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UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

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ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

(ACRS)

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REGULATORY RULEMAKING, POLICIES AND PRACTICES

SUBCOMMITTEE

+ + + + +

WEDNESDAY, MAY 21, 2025

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The subcommittee met via Video
Teleconference, at 8:30 a.m. EDT, Vicki Bier, Chair,
presiding.

COMMITTEE MEMBERS:

- VICKI M. BIER, Chair
- DAVID A. PETTI, Member-at-Large
- RONALD G. BALLINGER
- VESNA B. DIMITRIJEVIC
- CRAIG D. HARRINGTON
- WALTER L. KIRCHNER
- ROBERT P. MARTIN
- SCOTT P. PALMTAG
- THOMAS E. ROBERTS
- MATTHEW W. SUNSERI

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ACRS CONSULTANT:

DENNIS BLEY

DESIGNATED FEDERAL OFFICIAL:

MICHAEL SNODDERLY

ALSO PRESENT:

STEVEN ALFERINK, NRR/DRA

INDIA BANKS, NRR/DNRL

BOB BUDNITZ

JON FACEMIRE, NEI

ALISSA NEUHAUSEN, NRR/DRA

HANH PHAN, NRR/DANU

STACEY ROSENBERG, NRR/DRA

SHILP VASAVADA, NRR/DRA

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Adjourn

P-R-O-C-E-E-D-I-N-G-S

(8:30 a.m.)

CHAIR BIER: Call to order this meeting of the Regulatory Rulemaking, Policies and Practices Subcommittee of the Advisory Committee on Reactor Safeguards.

I am Vicki Bier, the Chair of today's subcommittee meeting.

Can people hear me okay online? Anybody want to respond quickly?

PARTICIPANT: Yeah, we're fine, thanks.

CHAIR BIER: Okay, thank you.

All right. ACRS members in attendance in person are Robert Martin, Tom Roberts, and myself.

ACRS members in attendance virtually via Teams are Vesna Dimitrijevic, Craig Harrington, Walt Kirchner, Scott Palmtag, Dave Petti, and Matt Sunseri.

We also have one of our consultants participating virtually via Teams, Dennis Bley.

If I have missed anyone, either ACRS members or consultants, please speak up now.

None. Michael Snodderly of the ACRS staff is the Designated Federal Officer for the meeting.

No member conflicts of interest were identified for today's meeting. And we do have a

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1 quorum.

2 During today's meeting the subcommittee
3 will receive a briefing on the staff's Draft Final
4 Interim Staff Guidance on Content of Risk Assessment
5 and Severe Accident Information in Light-Water Power
6 Reactor Construction Permit Applications.

7 The staff has developed this guidance at
8 the request of several external stakeholders engaging
9 in the pre-application process. Key is the two-step
10 licensing process, 10 CFR Part 50. This process
11 involves issuance of a construction permit based on
12 design information documented in a preliminary safety
13 analysis report, or PSAR.

14 This interim staff guidance clarifies the
15 scope and depth of the staff review of the description
16 of risk assessment and severe accident information in
17 the PSAR for a light-water power reactor construction
18 permit application that uses risk assessment and
19 severe accident information in support of the
20 application.

21 The ACRS was established by statute and is
22 governed by the Federal Advisory Committee Act, or
23 FACA. The NRC implements FACA in accordance with our
24 regulations. Per these regulations and the
25 committee's bylaws, the ACRS speaks only through its

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1 published letter reports. Any member comments and
2 questions should be regarded as only the individual
3 opinions of that member, not a committee decision.

4 All relevant information related to ACRS
5 activities such as letters, rules for meeting
6 participation, and transcripts are located on the NRC
7 public website and can be easily found by typing
8 "about us ACRS'" in the search field on NRC's
9 homepage.

10 The ACRS, consistent with the agency value
11 of public transparency and regulation of nuclear
12 facilities provides opportunity for public comment
13 during our proceedings. We have received a request
14 from Jon Facemire with the Nuclear Energy Institute to
15 make a presentation to the committee on today's topic.

16 We have received no other written
17 statements or requests to make an oral statement from
18 the public but we have set aside time at the end of
19 this meeting for public comments, if there are any.

20 The ACRS will gather information, analyze
21 relevant issues and facts, and formulate proposed
22 conclusions and recommendations, as appropriate, for
23 deliberation by the full committee.

24 A transcript of the meeting is being kept
25 and will be posted on our website.

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2 participants should first identify themselves and
3 speak with sufficient clarity and volume that they may
4 be readily heard. If you are not speaking, please
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6 you're on the phone.

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9 presentations. Rather, limit use of the meeting chat
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12 your electronic devices in the silent mode and mute
13 your laptop microphone and speakers. In addition,
14 please keep sidebar discussions in the room to a
15 minimum since the ceiling microphones are live.

16 For the presenters, your table microphones
17 are unidirectional and you'll need to speak directly
18 into the front of the microphone to be heard today.

19 Finally, if you have any feedback to the
20 ACRS about today's meeting, we encourage you to fill
21 out the public meeting feedback form on the NRC's
22 website.

23 We will now proceed with the meeting. I
24 gather that Steve Alferink from the Division of Risk
25 Assessment at NRR is making an opening statement.

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1 Is that correct?

2 MR. ALFERINK: Yes, that is correct.

3 CHAIR BIER: Okay, thank you, Steve. You
4 can go ahead.

5 MR. ALFERINK: Thank you.

6 Good morning and thank you for the
7 opportunity to discuss the Draft Interim Staff
8 Guidance for ISG on the Content of Risk Assessment and
9 Severe Accident Information in Light-Water Power
10 Reactor Construction Permit Applications.

11 My name is Steven Alferink and I am the
12 Acting Branch Chief at PRA Licensing Branch C in the
13 Division of Risk Assessment in the Office of Nuclear
14 Reactor Regulation.

15 In my opening remarks I want to take the
16 opportunity to highlight the background of this ISG.

17 In 2023 we initiated an effort to
18 determine the information content for PRA in severe
19 accidents in a preliminary safety analysis report for
20 a light-water power reactor construction permit
21 application. We received great support and engagement
22 from external stakeholders for this effort when we
23 first started thinking about developing this guidance
24 when some of our stakeholders stated a preference for
25 using 10 CFR Part 50.

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1 Since it has been almost 40 years since
2 the NRC received the last construction permit
3 application for a light-water power reactor much has
4 changed.

5 In this 40 years the NRC issued many
6 documents related to PRA and severe accidents,
7 including the Three Mile Island Action Plan in 1980,
8 which called for system reliability analyses that met
9 the 10 CFR 50.34 aspect, which required utilities with
10 any construction permit applications to establish
11 programs for reliability analysis.

12 The NRC later issued generic Letter 8820
13 which called for a systematic examination to identify
14 any plant-specific vulnerabilities for severe
15 accidents, the ITE, and a Supplement 4 which called
16 for individual plant examination of external events.

17 The Commission also issued its Policy
18 Statement on Severe Accidents in 1985, and its Policy
19 Statement on PRA Methods in 1995.

20 We recognize that policy statements are
21 not regulations. While they are not regulations, they
22 do provide the Commission's expectations, and we use
23 them to guide our efforts.

24 We first documented our efforts in a white
25 paper which we used to inform the development of this

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1 Draft ISG. The development of the white paper and
2 subsequent Draft ISG was a team effort with
3 participation from three different divisions: the
4 Division of Risk Assessment, the Division of Advanced
5 Reactors and Non-Power Production and Utilization
6 Facilities, and the Division of New and Renewed
7 Licenses.

8 The team worked collaboratively for
9 several months, meeting weekly to review progress and
10 comment on the technical content. Consequently, we
11 believe this ISG content will fill a gap that exists
12 in regulatory guidance and will ensure efficient and
13 effective reviews of construction permit applications
14 for light-water power reactors.

15 The Project Manager for the ISG, India
16 Banks, will start the presentation.

17 Stacey Rosenberg, a Senior Reliability and
18 Risk Analyst in my branch, will provide the overview
19 of the background and content of the ISG.

20 Alissa Neuhausen, previously a Reliability
21 and Risk Analyst in my branch, and now the Acting
22 Branch Chief of the License Renewal Project Branch in
23 the Division of New and Renewed Licenses will provide
24 the summary of stakeholder comments and how we
25 disposition the public comments we receive.

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1 We look forward to today's discussion and
2 your feedback.

3 Thank you. And I will now turn it over to
4 India to start the presentation.

5 MS. BANKS: Thank you, Steven.

6 Good morning, ACRS Regulatory Rulemaking,
7 and Policies and Practices Subcommittee members.

8 My name is India Banks, Project Manager in
9 the Division of New and Renewed Licenses. Before
10 turning it over to Stacey and Alissa I want to thank
11 the ACRS Subcommittee for allowing the staff the
12 opportunity to meet with you today to discuss the
13 Interim Staff Guidance Content of Risk Assessment and
14 Severe Accident Information in Light-Water Power
15 Reactor Construction Permit Applications.

16 As Steven said, the technology of risk
17 assessment and severe accident analysis has advanced
18 significantly since the last power reactor
19 construction permit was issued in the 1970s.

20 Licensees and the NRC staff use risk
21 assessment techniques more effectively than ever
22 before. The staff has developed this ISG to clarify
23 the scope and depth of the staff review of the
24 description of risk assessment and severe accident
25 information in the PSAR for light-water power reactor

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1 construction permit applications that uses risk
2 assessment and severe accident information to support
3 the application.

4 I want to commend the supporting staff in
5 DRA and the Division of Advanced Non-Power Production
6 and Utilization Facilities who helped develop this
7 guidance. The staff engaged with stakeholders in
8 several public meetings so the staff could consider
9 stakeholder views informing the need for positions
10 presented in this ISG.

11 On January 16th of 2025 the staff issued
12 a Notice for Public Comment on the Draft ISG. At the
13 end of the public comment period the staff received
14 comments from the Nuclear Energy Institute on nuclear
15 power. The staff addressed each comment and made
16 changes to the ISG accordingly.

17 During the presentation the staff will
18 discuss how these comments were addressed. The Staff
19 Guidance is addressed to the ACRS, and we look forward
20 to obtaining recommendations related to the issuance
21 of this ISG.

22 I will now turn it over to Stacey and
23 Alissa. Thank you.

24 MS. ROSENBERG: Thank you, India.

25 Can everybody hear me?

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1 (Simultaneous speaking.)

2 MS. ROSENBERG: I also want to thank the
3 ACRS Subcommittee for having us here this morning to
4 brief on the ISG. And since we have the introduction
5 slide up, I do want to take a second just to
6 acknowledge and thank those that were part of this
7 team:

8 Malcolm Patterson, who is here in the
9 room.

10 Keith Tetter I think is on the, on the
11 phone.

12 Marie Pohida who is out this week.

13 Mike Swim.

14 Steve Alferink who you just heard from.

15 Marty Stutzke, Jeff Wood, Anders
16 Gilbertson, who I know is also on the line, and Hanh
17 Phan.

18 So, thank you very much for your very hard
19 work on this.

20 And, oh, and Alissa Neuhausen and I were
21 co-authors of this project.

22 So, do you want to go to the next slide.

23 Okay. So, we're going to just, we're just
24 going to skip over the need for the effort.

25 MS. NEUHAUSEN: Yes.

1 MS. ROSENBERG: Okay, yes.

2 So, we'll skip over the need for the
3 effort because Steve already went over that.

4 All right. So, we'll just jump into the
5 overview.

6 Okay. The ISG clarifies the scope and
7 depth of the staff review of the description of risk
8 assessment and severe accident information in the
9 Preliminary Safety Analysis Report, which I'll
10 probably refer to as PSAR for short.

11 In November of 2024 the Commission issued
12 Staff Requirement SECY-22-0052 titled "The Proposed
13 Rule on Alignment of Licensing Processes and Lessons
14 Learned from New Reactor Licensing.'" While the SRM
15 states the proposed rule does require operating
16 license applicants to submit a description of the
17 plant-specific PRA and its results, the SRM did not
18 require construction permit applicants to include this
19 information.

20 So, that's, that's an important piece of
21 information.

22 Nevertheless, some designers of new light-
23 water reactors are using risk assessment to support
24 design decisions.

25 Next slide.

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1 So, the objectives of this guidance.

2 One of the most important points we want
3 to leave you with today is that the scope and level of
4 detail of risk information in the PSAR should
5 correspond to the design readiness at the time the
6 construction permit application is submitted, and how
7 the risk information is being used to support and
8 inform the construction permit applicant.

9 The intent is also to facilitate
10 consistency in the content of the CPAs, which would
11 lead to greater predictability of staff reviews.

12 The staff also wanted to clarify any
13 misconceptions that the PRAs for construction permit
14 applications must meet endorsed PRA standards.

15 MEMBER MARTIN: I'll jump in and ask a
16 question. I'm Bob Martin.

17 So, it's obviously, as you said,
18 addressing a gap with regard to the role of PRA and
19 CPAs. However, environmental reports always relied on
20 -- not always but for some time how have included PRA,
21 if not, you know, directly, implicitly in order to
22 address type exercises, cost-benefit analyses.

23 Are the objectives here to at least make
24 sure there's some consistency between how those PRAs
25 are informed or are there -- is it intentional to be

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1 different? Are there different objectives to the two
2 PRAs?

3 I would imagine you would want to leverage
4 one piece of work or, you know, both the ER and PSAR.

5 MS. ROSENBERG: I, I would think that
6 that's, I would think that that would be an efficient
7 way to handle a situation. You know, I'm not --

8 MEMBER MARTIN: But?

9 MS. ROSENBERG: -- a utility.

10 I think that, you know, I don't know what
11 their requirements are.

12 You know, when, when you're doing a PRA
13 it's tailored to what you're looking for. So --

14 MEMBER MARTIN: For the question
15 completeness would be, would apply to both; right?
16 Particularly in the space where you're looking at, you
17 know, severe accident mitigation, alternatives, such
18 like, you know, that sort of thing, because it all
19 goes back to what is the sign.

20 And, of course, you know, the PRA feeding
21 an ER is, you know, just like for a PSAR, can't be so
22 complete. I know this is all Part 51 stuff but it's
23 kind of, you know, a little bit of a duplication.

24 And going to the heart of the question,
25 was there any coordination with people that are

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1 responsible for Part 51 and that, you know, the
2 environmental work and what goes into those reports
3 from a technical standpoint? And I can already tell.

4 MS. ROSENBERG: No, we haven't done this
5 review in coordination with the environmental reviews.

6 MEMBER MARTIN: Yeah, and it kind of in
7 interests of -- kind of got this ISG, you know, it was
8 preventing, you know, preventing unnecessary burden.
9 There might be value in knocking on a few doors and
10 getting, getting their feedback, you know, in another,
11 you know, another team within the agency that also is
12 interested.

13 MS. ROSENBERG: Yeah. Yeah, it's a good
14 point.

15 Shilp, did you have anything you wanted to
16 add?

17 MR. VASAVADA: Yeah.

18 So, they should start out on the NRC
19 provisional risk assessment. Quick question. Our
20 experience has been that the PRAs or the risk
21 assessments that are used to support the safety piece
22 of the application are then essentially leveraged for
23 the amount of use. They test no outcomes. The
24 bifurcation, the -- the underlying cause of the PRAs
25 that are used.

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1 They are essentially built --
2 environmental reviews are same as applicable in risk
3 assessments as far as the safety piece.

4 You know, the comment is valid. Just we
5 need to make sure that we're not missing information
6 that we will need. However, my personal opinion is
7 what we have over here bridging the gap we'll
8 definitely address because the gap will still remain
9 because they are building it based on the safety
10 risks.

11 MS. ROSENBERG: Thank you.

12 Okay, so, I think --

13 MEMBER PETTI: This is, this is Dave. I
14 raised my hand but maybe people didn't see it. Dave
15 Petti.

16 I just had a question on the design
17 readiness issue.

18 Is this kind of a little chicken and egg?
19 Is the need for the PRA and the depth of the PRA
20 driving the design readiness in some sense or is it
21 the other way around, the design is where it is and so
22 the PRA is just, you know, where it is?

23 As I read the ISG, I kept thinking this
24 was going to pull the design to a further degree of
25 completeness, for better or worse, just because some

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1 of the information that you'd like to see, even at the
2 CP stage, you know, require a lot of details. Did you
3 guys think about that at all?

4 MS. ROSENBERG: So, which comes first?

5 MEMBER PETTI: Do you think that the PRA is
6 going to drive the design to be more complete at the
7 CP stage than were you not to have the PRA?

8 MS. ROSENBERG: Yeah, I, yes, I think that
9 it could do that, absolutely. That could even be a
10 goal of an applicant to have that happen.

11 So, if that's, that could be their goal
12 going in. And even if it weren't, I think they would
13 get a lot of insight, helpful insight.

14 MEMBER PETTI: Certainly from the design
15 perspective, I agree, there's a lot of value in the
16 PRA really. But there's a lot of other stuff there
17 that looks like it will push them to have a graded, or
18 just simplified, just not complete of their design to
19 be able to, you know, to put together the PRA.

20 MS. ROSENBERG: Well, and that's why we
21 keep saying it depends on the design readiness and
22 what is being requested at the time.

