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ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

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UNITED STATES OF AMERICA
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ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

(ACRS)

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RELIABILITY AND PRA SUBCOMMITTEE

OPEN SESSION

+ + + + +

FRIDAY

AUGUST 21, 2015

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ROCKVILLE, MARYLAND

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The Subcommittee met at the Nuclear Regulatory Commission, Two White Flint North, Room T2B1, 11545 Rockville Pike, at 1:00 p.m., Dennis C. Bley, Subcommittee Chairman, presiding.

COMMITTEE MEMBERS:

DENNIS C. BLEY, Subcommittee Chairman

JOHN W. STETKAR, ACRS Chairman

RONALD G. BALLINGER, Member

DANA A. POWERS, Member

JOY REMPE, Member

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STEPHEN P. SCHULTZ, Member

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R O C E E D I N G S

(1:02 p.m.)

CHAIRMAN BLEY: The meeting will now come to order, please. This is a meeting of the Reliability and PRA Subcommittee. I am Dennis Bley, Chairman of this meeting. The ARCS Members in attendance are John Stetkar, Joy Rempe, Ron Ballinger, and Steve Schultz. That's the whole gang. Hossein Nourbakhsh is the ACRS Staff Designated Federal Official for this meeting.

The Subcommittee will hear Staff's presentations on revised interim guidance on assessing the PRA technical adequacy for the advanced light-water reactors, and industry's comments on the draft ISG.

There will be a telephone bridge line. To preclude interruption of the meeting, the phone will be placed in the listen-in mode during presentations and Committee discussions. We have received no written comments or requests for time to make oral statements from members of the public regarding today's meeting.

The Subcommittee will gather information, analyze relevant issues and facts and formulate proposed positions and actions, as appropriate, for deliberation by the Full Committee. The rules for

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1 participation in today's meeting have been announced
2 as part of the notice of this meeting previously
3 published in the Federal Register.

4 A transcript of the meeting is being kept
5 and will be made available as stated in the Federal
6 Register notice. Therefore, we request the
7 participants in this meeting use microphones located
8 throughout the meeting room when addressing the
9 Subcommittee. Participants should first identify
10 themselves and speak with sufficient clarity and volume
11 so that they may be readily heard.

12 And for those of you who haven't been here
13 in a while, our new policy on the mics at the tables
14 is to keep them turned off because it makes it easier
15 to listen on the bridge line. And when you're going
16 to speak try to remember to turn them back on. We'll
17 remind you.

18 We'll now proceed with the meeting, and I
19 call upon Donnie Harrison.

20 MR. HARRISON: Thank you, Chairman. I'm
21 Donnie Harrison. I'm with the Staff. I'm the Senior
22 Technical Advisor for PRA ---

23 MEMBER STETKAR: Donnie, we're going to
24 remind you to turn your microphone on, which means ---

25 CHAIRMAN BLEY: Push down at the bottom,

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1 green light.

2 MR. HARRISON: Oh, I saw the faded green
3 light. I'm sorry. Again, I'm Donnie Harrison. I'm
4 with the Staff. I'm a Senior Technical Advisor within
5 the Office of New Reactors. I'm going to present today
6 on an ISG for Design Certification and Combined License
7 Applicants. It's ISG-028, and it's related to
8 assessing the technical adequacy of the PRA for those
9 two applications for advanced light-water reactors.

10 So here's the presentation outline. I've
11 asked them to split the screens, because at the last
12 meeting there were times where we ended up going and
13 looking at specific supporting requirements and then
14 asking questions about what was the position of the
15 Staff on those requirements. So I've already got that
16 up, in case we want to do that. I've also got backup
17 slides that, if we want to jump to those, we can bring
18 those up, as well, on specific dispositions.

19 The layout of the presentation is to
20 provide some background, purpose, and scope of the ISG,
21 to discuss several topics of the use of the PRA standard
22 for design certs and combined licenses. So, we'll
23 address the general topics, basically the front few
24 pages of the ISG. The topics that are covered by that.
25 We'll talk about the process we used to go by and

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1 evaluate the SR by SRs.

2 Then at that point I think we're going to
3 take a pause and let NEI present their comments on the
4 draft ISG. And following that, we'll come back and talk
5 about the summary of the comments and dispositions.
6 We'll have some examples of how we dispositioned
7 specific comments. We'll have examples of other types
8 of changes we made and what drove those, a summary of
9 the changes that were made to the eight areas we call
10 technical challenges.

11 Mainly for that was when I sent over the
12 comparison file, because those tables were split over
13 pages it made it look like a lot of changes were made
14 in those tables that were really not changes. They were
15 just moving from page 2 to page 1, or whatever, so I've
16 got that cleaned up in a version that you can see what
17 actually got changed. And then a summary of the
18 supporting requirements that had actual designation
19 changes, so that's something that went from a not
20 applicable to a can meet, or a can meet to a not meet.
21 And then, finally, a slide on our next steps.

22 So, to start off with the background, the
23 PRA standard is endorsed in Reg Guide 1.200 Revision
24 2 currently. It was developed based on and for current
25 operating reactors. It establishes high-level

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1 requirements and individual supporting requirements
2 for what belongs in a PRA, the aspects of a PRA, and
3 not the how. It doesn't tell you how to do each of the
4 individual pieces.

5 It also does not specifically address
6 advanced light-water reactor designs, it doesn't
7 address the pre-operational phase and conditions with
8 that, and it doesn't address a risk metric for new
9 reactors on large release frequency. Because of that,
10 we felt we needed to write an Interim Staff Guidance
11 that would provide the consistent consideration of the
12 PRA standard for these Part 52 applications. It's a
13 supplement to Reg Guide 1.200. It will eventually be
14 incorporated into Reg Guide 1.200, 1.206, which is the
15 COL Guidance, and SRP 19.0, as appropriate, at their
16 next revision dates.

17 SRP 19.0 Rev 3 has already completed so we
18 haven't incorporated this into that revision, so it
19 would be Rev 4 would be the version that we would
20 probably incorporate it. At this time ---

21 CHAIRMAN BLEY: Donnie, I have a question.
22 As I read through the tables it looks like only a handful
23 at most of these deal specifically with advanced
24 reactors. Given that, when you do the updating of Reg
25 Guide 1.200 and the others, will most of this apply to

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1 all reactors, or is this going to be strictly for
2 advanced reactors? And if so, why aren't you making
3 them all consistent, because they're almost all
4 consistent anyway?

5 MR. HARRISON: There's currently an effort
6 going on within the ASME/ANS PRA standard community to
7 go back through and almost all the parts are being made
8 consistent. And through that process, we're having a
9 standards meeting the week after next.

10 CHAIRMAN BLEY: Okay. So, what you're doing
11 will be rolled into that one ---

12 MR. HARRISON: As we identify things, we're
13 also identifying that to the standards folks. There was
14 a number of items in here related to screening. Some
15 of those are not just advanced light-water reactor
16 issues, but they will apply to any one that's --- a new
17 reactor that's a Part 50 plant would want to still
18 address. Those comments have been given to the PRA
19 Standards Group.

20 Now, they have their own process, and some
21 of those changes likely may get made, some will not be
22 made, and so then we'll have to engage on the standards
23 activity.

24 CHAIRMAN BLEY: Well, that kind of pulls me
25 back to since 1.200 is your guidance on how to apply

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1 what's in the standard, it almost seems to me like it
2 could be done in one fell swoop to suggest all of these.
3 And, of course, that might lead you to another change
4 later after the standard comes in.

5 MR. HARRISON: Yes. And this gets into a
6 processing topic. The efforts that are going on right
7 now, including the development and issuance of
8 low-power shutdown PRA standards, are all going to be
9 put out as trial use until the next edition comes out.
10 That trial use period may be upwards of three years.
11 We plan to do a draft of Reg Guide 1.200 that parallels
12 that trial use period.

13 And Mary Drouin is not here, but she's the
14 lead for that from Research, so we'll take the trial
15 use standards as they come out, we'll review them,
16 update a draft of Reg Guide 1.200 and put that out in
17 parallel. And then at some point that's all going to
18 come to --- all the trial use standards will come out,
19 get comment reviews, and then close out, and they'll
20 make a final version. And when that happens, then we'll
21 trail with a revision to the Reg Guide.

22 CHAIRMAN BLEY: One more ---

23 MR. HARRISON: Go ahead.

24 CHAIRMAN BLEY: Go ahead.

25 MR. HARRISON: Oh, there's a parallel

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1 effort in the standard to do an appendix that's related
2 to how to you use the standards for advanced light-water
3 reactors.

4 CHAIRMAN BLEY: Okay.

5 MR. HARRISON: So, that's a parallel
6 activity. There's a working group on that. We're
7 participating on that. And, again, that would be
8 something that would go out for trial use, as well. That
9 would be my expectation, so then this would come in for
10 a draft guide. But, again, that draft guide may be out
11 for years. And, again, that's part of the motivation
12 for putting out an Interim Staff Guidance; while that's
13 going on we have a position for current reviews.

14 CHAIRMAN BLEY: Okay. But that position
15 will only be for advanced reactors.

16 MR. HARRISON: Yes.

17 CHAIRMAN BLEY: It won't apply to those
18 that are not.

19 MR. HARRISON: Yes.

20 CHAIRMAN BLEY: One more thing from the
21 last meeting. I had the misguided impression; somebody
22 had brought up at that meeting that, in fact, there's
23 guidance being developed, and maybe it's in the
24 revision to the standard, but Category 1 is going to
25 disappear. Mostly it's not there now, and there's

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1 --- it's hard to find a legitimate need for it anywhere
2 that couldn't be done by the rare exception rather than
3 being in place completely. Yet, at least in what you
4 guys have been doing, it's still there, and I'm
5 wondering did I miss something, or is that coming, or
6 what's happening in that area?

7 MR. HARRISON: The one thing to consider is
8 the standards are looking at eliminating Capability
9 Category 3, so they're on the other end of that.

10 CHAIRMAN BLEY: But keeping 1.

11 MR. HARRISON: But keeping 1 and 2. That's
12 what they ended up deciding on.

13 CHAIRMAN BLEY: I mean, we've been caught
14 in this business on design certs of doing the PRAs to
15 Category 1 when they, essentially, have information to
16 do with the Category 2 on almost everything you're
17 doing. That, at least to us, just hasn't made sense,
18 so Category 3 is going to go away, but in the new
19 standard, in the revision to the standard.

20 MR. HARRISON: Yes. That's part of the
21 effort that's going on right now, is they're looking
22 at the Capability Category 3 items, and if there's
23 something that they think they need to retain, they'll
24 then incorporate that into a new Capability Category
25 2.

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1 CHAIRMAN BLEY: In your development of this
2 Interim Staff Guidance you've retained Category 1,
3 which then would apply for requests for design
4 certification for advanced reactors, so we're missing
5 a chance to get people to only use Category 1 if really
6 the information is not available to do Category 2.

7 MR. HARRISON: There are some
8 applications, risk-informed integrated leak rate
9 testing is an example of one where the Staff has fairly
10 pretty much accepted if you have a Capability Category
11 1 PRA, those are the elements you need to meet. And it's
12 mainly focused on LERF, and that whole process is mostly
13 a generic analysis that's incorporated into a
14 plant-specific approach. So, they allow you to meet
15 Capability Category 1 for most of that application, and
16 then address LERF. So, there are some applications that
17 still allow that. Again, it's the concept of
18 commensurate with the application, so here we're ---

19 CHAIRMAN BLEY: And design certs is one
20 where it's just hard to see why that's appropriate. You
21 want to jump in?

22 MEMBER STETKAR: Yes. I guess I still
23 --- it still baffles me why the Nuclear Regulatory
24 Commission Staff who has historically championed the
25 notion of risk-informed regulation has generally, in

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1 my mind perhaps not justifiably recognized throughout
2 the world as champions of risk assessment and
3 risk-informed regulation, shouldn't encourage people
4 to do better risk assessment. And, in fact, should
5 discourage people from doing better risk assessment.
6 So, rather than saying just do the bare minimum that
7 you can absolutely justify as necessary and sufficient
8 to satisfy the regulation, why don't you tell them you
9 ought to do Capability Category 2, and just tell us,
10 and in fact tell yourself, industry, the things that
11 you need. You can't do right now, but you can do in the
12 future to bring it up to Capability Category 2. It's
13 a much different philosophy. Why does the Staff take
14 the path of least resistance and dumb down the whole
15 process in 2015? We're not talking about 1975.

