulemaking for Recommendation 1.
 - Would provide improved flexibility and burden reduction to licensees while maintaining safety
 - Recommendation is outside the scope of delegation for routine ASME Code updates and requires Commission approval.
 - Staff will implement Recommendations 2 and 3.
 - Recommendations are within the staff's delegated authority for rulemaking.



Background

-
- Also considered eliminating incorporation by reference of ASME BPV Code, Sections III and XI, and ASME OM Code from § 50.55a and endorsing the Codes through a regulatory guide.

Background

-
- SECY-00-0011 discussed the staff's recommendation to replace the 120-month IST and ISI update requirements with a baseline of IST and ISI requirements and voluntary updates to NRC-endorsed Code editions without prior NRC approval.
 - Baseline requirements: 1995 Edition with the 1996 Addenda of the ASME OM and BPV Codes.
 - The ACRS recommended to retain the current 120-month update interval.
 - The Commission via SRM disapproved the staff's recommendation and approved the option to retain the current update interval.



Regulatory Issue

- Licensee IST and ISI programs describe licensee's implementation of the ASME OM Code and ASME BPV Code, Section XI requirements, respectively.
- 10 CFR 50.55a requires that every 120 months licensees must update IST and ISI programs to the latest edition and addenda of the ASME OM and BPV Section XI Codes incorporated by reference within 18 months of the start of 120-month interval.
 - 120-month interval corresponds to the 10-year ISI interval in ASME BPV Code, Section XI, IWA-2430.

Regulatory Issue

- Major modifications to ASME Codes typically take more than a decade.
 - 2009 Edition of OM Code included improved IST requirements for motor-operated valves ➡ in response to a 1989 NRC Generic Letter.
 - 2017 Edition of OM Code included improved IST requirements for active air-operated valves ➡ in response to a 2000 NRC Regulatory Issue Summary.
- Discovery of new degradation mechanisms has slowed greatly in recent years.
 - Last degradation mechanism discovered was primary water stress-corrosion cracking, which was in the early 2000s.
 - Subsequently addressed in ASME BPV Code Section XI.



Regulatory Issue

- There is a long history and established process of developing improvements and updates to the ASME Codes.
- Discovery of new degradation mechanisms or performance issues are typically first addressed by ASME using Code Cases before incorporating into an edition.
 - NRC would continue reviewing new or revised Code Cases for incorporation into the regulations on a biannual basis.
 - One of EVS recommendations would be to incorporate non-controversial Code Cases using an expedited process.
 - NRC can mandate the use of certain Code Cases to supplement the current Code of record if new safety concerns are identified.



Rulemaking Scope

- The proposed rulemaking would double the time between updates for the licensee's Codes of record for IST and ISI programs from **120 months** to **240 months** for licensees that update to the most recent edition and addenda of the ASME OM Code and BPV Code, Section XI incorporated by reference
 - Current 120-month ISI program update interval corresponds to the current 10-year ISI interval in ASME BPV Code, Section XI.
- The proposed rulemaking would primarily affect:
 - 10 CFR 50.55a(f)(4), "Inservice testing standards requirements for operating plants"
 - 10 CFR 50.55a(g)(4), "Inservice inspection standards requirements for operating plants"



Rulemaking Scope

-
- Potential future rulemaking to extend the update requirement from 240 months to 288 months.
 - ASME is considering extending current ISI interval to 12 years.
 - Staff is not currently proposing to conduct this rulemaking and ASME has not yet extended the interval.
 - Staff requests Commission approval for the additional rulemaking and delegation of authority to the EDO.



Rulemaking Process

- Typical rulemaking process includes development of rulemaking plan, regulatory basis, proposed rule, and final rule.
- Staff recommended omitting preparation of regulatory basis and proceeding with proposed rule development.
- Staff recommended that the proposed rule and final rule be delegated to the EDO, who would redelegate to the Director of NRR.



Rulemaking Schedule

- SECY is currently with the Commission.
 - Deliver proposed rule to NRR OD – 12 months after receipt of Commission’s SRM.
 - Deliver final rule to NRR OD – 12 months after comment period for proposed rule closes.
- This rulemaking may be combined with the next routine ASME Code Edition or Code Case rulemaking.