23 So, it's very dependent. It's going to be
24 variable. You know, it depends how far along you are
25 on your design, an applicant is on their design and

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1 what they're hoping, which regulatory finding they're
2 hoping to receive.

3 MR. VASAVADA: May I?

4 MS. ROSENBERG: Yes.

5 MR. VASAVADA: From the staff, member
6 Petti, I think what you are saying, as Stacey said,
7 something we struggled with a lot when we were
8 developing the ISG, because being a design expert I
9 would expect that there will be iterative process
10 continuously happening on the design side as to where
11 to draw the line, how much is enough on CP, et cetera.

12 And we tried to add as much as clarity as
13 to predictability, we did recognize that we had broad
14 spectrum in terms of the design readiness, as Stacey
15 said, part of the objectives, as well as what the risk
16 information is being used for.

17 And the ISG tries to cover that gap. If
18 there are aspects that are not available at the time
19 of the review, we recognize that. The ISG is the
20 guidance to the staff, recognizing that the majority
21 may be different and if there is not enough
22 information and there's a basis for that, that is
23 something that the staff can take a look at in its
24 review.

25 So, yeah, it's something that we struggled

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1 with. And we think it's an iterative process that we
2 would not be able to, I would say, control. This ISG
3 I don't think is driving that either.

4 MEMBER PETTI: Because they don't have to
5 submit the PRA at the CP stage, correct?

6 MR. VASAVADA: Correct.

7 MEMBER PETTI: Okay. Until only at the OL
8 stage would you need to pull. So, there is some
9 flexibility then.

10 MR. VASAVADA: Right. And we recognize
11 that.

12 MEMBER PETTI: Yeah. Right. This is only
13 in the event that they do provide some guidance for
14 that. Okay.

15 MR. VASAVADA: This is where an applicant
16 chooses to use risk assessment information to support
17 their application.

18 MEMBER PETTI: Okay, thanks.

19 CHAIR BIER: Walt, if you want to go ahead.

20 MR. KIRCHNER: Thank you, Vicki.

21 Good morning. This is Walt Kirchner.

22 I'm looking at this last bullet and I'm
23 wondering if it means what it says, or you intend it
24 to mean what it says. Certainly you want people who
25 voluntarily use PRA, as Dave was saying, perhaps start

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1 iterating and enhancing their design, and look for
2 vulnerabilities or severe accident vulnerabilities in
3 particular, and other system vulnerabilities that they
4 can improve on.

5 But, yes, they don't -- wouldn't it be
6 better to say that it's not required? But surely you
7 want them to be developing the PRA such that it meets
8 the AS and the ANS standard by the time --

9 MS. ROSENBERG: Yes.

10 MEMBER KIRCHNER: -- they submit it at the
11 OL. So --

12 MS. ROSENBERG: Oh yeah, definitely. Yes.

13 So, this is talk --

14 MEMBER KIRCHNER: Yeah. So --

15 MS. ROSENBERG: -- this is talking just
16 about the construction permit application. And I --

17 MEMBER KIRCHNER: No, I understand that.
18 But do you want -- if they are even at the preliminary
19 stage you want them to be developing the PRA such that
20 it will meet the standard?

21 MS. ROSENBERG: Yes.

22 But, you know, and I have a -- I have a
23 few future slides that will, hopefully, clarify this.

24 MEMBER KIRCHNER: Okay.

25 MS. ROSENBERG: And then maybe we can

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1 discuss it further.

2 MEMBER KIRCHNER: Well, I just want to
3 elaborate on Dave's statement. You know, David, it's
4 not required that they submit a PRA at the CP stage.
5 But you certainly want them to be developing one that
6 will meet the endorsed standards.

7 I just, maybe it's just the way the
8 vugraph reads.

9 MS. ROSENBERG: And maybe so, yes.

10 MEMBER KIRCHNER: Yeah.

11 MS. NEUHAUSEN: And Stacey just indicated
12 that there's additional slides later in the
13 presentation. And it does --

14 MEMBER KIRCHNER: Okay.

15 MS. NEUHAUSEN: -- go into how, it's really
16 how we're using ISG-28, right, and what portions are
17 applicable to a construction permit more than -- maybe
18 "misconception" is not the best way to phrase that.

19 MS. ROSENBERG: We probably should have
20 said that they have to meet all of the endorsed PRA
21 standards. That's probably what it would have been a
22 better sentence if we had said that.

23 MEMBER KIRCHNER: Yeah. It's just the
24 phraseology that is kind of a disconnect for me. We
25 certainly want them to develop a PRA according to the

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1 standard because --

2 MS. ROSENBERG: Yes.

3 MEMBER KIRCHNER: -- when you get to the OL
4 stage that's how you're going to review the PRA.

5 MS. ROSENBERG: Yes. Correct.

6 MEMBER KIRCHNER: Okay.

7 MS. ROSENBERG: Okay. Here's the next
8 slide.

9 Okay. This slide is a graphic of the
10 staff's approach to developing the guidance.

11 We reviewed relevant information from
12 sources such as Reg. Guide 1.70, Format and Content of
13 Safety Applications, issued in 1978.

14 And Reg. Guide 1.200, Technical Attributes
15 of an Acceptable PRA.

16 We reviewed the Standard Review Plan
17 Chapter 19, Severe Accidents, as well as recent
18 Interim Staff Guidance on Construction Permit
19 Applications.

20 At the same time, we solicited external
21 stakeholder feedback through public meetings, which
22 I'll discuss in the next slide.

23 We have and would continue to encourage
24 applicants to meet with us and in design-specific pre-
25 application meetings on this topic. These meetings

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1 provide an opportunity for the NRC staff's feedback on
2 design-specific questions related to Chapter 19
3 information.

4 Next slide.

5 Okay. We really collaborated, well, we
6 tried to collaborate a lot on the development. We
7 held three public meetings during the guidance
8 development. About 40 stakeholders attended each of
9 the meetings.

10 At the first public meeting in March of
11 2023 we received support from external stakeholders on
12 this initiative. We addressed external stakeholder
13 feedback by providing clarifying information on topics
14 of interest to them, to include external hazards, data
15 analysis, self-assessment for peer review, and
16 configuration control, among others.

17 Our internal team, which included members
18 from the Division of Advanced Reactors, meet weekly to
19 share ideas and insights, including similarities and
20 differences in the parallel effort for advanced
21 reactor guidance.

22 We were informed by and we utilized
23 similar concepts and materials where appropriate.

24 Okay. Now, I just want to mention a few
25 things about applicability of this guidance.

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1 This guidance is applicable to
2 construction permit applications for new light-water
3 reactors that do not use a licensing modernization
4 project framework.

5 The technical acceptability of a CP
6 application PRA may depend on the intended use of the
7 risk information and the level of design maturity at
8 the time the application is submitted.

9 Another important use of the risk
10 information is to help the NRC staff's review on those
11 aspects and to help focus our review on those aspects
12 of the design that contribute most to safety and
13 minimize attention to issues of low safety
14 significance.

15 Okay. Now we're going to get into the
16 contents of the ISG.

17 (Off-microphone comments.)

18 MS. ROSENBERG: Thank you. That wasn't a
19 question.

20 The ISG is focused on PSAR content.
21 Compared to a design certification or a combined
22 license application, the scope of information is
23 scaled down. The ISG is in a format that can be used
24 as a checklist to assist applicants with PSAR
25 preparation.

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1 At the CP stage the focus of risk
2 information in the PSAR is on description, including
3 justifications; the process of identifying and
4 dispositioning PRA uncertainties, including treatment
5 of key assumptions and key uncertainties,
6 identification of limitations, and the PRA scope,
7 level of detail, and plant representation, including
8 the impact of these limitations; and a summary of the
9 results and insights.

10 We expect the level of detail and the
11 content of different topics to vary across
12 applications, depending upon the design maturity and
13 the uses of the CP stage PRA, such as a selection of
14 licensing basis events, or demonstration of margins to
15 the Commission's safety goals.

16 CHAIR BIER: Excuse me. I have a comment
17 on that last bullet. And we may come back to this in
18 much more detail later in the discussion section.

19 My biggest question about this document is
20 not about the document itself but how it related to
21 the OL process. And conceptually I can think of the
22 CP PRA as it's done maybe with a Sharpie instead of a
23 fine-point marker, or instead of like a quarter
24 magnitude instead of three decimal places.

25 And, obviously, if there are big changes

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1 before the OL, like the design change or somebody
2 discovered a failure mode that wasn't in the CP PRA,
3 obviously that has to be in the OL PRA to have the
4 applicant have responsibility to fix that.

5 But the question that I have is if there
6 is nothing wrong about the assumptions in the CP PRA,
7 if they're just very general, like that Sharpie
8 outline, would the applicant have a responsibility to
9 provide more detail?

10 So, one of the examples is, at the CP
11 stage very likely it's not yet known exactly which
12 buses are going to provide power to which equipment,
13 but that can make a huge difference in risk.

14 And is the applicant going to be required
15 to provide that level of detail at the OL stage, or
16 can they come and say, hey, my CP PRA was good enough
17 for you guys, I'm going to use it at the OL stage and
18 there's no errors? So?

19 MS. ROSENBERG: No.

20 CHAIR BIER: Okay.

21 MS. ROSENBERG: Your OL PRA, you know, is
22 going to have to be peer reviewed. It's going to have
23 to meet standards. So, so it --

24 CHAIR BIER: So, so going in at the OL
25 stage with a PRA that is kind of, you know, Sharpie

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1 level without the detail about electrical support or
2 other support systems, et cetera, would not?

3 MS. ROSENBERG: No. No.

4 CHAIR BIER: Okay. That's the answer I
5 wanted to hear --

6 MS. ROSENBERG: Yes.

7 CHAIR BIER: -- so that will reduce later
8 conversation.

9 MS. ROSENBERG: Yeah, and we'll talk a
10 little bit later about configuration control which is
11 a process to get from where you are with the
12 construction permit application PRA over to your OL.

13 CHAIR BIER: And I guess the reason that
14 stuck in my mind as a question, when I was pretty new
15 on the committee I was kind of learning about all
16 these things. And the combined operating license,
17 that's a bigger issue because it's issued early on at
18 a time when the detail may not be available.

19 So, I think that's why I was kind of on
20 that.

21 MEMBER MARTIN: Stacey, I'm going in a
22 little bit different direction.

23 So, I'm going to say this is for LWRs.
24 And if the Reg. Guide 1.70 applied, you know, has a
25 traditional LWR, more than likely the applicant's not

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1 going to go this route. In cases that I think of
2 NuScale being the most obvious example where, you
3 know, there's, you know, a significant novelty in that
4 LWR, no doubt, well, and the evidence is there, that
5 there are unique hazards maybe that, that seem to
6 create a point of conversation in this realm. Now,
7 for say CP I think they're going a different route.

8 But I think on that, you know, this route,
9 at the CP stage would you expect all those unique
10 events to have been identified and supported by a PRA?

11 Or could they come in and just say, well,
12 we've kind of qualitatively determined that, you know,
13 this, these are the differences at least as far as,
14 you know, of course check with the team, but of course
15 you have to, but all events to really know what side
16 of the fence you are on.

17 And, I mean, it's kind of the first
18 question. And, you know, whether you would expect
19 that PRA at that time.

20 Just start off with that question and see
21 where it leads.

22 I'm trying to work through a scenario
23 where this makes sense.

24 MS. ROSENBERG: What is the question?
25 Just, like, you know, a one-sentence question.

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1 MEMBER MARTIN: Okay. So, here's the
2 scenario.

3 And say NuScale, they've kind of taken a
4 path, say, like Kairos, or something like that, where
5 they're going right into the CP.

6 MEMBER KIRCHNER: Bob, this is Walt.
7 NuScale submitted under Part 52.

8 MEMBER MARTIN: I'm just framing a
9 hypothetical.

10 MEMBER KIRCHNER: And maybe the GC and SBAA
11 --

12 MEMBER MARTIN: I'm framing a hypothetical,
13 Bob. I said that in front.

14 MEMBER KIRCHNER: No. No, but stop. Stop
15 for a minute.

16 When you go that route, one, the PRA is
17 required against the accepted standard in Reg. Guides.

18 And, secondly, the level of design detail
19 is much more complete than, than --

20 MEMBER MARTIN: Okay. Let's say, hold up,
21 with a hypothetical.

22 I, well, I know what you're saying. I
23 think you're just derailing me. All right, we'll just
24 call it --

25 MEMBER KIRCHNER: Well, because you

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1 mentioned Kairos, which is a completely, you know,
2 it's a completely different approach in terms of the
3 level of design material.

4 MEMBER MARTIN: But we're looking at a LWR
5 that is unique. As simply as that. And I thought
6 NuScale would be a good example of the history there.
7 But apparently not.

8 But let's just call it that, an integral
9 PWR that will have deviations from what was imagined
10 in Reg. Guide 1.70. They come in kind of like what
11 we're seeing with advanced reactors with, you know,
12 leading with a CP.

13 What would you expect, you know, with
14 these differences? Can they just come in with
15 qualitative assessment of the differences? Or would
16 the staff expect the PRA in that case to defend, you
17 know, those kind of statements?

18 And then, would they become licensing
19 conditions, you know, at that stage or, or, I don't
20 know, I'm just trying to figure out the path through
21 there, what is sufficient and what can be deferred?

22 MS. ROSENBERG: I would have to ask you a
23 question or, like, re-ask it, which is what, what is,
24 what is the intent of this? What are you -- are you
25 trying to get design finality?

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1 Are you trying to say that you meet the
2 safety goals?

3 Are you trying to get SSB classification?

4 So, I guess --

5 MEMBER MARTIN: Well, it's what required at
6 the CP stage, and that's kind of where it goes.

7 MS. ROSENBERG: Okay. If it's just, if
8 they're just -- if they're not trying to get anything
9 else and they're just submitting a PRA, is that what
10 you're asking?

11 MEMBER MARTIN: No. Do they have to submit
12 that PRA when there's clear evidence that there is
13 difference between a Reg. Guide 1.70 envisioned LWR
14 and this?

15 MS. ROSENBERG: Well, I, I'm not a lawyer,
16 I'm an engineer. But I would say, you know, the
17 direction in the FRM says, says no.

18 You know, there may be, you know, if we,
19 I guess if we didn't feel that we could review it with
20 the subtleties or changes in them in a deterministic
21 manner, we might want to request a PRA.

22 MEMBER MARTIN: So, just kind of say case
23 by case basis?

24 MS. ROSENBERG: I would have to say that.

25 MEMBER MARTIN: Okay, that's fair. That's

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1 the answer.

2 MR. VASAVADA: Just to answer one of the
3 parts to your question, yeah, we also find that, as
4 Stacey said, PRA is not required. And you can have
5 non-PRA based -- non-PRA risk assessments to address
6 certain cases, like Stacey said, will be case by case.

7 MEMBER MARTIN: You know, I can lay a
8 little bit more background. So, I worked on PW, P&W
9 power. And through the three application engagement
10 we qualitatively identified events that would and
11 would not be there.

12 Now, that rode the plant-specific review
13 standard process. Obviously NuScale did that and, of
14 course, took the design to finality.

15 And I'm kind of curious whether that
16 approach became truly qualitative? Now, it did lead
17 to action, the DSRS. But that, of course, is kind of
18 outside the -- you know, there's no requirement for
19 that, too.

20 So, I guess it's kind of to your point,
21 it's kind of just case by case. And it's up to the
22 staff. You know, there's no guidance really.

23 And maybe, maybe guidance is necessary or
24 not. I don't know. I mean, it's part of the
25 discussion I think.

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1 CHAIR BIER: Dennis?

2 DR. BLEY: Yeah. Thank you, Vicki.

3 And, Bob, I'm sorry, I turned my mike on
4 and forgot I had it on.

5 Back to Vicki's question kind of. I'm
6 thinking back 40, 50 years ago when we were doing a
7 lot of PRAs we, we decided to do it in a phased
8 approach. You know, phase one was to scope it and
9 figure out where to do the bulk of the work later on.

10 And one of the things we came up with, and
11 I, I think the ISG is asking for this, although
12 sometimes it's a little hard to tell, the place one
13 really ought to do a very thorough job, and has the
14 ability to do a very thorough job, is -- and again may
15 be part of the initiating events analysis and some
16 parts of the accident sequence analysis -- Bob would
17 call this hazards analysis I would think, and it goes
18 by different names depending on who's doing the work
19 -- but a really thorough search of how, what things
20 could go wrong and where they could lead if they do go
21 wrong before you'd know everything about all the
22 systems and how all the pieces fit together. Before
23 you could, long before you do a really good human
24 reliability analysis where you have procedures and
25 some experience on the machines.

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1 As I read it, it doesn't jump off the page
2 to me where it's important to do the best job and
3 where something similar can lie.

4 And somebody else made the comment about
5 PRA and other kinds of risk assessment. I guess for
6 me, you know, the old triplet idea of scenarios likely
7 having consequences is PRA. And you can do it at any
8 level of detail. So, all of those for me fit under
9 the rubric of PRA.

10 Anyway, is that kind of something you're
11 looking for or?

12 MS. ROSENBERG: Well, I think so.

13 I, you know, I think if we go a few more
14 slides maybe that will help to see what we're looking
15 for. And so maybe and if I don't answer that question
16 by Slide 14 we can revisit it; how does that sound?