16 MR. HARRISON: Right, and I hear you. My
17 intent with the ISG is not to change the Staff position,
18 that's on my next slide. But the decision was made that
19 when you look at what we're looking for, which is ---

20 MEMBER STETKAR: And the decision was made
21 by whom, Donnie? By whom?

22 MR. HARRISON: By the Staff.

23 MEMBER STETKAR: Okay, not by the
24 Commission?

25 MR. HARRISON: No, the Commission did not

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1 tell us ---

2 MEMBER STETKAR: Okay.

3 MR. HARRISON: --- to do Category 1. There
4 are aspects on seismic that was ---

5 MEMBER STETKAR: We'll talk about that.

6 MR. HARRISON: We will. But I think it was
7 a Staff decision back when we were developing Reg Guide
8 1.206 or the original SRP 19.0 about what was the intent
9 of the information we were getting from the PRA. And,
10 again, as you walk through the standard there's --- I
11 make reference to this. There's a process you walk
12 through that says what the level of PRA you need for
13 that application?

14 MEMBER STETKAR: How do you reconcile
15 things that we've seen already in design certification
16 PRAs that we've looked at that have omitted scenarios
17 that can result in both core damage and perhaps
18 containment failure, and we've identified them because
19 we've looked at the PNIDs and said look, you don't seem
20 to have this equipment in your PRA, or you don't seem
21 to have these failure modes in your PRA.

22 This is ACRS. I mean, we don't do this
23 professionally. It's we take a glance at stuff, and we
24 ask the applicant and they say, well, we're not required
25 to have that in our model because that is beyond

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1 Capability Category 1 requirements. How do you answer
2 those questions?

3 MR. HARRISON: Yes, on that particular
4 design-specific review standard

5 MEMBER STETKAR: Because people are
6 relying now on your guidance to justify not including
7 things.

8 MR. HARRISON: And I believe on the example
9 you're giving, I guess, I went back and thought about
10 that, and there's a situation that I think you
11 identified at the last meeting last year where that came
12 up. And I would have said the applicant is wrong. Now,
13 we may have missed it, but if they were invoking
14 --- because I think they were invoking --- if it's less
15 than 1 percent of the ---

16 MEMBER STETKAR: It doesn't, no. Actually,
17 it was a specific failure mode.

18 MR. HARRISON: Right.

19 MEMBER STETKAR: A piece of equipment, and
20 they said we're not required to do that under Capability
21 Category 1 because that's more detailed.

22 MR. HARRISON: Right.

23 MEMBER STETKAR: The specific examples are
24 not my point. My point is that the people doing the work
25 are using NRC Staff Guidance as justification for

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1 saying they don't have to do a thorough analysis; when,
2 in fact, as Dennis mentioned, if I read the stuff that
3 you have up there, the guidance, the ASME standards,
4 there aren't all that many of those items that only
5 apply to Capability Category 1, or only do not apply
6 to Capability Category 1. And yet people are using it
7 as a crutch to not do the work.

8 CHAIRMAN BLEY: Actually, sometimes it
9 makes the work harder.

10 MEMBER STETKAR: Well, and ---

11 CHAIRMAN BLEY: It certainly makes the next
12 round harder.

13 MEMBER STETKAR: That's my point, also; is
14 that the poor COL holders now are left with something
15 that they don't even know how much work they need to
16 do to patch it up if they want to use it for anything.

17 MR. HARRISON: Right, by fuel load you've
18 got to --- if you've done simplistics you're going to
19 have to convert it to a more advanced PRA by that time.

20 MEMBER STETKAR: And because the folks
21 doing the design certification and the COL application
22 want to get a cheap pass-through, they're just dumping
23 the extra load onto the poor people who then will
24 inherit this stuff without even knowing what their
25 deficiencies are in many cases.

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1 CHAIRMAN BLEY: Nobody has been through
2 that process yet.

3 MEMBER STETKAR: Have you documented the
4 fact that well, I don't have this available, and I need
5 this additional to do Capability Category 2, it would
6 at least give people a head's up on the back end that
7 oh, gee, I hadn't thought that I might need to do that
8 extra work. Maybe I could put a little pressure on my
9 vendor to do it up front. Anyway, that's ---

10 MR. HARRISON: Well ---

11 CHAIRMAN BLEY: Your turn.

12 MR. HARRISON: I was just going to move to
13 the next slide and just say the last point on the scope
14 issue was that we were only addressing the typical
15 conditions that we expected --- and the intent of the
16 ISG was not to change any of the prior Staff decisions
17 or approaches. So, we didn't address in the ISG anything
18 beyond just real Category 1 because of that, but I hear
19 your comment.

20 CHAIRMAN BLEY: Lynn was about to say
21 something. We'd be glad to hear it.

22 MEMBER STETKAR: We did, by the way, on the
23 record, we did make the same comment a year ago and we
24 heard the same responses. We hear you. We're going to
25 take that into consideration and, obviously, you heard

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1 us, but didn't.

2 MS. MROWCA: This is Lynn Mrowca. I'm the
3 Branch Chief of the PRA and Severe Accidents Branch.
4 And I think we did listen to what you were saying, and
5 back when I think we made the decision of Capability
6 Category 1 we were trying to understand what a design
7 cert PRA would be used for compared to what a PRA at
8 the time of fuel load would be used for. And if there
9 are risk insights, I guess the bottom line is for a
10 design certification we're looking for the risk
11 insights. So, if we find something where the risk
12 insights are missing, like what you've pointed out;
13 then yes, I think the applicant needs to go back and
14 address that.

15 MEMBER STETKAR: Lynn, the NRC Staff
16 reviewing it didn't find it. The ACRS, which is not our
17 role to do detailed reviews happened in something that
18 we stumbled across found something that, indeed, the
19 applicant went back and made a design change on. That's
20 not the way the process ought to work. We are not in
21 the ACRS the ultimate detailed reviewers of everything.
22 And if we are, it's a said state of affairs. That's not
23 the role that the ACRS is supposed to be providing.

24 CHAIRMAN BLEY: I think the other thing
25 we're concerned with is even though they aren't

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1 "risk-informed" applications, designers are using
2 their design cert PRAs to actually guide their design.
3 So, leaving these failure modes out of their PRA may
4 lead to surprises later on, which seems unfortunate.

5 MEMBER STETKAR: Or other examples, entire
6 support systems out of their models for a different
7 application.

8 MS. MROWCA: And they just base it on the
9 fact that they only need to do Capability Category 1
10 versus 2.

11 CHAIRMAN BLEY: Staff told us we only have
12 to do Capability Category 1. We cut those failure modes
13 out, essentially. Sometimes you have to work it.

14 MR. HARRISON: Yes, and that's
15 unfortunate. Again, if an applicant cut out a failure
16 mode that resulted in a different consequence, I don't
17 think the supporting requirements would have --- they
18 couldn't leverage Capability Category 1 for that. That
19 would actually be a mistake, because the supporting
20 requirements don't support that. But, again, it's
21 unfortunate that, if you will, that the ACRS caught an
22 error that the Staff should have probably pursued with
23 an RAI.

24 Going to the scope. The scope of this is
25 strictly these two application phases, 52.47 that are

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1 requirements A27 to provide a description of your PRA,
2 and 52.79 is for the Combined License Applicant. What
3 this ISG does not address is the COL holders or
4 licensees under 51.71(h), any risk-informed
5 application that someone might want to pursue like the
6 risk-informed tech spec, or risk manage tech spec,
7 risk-informed in-service inspection. For those
8 applications, they should be addressing the ASME ASN
9 PRA standard directly in the context of the
10 application, so the risk-informed tech spec change
11 requires you to have Capability Category 2, you would
12 have to address that for that application.

13 So, in the front part of the ISG there were
14 six topics. I'm going to talk about the first five, and
15 then come back and talk about the sixth one at the end.
16 This is scoping capability of the PRA. The PRA
17 configuration control, peer reviews and
18 self-assessments, operational guidance and practices,
19 and large release frequency.

20 We didn't get a lot of comments in this
21 area, but there were a few changes that were made. Much
22 of this will be just a refresher update from the
23 presentation from last November. So, the scoping
24 capability of the PRA, we've already touched on this.
25 Based on SRP 19.0 is the generally --- it's generally

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1 accepted if an applicant meets the high-level
2 requirements and the applicable supporting
3 requirements of Capability Category 1.

4 If there's some supporting requirements in
5 the standard where there is no requirement of
6 Capability Category 1, and under those cases not doing
7 anything can be either conservative or
8 non-conservative depending on what the actual
9 requirement is. If one says, for example, that
10 Capability Category 2, it's take credit for recovery
11 actions, and Capability 1 says there is no credit for
12 recovery actions; well, that's actually a conservative
13 approach because you're not getting the credit for
14 recovery.

15 Other ones are non-conservative where it
16 tells you not to do something, and not doing something
17 actually is a non-conservative approach. So, we looked
18 at those conditions where there was no requirement and
19 determined if that was acceptable or if Capability
20 Category 2 or 3 in one case needed to be addressed.

21 It's also recognized for Part 7 and 8, they
22 state for most of the Capability Category 1 supporting
23 requirements that it's not defined. That's partly
24 because Part 7 and 8 come after Part 6, which is the
25 screening of external hazards, and so the expectation

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1 of the standard was if you got passed screening, you
2 obviously had to do more than a simple bounding
3 calculation, so you must have Capability 2. However,
4 that's not completely correct. You can still refine
5 your bounding analysis and still be something like
6 Capability Category 1, which is defined in Part 9, which
7 is the generic other hazards category. So, for those
8 two parts we say you should refer to Part 9 when you're
9 looking at high winds and external floods to determine
10 if you can do a Capability Category 1 hazard in those
11 areas.

12 The last bullet here is Part 10 is seismic
13 margins. That's not endorsed in Reg Guide 1.200. It's
14 recognized in the SPR 19 and other places that the
15 seismic analysis for these two applications is a
16 PRA-based seismic margins approach, and it's laid out
17 in SRP 19.0, as well as ISG-20, and so the expectation
18 is that the applicants will follow that guidance.

19 MEMBER STETKAR: And I get it for the design
20 certifications. I really don't get why a COL applicant
21 can't perform a seismic risk assessment, other than the
22 fact that some lawyer has interpreted some Staff
23 interpretation as saying that they ought not to.

24 MR. HARRISON: Yes, I don't think we
25 --- matter of fact, in the ISG in the comments we don't

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1 say they shouldn't.

2 MEMBER STETKAR: No, you say if you want to,
3 you could, but then we're going to hold you responsible
4 for meeting all sorts of requirements. I pretty much
5 given that choice wouldn't, nor would any sane person.
6 So, you're effectively discouraging them from doing
7 risk assessment.

8 MR. HARRISON: The only advantage of doing
9 it at the COL stage would be then you would be positioned
10 so that by the time the fuel loads you would already
11 have that analysis done and you're fine.