Staff's Recommendation

- Staff recommends that the Commission:
 - Approve initiation of a rulemaking to extend the interval for the IST and ISI program updates from 120 months to 240 months, after updating to the most recent Codes incorporated by reference in § 50.55a.
 - Approve a future rulemaking to extend the interval from 240 months to 288 months if ASME increases the ISI interval to 12 years.
 - Approve the staff's request not to develop a regulatory basis for these rulemakings.
 - Delegate signature authority for these actions to the EDO.

QUESTIONS?



BACK UP SLIDES



Recommendation on Priority

- Based on the Common Prioritization of Rulemaking Methodology, the preliminary priority for this rulemaking is medium.
 - Indirect contributor toward the safety goal (enhancing NRC’s regulatory programs and risk-informing the current regulatory framework by prioritizing efforts to focus on the most safety-significant issues).
 - Significant contributor to the efficiency and reliability principles of Good Regulation (Efficiency and Reliability).
 - Moderate contributor to the governmental priority (future regulatory benefit).
 - Moderate contributor to the public priority (moderate public participation and moderate burden reduction).



Estimate of Resources

- If approval to initiate rulemaking is received in FY 2021, costs associated with rulemaking development in FY 2021 through FY 2023 are expected to be low.
 - Additional efficiencies will be realized if staff is able to combine rulemaking with a routine ASME Code Edition or Code Case rulemaking
- Proposed rulemaking would result in cost savings to licensees
 - Each IST and ISI program update costs an estimated \$1M per reactor unit



EVS Recommendations

Recommendation 2: Direct Final Rule for unconditionally-approved ASME Code Cases.

- Incorporation by reference of these Code Cases should be non-controversial.
 - Developed through a consensus standards process.
- Only one adverse public comment was submitted related to unconditioned Code Case in the last three ASME Code Case rulemakings.
 - Staff determined the requested condition was not needed.
- Results in improved efficiency as it would allow licensees to use new approaches and technologies more promptly.
 - Reduces NRC and licensee resources spent on the submittal and review of alternative requests.



EVS Recommendations

Recommendation 3: Decrease the frequency of rulemakings to incorporate ASME Code editions.

- Reducing the frequency continues to maintain safety while reducing expenditure of staff resources.
- This would alleviate bottlenecks that may come with implementing Recommendation 2, as OMB accepts only one rulemaking per CFR part at a time.
- With Recommendation 1, there would not be a strong driver to incorporate by reference new Code editions into § 50.55a on the current 2-year cycle.
- The review of each edition would still be documented as each edition is released.



10 CFR 50.55a Rulemaking Delegation of Authority

- Until 1976, the Commission approved each rulemaking to incorporate by reference certain portions of the ASME Code into § 50.55a.
- Via SRM, the Commission delegated the authority to the EDO for amendments that are routine in nature and represent the updating of basic codes and standards.
- In 2010, the EDO informed the Commission that he intended to redelegate the authority to the Director of NRR.
 - Expected to increase the speed at which new Code editions could be incorporated into regulations, increase accountability, and reduce inefficiencies and redundancies.
 - Only applies to rulemakings pertaining to ASME BPV Code, Sections III and XI, the ASME OM Code, and related regulatory guides.