17 DR. BLEY: I'm happy with that.

18 And I, I guess as I read it, if I were
19 picking this up and trying to do the PRA I'm not sure
20 it tells me where to put my emphasis and where I can
21 be more qualitative in how I look at the analysis, and
22 what my options are if I don't have a really
23 absolutely complete design at that point. Okay.

24 MS. ROSENBERG: Okay?

25 CHAIR BIER: One more question which I hope

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1 will be simple.

2 Would a licensee or an applicant have the
3 opportunity to come in and say we decided to use PRA
4 for one class of scenarios and not for others?

5 So, like, we're doing PRA for LOCAs but
6 our design isn't advanced enough to do it for loss of
7 outside power, so we're addressing those concerns
8 qualitatively, or deterministically, or whatever; is
9 that something that somebody could choose to do?

10 MS. ROSENBERG: I, I would imagine that we
11 would entertain that and see if that's, if that would
12 work.

13 CHAIR BIER: Okay. Thank you.

14 MEMBER ROBERTS: This is Tom.

15 Just following up on what Bob is asking.
16 I'm trying to understand the role of this ISG.
17 Rereading the 2022 SRM that you cited, it looks like
18 that's a proposed rule that I assume you haven't
19 actually submitted yet for the Federal Register.

20 So, in terms of the role of the PRA for
21 the operating license, that's a notional concept that
22 you would then pursue in rulemaking? But I think
23 right now 10 CFR 50 doesn't require a PRA, right, as
24 far as the amplitude --

25 MS. ROSENBERG: Right.

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1 MEMBER ROBERTS: -- of 50.52?

2 MS. ROSENBERG: So, we're talking about
3 SECY 22.52; right?

4 MEMBER ROBERTS: Correct.

5 MS. ROSENBERG: So, the one that came out
6 in November of 2024.

7 MEMBER ROBERTS: Yes.

8 MS. ROSENBERG: Right. So, that, you know,
9 hasn't been finalized.

10 MS. NEUHAUSEN: This is Alissa Neuhausen.

11 Yes, so that rule doesn't exist. We're
12 just operating on those grounds.

13 MEMBER ROBERTS: Right. So, the role here
14 really is, as I understand it, and, you know, Bob's
15 question and the question whether we really understood
16 it, but I think what you're saying here is that since
17 there is a, a trend, obviously, over the last 40 years
18 to use PRA as a role in design and, you know,
19 supporting safety justification and the like, that
20 it's likely somebody will choose to use it.

21 And if they choose to use it in a
22 construction permit application then you will want to
23 have a certain, you know, measure of quality in that
24 work to understand it to the extent that you can, you
25 know, believe that it supports the justification

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1 they're trying to make.

2 MS. NEUHAUSEN: Right.

3 MEMBER ROBERTS: But I think the role, the
4 role of this ISG is if someone chose to use PRA at the
5 CP stage for whatever reason, then they would want --
6 you would want them to meet these guidelines.

7 And getting to Bob's example, if someone
8 was close enough to Reg. Guide 1.70 that they didn't
9 think they needed to use PRA at all, then this ISG
10 wouldn't apply and you would then be in a position of
11 judging the adequacy of the CP application against
12 truly qualitative and deterministic methods, and maybe
13 you'd get there and maybe you wouldn't. But then this
14 ISG wouldn't apply.

15 So, the whole idea that of an OL requiring
16 a PRA, you might meet the quality event, seems like a
17 side issue, that's all future in terms of what comes
18 out of the rulemaking that's still in process. So, so
19 I do understand that.

20 MS. NEUHAUSEN: The rule is going to
21 happen. And I'll just add, go a little bit farther.

22 The ISG was also put together because
23 there was interest from industry. So it wasn't us,
24 you know, looking at it, there was there are
25 applicants who are looking at Part 50 that are

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1 interested in using a PRA and want to know what are
2 expectations of staff.

3 MEMBER ROBERTS: Right. Getting to Bob's
4 hypothetical, I think the answer to this question is
5 yes.

6 If somebody could get through the entire
7 application process where you strictly, you know,
8 general design criteria in Reg. Guide 1.70, stay away
9 from PRA, today they could do that. They would just
10 have discussions and did they really identify all the
11 hazards.

12 And that's part of the, you know, the
13 regulatory evaluation process is did they do enough to
14 identify all the hazards? And if they did, great.
15 And this ISG is, you know, something they wouldn't
16 have to consider

17 So, I just wanted to verify I understood
18 the purpose of this. Thank you.

19 MS. ROSENBERG: Sure.

20 Okay. So, I guess we'll continue.

21 Next slide.

22 Okay. I think we're on the development
23 approach.

24 CHAIR BIER: What I have is internal
25 events, so I think we're in the right place.

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1 MS. ROSENBERG: Okay, perfect.

2 Okay, so this table, this slide is a
3 reproduction of Table 1 from the ISG. And it
4 represents, along with the information on the next
5 slide, what the staff considers the minimum scope of
6 the PRA and non-PRA assessments of the CP stage.

7 Again, this is guidance and not a
8 requirement.

9 The applicant should perform an at-power
10 internal event PRA that meets Capability Category 1 of
11 the endorsed PRA standard for those technical elements
12 of the internal event PRA that can be reasonably met
13 at this stage in the design.

14 Okay. So, I'm not going to plan to go
15 through each of the elements listed in the table.
16 I'll just take one example, data analysis.

17 So, for the PSAR application it should
18 include a discussion of sources of initiating event
19 frequencies and failure rates; discussions for the use
20 of generic estimates; justification for failure rate
21 use for first-of-a-kind components; and appropriate
22 uncertainty and sensitivity analysis.

23 Okay. We're going to move on to --

24 MEMBER KIRCHNER: This is Walt Kirchner
25 again. I wanted to follow up on Bob and Dennis'

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1 question and see if I can phrase it differently.

2 This is a long list. It's a complete
3 list. And what struck me, perhaps a variation of what
4 Dennis was saying, what struck me is you're certainly
5 complete in all the elements on these two tables as to
6 what you want to see in a PRA certainly by the time
7 you get to the OL stage.

8 But where should the emphasis go? For
9 example, the human reliability analysis, isn't it a
10 little bit premature?

11 If you don't really have a detailed
12 design, Bob's hypothetical design, that's not
13 something comparable to NuScale where you have a very,
14 very mature and complete design, how much effort do
15 you want to put into something like human reliability
16 analysis, or even data analysis? Because you don't
17 have procurement specs for components and so on.

18 So, where do you expect and where would
19 you want to see an applicant actually using PRA at
20 this stage?

21 What I'm, what I'm trying to say is it
22 struck me reading the ISG, it's very complete, very
23 detailed. But what's the appropriate area, what are
24 the appropriate areas for emphasis at this stage,
25 especially if you don't have a very complete design?

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1 MS. ROSENBERG: So, first of all, I do want
2 to point out that there at the end it says "Capability
3 Category 1 is acceptable for a CP application."

4 So, and there will be several supporting
5 requirements that won't be able to met -- be met at
6 this stage. And maybe a lot of them will fall in
7 human reliability analysis. But we would think that
8 you would go through the steps of the PRA nonetheless,
9 and go through what you can evaluate, and document
10 what the limitations are because of the stage that
11 you're at.

12 Any questions?

13 MEMBER DIMITRIJEVIC: I just want to add
14 the comment of -- it's Vesna Dimitrijevic. First of
15 all to actually go back to his first question, you
16 know, first comment when he objected to this guidance
17 when you have overcoming misconception construction
18 that it must meet PRA standards.

19 Those are exactly categories from the PRA
20 standard and you're expecting them to meet the
21 Capability Category 1, that is in conflict with what
22 you said in objectives; right? So, you do expect them
23 to meet category -- the Capability 1 of that PRA
24 standard. And those are the PRA standards that
25 categories which you can list, have listed in this

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1 table.

2 Also, the PRA standards, you know, have
3 these categories which increase in the level based on
4 this hope of the realism and plans specificity; right?
5 And this Category 1 is the lowest one, so it has the
6 lowest level of the scope can be done on much higher
7 level than necessary. It is notifying for plant
8 specificity, is that level of realism it has to be
9 just good enough to satisfy whatever conclusions there
10 can be.

11 So, this is just what I want to add as a
12 comment. You contradict your previous statement.

13 MS. ROSENBERG: Okay. Let me, let me read
14 the statement though, because I don't want to
15 contradict it.

16 What I said was the applicant should
17 perform an at power internal event PRA that meets
18 Capability Category 1 of the endorsed PRA standards
19 for those elements, those technical elements of the
20 internal event PRA that can be reasonably met at this
21 stage of the design.

22 So, there are going to be several elements
23 that because of the design readiness or not will not
24 be able to be met.

25 So, what I guess I'm saying --

1 MEMBER DIMITRIJEVIC: Yes, but you know,
2 this is just like that a certain, you know, it's
3 obviously that is element which cannot meet the, you
4 know, the plan specification stages that is the
5 elements which cannot be met after the plant is
6 operational, and you have the plant-specific data.

7 But that will mean, that will be that it's
8 not expected to meet the standard to the level --

9 MS. ROSENBERG: Right.

10 MEMBER DIMITRIJEVIC: -- which can be met
11 in this stage.

12 So, I just think that you should really --
13 well, that's okay. I thought statement like that is
14 not in the ISG. So, you know, I was going to do
15 research for that.

16 But all right. The point is you expect
17 them to meet standards to the point which can be met
18 to the level of the details, and really some plant
19 specificity which can be met in this stage.

20 MS. ROSENBERG: I will go through the ISG.
21 I thought we clarified that in the ISG. But, if not,
22 we'll look back at it.

23 CHAIR BIER: Dennis?

24 DR. BLEY: Yeah. This is Dennis Bley
25 again.

1 Everything you said is -- true is not
2 quite the right word, but fits the problem. What I
3 want to suggest to you is that rather than focus on
4 Capability Category 1, which doesn't really give you
5 -- it's set up and then hardly anything is necessary,
6 and nothing needs to be plant specific -- when what we
7 really want out of this kind of analysis at this early
8 stage is what I said earlier about completeness on the
9 scenarios, but what we want is a report that tells us
10 what are the knowledge gaps?

11 What's missing at this time? How
12 important are they? And what's the plan for filling
13 in those knowledge gaps as the design progresses?

14 And I think a requirement to have that
15 kind of report would be much more beneficial to an
16 applicant and to the NRC staff.

17 MS. ROSENBERG: I think --

18 DR. BLEY: And a way to meet Capability
19 Category 1.

20 MS. ROSENBERG: I think it's in here. I do
21 think it's in here.

22 So, if I could get through a few more
23 slides, and then we could, we could talk about it.
24 And certainly if we're missing something we'll
25 definitely add it.

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1 But I do, I do think it's in here. Maybe
2 I'm moving too slow.

3 So, unless there's another question here,
4 I'm going to move on to hazards, the next slide.

5 Okay. So, this slide is a reproduction
6 also of Table 2 in the ISG.

7 Okay, so for hazards the right column
8 provides non-PRA assessments that should be included
9 in the PSAR.

10 The left column is, are those PRA aspects
11 of that hazard, like internal flood PRA vs. internal
12 flood risk evaluation. And they can be provided
13 instead of the non -- the alternate risk evaluations.
14 It's up to the applicant.

15 But the minimum is the, is the right
16 column.

17 Use of PRA beyond the minimum expectations
18 will result in detailed risk insights as well as an
19 easier transition between construction permit and
20 operating license reviews for the staff. So, I just
21 wanted to point that out.

22 So, it's basically one, either column,
23 either the left column or the right column for a
24 construction permit application.

25 Next slide.

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1 Okay. So, now here --

2 DR. BLEY: This is Dennis. This is Dennis
3 again. Quick question back on your last slide.

4 When you say not PRA, I take it you mean
5 not a full set of event trees and fault trees rather
6 than not the trickwood idea. Is that right?

7 MS. ROSENBERG: Right. Right.

8 DR. BLEY: Okay.

9 MS. ROSENBERG: These are risk evaluation
10 that's just not PRA.

11 Okay. All right, so technical elements.

12 DC/COL-ISG-028, which is titled Assessing
13 the Technical Adequacy of Advanced Light-Water Reactor
14 PRAs for the Design Certification and Combined License
15 Application, provides staff positions on supporting
16 requirements in the PRA standard that are not
17 applicable or cannot be achieved as written for the DC
18 and COL application stage.

19 We can use this for construction permit
20 applications. ISG-028 is one example of guidance that
21 can be used to determine which supporting requirements
22 of the PRA standard are applicable or needed to meet
23 high level requirements for a construction permit
24 application.

25 Okay?

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1 And with that, you would only need
2 Capability Category 1.

3 Next slide, please.

4 Okay. Now I just want to talk a minute
5 about seismic.

6 For seismic an applicant could perform a
7 PRA or an alternative risk evaluation. And the
8 alternative risk evaluation usually for seismic would
9 be a PRA-based seismic margin assessment, SMA.

10 Since site-specific information is
11 available at the CP stage, an applicant may have
12 additional options and choice of response spectra
13 compared to a Part 52 design certification.

14 A PRA-based estimate considers all
15 sequences leading to core damage or containment
16 failure. The primary difference between a PRA-based
17 SMA and a seismic PRA is that the PRA-based SMA, for
18 the PRA-based SMA the convolution of fragilities and
19 the plant seismic hazard curve is not performed.

20 One example of a PRA-based SMA is in the
21 NuScale application.

22 For a PRA-based SMA an applicant can
23 either use site-specific response spectra or a design
24 response spectra. If a site-specific response spectra
25 is used, site-specific seismic induced initiating

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1 events should be identified.

2 If a design response spectra approach is
3 used which is representative of multiple sites, the
4 applicant should demonstrate that the site-specific
5 ground motion response spectra is bounded by the
6 design response spectra.

7 The PSR should also include a description
8 of seismic fragility evaluation, including
9 justification if generic fragility values are used,
10 and a description of the plant response analysis and
11 the resultant site change.

12 This next slide on non-seismic hazards is
13 a graphic representation of an approach that can be
14 used to evaluate non-seismic hazards at the
15 construction permit stage. Non-seismic hazards
16 includes those identified in Table D1 of Appendix D to
17 Reg. Guide 1.200, including high winds, external
18 floods, pipeline explosions, aircraft impacts, and
19 many others.

20 Each non-seismic hazard should be
21 evaluated to see if it can be screened. For hazards
22 that are screened the applicant should describe the
23 qualitative or quantitative screening criteria and a
24 description of the site-specific screening evaluation.

25 If a hazard cannot be screened, an

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1 applicant could then choose whether to perform a PRA
2 or an alternative risk evaluation, conservative
3 estimate of risk.

4 The asterisk on this slide points out that
5 hazard screening would need to be reevaluated at the
6 operating license stage.

7 Okay. All right. Low power and shutdown.

8 Either a low-power and shutdown PRA or an
9 alternative risk evaluation can be used for a CP
10 application.

11 A description of any analysis performed to
12 screen plant operating states, including
13 identification of any design features relied on for
14 the screening, should also be provided.

15 Also, a description of the low-power
16 shutdown risk insights, key assumptions, and any
17 limitations arising from the level of design maturity
18 and operational detail should be provided.

19 Next slide. Okay.

20 Self-assessment vs. peer review.

21 A self-assessment of the PRA of the risk
22 information would be an acceptable tool for assessing
23 the technical acceptability of the PRA of CP
24 application.

25 The guidance in ISG-028 is generally

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1 applicable. We recognize that there may be some
2 deviation since the design certification application
3 may have a more mature design where a construction
4 permit application has information on site
5 characteristics.

6 Applicants may use the process in PRA
7 Standard 1.3, Risk Assessment Application Process, and
8 a flow chart 1-3-1, to help decide which supporting
9 requirements are applicable.

10 The applicant should provide a summary of
11 the results of the self-assessment or peer review
12 which would include any associated limitations. For
13 example, aspects of the PRA that were not able to be
14 fully reviewed due to the design status and site
15 limitations.

16 While either a self-assessment or a peer
17 review may be used to demonstrate the acceptability of
18 the PRA at this stage, the peer review would provide
19 additional confidence in the results.

20 Let's go to the Slide 17.

21 MS. ROSENBERG: Configuration control. A
22 description of the configuration control program will
23 demonstrate that the applicant has established an
24 acceptable process for upgrading and updating the PRA
25 as the design progresses, leading up to operating

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1 license application. The PSAR should describe the
2 technical elements that cannot be met and the reasons
3 why, the process to track assumptions and changes to
4 PRA and how new information will be included
5 consistent with as-built as to be operated plant
6 design.

7 Next slide, severe accidents. For severe
8 accidents, examples of which include core concrete
9 interactions, steam explosion, hydrogen combustion and
10 containment bypass, and others, the PSAR should
11 include a description of design features for the
12 prevention and mitigation of severe accidents, a
13 description of improvements to the plant, operation or
14 maintenance that prevent or reduce the possibility,
15 likelihood or consequence of severe accidents, an
16 evaluation of the severe accident phenomena to assess
17 their design relative to the containment performance
18 goals as approved in SRM-SECY-93-87, which is policy,
19 technical and licensing issues pertaining to
20 evolutionary and advanced light-water reactor designs.