12 MEMBER STETKAR: And there's no technical
13 reason in my mind other than confirming the anchorages
14 of the as-built stuff to the as-designed stuff. There's
15 no other thing --- and being able to do a walkdown when,
16 indeed, you didn't hang something where it ought not
17 to have been hung ---

18 MR. HARRISON: Right.

19 MEMBER STETKAR: --- that you couldn't do
20 a seismic risk assessment, except for the fact that the
21 guidance now says warning, warning, you are not
22 required to do this by the law, but if you do it, we're
23 going to hold you responsible to a bunch of stuff that
24 you don't want to be held responsible for at this time.

25 MR. HARRISON: That was not the intent of

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1 those words, so ---

2 (Simultaneous speaking)

3 MR. HARRISON: But that's the way you've
4 read it, and the --- this was an area we actually got
5 a comment from the industry saying that we --- in the
6 draft we had been inconsistent because we said you
7 --- we had said COLs ---

8 MEMBER STETKAR: Could do it.

9 MR. HARRISON: Could do it.

10 MEMBER STETKAR: Yes, and they're saying
11 they don't want to do it.

12 MR. HARRISON: And they came back and said
13 that wasn't consistent with our guidance, and BCCOL
14 ISG-020. And I had to be honest and say they're right,
15 that guidance did say you can still do the PRA based
16 seismic margins. That seismic margins analysis is also
17 used in other areas by the folks in --- the structural
18 folks to assure themselves of margin.

19 MEMBER STETKAR: Seismic margin analysis
20 as a design tool, in my opinion, isn't necessarily a
21 bad thing, but it doesn't tell you anything about the
22 risk. It tells you that you have margin against the
23 design-basis seismic event, it does not tell you what
24 your seismic risk might be.

25 MR. HARRISON: Right. The shortcut

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1 approach is where you can estimate, but you're
2 essentially correct. It tells you you have margin, and
3 based on that margin historical considerations might
4 have an idea of the ballpark of the core damage
5 frequency, but you don't really have that precisely
6 until you do the seismic PRA as part of the fuel load,
7 for the fuel load PRA.

8 MEMBER STETKAR: So, using it as a semi, I
9 don't want to use the term "risk-informed," because I
10 have to be careful. Using it as a tool to inform the
11 design process and give you some confidence that you
12 have margin in that design, I think is a great idea.
13 It's better than some sort of nominal deterministic
14 criteria, but that's the role that it serves. And that's
15 why it's okay in the design certification, but after
16 you get real hazards and real information about what
17 the design is going to be, I don't see why you need to
18 stop. But that's --- I won't say anything else.

19 MR. HARRISON: Under PRA configuration
20 control, the applicants need to have a PRA
21 configuration control consistent with what's
22 identified in the PRA standard, recognizing that places
23 where the standard talks about being as-built, or
24 as-operated, obviously, or as to be built, or as to be
25 designed, those are --- that's a simple thing.

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1 It also needs to include guidance on when
2 the PRA needs to be updated or upgraded, and also
3 reflect on if there's design changes that are not
4 reflected in the PRA, that those things are identified
5 and tracked when the PRA catches up to the design;
6 recognizing the design and the PRA become figurative
7 in related activities.

8 Regarding peer reviews and
9 self-assessments, again, SRP 19 states that you have
10 to justify the adequacy of your PRA that's being used
11 for the Part 52 design cert or combined license, but
12 the idea of scope, level of detail, and technical
13 acceptability. Again, this might be a semantics issue,
14 but there are aspects of what is a peer review that might
15 not be able to be fully met since there would not be,
16 necessarily, independent expertise or full knowledge
17 of that plant design, or its operational philosophy
18 since it's in the design concept at that point.

19 That's recognized and review teams,
20 though, should still be able to perform a
21 self-assessment or have an independent assessment, if
22 you will. And all that requires is that they need to
23 recognize that weakness in their tools in areas that
24 they could not evaluate or were unsure about, they need
25 to identify the limitations in the design and

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1 operational information and the review team's
2 familiarity with the design.

3 That might be something similar to, I was
4 doing a peer review for a current plant, and for
5 whatever reason there was a scope item of which the peer
6 review did not address. Then you would have to ----the
7 peer review would document that they could not address
8 that area, and a future peer review would have to
9 address that if they wanted to leverage that aspect of
10 the PRA.

11 MEMBER STETKAR: Donnie, before you leave
12 that. I mentioned this last year on this stuff. The way
13 that the guidance is written, and I'll quote it so we
14 have it on the record. It says, "While Reg Guide 1.200
15 contains the Staff's Guidance concerning peer reviews,
16 SRP Section 19.0 states that the DC applications PRA
17 is not required to have a peer review." And you
18 established that. "SRP Section 19.0 further states that
19 if a peer review or self-assessment is conducted before
20 the application, the Staff should examine the
21 documented results of the review. If certain aspects
22 of the PRA deviates from accepted good practices, then
23 the applicant should justify that the deviations do not
24 impact the PRA results or risk insights; otherwise, the
25 applicant needs to revise the PRA to incorporate

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1 accepted good practices and resubmit the PRA results
2 and risk insights."

3 Okay, I'm an applicant. I read this, it
4 says they told me I don't have to have a peer review
5 or a self-assessment. If I do one of those things, now
6 they're going to come after me with sticks and stones
7 and beat me up, and make me do a heck of a lot of things.
8 So, I better not do any of those peer reviews or
9 self-assessments, because there's nothing that I need
10 to do, that I'm not required to do it, and if I do it,
11 I'm only going to get beat up. So, you've now built into
12 the guidance a guaranteed disincentive for them doing
13 any of the stuff that I think is a really good idea to
14 kind of take a look at what you've done in a PRA, and
15 whether I call it a peer review according to somebody's
16 rules and stuff like that, or having a good bunch of
17 people sit down and look through it, and do a
18 self-assessment or something. You've built in in your
19 guidance a disincentive for that, and I have a real
20 problem with that.

21 CHAIRMAN BLEY: Kind of how could you deal
22 with that if you lean toward what John's saying, and
23 you --- if they do it, you don't review it with the
24 intensity you would of a final submittal. It just
25 strikes me there ought to be some way to structure that;

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1 say, you know, we'll do that detailed review later, but
2 we really applaud the effort that ---

3 MEMBER STETKAR: Yes, it's we'll look
4 favorably on you if you've got one of these things.

5 MR. HARRISON: And the reality is, an
6 applicant still has to determine the acceptability of
7 the PRA analysis. So we could improve the phrasing in
8 the SRP, if you will, to make it clear that it's not
9 that if you do it, we're going to run you through the
10 mill and ---

11 MEMBER STETKAR: Well, you said phrasing in
12 the SRP. This is a quote out of the thing we're
13 reviewing, it's the Interim Guidance.

14 MR. HARRISON: Oh.

15 MEMBER STETKAR: I'm quoting directly from
16 the Interim Guidance. It's a peer review under the title
17 "Peer Reviews or Self-Assessments." It does cite SRP
18 Section 19.0, but everything that I read there is a
19 verbatim quote from the ISG.

20 MR. HARRISON: Also, going back ---

21 MEMBER STETKAR: So you don't need to
22 change the SRP to do that.

23 MR. HARRISON: Yes, I'm sorry. I'll fix the
24 ISG. What I was trying to do in that paragraph is state
25 that this is what the SRP says. But the reality is, the

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1 applicant is required to justify the adequacy of their
2 PRA that they're relying on. They have multiple ways
3 of demonstrating that; one is you could go out and get
4 an independent review, or a peer review. You could do
5 self-assessments against the standard. And that's the
6 normal; anything else would be kind of deviation from
7 the normal process, and they would have to describe that
8 to us. But, regardless, an applicant has to justify that
9 the PRA is good enough to be able to support the design
10 cert or the combined license. The way I've written it
11 in the ISG, unfortunately ---

12 MEMBER STETKAR: See, I read through this,
13 obviously, I'm trying to be critical but I try to read
14 through their --- this is one place where --- and
15 there's another one. I can't remember where it is in
16 my notes, but I'll stumble over it here. Where I try
17 to read the words and find out whether the words
18 essentially provide a disincentive for an applicant to
19 do something that ought to be good; rather than saying
20 if you do some of this stuff, that's good, and we're
21 going to look favorably at it. This says if you don't
22 do it, you're okay; if you do do it, we're going to beat
23 you up on it.

24 MR. HARRISON: Thank you, and that's not my
25 intent. The intent is you have to justify your PRA, that

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1 it's technically acceptable. If you go down the path
2 of comparing it to the standard, that's a much easier
3 process. Actually, the benefit is to do that than it
4 is to try to argue that your PRA is technically
5 acceptable based on some other means. So, that this
6 should have been the easy path, not the disincentive
7 path, so that's a --- going to be easier path. So, I'll
8 fix that language so it's clear of what the intent is.

9 The way it is on the slide is the intent,
10 that the applicant must justify the accuracy of the PRA.
11 That's the bottom line of what has to happen. Now, the
12 means of how you go about that vary, so I'll fix that.

13 The next topic is Operational Guidance and
14 Practices, and I'll just let you know before you get
15 there, I realized in reading my section that there was
16 a non-understandable sentence in there that I've
17 doodled that I'm going to go fix after this meeting,
18 and a couple of places where I'm making conforming
19 changes to another section.

20 But under Operational Guidance and
21 Practices, there's many SRs that refer explicitly to
22 using plant-specific procedures or guidance, or
23 plant-specific practices, the alignment of systems and
24 such. And that's because the PRA was made for operating
25 plants that were already built and operating, so that

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1 guidance already existed.

2 For a design cert or a combined license,
3 you don't have those procedures written yet. You may
4 have concepts of them, you may have guidance documents
5 or operational guidance documents of how you plan to
6 operate the plant, or how you think this system works.
7 So, if you were to read things literally you would say
8 you couldn't meet those requirements.

9 The Staff recognizes that the PRA should
10 be based on the available information appropriate for
11 that stage of the design and use where we don't have
12 explicit information good practices. And that you're
13 actually into a documentation requirement to identify
14 the limitations and impacts on the risk insights you
15 do for that, and to document the assumptions, and
16 uncertainties related to the use of that general
17 information.

18 The last topic here of the front end of the
19 ISG is on large release frequency. Reg Guide 1.174 uses
20 large early release frequency as its metric. New
21 reactors uses large release frequency. That
22 terminology can be confusing. When going through the
23 standard, we recognize that if you were to do the
24 supporting requirements for LERF and apply them to
25 large release frequency, you could do basically the

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1 same analysis. And all you have to do is change out
2 everywhere you saw LERF, change it out to LRF, and you
3 ought to be able to achieve what was required. So,
4 that's more of an editorial fix, if you will, for the
5 purposes of the advanced light-water reactors.

6 I want to shift to how we went about looking
7 at the standard, and determining what was appropriate.
8 We went through each of the SRs. We generally followed
9 if this were a risk-informed application the process
10 that's up in Section 1-3, recognizing that we're not
11 looking at a change in the licensing basis, but just
12 at the base model. So, you identify the application,
13 that's the design cert and the combined license. You
14 determine the Capability Categories, so earlier we had
15 said that the guidance said that you would meet the
16 high-level requirements in generally Capability
17 Category 1 with noted exceptions when there is no
18 requirement of Capability Category 1. And then you
19 determine the standard scope and level of detail. So,
20 is the standard itself adequate for the application?

21 And that's kind of what we're really
22 looking at, is that aspect. So, when you look at the
23 standard scope and level of detail, we evaluate each
24 of the SRs to determine for the design cert and COL
25 application stage was it feasible to meet that

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1 requirement at Capability Category 1? And then
2 determine if a clarification is needed or if there's
3 additional guidance needed.