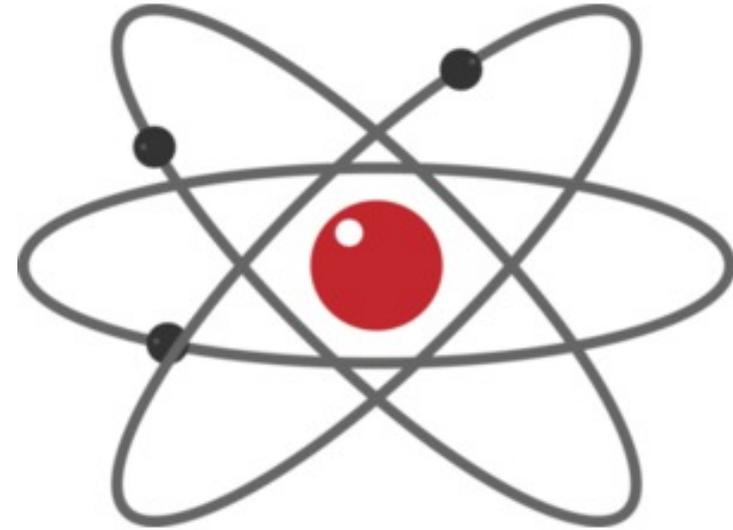
Revision 5 to Regulatory Guide 1.9, “Application and Testing of Onsite Emergency Alternating Current Power Sources in Nuclear Power Plants”

NRC Staff Presentation to the Advisory
Committee on Reactor Safety

July 7, 2021

Agenda

1. Introduction
2. Existing Guidance
3. Significant Changes
4. Proposed New Guidance
5. Public Comments and Resolutions
6. Questions and Comments



Introduction

- ✓ Current NRC guidance in Regulatory Guide 1.9 has not been updated since 2007. It does not reflect all the possible types of alternative onsite emergency AC power sources.
- ✓ The NRC is issuing Revision 5 of Regulatory Guide 1.9:
 - Endorse new and updated IEEE standards
 - Introduce technology-neutral guidance other than diesels, to include combustion turbine generators (CTGs) and other types of the emergency power sources for the onsite alternative alternating current (AC) electric power system.
- ✓ Purpose of introducing technology-neutral provisions:
 - Acknowledge that future applications may use alternative onsite emergency power supplies for advanced reactors and nuclear facilities.
 - Provide an initial path in the regulatory review process for alternative power supplies.
 - Establish a foundation for alternative power supplies by describing acceptance criteria.

Existing NRC Guidance

- ✓ Regulatory Guide 1.9, “Application and Testing of Safety-Related Diesel Generators in Nuclear Power Plants” was last updated in 2007 to Revision 4.
- ✓ Regulatory Guide 1.9 provides guidance that the NRC staff considers as an acceptable method for satisfying NRC regulations (mainly GDC 17 and 18) with respect to the design, qualification, and testing of emergency power sources used in onsite AC electric power systems for nuclear power facilities.

Significant Changes

- ✓ This revision (Rev 5) endorses one new and updates another IEEE standard in full, with supplements and clarifications:
 - IEEE Standard 387-2017, “IEEE Standard for Criteria for Diesel Generator Units Applied as Standby Power Supplies for Nuclear Power Generating Stations”
 - IEEE Standard 387-2017 was updated from 1995 version
 - Includes specific details on design and testing considerations

Significant Changes (cont.)

- IEEE Standard 2420-2019, “IEEE Standard Criteria for Combustion Turbine-Generator Units Applied as Standby Power Supplies for Nuclear Power Generating Stations”
 - Industry developed this new standard in 2019 based upon Interim Staff Guidance (DC/COL-ISG-021)
 - Specifically includes additional guidance on CTG’s principal design criteria, design features, qualification considerations, and testing requirements.

Proposed New Guidance

- ✓ Includes provisions for alternatives for onsite standby emergency AC power supplies that meet the intent of 10 CFR 50 and 10 CFR Part 52 requirements in consideration for small modular reactors, advanced reactors, and other nuclear facilities.
 - Includes criteria derived from General Design Criteria (GDC) 17 and GDC 18 (e.g., information on capacity, capability, independence, redundancy, testability, inspection, qualification, etc.).
 - References applicable guidance provided in Regulatory Guides: 1.75, 1.6, 1.81, 1.118, 1.89, 1.100, 1.164, 1.28, 1.155 and 1.189
- ✓ Includes additional design and testing considerations for EDGs, CTGs, and other emergency AC power sources.

Proposed New Guidance (Cont.)