21 Okay. RTNSS, the regulatory treatment of
22 non-safety systems. SECY-94-84 and SECY-95-132
23 describe the scope, criteria and specific steps of the
24 RTNSS process.

25 Staff follows SRP Chapter 19.3 when

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1 reviewing an applicant's application of RTNSS. The
2 RTNSS process applies to those non-safety-related
3 active systems in designs with predominantly passive
4 safety systems that perform the risk significant
5 functions and therefore are candidates of regulatory
6 oversight.

7 A RTNSS evaluation is not required at CP
8 application stage. Nevertheless, if an applicant
9 provides a RTNSS evaluation and requests a regulatory
10 finding on RTNSS at the CP stage, risk evaluations of
11 all modes and all hazards would need to be provided.

12 So with that, I will ask if you have any
13 questions. That was a summary of -- that was a short
14 summary of what is in our guidance document. And if
15 no questions, I will hand it over to Alissa Neuhausen,
16 who will go over the comments that we received and our
17 dispositions of the comments.

18 CHAIR BIER: I do have a few questions.

19 MS. ROSENBERG: Sure.

20 CHAIR BIER: Oh, go ahead, Dennis, if you
21 want to --

22 MEMBER PETTI: This is Dave.

23 CHAIR BIER: Oh, I'm sorry.

24 MEMBER PETTI: Just a quick one. Do you
25 have to have uncertainties at this stage?

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1 MS. ROSENBERG: Yes. Yes. I'm sorry.
2 Uncertainties are very important at this stage.

3 CHAIR BIER: Okay. A couple of questions.
4 One just on this slide. If the staff provides a RTNSS
5 evaluation at the CP stage, is that kind of assumed
6 carried over to the OL stage or it would need to be
7 redone?

8 MS. ROSENBERG: If the staff has enough
9 information to perform a RTNSS evaluation and make a
10 finding, I don't see why it would need to be
11 reperformed. There may be some action items included
12 that would need to be looked at.

13 But I think that -- you know, because if
14 an applicant wants a RTNSS evaluation at the CP stage,
15 then RTNSS is very prescriptive. There is a lot that
16 is in RTNSS. And, you know, they would have to
17 provide a full scope PRA.

18 CHAIR BIER: Okay. Thank you.

19 MS. ROSENBERG: So --

20 MEMBER MARTIN: Well, I'm late to RTNSS
21 and of course the topic in general. I feel like at
22 the CP stage -- again, we're talking just light-water
23 reactors -- the applicant would come in with a very
24 specific objective because these are really just
25 provisions from the standard, Reg. Guide 1.70.

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1 I think an objective wouldn't be a full
2 review of anything. It would be a targeted delta
3 review of what they need. We can hear that later as
4 you died your -- you know, I had to go -- I dug up, to
5 answer my earlier question about what does the
6 environmental report folks do.

7 And at the CP stage, all they say is the
8 CP application should provide the best information
9 available to assess SAMA and SNDRS. There is no
10 capability category, statement. It's just the best
11 available, which is all you really have at the CP.

12 So, you know, and maybe you're going to
13 get into in a second on public comments, but certainly
14 my immediate reaction is this needs to be controlled
15 a little bit to target what is essential at that stage
16 and shouldn't trigger major reviews. It should be
17 focused on best information available, consistent with
18 what they are already doing within ER.

19 MS. ROSENBERG: Absolutely. This was just
20 to -- there are some licensees that feel they have a
21 certain readiness at, you know, construction permit.
22 And if they are interested in getting certain
23 finality, you know, we are going to review it for
24 them.

25 MEMBER MARTIN: That's probably what they

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1 get for it. I mean, I don't know. Are you just a
2 glutton for punishment sometimes? You would hope
3 that, you know, their licensee people will say, all
4 right, we are going to take a very measured approach
5 to our review here and not ask for trouble, but.

6 MR. VASAVADA: This is Shilp from the
7 staff. To your point and to Stacey's point, the
8 regulations do allow licensees to identify any aspect
9 when they need a final decision at the CP stage. So,
10 again, it depends upon the license of the applicant to
11 determine where they are on their spectrum and what
12 they want. And as Stacey said, we will adjust
13 accordingly.

14 MEMBER MARTIN: Nothing is final at this
15 stage.

16 CHAIR BIER: Vesna?

17 MEMBER DIMITRIJEVIC: Yes. I have a -- I
18 have a question. But before my question, I want to
19 make a comment on something which you said for Dave.
20 You said that the applicant is supposed to do
21 uncertainty analysis. But this was one of mine main
22 concerns when I was reading through this.

23 This is not typical in the sense the
24 analysis that is done that here that should be more
25 identifying sources of uncertainty. Because if you

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1 don't have in a sense complete, you are at a different
2 stage of completing design doing the certainty parts
3 doesn't make any sense because it is difficult to
4 estimate uncertainties of so many incompleteness.

5 So uncertainty analysis should be
6 different than what is expected. The more we develop
7 PRA is more just identify sources of certainties and
8 how could they impact the results. That was just a
9 comment on what you said on uncertainty analysis.

10 My question is connected, but you have in
11 this ISG separated some discussion on passive
12 components and so if it is connected with the passive
13 components and also you have this RTNSS for the
14 passive -- separated for passive components. Can you
15 comment on that, why and how you separated then make
16 action from these, you know, passive features.

17 MS. ROSENBERG: I'm not sure I understood
18 the question. Did you?

19 MEMBER DIMITRIJEVIC: For the separation
20 from what we see, usually, you know, the guidance,
21 here you added these passive -- you have a section in
22 ISG, for example, a section is called, regulatory
23 treatment on non-safety system for designs with
24 passive safety systems, right? And then you have also
25 previously that covers the end. And you have passive

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1 safety system reliabilities subsection. What was your
2 main concern about passive systems and why are those
3 sections there?

4 MS. NEUHAUSEN: So I don't know that there
5 was any particular concern with passive systems, but
6 we do expect, you know, designs that we previously
7 made would have come in under Part 52 that were
8 passive designs, I think we are expecting to see those
9 in the construction permit come in under Part 50, and
10 so we wanted to address those in Part 50.

11 And for RTNSS, that's, you know, I think
12 we followed something similar to our SRP. So RTNSS
13 has a separate, you know, SRP Section 19.3. So that
14 had its own section in this ISG and then also SRP 19.0
15 I don't know if there's a heading for it. But there
16 is a specific discussion of passive safety system
17 reliability. And so we were -- consistent with the
18 SRP, which we used for Part 52.

19 MEMBER DIMITRIJEVIC: Well, see, this is
20 sort of disappointing also to me because I thought you
21 tried to make an additional step that connecting to
22 uncertainties. And you discussed this very well on
23 this thermal hydraulic type uncertainty in this
24 passive system reliability. And that was the concern.

25 And also in this last section on the --

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1 let me just find that. So I thought that you had made
2 some time to introduce something new here because most
3 of other things is just, you know, the PRA standard,
4 the connection. No safety systems which -- you also
5 have discussion that non-safety system, which result
6 in actuation of passive systems should be situation.
7 So, okay. I mean, I thought that that was some
8 attempt in something, you know, new. So all right.

9 CHAIR BIER: Dennis?

10 DR. BLEY: I want to get back to the thing
11 I asked earlier. As you went through the slides,
12 especially the ones describing what needed to be in
13 the preliminary safety analysis report, you kind of
14 covered the things I was looking at.

15 And I see bullets scattered through the
16 ISG that hit on this. But I think something concise
17 saying one of the key things we want to see out of
18 this PRA is identification of the knowledge gaps in
19 each area, what's missing. And Vesna's comment about
20 what you can do with uncertainty is right. But you
21 have a bullet on that, sources of uncertainty need to
22 be described. But somewhere to say we want to know
23 exactly what is not there, how important it might be
24 and what's the plans for gathering that data in the
25 future, if it's data or if it's new analysis. It just

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1 doesn't leap off the page to me.

2 I think you're right. It's kind of
3 scattered around everywhere and sort of covered. But
4 to me that's one of the big things you would want to
5 see out of this. So for your later reviews it would
6 help you focus. And for the applicants later work
7 without them focus as well. And I don't see it
8 concisely stated anywhere.

9 MS. ROSENBERG: Thank you.

10 CHAIR BIER: I have a few questions from
11 my read of the document, most of which are pretty
12 minor. One of them relates to some of the discussion
13 we just had on uncertainty. But I will just go
14 through chronologically and raise them just for you to
15 consider.

16 Under event sequence analysis, I am an
17 event tree person. So I had no problem with the
18 statement, a summary of the event tree for each
19 initiating event. But back a while ago, there was
20 still people doing large fault-tree models. Is that
21 still a thing and are you intending to preclude that
22 or is that just an oversight in the way this is
23 written or what are you anticipating?

24 MS. ROSENBERG: I think I will have to
25 look into that.

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1 CHAIR BIER: That's fine. Let me see.
2 Okay. Under uncertainty analysis, you talk about CDF
3 and LERF. And CDF obviously is because this is for
4 light-water reactors.

5 Have you thought about what a CP PRA might
6 start to look like for other reactor designs where CDF
7 would not be the main metric and would most other
8 things in this document look similar or that is really
9 premature and you haven't discussed that yet.

10 MS. ROSENBERG: We haven't discussed this
11 as a part of this opening question.

12 CHAIR BIER: So you're thinking about it
13 but nothing at this stage to share? Okay.

14 So the next comments that I have really do
15 deal with this topic of uncertainty. And this is
16 going to be discussed in much more detail this
17 afternoon. So some of you may want to tune in then if
18 you are available.

19 But, you know, one question is just is it
20 possible for uncertainties to be too large that you
21 might look at that and say, hey, these people don't
22 know what they are doing enough to be ready to have a
23 CP.

24 The other question, which is more related
25 to what the other discussion has been is just I would

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1 assume that large uncertainties would be assigned that
2 some further research or data collection or design
3 enhancement or whatever would be needed to address
4 those uncertainties. So do you want to talk a little
5 bit about how the uncertainty would be used?

6 MS. ROSENBERG: You know, uncertainty is
7 a cross-cutting issue, right? So I guess it would be
8 used to see if there are any outliers, you know, just
9 that we can't -- that need to be solved, need to be --

10 CHAIR BIER: Yeah.

11 MS. ROSENBERG: -- evaluated --

12 CHAIR BIER: Okay.

13 MS. ROSENBERG: -- to deal with, yeah.

14 CHAIR BIER: I think that's fine. That's
15 what I would expect. But, again, maybe it's just not
16 as clear in the write-up or summarized concisely.

17 MS. ROSENBERG: Because we have
18 uncertainties everywhere in each segment.

19 CHAIR BIER: Okay. I think this is my
20 last comment, which is really one that -- I think my
21 confusion is just a wording issue again. It says the
22 PRA configuration plan should include a description of
23 the applicant's plan for addressing the PRA elements
24 identified as inapplicable or not plainly a well PRA.
25 I think, you know, what things are inapplicable or not

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1 meant in the CP and PRA that will then be addressed
2 later in the OL PRA, correct?

3 MS. ROSENBERG: What page are you on?

4 CHAIR BIER: Page 26, I think, the first
5 bullet under configuration plan. You might just want
6 to like highlight that and go look at it.

7 MS. ROSENBERG: I believe the statement is
8 asking for the OL to address those things that we were
9 talking about.

10 CHAIR BIER: I assumed that's what you
11 meant. I just wanted to double-check. And I think
12 that summarizes my comments. So there is no other
13 comments or --

14 MEMBER MARTIN: I have a couple comments.

15 CHAIR BIER: Okay.

16 MEMBER MARTIN: Okay. I'm going to --

17 CHAIR BIER: As usual.

18 MEMBER MARTIN: -- again slice and dice on
19 the level of detail. So after it comes in -- again
20 love my scenarios -- with a qualitative argument but
21 then provides kind of -- I can just say a capability
22 category one PRA, really more as a confirmatory role.
23 They are leading with the qualitative arguments. But
24 to support those arguments, they are providing PRA
25 insights. Does that trigger all of this extra review?

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1 Can you move forward with assessing the
2 qualitative consistent with, you know, past practices
3 and not go into -- and not recognize it as really a
4 PRA submittal at the CP stage. Is there that
5 discretion?

6 And, I guess, I think I just answered a
7 question based on our earlier conversation that it's
8 case-by-case to some extent, right? I'll let you --
9 it's not easy there, Stacey.

10 MS. ROSENBERG: It depends on design
11 readiness.

12 MEMBER MARTIN: Right.

13 MS. ROSENBERG: Right? And what the
14 application is being asked for, right? So your
15 scenario could go through if nothing specific is being
16 asked for at that time.

17 MEMBER MARTIN: Well, I mean, they would
18 be asking for -- you know, they would be presenting
19 their events, right? What is and is not a severe
20 accident? You know, what are the deviations in, you
21 know, the design basis space? What are unique
22 hazards? But they are presenting them, you know, in
23 a point-by-point kind of basis, qualitative arguments.

24 And then it wouldn't be unusual for them
25 to say the technical basis for those decisions draw on

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1 PRA insights. And then, you know, I mean a judicious
2 approach to the review might for the applicant to
3 submit only the qualitative and then have the
4 documents with the PRA kind of in reserve for review.

5 And I am not sure that gets submitted. It
6 would be recognized as being a submission. It would
7 just be a peripheral document supporting their initial
8 arguments.

9 MS. ROSENBERG: I think if they have a PRA
10 to support their arguments, so much the better.

11 MEMBER MARTIN: Right, right. Thanks. I
12 am just concerned that we are just triggering more
13 than is necessary on a review standpoint. And that
14 they have, you know, at the CP stage you get into the
15 weeds, when, you know everybody has been involved in
16 the design process, known as a whack-a-mole, right?
17 Something is wrong. You change it, and it affects
18 other things. And your PRA is the one thing that just
19 gets whacked, you know, all the way through the design
20 process. And so it is moving a lot.

21 MS. ROSENBERG: But we like to see that,
22 you know? You know what I mean? Like if something
23 changes and PRA has to change --

24 MEMBER MARTIN: Right.

25 MS. ROSENBERG: We like to see the

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1 configuration control document that and what's
2 changed. And maybe that -- it's changed because of
3 something in the PRA. And so we like to see, you
4 know, this design we changed this because we saw
5 something in the PRA. And so we made the changes, and
6 now we are doing it this way.

7 MEMBER MARTIN: Yeah. I guess my concern
8 would be if the review starts becoming a distraction
9 to the design process, it has its own kind of impact
10 on safety, right?

11 If you have an applicant going off
12 answering questions at the CP stage because of some
13 perceived incompleteness with a PRA, they are not
14 doing other things that might lead towards a better
15 design. So being around it is a safety issue if we
16 just tighten up the focus on reviews at this stage.

17 And I guess I am going to fault on maybe
18 this capability category one might even be too much
19 even though Dennis already kind of acknowledged it is
20 pretty open ended at this point, but best available
21 information. More delta review kind of targets
22 focusing on the end products of why they might
23 otherwise submit these things.

24 But I agree, I mean, internally PRA or
25 more now. Certainly, we see it with the advanced

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1 reactor designs, yes. I mean, they are moving along
2 with design process. But this is all happening very
3 much in real time. Designs are a changing dynamic.

4 And you can't necessary share that all
5 with a regulator. It is just moving too fast and to
6 share everything is really asking too much. A roll-up
7 once in a while and, you know, a pre-application
8 meeting, that's nice. But that's, you know, again, a
9 design expectation.

10 But there has got to be some limits on the
11 overall scope of review because this could really, you
12 could really take it too far. So anyway, it's all
13 setting the parameters for it.

14 CHAIR BIER: Okay. If there's no further
15 questions or comments, then Alissa, I assume, your
16 part is going to be pretty quick and then we can plan
17 to take a break after that. Is that --

18 MS. NEUHAUSEN: Yeah. I am going to
19 address the comments and then the -- I think NEI is
20 going to talk about the comments.

21 CHAIR BIER: I think we will take a break
22 before NEI and after your part. Thank you. Go ahead.

23 MS. NEUHAUSEN: So we received 12 comments
24 during the public comment period. Nine of them were
25 for NEI and three of them were for NuScale. Staff has

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1 agreed with five of the comments and made changes to
2 the ISG. And we partially agreed with three comments
3 and made changes to the ISG. And there were four
4 comments and made no changes to the ISG.

5 For the next couple of slides --

6 CHAIR BIER: Pull your mic a little
7 closer. Yeah.

8 MS. NEUHAUSEN: I have broken up the next
9 seven slides into -- instead of agreed/disagreed, they
10 are more based on topic area.

11 So two comments requested additional
12 clarity. Staff agreed on amending the ISG to clarify
13 that the ISG provides guidance on the staff review of
14 the descriptions in the SCR not on the acceptability
15 of the PRA.

16 The staff responds and clarifies that the
17 guidance is for the PRA information required to be
18 reviewed for a CP if PRA information is used in the
19 submittal as we discussed earlier.

20 Five comments requested clarity for
21 adjustments to the minimum elements in scope of the
22 PRA. Staff agreed, partially agreed and disagreed
23 with various portions of these comments.