4 So, you're going to see that even in cases
5 where we say you cannot meet a requirement, we may say
6 but you still need to do something, or if a requirement
7 is not applicable for some reason, you still may have
8 to do something. That especially is true where there's
9 places where a requirement has a multiple parts to it.
10 If it says do two things and the third thing is do a
11 walkdown, okay, you can't do the walkdown. And the way
12 we structured it, that would result in that supporting
13 requirement listed as, you know, cannot meet it.
14 However, we still want you to do the first two things,
15 so we would write that out in the clarification section.
16 So, cannot meet doesn't mean you don't do anything.

17 And here's just kind of the outcome. When
18 we went through we had these six categories of how
19 things were split out, either can meet, cannot meet,
20 the supporting requirement is not applicable, we
21 replaced the requirement with another requirement, we
22 enhanced the requirement by adding on to it, or there's
23 a new requirement because there was a missing need.

24 I put down the percentages of how things
25 came out, so about 75 percent are can meet Capability

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1 Category 1, 5 percent are cannot meet, 6 percent are
2 not applicable, there's 1 percent of them are replaced,
3 1 percent and just to give you context, of 686
4 supporting requirements, so about seven replacements.

5 MEMBER STETKAR: I think we asked you this
6 last year. If you did a similar comparison against
7 Capability Category 2, do you have any notion what the
8 statistics would look like?

9 MR. HARRISON: I don't have the exact
10 statistics, but I had actually started to do that. For
11 the internal events, there's very few that you cannot
12 meet. If you ---

13 MEMBER STETKAR: And, again, we just
14 --- when you say cannot meet, I want to ask you a second
15 --- there's a corollary, because I want to understand
16 how I interpret cannot meet, but go on.

17 MR. HARRISON: For the most part, if you
18 could meet Capability Category 1 for most --- again,
19 at least within the internal events, obviously, in
20 Parts 7 and 8 since I said, you know, the way they're
21 structured, you can also meet Capability Category 2.
22 Most of the standards are like the one up on the board
23 here where it goes across all three anyway. That's the
24 vast majority of those requirements, so that's you meet
25 it, or you don't.

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1 MEMBER STETKAR: Right.

2 MR. HARRISON: There's some --- and,
3 again, there's not lots. There's like IE-A4 has it
4 across 1 and 2, and something unique for 3. Right? IE-A5
5 has it segmented between 1, 2, and 3. For most of these
6 you can meet Capability Category 2, as well as 1. There
7 are some you can't.

8 MEMBER STETKAR: Right. But ---

9 MR. HARRISON: Or, again, you have to look
10 at the --- the thing they did that was nice which is
11 up on the wall here, is they bolded the differences so
12 you can see what's different by looking at what's in
13 bold. So, for like IE-A5 it's perform a qualitative
14 review of system impacts to identify initiating events.
15 To do 2, it's use a structured approach. Well, you could
16 still use a structured approach for a design cert versus
17 the allowable to identify initiating events. So, the
18 majority of the Capability Category 2 ones you can meet
19 them if you can meet Capability 1. There's some that
20 you can't.

21 MEMBER STETKAR: Okay.

22 MR. HARRISON: Just because it's
23 qualitative versus quantitative.

24 MEMBER STETKAR: Now, when I see the words
25 "not applicable," and I read the guidance, I understand

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1 what that means. When I see "cannot meet," what I heard
2 you say, and what I read in the guidance, and what I'm
3 concerned about interpretation is I'm not sure. If I'm
4 reading this and you say I cannot meet IE-A5, for
5 example, okay. Well, I don't need to worry about that
6 one, because I know I cannot meet it. The Staff says
7 I cannot meet it.

8 However, when I read the guidance, the
9 verbiage in there, it says well, you can't meet every
10 single one of those words, but there's a bunch of stuff
11 that you can, that you ought to be able to do, and ought
12 to think about it. And I have a problem with saying I
13 cannot meet it, because if people are doing check off
14 the boxes, they're saying the Staff says I can't meet
15 it. I don't need to even worry about it.

16 MR. HARRISON: Right. And the caution that
17 we're trying to give is just because it says you cannot
18 meet, or it's not applicable, doesn't mean you don't
19 do something. You need to read that comment or
20 clarification of what you need to do.

21 MEMBER STETKAR: And before you chime in,
22 I had one example where I found that you changed between
23 the draft we saw last year and the version that you've
24 written for today. You changed the words from "can meet"
25 to "cannot meet," and yet the verbiage in that item

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1 really didn't change all that much. So, suddenly now
2 you used to say I could meet it, but now you say I can't
3 meet it, but what you're saying I should, ought to do
4 is basically the same thing. So, I'm now really confused
5 about how to interpret cannot meet versus can meet,
6 because even in some of the stuff that you say I can
7 meet, you say well, you can't meet it completely, but
8 you can meet most of the stuff, so I'm going to call
9 it a can meet.

10 MR. HARRISON: Yes. The only place where I
11 think from a can meet to a cannot meet was back in the
12 winds and external floods. I believe that was the only
13 one that went that ---

14 MEMBER STETKAR: Let me find it. You're
15 probably right.

16 MR. HARRISON: And the reason that was
17 changed had nothing to do with --- there was an error
18 in the draft. We had identified for the generic approach
19 that that parallel requirement was cannot meet. We
20 thought when we were going through this effort of the
21 final that we had an inconsistency, so it was actually
22 a correction. The draft in the summary tables showed
23 those two requirements as cannot meet, but the table
24 in the back actually showed them as a can meet.

25 MEMBER STETKAR: Okay. But let me make sure

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1 I get the right --- "For this supporting requirement,"
2 and it is for winds. You're absolutely right. Yes,
3 winds. "For this supporting requirement, Capability
4 Category 1 is identified as not defined. Certain
5 aspects for Capability Category 2-3 consideration can
6 and should be performed, although DC applicants will
7 likely use generic information based on design and
8 guidance documents. At the COL application stage,
9 site-specific information is available and can be used
10 directly or in confirming the DC analyses though
11 generic data will likely still be used for structure
12 and component fragilities. However, plant walkdowns
13 cannot be performed for either DC or COL applications.
14 The information collected should include the available
15 and pertinent information for that application stage
16 to reflect the system design will be enhanced if
17 additional system design and information is available
18 at the COL application stage."

19 All of that sounds to me really reasonable,
20 and yet you say I cannot meet that requirement.

21 MS. MROWCA: John, which requirement are
22 you looking at?

23 MEMBER STETKAR: I'm looking at
24 specifically Table 7, Supporting Requirement WFR-A1,
25 and Table 8, Supporting Requirement XFR-A1.

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1 MR. HARRISON: I brought this up on ---

2 MEMBER STETKAR: It's the winds and the
3 floods that he remembered.

4 MS. MROWCA: Thank you.

5 MEMBER STETKAR: And those were changed
6 from can to cannot, but my whole point is not --- I'm
7 trying to get the concept here.

8 MR. HARRISON: Yes.

9 MEMBER STETKAR: That if I'm looking at
10 this as an applicant, as a person checking off boxes
11 and the Staff says I cannot meet it, then I say well,
12 I can't meet it. Why do I need to worry about it?

13 MR. HARRISON: Right. And this is exactly
14 the example I gave before that has multiple parts to
15 it.

16 MEMBER STETKAR: Well ---

17 MR. HARRISON: One part of which is
18 walkdowns.

19 MEMBER STETKAR: I know, but ---

20 MR. HARRISON: So, I could have done a
21 partial meet ---

22 CHAIRMAN BLEY: Donnie, the details
23 explain what you can meet and what you can't meet, or
24 what you might not be able to meet, or what you might
25 do in lieu of what we'd eventually be able to do. What

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1 do we gain by having these categories that sometimes,
2 and I have no idea how often, aren't --- well, they
3 aren't 100 percent applicable.

4 Some of the cannot meets have things you
5 can meet, some of them you said mostly you can meet so
6 we'll put it in a can meet, but some of the parts you
7 can't meet. What do we gain by having these labels? It
8 just seems at some point somebody doing it is going to
9 make a mistake because of it, or somebody reviewing it
10 will make a mistake, or we'll have all sorts of
11 bickering because you said we cannot meet it, and I
12 don't have to do it, and my lawyer says that's the way
13 it is.

14 MEMBER STETKAR: I get not applicable.
15 Okay, that's ---

16 CHAIRMAN BLEY: As long as it's all not
17 applicable.

18 MEMBER STETKAR: As long as it's all not
19 applicable, and I think ---

20 MR. HARRISON: And, unfortunately, there
21 are not applicables where there's actions you need to
22 do.

23 CHAIRMAN BLEY: Exactly.

24 MEMBER STETKAR: I get replace, because
25 that's a place where you made an actual value judgment

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1 and said you need something, and I get enhance. But this
2 can meet and cannot meet with, you know, if it's 97
3 percent that I can meet it, I'm going to call it can
4 meet, and if it's 95 percent that I can meet it, I'm
5 going to call it a cannot meet.

6 CHAIRMAN BLEY: What good does having that
7 label do anybody? All I can see it can do is create
8 confusion. I don't see any benefit to having it.

9 MR. HARRISON: And I agree ---

10 CHAIRMAN BLEY: And I wonder what the
11 benefit is.

12 MEMBER STETKAR: Income for attorneys.

13 CHAIRMAN BLEY: Somebody wanted it?

14 MR. HARRISON: Well, yes, I don't think
15 that was the intent. I think if you went back when we
16 started this effort and started going through it, we
17 were doing things in parallel with the PRA Standard
18 Committee ---

19 CHAIRMAN BLEY: And you were really
20 thinking some of them just won't apply, or you can't
21 meet them.

22 MR. HARRISON: Really thought that, yes.
23 And there a handful that you can't meet it, you don't
24 need to meet it, you can ignore it. But that's a few,
25 that's not the majority. And there's a number of places

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1 saying it's not applicable. So, I --- it might have been
2 in IE-A5 that okay, we're going to have those, so we'll
3 have a category ---

4 CHAIRMAN BLEY: But my own thought is ---

5 MR. HARRISON: Then we realized it ---

6 CHAIRMAN BLEY: There's no real benefit to
7 having these unless you restricted them to saying
8 cannot meet or not applicable only when it's 100 percent
9 true, and everything else you've got to read it. And
10 if I read it, I see I can meet 90 percent of it, but
11 part I can't. And you acknowledge that in the text, and
12 it's there.

13 MR. HARRISON: If you wanted to go down that
14 path, what you would end up with is some of the cannot
15 meets and the not applicables would become enhanced or
16 --- they would be replaced. You would just say instead
17 of doing this, do this, and the substitute would be
18 everything but the requirement for a walkdown.

19 CHAIRMAN BLEY: But I come back to what good
20 does it do anybody to have these labels item by item,
21 especially when they're aren't 100 percent true? What
22 good does it do having --- if they were 100 percent
23 true, I know I only have to --- I don't have to look
24 at anything that says cannot meet, and I don't have to
25 look at anything that says not applicable.

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1 MR. HARRISON: Yes.

2 CHAIRMAN BLEY: And I'd have to look at
3 everything else.

4 MR. HARRISON: And the intent was you would
5 read the title with the commentary so that you would
6 understand ---

7 CHAIRMAN BLEY: So, if you're going to read
8 the commentary, what good does that label do you? You,
9 what does --- does it do anybody at NRC, what good does
10 it do somebody who's trying to submit an application?