- ✓ This Revision introduces a new technology-neutral concept for power sources other than EDGs and CTGs.
- ✓ Since the range of possible alternative power sources is very wide in scope, the staff provided only basic foundations identifying the regulatory requirements for an alternative onsite power sources.
- ✓ Revision 5 is only introducing guidelines for alternative power sources. The staff is open to reviewing and endorsing future industry standards for alternate onsite power sources.

Proposed New Guidance (cont.)

Sample Supplements and Clarifications to IEEE 387-2017:

- ✓ “Design and Application Considerations” for testability and synchronization capabilities was supplemented:
 - to address testing of the EDG operating in parallel with the preferred power source in the event the preferred power source has transients.
- ✓ “Design and Testing Considerations” was clarified:
 - The design should allow testing of the EDGs to envelop the parameters of operation.
- ✓ “Operations” was clarified:
 - to include that licensees should monitor EDGs cumulative operating time above the nominal rating for additional restrictions as specified in manufacturer-recommended accelerated maintenance requirements and industry consensus group recommendations.

Proposed New Guidance (cont.)

- ✓ Sample Supplements and Clarifications to IEEE 2420-2019:
 - “Design and Application Considerations” for testability and synchronization capabilities was supplemented:
 - to address testing of the CTG operating in parallel with the preferred power source in the event the preferred power source has transients.
 - “Design and Testing Considerations” was clarified:
 - The exhaust system should be purged before startup or during shutdown
 - The pressure loss associated with the air intakes may be significant. Design should consider the local environment and the possibility of condensation of moisture from the ambient humidity
 - “Recommended Parameters” was clarified:
 - adding additional items to be monitored to indicate the need for an overhaul.

Proposed New Guidance (cont.)

- Both IEEE standards were supplemented to include verification of all subsystems such as fuel oil, lube oil, cooling, starting, and piping systems credited for operation.
- ✓ Other important changes:
 - Removal of testing and design requirements from Rev 4 because they have been incorporated in the updated IEEE 387-2017.
 - Title of Regulatory Guide 1.9 changed to be more technology neutral, “Application and Testing of Onsite Emergency Alternating Current Power Sources in Nuclear Power Plants.”

Public Comments and Resolution

✓ Summary:

- Received 51 comments from NEI, IEEE, and members of public.
- One significant change made to the background section was to combine the two sections on EDGs and CTGs into one.
- The rest of the comments were minor and incorporated by editorial changes.
- Several other comments did not require changes because they were determined to be beyond the scope of this regulatory guide.

Public Comments and Resolution(cont.)

- ✓ Comments of interest from NEI (Comments No. 1, 2, 3, and 5)
- Reference to a 30-day mission time for the EDGs represents a backfit concern.
 - 30-day timeframe removed. Mission time now refers to licensing bases.
- A requirement for constructing a chamber for testing various atmospheric conditions would be impractical.
 - Clarified language to state the design of EDG encompasses a temperature and humidity band of operation.
- The design requirement associated with preferred offsite power should be considered part of the remote protection system per IEEE Standard 387, hence, not within the scope of this regulatory guide.
 - EDG has adequate internal protection to sustain its mission while paralleled to grid.

Public Comments and Resolution(cont.)

- ✓ Comments of interest from IEEE
 - Almost identical to NEI comments. They were addressed within the responses to NEI comments accordingly.

- ✓ Comments from Members of Public
 - Clarification on the use of terms “accident”
 - Terminology used was consistent with the terminology in the endorsed version of IEEE Std 387-2017.
 - Clarification for bypassing non-critical trips of EDG.
 - Bypassing of noncritical trips during accidents is expected and it is important to take measures to ensure that spurious actuation of these other protective trips does not prevent the EDGs from performing their function during accident mode of operation.

The endorsement of these IEEE standards does not add any new regulatory positions regarding design basis events (DBE), anticipated operational occurrences (AOOs), loss of offsite power (LOOP) with accident conditions.

Steps Towards Issuance

- OGC has provided NLO.
- Briefed ACRS subcommittee and received feedback.
- Briefed Committee to Review Generic Requirements (CRGR) on NEI's contentions of possible backfit
- Brief ACRS full committee.
- Issuance of new guide is expected in July.

Questions and Comments

?