24 Staff modified the ISG to clarify that the
25 minimum scope for a CPA that uses PRA information is

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1 an at power internal events PRA. If PRA information
2 for other hazards is used to support the CPA, staff
3 would review those hazards. Otherwise, staff will
4 focus on the applicant's plan for assessing risk
5 contributors not addressed by a PRA or alternative
6 risk valuation in the OLA.

7 Staff did not modify the ISG to remove a
8 discussion of preliminary results or risk evaluations
9 from its review. At the CPA, all results are
10 preliminary. However, we believe the comment is
11 addressed by not requiring hazards other than integral
12 events.

13 Staff modified the ISG to clarify that a
14 PRA is not required to determine licensing basis
15 events for a Part 50. Staff agreed there may be
16 hazards for which a PRA does not offer additional
17 insights at the CP stage. And if PRA information is
18 not used for these hazards to support the CPA, staff
19 would not review them.

20 Hazard risk evaluations are not required,
21 consistent with SRM 232-0052 as long as they are not
22 used to support the construction permit application.

23 One comment stated that the hazard
24 assessment requirements go beyond traditional design
25 requirements for safety-related SSEs.

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1 All hazard assessments are not required
2 for the construction permit application. So the staff
3 will look for some assurance that the applicant has
4 considered potential impacts and hazard assessments.
5 And further the PRA used in a confirmatory manner does
6 not convey design requirements.

7 One comment requested additional
8 clarification that supporting requirements may not be
9 applicable or may not be reviewed. The staff
10 reiterated an existing discussion in the ISG to make
11 it clear to staff that all supporting requirements
12 endorsed in industry standards may not be applicable
13 to a CP. I think we discussed that one earlier.

14 One comment requested references for
15 alternative risk evaluations. In this ISG, staff is
16 not endorsing a particular alternative risk evaluation
17 in the guidance. Prior applications can be reviewed
18 for previously used methodologies.

19 One comment requested a change to a
20 statement to include in the ISG on passing safety
21 system reliability. The statement that we used is
22 consistent with SRP Section 19. It indicates to the
23 staff why passive safety system reliability may be
24 important to certain reviews.

25 Obviously, we are not necessarily stating

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1 in the ISG that this statement is applicable to all
2 review although that statement is important for
3 reviewers in understanding their role for reviewing
4 the construction permit application PRA.

5 And the last one -- one commenter
6 requested that the guidance verify that RTNSS may not
7 be identified for all passive plant designs. So we
8 clarified that this may be the case. The resolution
9 to the comment discusses that the process for
10 identifying RTNSS should determine that output but
11 consistent with design certification reviews there may
12 not be RTNSS identifiable at all times.

13 That's all the comments.

14 CHAIR BIER: Okay. Any further questions
15 or comments for staff before we take a break? Well,
16 we have an external comment with the hand raised, but
17 I think we will take that later in the time for public
18 comments if that's acceptable.

19 So with that, I think we are on break and
20 be back around 10:20 to hear from NEI.

21 (Whereupon, the above-entitled matter went
22 off the record at 10:06 a.m. and resumed at 10:20
23 a.m.)

24 CHAIR BIER: We are now back in session
25 after break and ready to hear from Jon Facemire from

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1 NEI.

2 MEMBER PETTI: I think your mics on mute.

3 CHAIR BIER: sorry. Thank you. I got one
4 mic and not the other.

5 Okay. We are now back in session. And
6 ready to hear from Jon Facemire from the Nuclear
7 Energy Institute and then after that we will have
8 public comments from anyone else. Thanks.

9 MR. FACEMIRE: Thank you. And thanks for
10 the opportunity to present today. My name is Jon
11 Facemire. I am a senior project manager in the New
12 Nuclear Group at NEI.

13 A little more on my background. I have
14 been with NEI for about two years. Prior to that I
15 was at X-Energy, where I was a licensing manager and
16 developing our licensing modernization project
17 preliminary safety analysis report. So I have spent
18 most of the last four years thinking about what level
19 of risk information is good enough for construction
20 permit application.

21 Prior to that I was Jensen Hughes
22 supporting the operating fleet, the best informed
23 completion times, 5069, basically any risk-informed
24 application. I worked for Exelon and various clients
25 throughout the industry.

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1 I really appreciated the conversation this
2 morning. I do want to have the scenario that was in
3 my mind. If I was a light-water reactor applicant, I
4 would a PRA to give me confidence that the licensing
5 basis event selected in my preliminary safety analysis
6 report were complete, right? That would be my goal.

7 As the staff noted, there is a lot of
8 different potential use cases for the PRA, but that's
9 kind of what I had I mind going in.

10 CHAIR BIER: Jon, can you just pull the
11 mic a little closer. Thanks.

12 MR. FACEMIRE: Sure. How's that? So
13 yeah, a lot of the comments made by Member Bob Martin
14 resonated. They made a lot of sense to me. And that
15 is really the one comment that we did feel was
16 outstanding and needed to be further addressed in the
17 staff guidance.

18 So I will go through the slides. NEI did
19 provide comment on the interim staff guidance. We do
20 appreciate that seven of the nine comments were
21 addressed or partially addressed. Thanks to the NIC
22 for that clarification.

23 But our remaining comments are really
24 focused on consistency with the level of detail
25 required for construction permit PRA information,

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1 specifically the guidance that sits in Reg. Guide
2 19.253, Appendix A.

3 We think that it's really, really
4 important that the expectation for a light-water
5 reactor and a nonlight-water reactor be similar for
6 what's good enough for a PRA at the CP stage.

7 We also were looking forward a little bit
8 to implementation of the ADVANCE Act implementation,
9 how this guidance could be used down the road for Part
10 53. So some of the background we go into -- leans
11 into the guidance in those documents.

12 CHAIR BIER: If you could pause for a
13 moment, apparently some of the people online cannot
14 see the slides. And I doubt that's a problem on your
15 end. But can we get Thomas or somebody to look at
16 that?

17 DR. BLEY: Yeah, I can't see the slides.

18 CHAIR BIER: Okay.

19 MR. PALMTAG: This is Scott, I can see
20 them.

21 MEMBER PETTI: I have had this problem
22 historically so I thought it was just me. But I see
23 others have problems.

24 MR. SNODDERLY: So it sounds like other
25 people can see them. What I would ask Member Petti

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1 and Dennis, Consultant Bley, could you please log out
2 and log back in if that would help.

3 MEMBER PETTI: Sure.

4 CHAIR BIER: That usually is the solution.

5 MR. SNODDERLY: Thank you.

6 CHAIR BIER: I think we can go ahead then,
7 and we'll see how that goes.

8 MEMBER MARTIN: I have a question. Now
9 you had this comment on your previous slide looking
10 for consistency for LWRs and non-LWRs. Are you sure
11 that that's what you want?

12 Because I think I can, you know, moving
13 forward in a world where we have, you know, Part 53
14 where we have PRAs kind of leading the design process
15 and that they are the initial basis for those kind of
16 decisions as opposed to Part 50, where it has kind of
17 been led by more deterministic thinking. And PRA,
18 integration of PRA has been more of a confirmatory
19 role. That would seem to apply a different focus in
20 the different domains. And, you know, Part 52, I
21 think is more kind of in the confirmatory realm too,
22 but it is obviously a move towards a greater
23 integration of PRA.

24 It would, to me, be different paths when
25 it comes to, you know, how an agency here would look

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1 at that and how an applicant might want the agency to
2 look at it, you know.

3 MR. FACEMIRE: Yeah. So I am making that
4 comment in the context of our broader comments on Part
5 53 that PRA should not have to play a leading role in
6 the licensing of nonlight-water reactors. There are
7 certain applicants who want to pursue a more
8 deterministic maximum hypothetical accident approach.
9 We think that that should be appropriate and that --
10 well, we agree with the staff that the application of
11 the PRA should determine the level of detail needed
12 for the PRA.

13 If you are following LMP, right, back a
14 little bit more. If you are following MHA, then the
15 level of PRA information should be way less.

16 MEMBER MARTIN: Right, right. Then it
17 still becomes kind of a case-by-case --

18 MR. FACEMIRE: Yup.

19 MEMBER MARTIN: -- depending on, you know,
20 claims of graded approach or whatever, which actually
21 kind of complicates it for everybody. But, you know,
22 it's hard to find that one size fits all approach
23 under the realm of being consistent. You know, not an
24 easy task for anybody.

25 MR. FACEMIRE: Understood. All right. So

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1 the specific language. And Reg. Guide 1.253 that we
2 feel is quite appropriate and that we want to better
3 align with this interim staff guidance on this page.
4 So, yes, identifying hazards and plan operating
5 states, being comprehensive and systematic. I do
6 think we want to look for areas of concern. And we
7 should disposition them.

8 But they can be dispositioned in a lot of
9 different ways. They can be dispositioned with the
10 PRA. They can be dispositioned with acceptable
11 screening methods or risk-informed supplemental
12 evaluations or crediting design basis hazard levels.

13 Now design basis hazard levels are kind of
14 specifically defined in LMP. But we are trying to
15 interpret that a bit more broadly. We see that as
16 traditional hazard analysis should be acceptable. And
17 in the later slides we get into some of the Part 53
18 language that we think supports that.

19 Page 33 from Reg. Guide 1.253 regarding
20 PRA acceptability, minimum scale at a CP is at power,
21 internal events only. We were happy with the common
22 evolution on that piece of it.

23 But the piece that we feel was not
24 dispositioned fully was the CP applicant may be able
25 to disposition certain hazards by crediting design

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1 basis hazard levels in lieu of explicitly modeling
2 these hazards in the PRA.

3 We felt that the PRA guidance and the
4 supplemental evaluation guidance go beyond this
5 statement, which would allow you to use traditional
6 hazard analysis in lieu of a PRA or a supplemental
7 evaluation.

8 I will pause there.

9 MEMBER MARTIN: I will bring up my comment
10 from earlier regarding, you know, what I think would
11 be an objective of any applicant, which would be not,
12 you know, duplicate efforts when it comes to preparing
13 PRAs for environmental report and/or CPA. Did you put
14 much thought into that? Obviously, you mentioned your
15 experience with X-energy. Did that come up in your
16 own experience? And did you bring that to NEI?

17 MR. FACEMIRE: You know, we leveraged the
18 PRA. It was a full power internal events PRA with
19 either supplemental evaluations or deterministic
20 hazard analysis. And those identified are candidates
21 of near accidents that we analyzed for purposes of the
22 environmental report and scanned those.

23 MEMBER MARTIN: Right, right. But you
24 wouldn't necessarily be looking at that for an LWR,
25 you know, situation. It kind of seems -- again, and

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1 I am your -- I was the -- I am the X-energy design
2 center lead. So, you know, I am particularly
3 interested in your last four years, but moving towards
4 LWR space.

5 You wouldn't necessarily want to apply
6 that mindset, you know, for new --

7 MR. FACEMIRE: Is that a question of the
8 licensee in my mind?

9 And then the longer one, and this gets
10 into the supplemental risk evaluation guidance. In my
11 mind, this language in Reg. Guide 1.253 pointing back
12 to NUREG 1855 is really sufficient.

13 It kind of gets to the discussion of this
14 morning, right? There are many ways to address the
15 risk triplet, some of them quite conservative. Like
16 one of our very initial buyer screenings at X-energy
17 was assume everything outside of the reactor building
18 burns down at a frequency of one, show that you are
19 still safe even for that very, very conservative
20 scenario and that's it.

21 I don't think that meets the supplemental
22 evaluation guidance because we didn't put a lot of
23 thought into the initiating event scenario there. It
24 was just fill it all. We're still fine.

25 So our concerns are largely about what is

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1 the minimum acceptable for the supplemental
2 evaluations for hazards.

3 Some other items, pointing back to the
4 staff requirements memorandum around Part 53, some of
5 the guidance in there, screening tools and bounding
6 are simplified methods may be used for any modes
7 and/or hazards. And the staff should not apply
8 consensus PRA standards as a strict checklist of
9 requirements, again getting back to the idea that
10 deterministic traditional hazard analysis approach in
11 our mind should be appropriate and then would make
12 this interim staff guidance applicable to Part 53 as
13 well.

14 So looking at efficiency, we think there
15 is a potential for this guidance to not just be
16 applicable for the current regulatory pathways
17 available, but could be applicable for Part 53 down
18 the road.

19 And then the Part 53 proposed tool
20 language reflected some of that guidance. So the PRA
21 can be used in combination with generally accepted
22 approaches or systematically evaluating engineered
23 systems. And there is flexibility in determining the
24 degree to which the PRA needs to be developed.

25 I am trying to keep hammering this home.

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1 But I think there is also in a wide range of
2 applications this same concept is coming through. And
3 it is really important for implementation of the
4 ADVANCE Act down the road.

5 So the language in Section 208 for the
6 regulatory requirements for microreactors is that the
7 commission shall develop risk-informed and
8 performance-based strategies and guidance, including
9 strategies and guidance for risk analysis methods,
10 including alternatives to probabilistic risk
11 assessments. Although another opportunity, it doesn't
12 have to be PRA if you can justify it based on bounding
13 risk deterministic methodologies and hazard analysis
14 should be sufficient.

15 CHAIR BIER: A quick question on this Jon.
16 It sounds like the staff has been saying that they are
17 happy to consider alternative methods, but don't want
18 to prescribe specific alternative methods. Is that
19 agreeable with you or do you wish they would go
20 farther?

21 MR. FACEMIRE: So one of my concerns from
22 my experience as an applicant was not knowing what was
23 good enough, particularly for a buyer which has been
24 a point of contention in the past. We wanted to
25 provide enough information that we wouldn't be stuck

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1 in regulatory limbo for a very long time. And we
2 didn't feel that we had enough confidence in what was
3 sufficient in that area in particular. But there are
4 others.

5 MEMBER MARTIN: Don't you see -- I mean,
6 the way I see this, you have kind of contradictory
7 objectives. You want all the flexibility, but you
8 want to also have absolute certainty that you provided
9 the right amount of information.

10 It makes, you know, quite a challenge to
11 craft those kind of rules or, you know, expectations.
12 So I'll turn to the staff and go, you know, I can
13 appreciate the challenge you've got when you're trying
14 to do all things in this case, but --

15 MR. FACEMIRE: Yes.

16 MEMBER MARTIN: -- I don't have the job.

17 MR. VASAVADA: This is Shilp from the
18 staff. I was going to say and to add to that, we have
19 to accommodate a broad spectrum of properly designed
20 maturity by licensing applicants. It's more than just
21 focus on the LMP or something like that. There can be
22 different ways of doing it.

23 So trying to be as accommodating as we
24 can, but it is providing the bare minimum to make sure
25 that there is consistency, accuracy and

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1 repetitiveness.

2 MEMBER MARTIN: Yeah, I mean, I can
3 appreciate the broad vision, you know, for the role of
4 PRA at different stages of application. But here, of
5 course, we are focused on Part 50 and LWRs and a
6 relatively narrow scope.

7 I just feel like you can kind of -- you
8 can do better than what we have right now and provide
9 meaning and provide a little more flexibility and a
10 little bit more certainty without trying to, you know,
11 take on the whole thing that, you know, maybe a Part
12 53 is trying to do. You know, but I certainly
13 encourage a separation of that long-term vision just
14 for the near-term objective.

15 MR. FACEMIRE: And we'll get to it on one
16 of the last slides. But in this specific context, we
17 are not asking for significant changes. And that
18 Table 2 right now, there is the PRA pathway. There is
19 a supplemental evaluation pathway.

20 And our suggestion, our proposed
21 resolution, is a traditional pathway, right, that if
22 at your CP application you have a deterministic hazard
23 assessment, like do you have a fire safe shutdown
24 analysis, that should be good enough.

25 MR. VASAVADA: I'm sorry. This is Shilp

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1 from staff. Can I jump in?

2 MEMBER MARTIN: Sure.

3 MR. VASAVADA: So I wanted to kind of go
4 back and redirect what Stacey had said during the
5 presentation. I used ideas from the staff in cases
6 where the applicant chooses to provide that type of
7 risk assessment information.

8 If an applicant chooses to do it
9 differently, deterministically, then a lot of this
10 would not be something that the staff would want to
11 look at in the PSAR. We would be looking on the PSAR.
12 So I just wanted to also make that scoop of the ISG
13 clear.

14 It's if f the applicant chooses to provide
15 certain diagnostic information. It is not meant to be
16 like the replacement for Reg. Guide 1.17.

17 MR. FACEMIRE: So going forward, I'm not
18 going to go through all the comments for the most
19 part. We were relatively happy with how they were
20 addressed. The one that we felt was not addressed
21 that was specifically around those hazard evaluations.
22 We felt that the supplemental evaluations are asking
23 for more.

24 And, you know, so leaning into the 1.253
25 language, our outstanding issues both for hazard

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1 assessment and for low power shutdown risk, we didn't
2 feel like the guidance for supplemental evaluations go
3 beyond what should be required at the CP stage.

4 As you all have said, we understand this
5 guidance was for those who choose to provide that
6 piece of information. But one thing that wasn't
7 clear, like, what we had envisioned was that there
8 might be situations where you want to provide that
9 full power internal events PRA, right? In my mind,
10 that makes a lot of sense. You can do it very early
11 based on the design maturity that you have. You can
12 meet most of the elements.