11 MR. HARRISON: The hope was it would
12 streamline kind of that part of the review, especially
13 if you --- if 75 percent ---

14 CHAIRMAN BLEY: You've got to read it
15 anyway.

16 MR. HARRISON: Well, if 75 percent is can
17 meet, I already know they have to address those, so ---

18 MEMBER STETKAR: Okay, the differences
19 between 75 percent and 80 percent, that's not a big
20 difference to me ---

21 MR. HARRISON: Right.

22 MEMBER STETKAR: Call them all can meet
23 with the qualifications of whatever is over in the
24 discussion.

25 MR. HARRISON: Yes. And one of the

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1 strategies ---

2 MEMBER STETKAR: If it were the difference
3 between 5 percent and 85 percent, I'd understand it.
4 You already have said that 75 to 80 percent ---

5 MR. HARRISON: Right. One of the things,
6 just as perspective, separate from this activity ---

7 CHAIRMAN BLEY: I can understand where it
8 came from. I just can't understand at this point what
9 good it does ---

10 (Simultaneous speaking)

11 CHAIRMAN BLEY: If you could possibly
12 explain to me what good it does to me if I'm doing an
13 application or to me if I'm doing a review of an
14 application, what good does that label do? I can see
15 ways it can confuse me, but I can't see a way it helps
16 me. And if you can tell me a way it helps me, I'm glad
17 to hear it.

18 MR. HARRISON: Yes. Again, maybe I'm being
19 myopic. I look at them and it helps me understand what's
20 the requirement, and it clues me in that there's pieces
21 of this requirement that they can't do, but it doesn't
22 mean that they can't do it all.

23 CHAIRMAN BLEY: A category that says cannot
24 meet entirely would be almost everything, you know. You
25 know what wouldn't be because you've got a lot of them

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1 that you can meet all the way through. But some of those
2 you have qualifiers on.

3 MR. HARRISON: Right.

4 CHAIRMAN BLEY: So, I'm still searching for
5 if I'm a user of this document and it's guidance for
6 somebody, if I'm a user either on Staff or at an
7 applicant, I'm having trouble seeing what good it does
8 me. And I have --- I can see where I can get in trouble
9 because of them.

10 MR. HARRISON: Yes. Again, from my
11 perspective, it helps me focus. But then ---

12 CHAIRMAN BLEY: Focus on what? You've got
13 to read the other ones, you've got to read all the text.

14 MR. HARRISON: But it focuses you in on if
15 an applicant comes in and they have a supporting
16 requirement, and they say oh, we couldn't meet this,
17 and we're saying no, you can meet it. That clues me in.
18 And if they say they can meet a requirement, and we say
19 well, wait a second, we believe that requirement is not
20 applicable or you can't meet it, what did you mean by
21 --- it would drive me to ask a question to that
22 applicant of what do they mean by can meet, if they say
23 they can meet it. Are they saying they can do walkdowns
24 when I know they can't, or they're going to have to
25 justify ---

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1 CHAIRMAN BLEY: You genuinely think it will
2 help you if you're doing a review.

3 MR. HARRISON: That was my intent.

4 CHAIRMAN BLEY: What I'm --- I know the
5 intent, and I know what the expectations were, but since
6 the expectations haven't panned out, now I'm having
7 trouble with the final product thinking if I'm a new
8 guy in the reviewing group, and I'm going to be real
9 tempted not to look at any of the cannot meets and not
10 applicables, especially if application says can't meet
11 it. And I look and I say oh, yes, that's what it says
12 over here. If I'm getting dragged into the fine print
13 anyway, I don't see how it helped me. Even if I use
14 it to budget my time since there's only 5 percent in
15 one, and 6 percent in the other, it's not going to help
16 me much on budgeting my time either. I'm just struggling
17 for how it helps me as a reviewer. And I really can see
18 arguments coming up because of it, or just confusion.
19 Oh, my gosh, I missed that because I looked at the
20 headline and I didn't read it carefully. And I read
21 two-thirds of the way through it, and agreed yes, I
22 can't meet this stuff. Oh, yes, the last one I could
23 have met. Oops, I missed.

24 MEMBER STETKAR: Or the Staff said well,
25 you can't meet it exactly, but there's stuff that you

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1 can kind of do that gets you part of the way there. Well,
2 all right, but I didn't think about that because the
3 Staff said I ---

4 CHAIRMAN BLEY: I'll be interested later in
5 hearing if NEI has --- finds this useful to anyone. And
6 I'm having trouble searching for it.

7 MR. HARRISON: And I will say separate from
8 this there's the activity with the advanced light-water
9 reactor appendix to the PRA standard is doing something
10 similar, and realizing that we wanted to be a little
11 bit better. Well, that project team is currently doing
12 is when we have a situation like this, we're replacing
13 them all, so we're saying you can only --- you can do
14 part of it, you can't do the other part.

15 CHAIRMAN BLEY: And we're just including
16 what you can do.

17 MR. HARRISON: We're rewriting the
18 standard, basically, and saying here's what we want you
19 to do. So, we're giving what I refer to as the
20 pre-operational phase requirement.

21 CHAIRMAN BLEY: You know, just thinking off
22 the top of my head, I could see keeping the can meet
23 for the 100 percent you can't meet them, and for any
24 of the ones that are partial revising them seems as easy
25 as having the table in there as it is now with the

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1 discussion.

2 MR. HARRISON: And that would push all
3 those into replace.

4 CHAIRMAN BLEY: Now, are you using these
5 categories for management purposes in some way that
6 makes it very useful?

7 MR. HARRISON: I think we're using it from
8 a general sense of maybe like general level of effort
9 that you think you're going to get. But, again, at 75
10 percent, it's not like we're saying 5 percent of the
11 things we're going to have to look at detail about what
12 you can't meet, and so they're going to do something
13 else, or some part of it. But beyond that, I'm not sure.
14 It's not being used for resource planning or budgeting.

15 CHAIRMAN BLEY: I mean, I would agree. I
16 would have done the same thing because it's nice to have
17 those categories if they're useful. And they would have
18 been useful if, in fact, I could say well, I only have
19 to look at 75, you know, 82 percent of these, and the
20 rest I only have to read, make it a lot easier, well,
21 a little easier. Anyway, we're just beating that. I'm
22 not sure --- I'm really stuck in wondering what good
23 it does. And if somebody can eventually tell me, that'll
24 be great. And if it doesn't do any good, I'd get rid
25 of it.

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1 MR. HARRISON: Yes. Hanh from the Staff is
2 walking up to the mic.

3 CHAIRMAN BLEY: Okay.

4 MR. PHAN: Good afternoon. My name is Hanh
5 Phan. I'm the Senior PRA Analyst in NRO. When we develop
6 the Staff Guidance 3 we did look at the PRA standard
7 and the potential applicants can do to fulfill that
8 standard. For those cannot meet we identify them and
9 we expect the applicant to identify those. If they
10 cannot meet, they have to justify how that would impact
11 the application. So, that not just the items say you
12 can ignore that standard or supporting requirement, but
13 they have to do something in order to satisfy that
14 supporting requirement.

15 CHAIRMAN BLEY: They have to do that
16 anyway.

17 MR. HARRISON: At some level. And, again,
18 the other --- the global intent or the purpose of the
19 ISG was to gain consistency across the applicants, so
20 instead of each applicant coming in with their own
21 argument for what they could or couldn't do, this was
22 trying to standardize that. So, from that standpoint
23 it could be beneficial in at least identifying these
24 are the common supporting requirements that are unique,
25 if you will, that you have to look at the comments to

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1 see if there's additional work to do.

2 So, I hear the comment. Again, the
3 alternate approach would be to put in replacement text
4 for each of these conditions, and ---

5 CHAIRMAN BLEY: If I read the summary
6 statement on page 9, you know, there it's clear that
7 can meet means you can meet them, and cannot meet means
8 you cannot meet them. But it turns out that's not quite
9 true, so anyway.

10 MEMBER STETKAR: The other approach is to
11 say they can meet every single one of them with some
12 qualifications, and they justify --- you know, you've
13 already provided in large part most of those
14 qualifications.

15 MR. HARRISON: Right.

16 MEMBER STETKAR: The quote that I read
17 earlier said well, you can't quite do this, but you can
18 do a bunch of the other stuff.

19 MR. HARRISON: Right. You could turn this
20 into a qualification clarification ---

21 MEMBER STETKAR: And say, well, if I get to
22 that point, I read the qualification and say, you know,
23 you're right. I can't meet it, consistent with what you
24 said I can't do, and I've done this other stuff, or for
25 some reason I can't do this other stuff that you said

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1 I ought to be able to do, and here's why I can't do that
2 stuff.

3 MR. HARRISON: Right. No, you are right.
4 You could do that approach where you went through the
5 standard and you said for some things we're just going
6 to give you clarifications, other places we're going
7 to give you a qualification that says --- that would
8 be like a replacement and say instead of this, do this.
9 A clarification is saying recognize you can't do the
10 aspects of this, but this is what you can do. So, then
11 it becomes your qualification-clarification ---

12 MEMBER STETKAR: But largely, Donnie,
13 you've already done that.

14 MR. HARRISON: Right.

15 MEMBER STETKAR: You said we could do this,
16 but I think you've already done all of that, haven't
17 you?

18 MR. HARRISON: It's in my clarification on
19 the ---

20 MEMBER STETKAR: Yes. So it isn't --- I
21 mean, to get to ---

22 (Simultaneous speaking)

23 MEMBER STETKAR: What I'm talking about
24 doesn't, to me, require any more --- well, I won't say
25 any more, but a substantial amount of effort because

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1 it seems like that --- and it is a substantial amount
2 of effort that was put into this has already been done,
3 and a lot of thought has been put into each one of these
4 things in those clarifications and comments.

5 MR. HARRISON: And we could make that
6 change. I mean ---

7 MS. MROWCA: Yes. I think it's something
8 that we could reconsider, and I think the timeliness
9 of having the Joint Committee on the Risk Management
10 Meeting in a couple of weeks would be really good
11 because we don't want to stray too far from them. And
12 if we're --- we want to make sure we're using consistent
13 definitions, et cetera, when they develop their
14 standard. So, I think that could be something ----- I
15 don't know if you've had these discussions with them
16 already, Donnie, or maybe it's something that we should
17 do.

18 CHAIRMAN BLEY: For the record, I misspoke
19 before. In your general directions you do say for the
20 cannot meet and the not applicable you've got to go read
21 it because there might be parts of it you have to do.

22 MR. HARRISON: Okay. I was going to pause
23 here and let, I believe it's Victoria, come up and
24 present on their comments on the draft.

25 MS. ANDERSON: All right. I'm Victoria

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1 Anderson of NEI, and work in the Risk Assessment
2 Division there.

3 We're here to talk a little bit today about
4 our comments on the ISG. This is what I put for the
5 background, that ISG was issued for comment late last
6 year. We provided comments in January of this year. We
7 focused on the appropriateness of the various
8 supporting requirements for the DC and COL
9 applications.

10 At this time, we have not seen a resolution
11 of the comments. The best I was able to do was thumb
12 through the beginning of Donnie's slides here, so ---

13 CHAIRMAN BLEY: We're aware of that. So, we
14 understand you haven't seen that.

15 MS. ANDERSON: Okay. So, really all I'm
16 able to do today is sort of provide the intent behind
17 our comments, and what we saw out of the ISG.

18 So, the first topic I was going to talk
19 about was Capability Category treatment. I think we
20 talked about that quite a bit already. And before I get
21 into our specific comment, before these PRAs would get
22 used for a more intensive risk-informed application,
23 such as risk-informed Tech Spec 4B, Risk-Informed
24 Completion Times or 69, some form of special treatment,
25 the licensee would have to make sure that their PRA was

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1 up to Capability Category 2 before they could go into
2 that kind of risk-informed application.