13 And our interpretation, and it sounds like
14 this was wrong, was that if we provided that internal
15 events PRA information, then we would need to also
16 provide the supplemental evaluations for the other
17 hazards in the lower modes. If that was not the
18 intent, and it sounds like it wasn't, maybe we misread
19 that.

20 But from a human factors perspective, like
21 those Tables 1 and 2 certainly implied that in our
22 reading of it. And some clarity that that was not the
23 intent would be appreciated.

24 But our suggestion was just to put a third
25 column in the table that says traditional analysis,

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1 traditional hazard analysis, traditional lower modes
2 and a qualitative assessment, we thought that provided
3 clarity. I do acknowledge there is multiple ways to
4 do that. And that was the end of my slide outside of
5 acronyms.

6 CHAIR BIER: I guess on that last point,
7 and following up on staff that if somebody is doing a
8 traditional deterministic type analysis, staff would
9 not be using this ISP, I guess the issue might be if
10 somebody wants to do traditional deterministic on some
11 hazards and maybe PRA on other hazards may be why it
12 would be worth having it in the tables. Just a
13 thought. Is that kind of where you are headed, Jon?

14 MR. FACEMIRE: Yeah, or the Reg. Guide
15 1.70 guidance is quite old.

16 CHAIR BIER: Okay.

17 MR. FACEMIRE: I am looking for somewhere
18 to tell us what's good enough for a CP given how the
19 regulations have evolved over the years. And I saw an
20 opportunity in this interim staff guidance. But I
21 understand the scope as discussed this morning.

22 CHAIR BIER: Okay. Do we have further
23 questions or comments for Jon now that you have
24 completed your presentation?

25 MEMBER MARTIN: Maybe just one

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1 clarification. Maybe, you know, pull the staff back
2 in. Reg. Guide 1.253, I didn't see it in the ISG.
3 I'm looking at the staff. What's your feeling about
4 Jon's comments relating to more integration of that
5 Reg. Guide here?

6 MR. VASAVADA: And so as Stacey talked
7 about in the presentation, we had great representation
8 from a group that --

9 CHAIR BIER: Yeah, Shilp can you pull your
10 mic closer? Thank you.

11 MR. VASAVADA: I will start again. So we
12 had great representation in the working group from the
13 folks who are already closely tied to Reg. Guide -- or
14 Draft Guide 1.253.

15 And we brought a lot of the concepts that
16 we could, recognizing the defense in the scope. That
17 one is focused, and if I am understanding correctly,
18 primarily on LMP. So there's like a set, you could
19 say. You know when the PRA is going to be useful and
20 how it is going to be used.

21 There is a lot of body of evidence over
22 there to support that. Over here, again as I said, it
23 is a much broader spectrum. I am not going to say a
24 majority but also what it is going to be used for in
25 there and different places.

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1 So to the extent that we could, we were
2 able to bring in all the elements, or the necessary
3 elements of, especially the minimum needs of the PRA
4 for all events and the others. It pretty much mimics
5 1.253 because we caught that information from those
6 folks, and we thought it would be applicable LWRs.

7 So the short answer is, to the extent that
8 we could, we brought those elements in. But we do
9 recognize the defense in the scope that we were trying
10 to help staff achieve. But this guidance for LWRs
11 compared to what was in Draft Guide 1.253, which is
12 where some of the defenses exist.

13 MEMBER MARTIN: Yeah, I would certainly
14 agree with this. You don't want to hold LWRs to a
15 higher standard, particularly when you are in hazard
16 risk evaluation. You know, to an earlier point about
17 delta reviews, that is really how you -- you know, an
18 applicant or how I see an applicant using, you know,
19 or being informed by this ISG, which is to say, you
20 know, more properly.

21 Again that has kind of been my biggest
22 concern is trying to find the balance and, you know,
23 it all comes down to kind of case-by-case and how the
24 applicant -- and I don't know if there is really much
25 we can do outside of that. But very difficult to

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1 provide the clarity and the flexibility at the same
2 time.

3 One thought is, you know, to the staff's
4 comment, here, you know a second ago, the range of
5 maturity -- I'm not getting -- in the interest of
6 simplifying and providing more clarity, can we make an
7 assumption at the construction permit stage? And, you
8 know, it is 10 to 20 percent complete. And then, you
9 know, kind of craft guidances on assumption that you
10 don't have that maturity. And, you know, you're not
11 trying to do more than necessary.

12 I know, again, Stacey mentioned, you know
13 -- or maybe you did, too. But the finality, you know,
14 there might be some aspect of the design that
15 applicant feels they can get some finality. But not
16 -- maybe that just doesn't get handled at the
17 construction permit. It's just, you know, carved out
18 for a longer term, a consideration.

19 But focusing strictly on CP, I think you
20 could just eliminate the maturity question and just
21 accept that it is only going to be, you know, 10 to 20
22 percent mature. And that there is a certain freedom
23 that comes with that at that point. I understand the
24 next piece.

25 MR. PHAN: May I?

1 MEMBER MARTIN: Underneath the mic over
2 there.

3 MR. PHAN: So this is Hahn Phan. I am the
4 senior PRA analyst.

5 In the past I left many application for
6 non -- for AWRs, for AWRs, for Part 2 application. In
7 this interim staff guidance there are inconsistencies
8 with the elements included in the interim staff
9 guidance.

10 Personally, based on my experience and
11 information submitted to the NRC in the past for
12 whenever there are sufficient information data in
13 model that the applicants, under their rules, their
14 expectation, they could come up to the PRA standard
15 threshold. Most of these applications include low
16 power shutdown. Right now under the transformation,
17 there is no requirement of PRA under Part 2.

18 So that is up to the applicants. But for
19 the staff, after the application, as far as public
20 confidence in the application is the applicant
21 understand rules they can come up with a model of the
22 PRA that will start the insights for low power and
23 shut down and other actions if they are willing to do
24 so. So why we have included that there? Because that
25 is there if they want to. Thank you.

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1 MEMBER MARTIN: Thank you.

2 MR. FACEMIRE: Just on the conversation a
3 little more. My experience was at a CP stage, you
4 don't have cable tracing. Very, very hard to do a PRA
5 without cable tracing. You don't have all the pipe
6 layouts yet. Very hard to do an internal flood PRA
7 without pipe.

8 You don't have operating procedures. It
9 is very hard to meet the HRA elements without
10 operating procedures. So those could be some pieces
11 where examples like, I pulled up during the meeting HR
12 E.1, I called that operating procedures explicitly.
13 Like just an example that it is fine that some things
14 are not applicable and not a capability category one,
15 I think, would be very useful to give applicants
16 assurance that they are not going to get in trouble
17 for meeting a standard that is impossible for them to
18 meet at this stage.

19 I do understand and I appreciate that it
20 is in words that exam itself.

21 CHAIR BIER: You may also not have
22 equipment elevation. So it would be difficult to do
23 external flooding. Other questions or comments before
24 we turn to public comments?

25 Okay. So I know that --

1 MEMBER PETTI: There's a hand.

2 CHAIR BIER: Yes, I know we have a public
3 comment waiting from Bob Budnitz, if you want to go
4 ahead now?

5 MR. BUDNITZ: Can you hear me?

6 CHAIR BIER: Absolutely.

7 MR. BUDNITZ: This is Bob Budnitz. I am
8 in Berkeley. I want to talk about seismic margins
9 methods. If you go back to the NRC slides, and you
10 don't have to do it. But there are two tables that
11 are taken from the Draft Reg. Guide. The one table
12 about the one table about the elements of an internal
13 events PRA and then the second table talks about
14 external hazards, various kinds of hazards. And
15 alternative, it uses the phrase alternative risk
16 evaluation methods for those.

17 And under seismic in that table it says
18 either a seismic PRA or a seismic margin analysis.
19 And in other words, at the CP stage, according to the
20 Reg. Guide, a seismic margin analysis would be an
21 adequate way of understanding the risk -- to aid in
22 decision-making, whether it is acceptable or not.

23 And I want to make a point about seismic
24 margins analysis that I hope everybody understands,
25 which is that the seismic margin analysis does not

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1 produce what we traditionally think of as a risk
2 estimate. It is not a risk estimate.

3 By the way, core damage frequency is
4 directly related to risk, although it is not a risk
5 estimate either. But what the seismic margin analysis
6 method produces is for an individual component, it
7 produces what we call a HCLPF capacity, H-C-L-P-F, a
8 high confidence, low probability failure capacity for
9 a component. And if a cut set has four components, it
10 produces a HCLPF capacity for the cut set, for a
11 sequence.

12 And if you roll those together, you can
13 come up with a HCLPF capacity for the plant as a
14 whole. But that HCLPF capacity is only related to the
15 risk if you know something about the hazard.

16 Let's suppose that the plant level HCLPF
17 capacity is .5g. I just made that up. Well, that's
18 a very different risk in the West than it is in New
19 England. And it is very different in New England than
20 it is in Florida because the seismic hazard is so much
21 different by large factors between those different
22 areas of the country.

23 So the notion that the seismic margin
24 assessment is a risk evaluation is in my view, well,
25 it's a little dicey. It can only be a risk evaluation

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1 if you know something at least about the hazard, the
2 seismic hazard, at the site so that you can do a rough
3 convolution and understand what the real risk actually
4 is.

5 And I am making that point because you
6 shouldn't be misled to think that a seismic margin
7 assessment, as useful as it is, is by itself a risk
8 evaluation.

9 On the other hand, if it is a CP, you have
10 a site. You might not know the seismic hazard as well
11 as you really would like at the end. But you know
12 something about the hazard for sure because we know
13 something about the hazard in every site in the U.S.

14 And therefore, you can get your arms
15 around it, But I just want to make that point. It is
16 a very simple point.

17 CHAIR BIER: Okay. Thank you very much,
18 Bob.

19 MR. PHAN: Hello, Dr. Budnitz. This is
20 Hahn Phan, NRC.

21 MR. BUDNITZ: Hi, Hahn.

22 MR. PHAN: Hello. In response to your
23 position. According to the SRM, on the SECY-93-087,
24 the staff not reviews these assignment margin
25 assessments. The staff focus on the PRA-based

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1 estimate which the models place on the internal
2 defense PRA. And that gives us insight. It rarely
3 went to the risk not just the -- in a success path or
4 any of the deterministic. But the staff get risk
5 insight from the PRA-based estimate. And we expect
6 applicant to address assignment using that
7 methodology. Thank you.

8 MR. BUDNITZ: By the way, Hahn, I
9 completely agree. There are very important insights.
10 The point I was making was that those important
11 insights should not be considered as -- they are not
12 by themselves a risk estimate, even though the table
13 calls them a risk estimate. It is not as close as
14 surrogate as CBF is to risk. Okay?

15 And just to make a point for some people
16 on the call that don't know, a seismic margin method
17 was invented in 1984 by an expert panel that I
18 chaired. And if you think that was 40 years ago, you
19 are off by one. So it's been around.

20 We were there at the time trying to do
21 something to get our arms around a surrogate for risk,
22 by the HCLPF capacity is a very useful, but certainly
23 not a direct surrogate for risk. Okay?

24 CHAIR BIER: Thank you. Any follow-up
25 after Bob's comment? I appreciate you providing that.

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1 Are there any other public comments either
2 in the room or online, on the phone? If you are
3 online, you can raise your hand. If you are on the
4 phone, I guess you can just unmute and introduce
5 yourselves.

6 MEMBER MARTIN: Is that still Bob's hand?

7 CHAIR BIER: I think that's still Bob's
8 from before. So I think we've heard from him. If
9 there is no further public comment, then we should
10 take at least a few moments for committee discussion
11 to see how we want to proceed on this topic.

12 My own sense, which members are happy to
13 disagree with if they want, my own sense is this does
14 not require a letter because really most of the impact
15 of this is commercial, not safety-related.

16 But if there are safety problems, we have
17 the whole OL process that will hopefully capture that
18 with much more detailed PRA information and that at
19 the CP stages, there are issues first of all of just
20 licensee liability of going forth with the CP approval
21 that then may not receive an OL if some of the
22 justifications are not there. Or, as Jon as
23 mentioning now of, you know, just the regulatory of
24 limbo of you provided what you thought was good enough
25 and then I turns out it wasn't good enough, and there

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1 is an iteration of getting the CP approval.

2 But, you know, while I think the
3 discussion here has highlighted a lot of good insights
4 that hopefully the staff will take away, I don't know
5 that any of them rises to the level that I would see
6 as writing a letter on.

7 But if anybody else on the committee wants
8 to comment on that, either to, you know, state a
9 reason why a letter might be needed or even just
10 stating some points that you hope will show up in the
11 meeting summary, I am happy to hear those.

12 MEMBER MARTIN: Vicki, I will support --
13 I tried to highlight a couple, you know, issues that
14 I had. You're the lead on this. And obviously I am
15 going to follow your lead. Ultimately this is staff
16 guidance. Something they are preparing for themselves.

17 And, you know, I appreciate after hearing
18 from NEI and, of course, the staffers that, you know
19 they are trying to do lots of -- you know, solve lots
20 of different problems.

21 I guess if there was one thing that, you
22 know, I wanted to reiterate, was I think there is
23 importance of being consistent with how PRAs are being
24 prepared or to complete this level. It is expected
25 that PRAs are being prepared for the environmental

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1 report. You would want to consistency there. But
2 again, that's on the applicant side.

3 But ultimately, any applicant, you know,
4 that pursues these kind of activities needs a very
5 good, you know, regulatory affairs manager, licensing
6 managers. And experienced ones know how to navigate
7 and know how to, you know, provide the right
8 information to control the conversation.

9 So ultimately it maybe doesn't rise to
10 anything more than, you know, a nod in this meeting.
11 But hopefully we have provided some useful discussion
12 and a couple points for later consideration.

13 CHAIR BIER: Yeah. In my mind the only
14 point that was discussed that might have risen to the
15 level of a letter was a question I asked about if
16 somebody comes in with a CP level PRA and gets it
17 blessed, does that satisfy the requirement
18 automatically of an OL PRA, in which case I would be
19 very worried.

20 But since everybody has the opportunity to
21 come back and take another look, staff and ACRS and
22 everybody else at the OL stage, I think the safety
23 implications are not a huge deal that we need to
24 comment on.

25 Any further discussion?

1 MR. SNODDERLY: I got Walt.

2 CHAIR BIER: Oh, Walter. Thank you. You
3 want to go ahead?

4 MEMBER KIRCHNER: Thank you, Vicki. Bob
5 Budnitz brought up a good point. It started me
6 thinking about things. We have been talking rather
7 loosely about level of maturity of design, and we use
8 numbers that are, I think -- based on lessons from the
9 past, we probably would expect a much higher percent
10 complete design than 10 or 20 percent.

11 But what comes to mind is that the
12 applicant, and I am looking at 10 CFR 5035, the
13 applicant may request as part of a design -- a
14 construction permit application some specific
15 approval.

16 And I think early on, if you're actually,
17 you know, building and pouring concrete and rebar for
18 a facility -- I'm thinking of the containment
19 structure for an LWR, whether it is a conventional one
20 or an advanced containment design that we've seen some
21 -- you would want probably at the construction permit
22 time frame approval of that particular aspect of the
23 design. And that probably requires a fairly
24 sophisticated seismic analysis for the site with the
25 site specific ground motion spectrum, et cetera, et

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1 cetera, and all that.

2 I guess my concern here -- an applicant
3 can do that. But an applicant also choose to use
4 this PRA approach, does that become a trap? I mean,
5 the PRA, the ISG pretty much follows an outline for a
6 very complete PRA. What level of PRA will be
7 acceptable?

8 I think the comments from NEI we were
9 thinking through -- my concern is just that an
10 applicant might get in a position where they are in a
11 kind of a do loop with the staff on what's acceptable.

12 I would think, of course, an applicant can
13 go ahead at risk with construction, but he would
14 probably want some finality on certain design aspects
15 of the plant, like say a containment structure.

16 And I am just wondering if they are also
17 using PRA, what level of PRA is needed to get that
18 design approval? Do you see my concern, Vicki? My
19 concern is that the expectation or the requirement for
20 completeness of a PRA, say a seismic PRA, may be
21 difficult to do early on.

22 But can they -- if an applicant -- this is
23 hypothetical. If an applicant submits a PRA as part
24 of their construction permit application -- it is not
25 required -- but they choose to go this option and then

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1 the staff uses their ISG, is there a potential for
2 getting into a do loop so to speak between the staff
3 and the applicant on satisfying the requirements?

4 I mean, just the staff will have the ISG.
5 It is pretty complete, very thorough. How does the
6 staff and the applicant negotiate say that just a
7 level one full power internal events PRA is sufficient
8 and then use other methods, like suggested in the last
9 NEI slide here, Item 3, to fill out the rest of the
10 requirements for the application? Is that flexibility
11 going to be there or is the expectation one, that it
12 is completely satisfied by the PRA and all the
13 requirements that seem to appear in the ISG?

14 CHAIR BIER: Does the staff --

15 MEMBER KIRCHNER: Is there a graded
16 approach? Is there a way that is -- that's my
17 concern. I will stop there.

18 CHAIR BIER: Does the staff want to
19 respond on that?

20 MR. VASAVADA: Yeah, Shilp Vasavada from
21 the staff. I will respond. I think the short answer
22 to Member Kirchner's question is yes.

23 First of all the question is whether
24 somebody wants to rely on a PRA or choose to provide
25 a PRA to support a CP application? If not does, the

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1 ISG actually doesn't apply?

2 And as we talked about, stated, clarified
3 and talked about during the presentation, and we had
4 a discussion with -- Mr. Facemire's presentation.
5 Even ISG says internal events PRA something, if you
6 want to support your application you can -- a PRA is
7 something you can look for. Everything else you can
8 choose either a PRA or a non-PRA based risk
9 evaluation.

10 We also talked about not do it for certain
11 cases and do a deterministic evaluation. So, again,
12 the short answer is yes. I don't think that ISG is
13 prescribing anything, either to the staff or to the
14 applicant.

15 There are so many different combinations,
16 I could literally -- that it is I think
17 counterproductive in our view to say this is the
18 minimum we will need for all these different scenarios
19 because it is very likely we will miss a scenario. So
20 that is physically our take on the staff's side.

21 CHAIR BIER: I do see your point, Walt,
22 that a pretty good seismic characterization would be
23 needed in order to have a containment design, which is
24 going to survive an earthquake. On the other hand, as
25 Jon was mentioning, we may not know pipe routings and

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1 pipe hangers and all the rest of it to do a detailed
2 seismic analysis in the PRA. Jon, do you want to
3 expand?

4 MR. FACEMIRE: Yeah, I just want to add
5 that next month on the 25th, the ACRS is meeting again
6 to discuss Reg. Guide 1.251, which lays out different
7 options, traditional, more LMP focused, and an option
8 three that needs more exploration in my mind.

9 CHAIR BIER: Yeah.

10 MEMBER KIRCHNER: Vicki, can I pursue this
11 a little further?

12 CHAIR BIER: Please.

13 MEMBER KIRCHNER: One of the things that
14 happened in DOE projects was that they would commence
15 construction and then later seismic analysis would
16 indicate that the structure wasn't going to be
17 qualified for the demand. And so it's very expensive
18 to then start redoing a construction project starting
19 with the footings and the, you know, concrete and
20 rebar and all the rest.

21 So it would seem to me at the construction
22 permit stage, one would want to get some design
23 approval on certain things like containment. And,
24 yes, you probably cannot do the complete seismic PRA
25 at that point because of all the design details and

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1 such that aren't necessarily available.

2 But one would hope not to have to go back
3 and redo a design, say of something as important as
4 the containment. So I'm just concerned. Maybe it is
5 not a legitimate concern. But I am concerned that you
6 go down this route, and you can't get closure with the
7 staff on certain aspects of the design.

8 The applicant goes ahead at his or her own
9 risk with major construction and then down the road
10 when the PRA is completed at the OL stage then issues
11 may arise.

12 So how do you get, you know, approvals of
13 important aspects of the design early at this
14 construction permit stage and some certainty that down
15 the road that you are not going to find oneself in a
16 situation where that design approval changes?

17 Maybe it's more -- maybe it's not a PRA
18 issue. Maybe it's more just an issue of design
19 maturity at the CP stage and how much risk an
20 applicant is willing to take.

21 CHAIR BIER: And staff is there a response
22 or just --

23 MEMBER KIRCHNER: No, I don't need a
24 response. It's just a concern I have with the CP
25 application.

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1 CHAIR BIER: Okay.

2 MEMBER PETTI: This is Dave.

3 CHAIR BIER: Okay. Yeah.

4 MEMBER PETTI: Walt, this is Dave.

5 Wouldn't the seismic management approach be

6 sufficient?

7 MEMBER KIRCHNER: I would think so.

8 That's what I would hope.

9 MEMBER DIMITRIJEVIC: Vicki?

10 CHAIR BIER: Yeah, Vesna, go ahead.

11 MEMBER DIMITRIJEVIC: I just want to

12 comment on something. In the design certification,

13 this information which we said wasn't available in CP

14 is not available in design certification either.

15 Pipeline is not laid out. Cables are not laid out.

16 Components are not put into place. We don't know

17 elevations. The operating procedures are not

18 available.

19 So there is no difference in design

20 certification phase in CP on these elements which have

21 been here specifically brought up.

22 So I just want to say the only difference

23 when it comes to the seismic is actually in CP we know

24 the location.

25 MEMBER KIRCHNER: Correct.

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1 MEMBER DIMITRIJEVIC: So therefore, you
2 know, we have really to see when we are doing these
3 design certification and the directions we follow
4 there and then, you know, going to the CP. The
5 trouble is more in the CP mode is that not in these
6 parts of design which are not available until like,
7 you know, the late, call it, stage.

8 In CP we don't have a complete design in
9 the sense that we have, you know, design of the
10 systems, the number of the pumps, the valves, things
11 like that. I mean, this side of things are not
12 available in design certification state so the same
13 logic applies to this. I just wanted to bring this up
14 so.

15 CHAIR BIER: Thank you for that comment.
16 And now, Hahn, if you want to proceed?

17 MR. PHAN: In response to your first
18 concern regarding the staff perspective, applicant's
19 perspective, regarding the PRA.

20 In the licensing applications, if there is
21 a section discussing PRA or providing PRA information,
22 the staff will ask for the clarification of this. Why
23 the PRA is sufficient to support the application?

24 In addition to that, if the application
25 includes any use of the PRA, including the

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1 environmental details or, you know, human engineering
2 factor engineerings, physical security or touch back,
3 then the staff will use the interim staff guidance to
4 ask applicants to clarify why their PRA is sufficient
5 for the risk-informed decision-making to support those
6 application. And that is the purpose of the interim
7 staff guidance. Thank you.

8 CHAIR BIER: Okay. One other comment I
9 wanted to make both for Jon's benefit and maybe
10 anybody else online. As of at least the last I have
11 heard, there is a possibility that the June seismic
12 meeting may be postponed. And I don't know if any of
13 the staff knows any update on that.

14 So don't buy any nonrefundable plane
15 tickets if you want to be here for that meeting. But
16 other than that, it looks like there is a subsequent
17 comment from Bob Budnitz again if you want to proceed.

18 MR. BUDNITZ: Vicki, can you hear me?

19 CHAIR BIER: Yup.

20 MR. BUDNITZ: This is simple enough. Part
21 52 is, of course, the design certification process.
22 In the context of the policy development for Part 52,
23 and this is more than 20 years ago, the commission
24 allowed using the seismic margin method for evaluation
25 of the adequacy of a design certified plan, provided

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1 that in the end the plant level HCLPF capacity was
2 1.67 times the design basis.

3 Now I will just tell you how that came
4 about. All of the original early design certification
5 vendors -- we're talking about General Electric and
6 Westinghouse and Combustion -- they were all using .3g
7 as the standard plan for Part 52 purposes for their
8 designs.

9 And then the commission, based on staff
10 input, looked at that and said, you know, if the plant
11 level HCLPF was .5g, remember the design was .3, then
12 that would be adequate. And that's where the 1.67
13 came from. It's the ratio of .5 to .3.

14 And so it is now in policy for Part 52
15 that if you have a design certification and you can
16 show that the plant level HCLPF is 1.67 times the
17 design, which is as I said, if it's .3 then it's .5.
18 Then that is adequately safe.

19 Now you can use that same logic here. You
20 see when they were design -- when a vendor was doing
21 that design, they didn't want to have a continuous
22 structure that was anything close to the 1.67. They
23 better have quite a lot of margin. And everybody put
24 in a lot of margin for the things that they had to
25 commit to early on, like the containment. And other

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1 stuff may be addressed later.

2 So it worked out perfectly fine. That is
3 everybody was able to do their design, meet the 1.67
4 with lots of margin, no problem at all. And they
5 could proceed.

6 Now here we are with the same problem
7 here. This is now Part 50, but we are talking about
8 an early design. It really isn't a problem to design
9 the containment, to have way more margin. In fact, if
10 it doesn't it is not going to be doing the
11 containment's job, if you know what I mean?

12 The containment's job at first is to
13 contain, you know, radioactivity, under pressure and
14 stuff like that. So that isn't really a problem. And
15 I don't think the thing that Walt raised, as important
16 as it is, is in practice going to be a constraint on
17 any of the early CP of designers.

18 CHAIR BIER: Okay. Thank you. Any
19 further discussion from committee members or
20 consultant?

21 MR. SNODDERLY: This is Mike Snodderly of
22 the ACRS staff. So I believe -- I just wanted to
23 confirm. So right now your plan, it would be to at
24 the PNP in June to write a summary report which would
25 include some of these insights.

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1 CHAIR BIER: Correct.

2 MR. SNODDERLY: Okay. Thank you. I'll
3 work with you to put something together.

4 CHAIR BIER: Thank you. So I think with
5 that, we are ready to adjourn this morning's meeting.
6 And there is a related, but separate meeting, that
7 will start this afternoon at 1:00 p.m. Thank you,
8 everybody.

9 (Whereupon, the above-entitled matter went
10 off the record at 11:20 a.m.)

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Draft DRA-ISG-2024-XX, “Content of Risk Assessment and Severe Accident Information in Light-Water Power Reactor Construction Permit Applications”

NRC Staff Presentation to ACRS

May 21, 2025

Introductions

Presenting Staff

India Banks
Project Manager, NRR/DNRL

Stacey Rosenberg
Co-author, NRR/DRA

Alissa Neuhausen
Co-author, NRR/DRA

Contributing Staff

- Malcolm Patterson, NRR/DRA
- Keith Tetter, NRR/DRA
- Marie Pohida, NRR/DRA
- Michael Swim, NRR DRA
- Steven Alferink, NRR/DRA
- Marty Stutzke, NRR/DANU
- Jeffery Wood, RES/DRA
- Anders Gilbertson, NRR/DANU
- Hanh Phan, NRR/DANU

Need for the Effort

- Planned use of 10 CFR Part 50 from near-term applicants
- Staff identified a gap in available regulatory guidance for risk insights and severe accident information in LWR CP applications
 - No construction permit applications for nearly 40 years
 - Past construction permit applications pre-dated agency's key PRA-related actions
 - Three Mile Island Action Plan
 - Generic Letter 88-20
 - Commission's Policy Statements on Severe Accidents and PRA
 - Use of PRA at the design stage

Overview

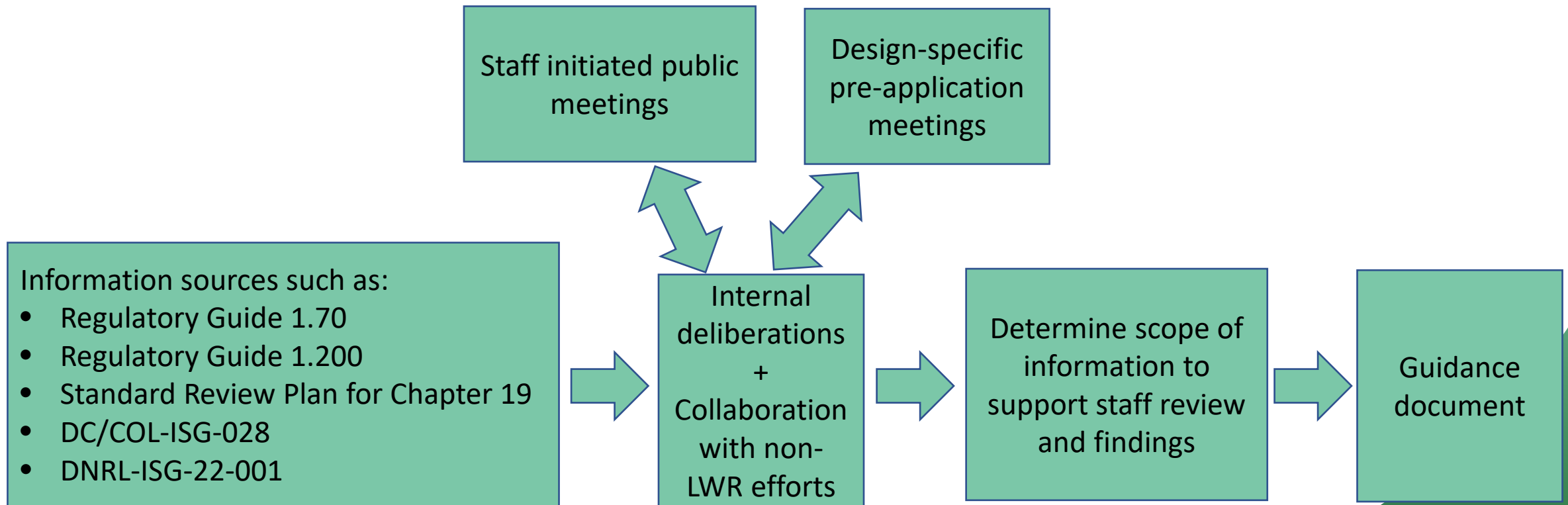
This ISG clarifies the scope and depth of the staff review of the description of risk assessment and severe accident information in the PSAR

- SRM-SECY-22-0052:
 - Operating license applicants required to submit a description of the plant-specific PRA and its results
 - Construction permit applicants are not required to submit a description of the plant-specific PRA and its results
- Many designers of new LWRs are using risk assessment to support risk-informed design decisions

Objective of the Guidance

- Scope of information for risk insights and severe accident information in an LWR CPA commensurate with:
 - Design readiness at time of CPA submission
 - Use of risk insights and information in CPA (e.g., identifying licensing basis events)
- Increase consistency in content for LWR CPAs and predictability of staff review
- Overcome misconception that construction permit applicants must meet endorsed PRA standards

Development Approach



Internal Collaboration and External Outreach

- Conducted three public meetings (March & July 2023, January 2024)
 - About 40 people participated in each meeting, including new LWR designers
 - External stakeholders voiced support for this guidance at the first meeting
 - Staff addressed stakeholder feedback on guidance topics
- Advanced reactor staff and new reactor licensing staff contributed to the development of white paper
 - Open communication and sharing of similarities or differences in efforts
 - Leveraged work on DG-1404, Revision 1 (proposed new RG 1.253)

Applicability

- CP applications for LWR designs that do not use licensing modernization project (LMP) framework
- Considers the role of risk assessment and severe accident analysis at time an application is submitted
- Scope and technical acceptability of CP application PRA depend on intended use of information and level of design maturity

Guidance Content – PSAR Information

- Scope of information is scaled down compared to DC or COL applications
 - Considers design description requirements in 10 CFR 50.34
- Guidelines are presented as bulleted list for each topic
 - To assist PSAR preparation, it can be used as a checklist
- Information identified for inclusion in PSAR is primarily—
 - descriptions, including justifications
 - identification of assumptions and limitations
 - summary of results and risk insights
- Level of detail is not prescribed to accommodate variation in design maturity

Scope – Internal Events

Table 1 Internal Events PRA Elements for a CP Application*

Initiating Event Analysis
Accident Sequence Analysis
Success Criteria Development
Systems Analysis
Human Reliability Analysis
Data Analysis
Large Release Frequency Analysis [†]
Quantification
Uncertainty Analysis

* Capability Category I is acceptable for a CP application

[†] Level 2 PRA

Scope - Hazards

Table 2 Additional Elements for CP Application

PRA Evaluations	Alternative Risk Evaluations (not PRA)
Internal Flood PRA	Internal flood risk evaluation
Internal Fire PRA	Internal fire risk evaluation
Seismic PRA	PRA based seismic margins
High-winds PRA or PRA based screening analysis	High-winds risk evaluation
External flooding PRA or PRA based screening analysis	External flood risk evaluation
Other hazards PRA or PRA based screening analysis	Other hazards risk evaluations
Low-power and shutdown PRA	Low-power and shutdown risk evaluation
	Plant operating state analysis