3 MEMBER STETKAR: And, Victoria, that's
4 certainly absolutely true. There's no dispute
5 whatsoever. The regulatory guidance certainly
6 requires that --- the regulatory guidance doesn't
7 require anything, but ---

8 MS. ANDERSON: Calls for.

9 MEMBER STETKAR: Calls for it, suggests
10 strongly. On the other hand, having been deeply
11 involved with the development of several risk
12 assessments in my life, to a project it is always
13 easier, much easier, more efficient, more technically,
14 I've lost the term, technically good when I'm
15 developing a model to put everything in at the time
16 because I'm thinking about that system, I'm thinking
17 about all of the failure modes, I'm thinking about the
18 effects of those failure modes, and I'm building that
19 model.

20 If I build a simplified model and then
21 years later come back and ask, in this case a different
22 person, to go fix up that model and make it better, that
23 is (a) woefully inefficient, and (b) they're going to
24 miss things, because the second analyst isn't going to
25 be thinking about those, the scope, and the detail, and

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1 the failure modes.

2 And the incremental effort when I'm
3 building the model from scratch to put in all of the
4 failure modes, or the scope and level of detail to
5 satisfy Capability Category 2, incrementally really
6 isn't all that much, if I look at a valve in terms of
7 failure to open, failure to close, spuriously open,
8 spuriously close. There's four of them. If I leave two
9 of them out, the spurious things because Capability
10 Category 1 for some reason doesn't require me to do that
11 because it's a small fraction of, in my interpretation,
12 the total failure rate, I actually have to think about
13 leaving those things out. I mean, I actually have to
14 think about not putting them in there where it's no
15 extra effort for me to put them in there.

16 MS. ANDERSON: I think I definitely
17 understand the inefficiencies that could result from
18 that. I think we've seen that in the development of
19 prior PRAs for the current fleet where we've had to go
20 and do a lot of back work to make our prior PRAs as
21 detailed as they need to be to reflect the plant
22 accurately, because we're going back so far
23 after-the-fact, after doing walkdowns of cables and all
24 sorts of things we don't need to be doing.

25 MEMBER STETKAR: That's a little bit of a

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1 different issue, though, than what I'm talking about
2 here. I'm talking about building the basic model, when
3 I have analysts sitting down looking at the available
4 electrical piping instrumentation lines and crafting
5 fault trees and event trees to build that model.

6 And then saying, well, all right. Now a COL
7 license holder years after the fact will have a PRA
8 staff that takes that thing and now must bring it up
9 to -- add things to it cleverly, and bring it up to
10 a Capability Category that's adequate to support a
11 risk-informed application that they'd really like to
12 get, like getting some relief from their tech specs,
13 or doing something like that. Those poor second set of
14 people that are handed that thing and then required to
15 take it and improve it are not going to be happy campers,
16 and they're likely to miss things, because they have
17 a deep incentive to not put the level of effort in at
18 that stage that the first people, in my opinion, could
19 have done very, very easily. And I'm done.

20 CHAIRMAN BLEY: And that's an efficiency
21 and getting it right eventually argument. The part that
22 bothers me is although we issue the design
23 certification based on deterministic criteria, many of
24 the applicants for design certification have actively
25 used their PRA to craft the design. It turns out it works

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1 well under the other criteria, but maybe they could have
2 done a little better if they had not shortcut things
3 they didn't have to shortcut.

4 We've also had a process in place through
5 ITAAC to eventually check and make sure we have a good
6 maintenance program, and some of the human factors
7 interface that will be done originally without the
8 benefit of that completed PRA, and we're shifting the
9 onus from a designer to an operator, to a whole bunch
10 of different operators. So, that's kind of where I come
11 from on it. It seems an odd way to do it, and it seems
12 like it doesn't give us as much advantage as we could
13 have had. Go ahead.

14 MS. ANDERSON: I mean, certainly, there are
15 potential for some inefficiencies. I do think that the
16 current set of licensees that are looking --- that are
17 building new plants, they're coordinated well with the
18 vendors and the vendors' PRA personnel, so I appreciate
19 that there's certainly some potential inefficiencies
20 in the process. But I just wanted to convey that these
21 PRAs will be, you know, because of the appropriate
22 qualities of what are used in regulatory risk-informed
23 applications.

24 CHAIRMAN BLEY: I guess we'll see when the
25 first owner-operator builds their pre-fuel load PRA how

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1 happy they are with the process they bought into
2 sometime ago.

3 MEMBER STETKAR: I'm really interested,
4 and we can name names here, Southern Nuclear has a very,
5 very active risk-informed management process for the
6 existing Vogtle units, so I'm really interested to see
7 what Southern Nuclear runs into when they start
8 upgrading the PRAs for Vogtle Units 3 and 4.

9 MS. ANDERSON: I think they're starting to
10 get the teams together to do some of that work, so there
11 may be some point at which they would be able to come
12 in and speak on that.

13 CHAIRMAN BLEY: We'll be interested.

14 MS. ANDERSON: So, back to the ISG --- oh,
15 go ahead.

16 MEMBER SCHULTZ: Victoria, if it were only
17 inefficiency, it wouldn't bother me. But I'm concerned
18 with the process that's being established. I'm
19 concerned that the improvements that will need to be
20 made in order to do those things that the operator will
21 want to do could be done piecemeal; and, therefore,
22 things, as John had said earlier, they could be missed.
23 And then it's more than inefficiency. Now you really
24 have a problem. And the further you go out doing that
25 type of fix and patch, and fix, and meet it forward,

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1 the more problems you get into.

2 MS. ANDERSON: I think we take it all under
3 advisement, and I do think that the --- like I said,
4 the utilities that are building new plants are
5 coordinating pretty closely with their vendors. So,
6 hopefully, we'll keep those difficulties to a minimum.

7 With respect to this ISG, the reason we
8 sort of have a concern with how in some cases NRC Staff
9 has said well, we need to look at the Capability
10 Category 2 rather than just the Capability Category 1.
11 We're concerned with consistency with the existing PRA
12 ISGs for new builds, that's ISG-3, and Section 4C
13 specifically notes that Capability Category 1 should
14 generally be acceptable for DC and COL applications.
15 We're mostly concerned about confusion because of
16 divergent regulatory guidance. And, yes, it does say
17 generally so, of course, there could be some cases where
18 it could be justified that Capability Category 2 would
19 --- so I think we just want to make sure that there's
20 consistency there between this ISG and the existing ISG
21 that's already out there.

22 So, we also identified a couple of areas
23 where there could be improved clarity. One of them was
24 actually what we were just discussing on cannot meet
25 versus can meet. And we felt that that was confusing

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1 when discussing generic versus plant-specific data. I
2 think it might be easier if that category that right
3 now is called "Cannot Meet," could be "Cannot Meet As
4 Written." That might make it more clear, or something
5 to that effect, because if it's adding the
6 clarification --- we had the exact same comment I think
7 on the confusion.

8 MEMBER STETKAR: Kind of sort of might be
9 able to meet ---

10 MS. ANDERSON: Right. But, you know, if
11 you're putting in clarification, then you could just
12 say cannot meet as written, and here are the
13 clarifications for how you can meet it. That might make
14 that easier.

15 We just had a couple of other comments on
16 potential for improved clarity. For example, the
17 standard talks about codes that are within know limited
18 applicability. We said within know --- or demonstrated
19 limits, for example, for plants that are not yet built.
20 We thought it would be beneficial to include a more
21 complete reference to the applicability of LRF
22 throughout the document so that whenever LERF was
23 referenced, there was a specific reference that LRF
24 would sub in.

25 And we also noted that the document could

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1 be structured to better address the potential
2 differences between Reference COL and Subsequent COL.
3 I think most of those are relatively minor
4 considerations for improved clarity.

5 A couple of additional specific
6 considerations for a DC COL. In some cases, it might
7 be difficult to completely identify model
8 uncertainties for a new passive design just because of
9 the lack of data and operating experience. It looks like
10 that comment got incorporated when I was thumbing
11 through.

12 We also noted that the SR clarification
13 should say as-to-be-built instead of as-built. And,
14 again, I think ---

15 MEMBER STETKAR: I think they pretty well
16 got that.

17 MS. ANDERSON: Yes. There were some cases
18 where the ISG stated that assumptions could be included
19 for DCs, but they didn't say assumptions could be
20 appropriate for COLs, and we think in some cases it
21 could still be appropriate for COLs.

22 MEMBER STETKAR: You know, I didn't check.
23 You went through it, I'm sure, with a fine-tooth comb,
24 but I did read a lot of that, anyway, in this version,
25 I think.

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1 MS. ANDERSON: Again, we haven't seen this
2 version so these are just the comments on the version
3 from last year.

4 MEMBER STETKAR: Okay. Yes.

5 MS. ANDERSON: So, if that's been fixed,
6 that's great.

7 MEMBER STETKAR: I think it has, but that's
8 me.

9 MS. ANDERSON: So, just in conclusion, we
10 think it's critical to resolve the issue of the
11 treatment of SRs with no action criteria for Capability
12 Category 1. That's something we need to make sure that
13 there's consistency across the guidance. And we do look
14 for to reviewing the disposition of the comments. And
15 that's all I have, unless there are other questions.

16 CHAIRMAN BLEY: Anything else? Thank you.

17 MS. ANDERSON: Thank you.

18 CHAIRMAN BLEY: And we do have your
19 detailed comments.

20 MS. ANDERSON: Okay, excellent.

21 MR. HARRISON: Okay. Now, I'll pick up
22 where Victoria left off, and I'll start to talk about
23 how we've addressed those comments, many of which were
24 just mentioned.

25 Again, when we put out the draft ISG back

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1 in November of last year, we only got one set of
2 comments. They were all issued by NEI, a collection of
3 industry comments. We counted up 49 specific comments.
4 We also considered our discussions at the last
5 Subcommittee meeting back last year. We had some
6 internal comments and edits that were identified, and
7 then again we reflected on some of the similar efforts
8 that we're doing in the PRA standards community to come
9 up to this stage.

10 Regarding the industry comments, there's
11 49 of them. I've broken them into these subgroups.
12 There's 24 of what I call edits or clarifications,
13 consistency checks, or corrections, 15 that are related
14 to assumptions or uncertainties in limitations, like
15 the last one there, limitations in --- that was the one
16 Victoria had up on the board, as well. And then 10
17 related strictly to initiating event or hazard
18 screening.

19 I'll note of the 49 comments, 37 of them
20 we agreed with the comments and incorporated change so
21 that left 12 that we disagreed with industry on their
22 comments. However, even within those 12, 7 we still made
23 changes to the supporting requirements affected by the
24 comment. It was just for a different reason than what
25 the comment from the industry was.

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1 Next series, and again I've got backup
2 slides so we can go to specific comments or specific
3 SRs, if you'd like. But I've gone through that list and
4 identified some examples, so here's an editorial one
5 of the as-to-be-built, as-to-be-operated as opposed to
6 the --- so we made that change in the clarification
7 comment section of the SR.

8 Consistency, here's one on IE-A8 where the
9 comment was this exceeded the PRA standard requirement
10 without having a basis provided. This is the no action
11 requirement where there's no action required in IE-A8.
12 And, in general, we said that we believe we're being
13 consistent. The ISG-03 says that generally that's
14 acceptable. When we looked at these specific ones, we
15 then looked to see if a requirement needed to be
16 addressed, if there was no action to particularly cover
17 A1. So, we believe we're generally consistent with
18 ISG-3 while addressing specific differences within the
19 standard for a design cert or COL.

20 A typical example of a clarification, this
21 was a general one on multiple modules that we had not
22 addressed multiple modules within our review. We
23 agreed, but we did add a footnote to make it explicitly
24 clear at least in the context that we didn't address
25 multiple module issues, and that that topic is

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1 something that's addressed in SRP Section 19. And
2 that's where the reader should go if they're looking
3 for information on that.