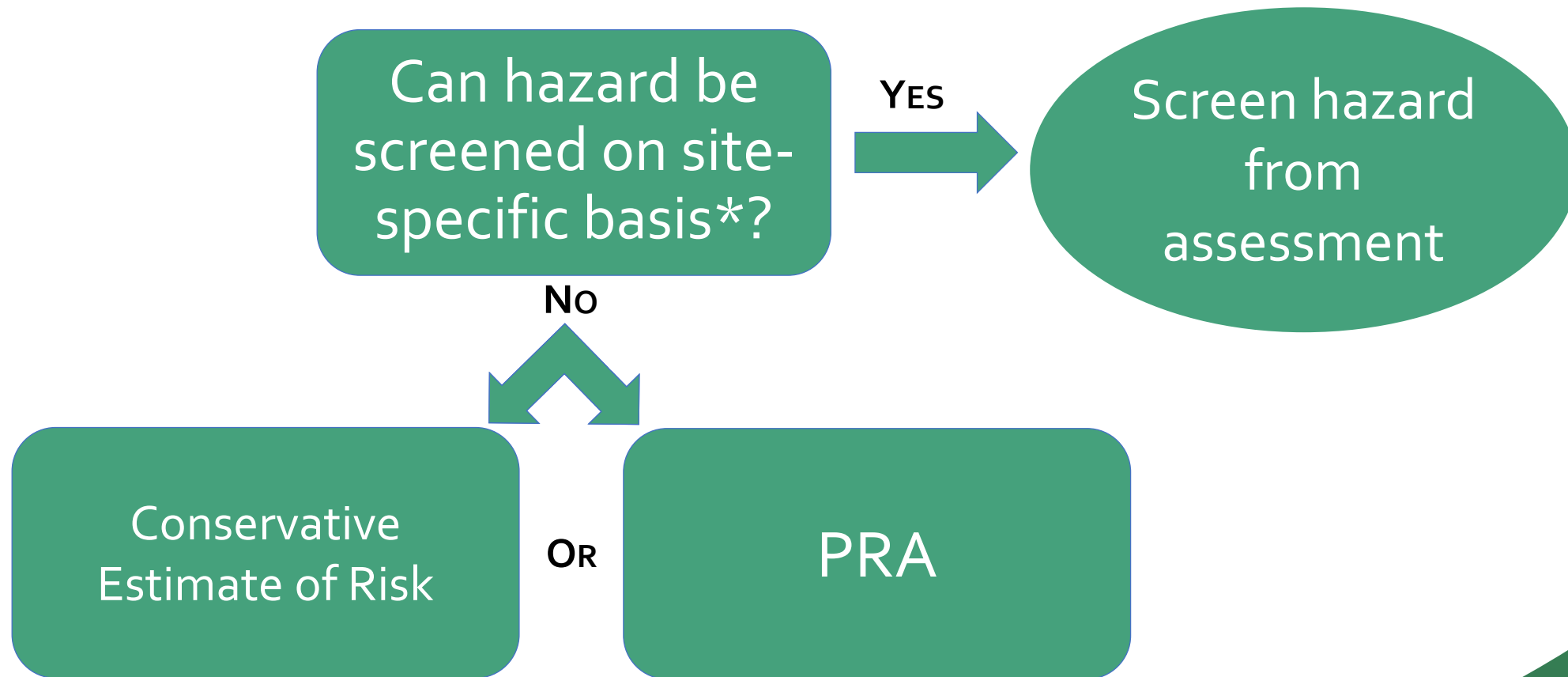
Technical Elements

- DC/COL-ISG-028 provides staff positions and clarifications on supporting requirements in (ASME/ANS) RA-Sa–2009 (PRA Standard) that are not applicable or cannot be achieved as written for the DC and COL application stages
- Staff considers this as an approach for a CP application
- For the CP application, consistent with DC/COL-ISG-028, Capability Category I of an NRC-endorsed PRA standard is acceptable for PRAs

Seismic – PRA or Alternative Risk Evaluation

- Applicant can use site-specific response spectra
 - Identification of site-specific seismic-induced initiating events (e.g., slope stability, liquefaction, dam failure)
- Applicant can use design response spectra representative of an envelope of multiple sites
 - Demonstration that the site is bounded by the design response spectrum
- Applicant can use a seismic PRA
 - Description of probabilistic seismic hazard analysis performed to develop the site-specific seismic hazard curves and any changes to the seismic hazard curves used in the seismic PRA
 - Identification of site-specific seismic-induced initiating events

Guidance Content – Non-Seismic Hazards



* Re-evaluate at OL stage to account for design changes during construction.

Low Power and Shutdown

- A low-power and shutdown (LPSD) PRA or an alternative risk evaluation is acceptable for a CP application
- Description of any analysis performed to screen POSs from inclusion in the LPSD PRA, including identification of any design features relied on for the screening

Self-Assessment/Peer Review

- PRA self-assessment is acceptable for assessing the technical adequacy
- Certain PRA elements may not be applicable or met at this stage
- PSAR to include:
 - Description of PRA self-assessment
 - Summary of any limitations arising from maturity of the design
- Staff would accept peer review in accordance with RG 1.200 (would provide additional confidence in PRA results)

Configuration Control

Configuration control program information provides confidence in the applicant's ability to track assumptions and changes, including:

- identification of PRA technical elements (RG 1.200) that are not met or not applicable, an explanation for the reason for each
- a description of the process to track assumptions and monitor inputs
- a description of how new information will be collected and included consistent with the as-built, as-to-be-operated plant design

Severe Accidents

PSAR should include:

- a description and analysis of design features for the prevention and mitigation of severe accidents
- a description of improvements to plant design, operations, or maintenance that prevent or reduce the possibility, likelihood, or consequence of the identified severe accident

RTNSS

- The RTNSS process applies to those non-safety-related SSCs (in designs with passive safety systems) that perform risk-significant functions and, therefore, are candidates for regulatory oversight
- A RTNSS evaluation is not required at CP application stage
- An applicant may choose to provide a RTNSS evaluation at CP application

Public Comments and Resolution

Twelve comments received (9 from NEI and 3 from NuScale)

- Staff agreed with 5 comments and made changes to the ISG
 - NRC-2024-0217-DRAFT-0001-1/2/6/7
 - NRC-2024-0217-DRAFT-0002-3
- Staff partially agreed with 3 comments and made changes to the ISG
 - NRC-2024-0217-DRAFT-0001-3/8/9
- Staff disagreed with 4 comments and made no changes to the ISG
 - NRC-2024-0217-DRAFT-0001-4/5
 - NRC-2024-0217-DRAFT-0002-1/2

Changes to Address Public Comments (1/7)

- Two comments requested additional clarity on the guidance document
 - Acceptability of the descriptions of PRA information or the PRA model information and results provided in the PSAR
 - Information required to be in the PSAR or available in separate source documents and analyses supporting the CPA
- The ISG provides guidance on the staff review of descriptions provided in the PSAR
- The draft ISG provides guidance on the PRA information required for a construction permit application (CPA) submittal if PRA information is used in the submittal

Changes to Address Public Comments (2/7)

- Five comments requested clarity or adjustments to the minimum elements and scope of the PRA
 - Some elements may not be available
 - Discussion of intermediate preliminary results may not be appropriate
 - Use of PRA should not be required to determine licensing-basis events
 - There may be hazards for which PRA does not offer additional insights at the CP stage
 - Not appropriate for this ISG to suggest that hazard risk evaluations are required
- Staff modified the ISG to state that staff should review the applicant's justification that the scope and level of detail of any PRA or alternative risk evaluation are consistent with the intended uses of the information... The staff should review the applicant's plan for assessing any risk contributors not addressed by a PRA or alternative risk evaluation

Changes to Address Public Comments (3/7)

- One comment stated that the hazard assessment requirements appear to go beyond traditional design requirements for SR SSCs
- This draft ISG does not provide guidance on design requirements or propose alternate design requirements
- The PRA or alternative risk evaluations should be consistent with the design and assumptions

Changes to Address Public Comments (4/7)

- One comment requested clarification that supporting requirements may not be applicable or may not be reviewed
- For consistency with the existing discussion on page 5 of the ISG, staff reiterated on page 8 that the staff review should consider that all supporting requirements endorsed in industry standards may not be applicable at the CP stage

Changes to Address Public Comments (5/7)

- One comment requested references for alternative risk evaluations
- Staff is not endorsing particular alternative risk evaluation methods in this guidance document
- If the method can be justified to be applicable for its use, the staff will review the description provided in the CPA as described in this ISG

Changes to Address Public Comments (6/7)

- One comment requested a change to a statement included in the ISG on passive safety system reliability
- This statement is consistent with SRP Section 19.0
- This statement tells staff why this portion of the review may be important
- An applicant can justify on a case-by-case basis that this is not an important element for their design

Changes to Address Public Comments (7/7)

- One comment requested that the guidance clarify that some cases may result in the identification of no RTNSS non-safety-related SSCs
- The staff clarified in the ISG that RTNSS SSCs may not be identified for all designs following the RTNSS process
 - The staff guidance includes reviewing the RTNSS process that determines that no RTNSS SSCs are identified
- The staff clarified that RTNSS SSCs may not be identified in the CPA depending on the use of the PRA and risk assessments and may be determined for the operating license application

Acronyms

COL	Combined operating license	POS	Plant operating state
CP/CPA	Construction permit/application	PRA	Probabilistic risk assessment
DC	Design certification	PSAR	Preliminary safety analysis report
ISG	Interim Staff Guidance	RG	Regulatory Guide
LMP	Licensing Modernization Project	RTNSS	Regulatory Treatment of Non-Safety Systems
LPSD	Low power and shutdown	SRM	Staff Requirements Memorandum
LWR	Light-water reactor	SRP	Standard Review Plan
OL	Operating license	SSCs	Structures, systems, and components



ACRS – CP PRA Content

May 21, 2025

February 2025 NEI Comments

- By Federal Register (FR) notice (90 FR 4806) dated January 16, 2025, the Nuclear Regulatory Commission (NRC) requested comments on draft Interim Staff Guidance (ISG) document, “Content of Risk Assessment and Severe Accident Information in Light-Water Power Reactor Construction Permit Applications.”
- NEI Provided Comment on February 18, 2025
- 7 of 9 comment were accepted or partially accepted in updated ISG provided for this meeting
- NEI is focused on consistency in the level of detail required for CP PRA information and specifically RG 1.253, which includes an Appendix A on CP PRA Guidance for non-LWRs.
- NEI also sought consistency with the Part 53 Rulemaking which intends to be Technology-Inclusive as well as the ADVANCE Act

RG 1.253 Consistency

- A.3.2 “the CP applicant should:
 1. Identify all radiological sources, hazards, and POSs by performing a comprehensive and systematic search.
 2. Disposition the search results by a combination of PRA logic modeling, acceptable screening methods, risk-informed supplemental evaluations, and crediting design-basis hazard levels (DBHLs).”
- A.3.3 “Regarding PRA acceptability, the minimum scope of the CP PRA logic model should include the internal events hazard group for the reactor in the at-power POS.”
- A.3.7 “The CP applicant may disposition certain hazards by crediting DBHLs in lieu of explicitly modeling these hazards in the PRA or accounting for them through a risk-informed supplementary evaluation.

RG 1.253 Consistency

- A.3.6 “Regarding PRA acceptability, risk-informed supplemental evaluations may be used to disposition certain radiological sources, hazards, or POSs. NUREG-1855, Revision 1, “Guidance on the Treatment of Uncertainties Associated with PRAs in Risk-Informed Decisionmaking” (Ref. A-19), provides a generally acceptable approach for developing risk-informed supplemental evaluations. Section 1.3 of NUREG-1855 notes that the process described in NUREG-1855 “...is applicable to non-LWRs and reactors in the design stage; however, the screening criteria and the specific sources of uncertainty may not be applicable.” Consequently, non-LWR CP applicants who use the guidance in NUREG-1855 to develop risk-informed supplemental evaluations should (1) describe and justify the use of reactor technology-specific screening criteria, and (2) explain how specific sources of uncertainty were identified and addressed.”

SRM-SECY-23-0021 Consistency

SRM-SECY-23-0021 – Proposed Rule: Risk-Informed, Technology-Inclusive Regulatory Framework for Advanced Reactors (bold is emphasis added by NEI)

- “**Screening tools and bounding or simplified methods may be used for any mode or hazard**, provided that the applicant provides an acceptable technical basis. As with all risk-informed methodologies, treatment of uncertainties should be addressed.”
- “The **staff should not apply consensus probabilistic risk assessment (PRA) standards as a strict checklist of requirements** for Part 53 PRA acceptability determinations. Rather, the staff should allow PRA acceptability determinations for Part 53 applications to be appropriately flexible, considering how PRA insights are relied upon to support the licensing application, together with factors such as safety margin, simplicity of design, and treatment of uncertainties. The staff should revise the proposed rule or preamble, as appropriate, to convey this point and also seek specific comment in the Federal Register Notice (FRN) for the Part 53 proposed rule on PRA acceptability for Part 53 applications in order to develop guidance.”

Part 53 Consistency

Part 53 – Proposed Rule: Risk-Informed, Technology-Inclusive Regulatory Framework for Advanced Reactors

- “These requirements [53.415 and 53.510] would support either traditional deterministic approaches for determining and protecting against external hazards or probabilistic approaches that are being developed for seismic and some other external hazards.”
- “The analyses required for this demonstration would be described in proposed § 53.450(e), which would require that those events be identified and assessed using a PRA methodology **in combination with other generally accepted approaches for systematically evaluating engineered systems**”
- Existing processes for defining the scope and capability of a PRA supporting an application offer **flexibility in determining the degree to which the PRA needs to be developed** and may be informed by other factors such as design complexity and the needed degree of realism and level of detail, consistent with the use of the PRA and substance of the application. Such processes are currently available for appropriately defining the scope of the PRA and determining applicability of supporting requirements in consensus PRA standards needed to satisfy the proposed regulatory requirements for the specific uses of analyses under § 53.450(b).

ADVANCE Act Consistency

Section 208 – Regulatory Requirements for Micro-reactors

“The Commission shall...develop risk-informed and performance-based strategies and guidance to license and regulate micro-reactors...including strategies and guidance for...(E) risk analysis methods, including alternatives to probabilistic risk assessments;”

NEI Comment Summary

- Comments 1 & 2 –Clarification on ISG Scope was addressed
- Comments 3 – Clarification on needs for CPA acceptance vs CP issuance was addressed
- Comment 4 – Changes to risk assessment was not addressed. NEI comment still stands, given hazards PRAs may be undeveloped, relative risk insights may be masked by modelling limitations and provide limited value.
- Comment 5 – Hazard risk evaluation requirements. **This is inconsistent with RG 1.253, SRM-SECY-23-0021 and Part 53. LWRs should not be held to a higher standard than non-LWRs**
- Comment 6 – Use of PRA in establishing Licensing Basis Events (LBEs) was addressed.
- Comment 7 – Supporting Requirements was addressed
- Comment 8 – Hazards PRA at CP stage was partially addressed, see comment 5.
- Comment 9 – Consistency with RG 1.253 was partially addressed, see comment 5. Guidance in this ISG should be clear that traditional hazard design is sufficient for a CPA consistent with RG 1.253, SRM-SECY-23-0021 and Part 53.

NEI Comment Summary

Outstanding Issues

- Consistent with RG 1.253, “CP applicant may disposition certain hazards by crediting DBHLs in lieu of explicitly modeling these hazards in the PRA or accounting for them through a risk-informed supplementary evaluation.” The ISG for hazard supplemental evaluations goes well beyond the requirements on RG 1.253. No risk-informed supplemental evaluation should be required for a CPA if traditional Hazard Design is applied.
- Low Power and Shutdown risk evaluation guidance and the discussion of POS remains too stringent for a construction permit PRA.
 - POS should not have to facilitate “realistic estimation of CDF and LRF” if lower modes can conservatively be shown to not be risk-significant.
 - Qualitative arguments for why lower modes should be bounded by full power operation should be sufficient for a CP. Anything else is not consistent with the SRP which requires certain LPSD events to be addressed deterministically.

Proposed Resolution

Amend the ISG in a way that aligns with RG 1.253, Part 53 and the ADVANCE Act. For hazards and lower modes of operation, three options should be acceptable for a CP PRA.

- 1) PRA
- 2) Risk-Informed Supplemental Evaluation following guidance in ISG
- 3) Traditional Analysis credited as a “supplemental evaluation”: Hazard Analysis following RG 1.59, RG 1.76, etc. Lower Modes assessed in accordance with SRP Chapter 15

Acronym List

ACRS – Advisory Committee on Reactor Safeguards
CP – Construction Permit
CPA – Construction Permit Application
DBHL – Design Basis Hazard Level
FR – Federal Register
ISG – Interim Staff Guidance
LBE – Licensing Basis Event
LWR – Light-Water Reactor
NEI – Nuclear Energy Institute
Non-LWR – Non-Light-Water Reactor
NRC – Nuclear Regulatory Commission
POS – Plant Operating State
PRA – Probabilistic Risk Assessment
SE – Supplemental Evaluation
SRM – Staff Requirements Memorandum
TICAP – Technology Inclusive Content of Application
TI-RIPB – Technology Inclusive Risk-Informed Performance-Based

Meeting Title**May 21, 2025 Open Session****Interim Staff Guidance:****Content of Risk Assessment and Severe Accident
Information in Construction Permit Applications****Attendees**

Michael Snodderly	ACRS DFO
David Petti	ACRS
Jennifer Lindeman	Court Reporter
Christopher Brown	ACRS
Scott Palmtag	ACRS
Shandeth Walton	ACRS
Vicki Bier	ACRS
Dennis Bley	ACRS
Steven Alferink	NRR
Craig Harrington	ACRS
India Banks	NRR
Matthew Hiser	NRR
Vesna Dimitrijevic	ACRS
Sandra Walker	ACRS
Stacey Rosenberg	NRR
Alissa Neuhausen	NRR
Sunwoo Park	NRR
Yan Gao	X-energy
Jim Schneider	
Jon Facemire	NEI
Jeffery Wood	RES
Walt Kirchner	ACRS
Ellery Coffman	NRR
Robert Roche-Rivera	NRR
Shilp Vasavada	NRR
Mihaela Biro	NRR
Marissa Bailey	ACRS
Doug Bowman	
Jason A. Christensen	INL
Mark Shaver	NuScale
Matt Sunseri	ACRS
Charles Moulton	NRR
David McClain	NRR
Keith Tetter	NRR
Anders Gilbertson	NRR
Sari Alkhatib	X-energy
Tracy Radel	NRR
Victoria Huckabay	NRR
Candace de Messieres	NRR
Todd Hilsmeier	NRR
Annie Kammerer	ACRS
Hanh Phan	NRR