4 An example of a correction. There were two
5 comments related to SY A-19 and SY A-20. We had written
6 in the prior version that these SRs could not be met
7 because you wouldn't have plant-specific experience,
8 but this is not in the data section. This is in the
9 modeling section, and it's a model for maintenance
10 unavailability using plant history. So, we accepted the
11 comment and changed the entry to a can meet with a
12 clarification saying that you're not going to have
13 history of plant performance. You can model
14 unavailability due to maintenance, you just won't have
15 the data for it, so you'll be using general industry
16 practices. The red text down at the bottom is what we
17 basically changed, applicants should use general
18 industry practice available design information for
19 identifying component and train unavailabilities so,
20 that's the one where we corrected our entry.

21 An example of a COL assumption. I think
22 there were a number of --- in the area of assumptions,
23 there were a number of them that said recognize that
24 combined licenses will also have to make assumptions,
25 because we had language in there that said design certs

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1 won't have the information. They'll have to use
2 assumptions on the site, or on current conditions. And
3 the comment basically said hey, that doesn't mean that
4 combined licenses know everything about their design
5 at the application stage. They may still be working
6 things out, and so for all of those conditions we agreed
7 and put in language that said that we expected that a
8 combined license would have more information that
9 helped refine the model if it's available, but we
10 recognize some assumptions would still be made.

11 A lot of this deals with, in this case,
12 support systems. What's your ultimate heat sink? That
13 type of thing, that clearly would not have a design
14 cert, necessarily, but a combined license you would
15 have your site, you would know what your ultimate heat
16 sink was going to be. You may not still have figured
17 out exactly the details of that, and there might be
18 assumptions in there, so we thought that was a fair
19 clarification.

20 Uncertainty documentation, this was the
21 place early on where they --- the industry gives a
22 comment saying that it would be difficult to insure
23 completeness in identifying model uncertainty for
24 these plants, recognizing they've got such a low CDF.
25 We agree with the concept that it's difficult to insure

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1 completeness in identifying model uncertainty, but we
2 think you need to document the more uncertainty that
3 you have at these stages, mainly because as you refine
4 these models you need to know the assumptions that were
5 made to build them in the first place, so that you know
6 where you need to refine or change assumptions, or
7 validate those assumptions as you go forward.

8 We did do a slight change to the
9 clarification on these that we dropped the word "model"
10 because within the standard, model uncertainty
11 actually carries a specific meaning or definition to
12 it. And so we put in that you would document the
13 additional sources of uncertainty related assumptions.
14 The key focus here is you need to write down your
15 assumptions that you are using so you can check them
16 as you go forward.

17 Limitations in the peer reviews. We kind
18 of talked about this in a general sense. Again, they
19 were --- the way it was worded in the draft, we gave
20 the impression that this was to help risk-informed
21 applications, and I think we actually said it that way.
22 The resolution here is that wasn't really the intent.
23 It was really to say you need to document the
24 limitations in those actual reviews, we need
25 information, knowledge of the review teams. So, we've

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1 corrected that impression within the items --- there's
2 only one SR, I believe, on limitations on peer reviews.

3 Screening, I've got a couple of examples
4 here. One of the early comments was that we had put into
5 the standard in the draft ISG the idea that when you
6 did a couple of screening of initiating events that you
7 need to check and make sure that they were no more than
8 1 percent of the total for all the CDF, internal event
9 CDF, or 10 percent of that CDF. We also in that same
10 IE-C6 that enhanced it to include an ultimate insurance
11 statement that said when you screen out make sure the
12 cumulative impact of the screened initiators is less
13 than 5 percent of the total. So, the intent was to
14 reasonably insure that you didn't miss an initiator,
15 and show up to be what you screened out was actually
16 significant.

17 We also recognized that we had the 5
18 percent cumulative impact, which is somewhat redundant
19 with making people looking for a 10 percent and a 1
20 percent on individual situations, so we agreed that
21 that was --- we could live with just doing the insure
22 5 percent in a different requirement.

23 MEMBER STETKAR: Donnie.

24 MR. HARRISON: Yes?

25 MEMBER STETKAR: And because I stumble

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1 over all of these things, and I saw how you moved things
2 around for the internal events, and the stuff you added
3 for the other things that I'll mention in a moment.

4 If I'm now a practitioner, and I march
5 through the guidance here, the guidance up in IE-C6,
6 there are three sets of criteria there that allow me
7 to screen things out.

8 MR. HARRISON: Yes.

9 MEMBER STETKAR: And of the criteria, as
10 you've noted here, says that the "mean frequency of the
11 initiating event is less than 10 to the minus 6 per year
12 and core damage could not result unless at least two
13 trains of mitigating systems are failed independent of
14 the initiating event." Even though they might fail at
15 10 to the minus 1 because of common cause.

16 MR. HARRISON: Right.

17 MEMBER STETKAR: So, you know, it's 9.9973
18 times 10 to the minus 7, so I check off the box, and
19 I screen out that initiating event. And then I come over
20 to the cumulative thing, and it says "insure that the
21 mean cumulative contribution to core damage of the
22 internal initiating events that have been screened out
23 is less than 5 percent of the total mean CDF for internal
24 events."

25 And I've thrown out that 9.997 times 10 to

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1 the minus 7 initiating event. I still have to, though,
2 keep it so that I make sure that I meet this cumulative
3 ---

4 MR. HARRISON: Yes, that's the intent.

5 MEMBER STETKAR: Fine.

6 MR. HARRISON: The intent is to do that.

7 MEMBER STETKAR: As long as that's the
8 intent, and everybody understands that, I'm okay,
9 because it doesn't make any difference then what I do
10 up front.

11 MR. HARRISON: Yes, the confusion that we
12 had on IE ---

13 MEMBER STETKAR: No, that's ---

14 MR. HARRISON: We put everything in one
15 place, and it was up front that --- so we're taking the
16 insurance statements and put them in for
17 quantification.

18 MEMBER STETKAR: And I had a real problem
19 with it until I found where you put the cumulative
20 thing.

21 MR. HARRISON: Yes.

22 MEMBER STETKAR: And I just wanted to make
23 sure I wasn't misinterpreting some things.

24 MR. HARRISON: Yes. Well, again ---

25 MEMBER STETKAR: Because on the --- see,

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1 everywhere else you're pretty consistent and it's
2 concise in one place. On the internal events, you get
3 into these three different screening criteria, and you
4 took out the fall back, you know, the backstop positions
5 here, and then finally get down to the end where the
6 cumulative thing is, but it's geographically removed,
7 and it kind of reminds you, so ---

8 MR. HARRISON: Right, it's hard to write an
9 iterative process in a two dimensional direction, or
10 whatever. As you read through, you get to the end and
11 you say oh, I may have to go back and do some things.
12 But yes, you've read it exactly the way it's supposed
13 to work.

14 MEMBER STETKAR: Good.

15 MR. HARRISON: Here's one on screening
16 again on external B1. This is one where we said that
17 you cannot use --- we changed the criterion and
18 basically said you can't use Criterion 1 that's in the
19 standard. The comment we got said well, removal of the
20 use of design capability and the use of screening leads
21 to the inability to judge the consequences of an
22 external event. So, for example, if I have a design load
23 rating for my roof for a snow load, if that can't be
24 used, then how can you figure out the frequency?

25 Our resolution basically says that's not

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1 the intent of that actual supporting requirement. The
2 supporting requirement lets you screen out hazards not
3 considering their frequency. It simply says if you meet
4 the design basis, you can screen it out. That infers
5 a frequency, but it's not guaranteed to be a lower
6 frequency. And you get some of that by reading the
7 support requirement note where it says what that means,
8 it means a 1975 Standard Review Plan. So, we clearly
9 say when you're considering a hazard, you can consider
10 the capability of your design and determine if the
11 frequency of exceeding that capability is small enough
12 to screen it out. But just because you meet the design
13 basis doesn't mean you an screen it out.

14 And this gets into a long --- I've
15 shortened the answer down below, but it gets into a long
16 discussion about conditions where you might meet the
17 design tornado loading, but you only do that for your
18 safety-related structures, your non-safety structures
19 don't have to have that tornado loading, so people that
20 would screen out tornados because they design for
21 tornados may miss the non-safety structure impacts if
22 they could be critical.

23 For a new reactor, I wouldn't expect that
24 to be a critical issue, but you will see that in some
25 of the current operating where that is a problem.

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1 MEMBER STETKAR: Donnie, I'll bring it up
2 now. I went through, you know, trudged through all of
3 the requirements and looked at your application of the
4 screening criteria, and the assurances that, indeed,
5 whatever you've screened out don't exceed 5 percent of
6 your CDF, and LRF, and that particular category of
7 events. And that's one little question that I'm not even
8 going to bother, but I had a big question.

9 You've done that for everything, external
10 floods, high winds, tornados, you name it, except for
11 seismic. There's no requirement for me to say that the
12 stuff that I've screened out, and regardless of what
13 you say, the PRA-based seismic margins is a screening
14 process. There's no requirement for me to show that the
15 seismic stuff that I've screened out in my risk
16 assessment is less than the total --- than 5 percent
17 of the total seismic risk, CDF or LRF. And the seismic
18 risk for some of these plants might be 90 percent of
19 the total risk, so I've got a real problem with that,
20 because you're telling me that I need to assure, for
21 example, external flooding might be 5 percent of my
22 total risk, and I have to assure myself that the
23 external floods that I've screened out is less than 5
24 percent of that 5 percent, which is a really small
25 fraction. But I don't have to do anything with seismic

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1 stuff that might be almost all of my risk. I'm really
2 troubled by that. Philosophically, I'm really troubled
3 by that.

4 You're not asking somebody regardless of
5 what --- and there are methods that you can use given
6 the PRA-based seismic margin to try to estimate how much
7 you've thrown away, because you can infer what hazard
8 curves --- certainly at the COL stage you have the
9 hazard curves, and you can make estimates of what those
10 fragility curves might be, because there are slopes to
11 them, and uncertainties that don't vary wildly, so you
12 can make at least estimates, have you thrown away, you
13 know, 75 percent of your core damage frequency? So, why
14 doesn't the guidance at least tell the seismic people
15 to do the same thing that you do in about seven or eight
16 other areas for things that might be much, much more
17 minuscule?

18 MR. HARRISON: Yes. And, fundamentally, I
19 think the --- or philosophically, the driver was what
20 we expect most COL applicants to do when they come and
21 look at seismic is to confirm that their site parameters
22 are bounded by the design cert ---

23 MEMBER STETKAR: I'm sorry? The design cert
24 develops parameters for the design-basis earthquake at
25 somewhere in the 10 to the minus 5 to 10 to the minus

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1 4 exceedance frequency range.

2 MR. HARRISON: Right.

3 MEMBER STETKAR: They're usually closer
4 these days down closer to the 10 to the minus 5. It says
5 nothing about what happens if I get a 10 to the minus
6 6, 1.5g earthquake.

7 MR. HARRISON: Right.

8 MEMBER STETKAR: So, they're not bound
9 --- the site parameters don't bound the seismic risk
10 in any way, shape, or form. They give me assurance that
11 if I have the nominal design-basis earthquake, that I
12 have some margin against that.

13 MR. HARRISON: Right. Agreed.

14 MEMBER STETKAR: It gives me no information
15 about the seismic risk.

16 MR. HARRISON: I would agree.

17 MEMBER STETKAR: Okay. So, don't say that
18 they confirm that the site parameters bound anything.

19 MR. HARRISON: Okay. Yes, I didn't mean it
20 to say it bounded the risk. What they're saying is that
21 their parameters for their site are within, if you will,
22 the envelope of the analysis for the seismic event ---

23 MEMBER STETKAR: Which gives me confidence
24 that at --- that the buildings that they built aren't
25 going to fall down under the earthquake, the

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1 design-basis earthquake at a recurrence interval, if
2 you want to think of it that way.

3 MR. HARRISON: Right.

4 MEMBER STETKAR: That's been defined for
5 that design-basis earthquake.

6 MR. HARRISON: And that margin, there's
7 some level above that.

8 MEMBER STETKAR: There's margin for that,
9 but beyond that acceleration, it doesn't tell me much
10 because I don't know what the fragilities look like,
11 nor do I know what the exceedance frequency is. But when
12 I get to the site, I do know what the exceedance
13 frequency is because I know it all the way out to a
14 couple of g. And, in fact, I have the site-specific
15 ground motion response spectra available. And I have
16 the building design, so I have the building response
17 spectra, and I've got the soil structure interaction.
18 I've got all that stuff.

19 MR. HARRISON: No, I agree with you.

20 MEMBER STETKAR: And even if I said I didn't
21 have that stuff, there are ways that I can --- there
22 are methods that I can use to try to estimate
23 approximately how much I'm throwing away. And that's
24 my whole point; even given a PRA-based seismic margin,
25 because to do that you need to develop HCLPF capacities.

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1 To develop HCLPF capacities you have to have some
2 estimate of what you used for the basic fragility
3 models.

4 MR. HARRISON: Right. So, I agree you could
5 do it. We have not asked the applicant ---

6 MEMBER STETKAR: But why haven't you at
7 least asked them to do it, because you're explicitly
8 asking them to do it for everything else? They've
9 designed it against those tornados. You've already
10 admitted that they did that, but for tornados I've got
11 to do it because I've screened out some --- I've
12 screened out the EF5 tornados.

13 MR. HARRISON: No, that's a good point. I
14 really had not even thought of it that way. I was looking
15 at more, again, the position that we had taken which
16 was you were going to follow SR 19 and its reference
17 to ISG-020. That was the process. Within that process
18 which referred to SRM from the 1990s, '93, you just do
19 that. And then when the COL comes in they just confirm
20 that they're within the envelope of a prior analysis.
21 If they liquefaction or something then they have to
22 adjust that analysis to address it.

23 MEMBER STETKAR: Sure.

24 MR. HARRISON: But that's always in that
25 guidance, so when it comes to the seismic ---

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1 MEMBER STETKAR: But, again, that's all
2 within the design-basis envelope. That doesn't tell you
3 any --- at best, you know, plants are designed not to
4 melt for a design-basis LOCA. The plants are designed
5 not to break for a design-basis earthquake. The plants
6 are not designed to not melt for a reactor vessel
7 rupture event, which we quantify in PRAs.

8 MR. HARRISON: Yes.

9 MEMBER STETKAR: The plants are not
10 designed to withstand very, very large earthquakes
11 which have some perhaps very small frequency.

12 MR. HARRISON: And I could derive a
13 frequency for the review level earthquake that you ---

14 MEMBER STETKAR: Yes. No, I mean, you can
15 --- and, in fact, the Staff has done similar things by
16 extrapolating hazard curve, not hazard curves, they've
17 had hazard curves, but they've developed surrogate
18 fragility curves to try to do some sort of estimate,
19 ballpark estimate anyway for the risk for some
20 applications that we've seen recently, some --- no need
21 to mention.

22 MR. HARRISON: Yes.

23 MEMBER STETKAR: So, the Staff even knows
24 how to do that. Are they precise? No, but they'll
25 tell you whether you're screening out 5 percent, or 95

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1 percent of the seismic risk.

2 MR. HARRISON: That's a fair comment. I
3 hadn't actually considered that. I didn't go over the
4 5 percent criteria.

5 MEMBER STETKAR: It's the only one --- you
6 know, as I said, I went through these things with a
7 fine-tooth comb. I had the other things about is it
8 possible, is it feasible to do actually a seismic risk
9 assessment at the COL stage? My opinion is yes, it is.
10 But even if you take the opinion that you don't need
11 to do it according to the regulations, what you do need
12 to do to at least develop a site-specific seismic hazard
13 which you must have at the COL stage because you need
14 to do that comparison, and a PRA-based seismic margin
15 assessment, which you do need to develop some estimates
16 of HCLPFs which are theoretically derived from some
17 fragility assessments --- we won't get into that part
18 of the math.

19 CHAIRMAN BLEY: Originally.

20 MEMBER STETKAR: Originally. Given that
21 --- those two pieces of information, one can use them
22 to estimate how much you've, as I said, de facto
23 screened out by the methods that you've used.

24 MR. HARRISON: Something I would have to
25 think about and have it for sure, yes.

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1 MEMBER STETKAR: I mean, I ---

2 MR. HARRISON: It's a fair comment, though.

3 MEMBER STETKAR: Again, this is guidance.

4 It doesn't tell you how to do that particular estimation
5 calculation, but it could tell you that you ought to
6 try to do it.

7 MR. HARRISON: Right. Yes, I will say we had
8 --- one of the comments, one of the last comments we
9 got from NEI was a recognition, I mean, they pointed
10 out that high winds and external flooding were treated
11 differently than seismic. And our response was yes,
12 they are, but it's seismic that's the outlier, not high
13 winds ---

14 MEMBER STETKAR: And, as I said, in the
15 guidance, indeed, that's absolutely the case. Seismic
16 is the outlier, because everything else, regard --- I
17 mean, there are nuances, the way you write things about
18 how a particular hazard might be screened out, but
19 ultimately you fall back to this notion that there needs
20 to be a check to say that however you made the decision
21 to screen out something, you need to check that what
22 you screened out is not a large fraction of what you
23 kept in.

24 CHAIRMAN BLEY: We seem to have violent
25 agreement.

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1 MEMBER STETKAR: Yes.

2 MR. HARRISON: I'm just trying to think in
3 my mind how we would write that. We'll have to --- I
4 think that's an excellent approach to take practices,
5 how you would incorporate something like that into the
6 guidance. I may come back and bother you separately
7 about wording for something like that.

8 MEMBER STETKAR: Nope.

9 MR. HARRISON: The other slide here I
10 wanted to go was examples of changes that were made that
11 were not made because of an NEI comment, but may be
12 related to an NEI comment, but is based on other things.
13 I mentioned we were reflecting on internal review, the
14 activities we're doing on the PRA standard, and then
15 our meeting from last year of the ACRS Subcommittee.

16 Here's an example where we actually got an
17 NEI comment that says we're being contrary to the
18 standard, there's no basis provided. This was on
19 IFSN-A15 and 16. These are screening of the flooding
20 hazard, and we had said in our SR that these supporting
21 requirements were redundant with two other supporting
22 requirements in the standard, and therefore they didn't
23 need to be performed.

24 We disagreed with the NEI position that we
25 were being contrary to the PRA standard saying that

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1 these shouldn't be used. But at the same time, based
2 on our activities on the PRA standard and some internal
3 review, we realized that there's a one-word difference
4 between the screening of SR --- IFSN-A12 and A15, and
5 a one-word difference between A14 and A16, and that
6 those words are "area versus source." So, A12 and A14
7 screen on flood area, A15 and A16 screen on flood
8 source. So, we were incorrect in saying that they were
9 redundant with the other supporting requirements, so
10 they should be treated similar to those other ones.

11 That being said, we also had to add some
12 --- once you went in and started to say okay, we need
13 to treat them like A12 and A14, they're not exactly the
14 same. And I think it was IFSN-A15, it has language
15 that's not in IFSN-A12, so we had to do --- there was
16 also in A13 that why they did flood areas with three
17 SRs, and they did flood sources with only two SRs. They
18 say all the same things, but they split them up
19 differently. So, we fixed it in our latest version. But,
20 again, that was a driver from actual other activities
21 than a couple of comments.

22 Another one, this comes from the ACRS
23 Subcommittee discussion from last year. It was brought
24 up that some of our narrow reading of the SRs resulted
25 in us saying that you couldn't meet certain human

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1 reliability requirements.

2 We went back and looked at those
3 requirements, plus some others and revised their
4 designations and clarifications, and so we changed E3
5 and A4, one said human reliability and the internal
6 events, HRA-A4 is actually the human reliability and
7 that must be fire. So, we changed those to can meet,
8 and we just recognized that E4 was already a can meet,
9 but we need to change the clarification and enhancement
10 for that SR, as well. So, we took off language that plant
11 operators --- this has to do with plant operators and
12 training, reviewing materials and making sure that they
13 were consistent.

14 Now I'm going to stop and go over these
15 eight technical challenges. Again, there's a summary
16 table ---

17 CHAIRMAN BLEY: I'm thinking this might be
18 a good place to take our break, don't you think?

19 MR. HARRISON: Yes.

20 CHAIRMAN BLEY: You had to split this talk
21 somewhere, and this seems like a natural spot.

22 MR. HARRISON: That works.

23 CHAIRMAN BLEY: Okay, let's do that, and
24 let's come back at five after three.

25 (Whereupon, the above-entitled matter

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1 went off the record at 2:50 p.m. and resumed at 3:13
2 p.m.)

3 CHAIRMAN BLEY: We're back in session.

4 MR. HARRISON: Okay. This is Donnie
5 Harrison, again. Before we start on this slide, we did
6 go upstairs during the break and just reminded
7 ourselves that you had asked about comparing Capability
8 Category 1 and 2, and we did go through an effort and
9 generated comparison sheets this past year where we
10 walked through and said if there was a difference
11 --- first of all, most of the requirements are across
12 all three, but for those that are different, is it
13 attainable to get to Capability 2 or not? And the vast
14 majority of time yes, you could achieve Capability 2.

15 There are some that you can't, again,
16 similar to like if it requires interviews, if you want
17 to say. Now, I'll point in that situation, like IE-A8
18 was, we pushed the industry in our ISG to say you should
19 be interviewing the design personnel, the discipline
20 to do that.

21 Now we've got the comment that said
22 Capability Category 1 says I don't have to do anything,
23 so you shouldn't make me do it. So, we are pushing to
24 kind of --- in those situation --- at least situation
25 we're pushing to do the Capability Category 2-like

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1 thing. But that's the typical, where it's calling for
2 site-specific, or plant-specific information, or
3 specific things about the similar designs. So, we did
4 go through an effort to do that. That's just information
5 sharing.

6 We do have text in the front of the ISG that
7 says if you do have enhanced information, enhanced
8 capability, you should tell us about that. It's a
9 should, but it's mainly geared towards the --- if you
10 have more site information, if you're able, like a COL
11 and you actually have better information on your site
12 because you already have operating plants on that site,
13 or if you've got a foreign plant that's operating
14 already, you could leverage that information to help
15 you with procedures, and simulators, and you might be
16 able to meet some of the requirements we were saying
17 you cannot meet. So, it was in that context, just a --- I
18 don't know if there's anything additional, Lynn, that
19 you'd want to add to that, just for information sharing.

20 With that, we'll move into these eight
21 technical areas. Again, there was a summary table, and
22 really all I want to do with this section, these eight
23 topics were discussed at the last ACRS meeting. And I
24 just want to walk through the changes, and show
25 --- we've already hit most of these topics, but this

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1 is a lot easier to read than what was in the markup that
2 was provided to you. And it's a lot easier to understand
3 what actually changed, instead of all of the things
4 that got moved around in the tables.

5 So, the first one is site-specific
6 features and characteristics. And I'll just note on
7 this one, in the draft we said it was not applicable
8 for DC, but we had a column that said you could do it
9 for COL. Based on a public comment, and to be consistent
10 with our position on seismic hazard, we changed that
11 from not applicable for DC to be not applicable DC and
12 COL. And we brought the liquefaction consideration
13 that's in SHA-I down into that list, as well. So, that
14 was really just adjusting the grouping on that.

15 On screening events and hazards there was
16 more changes made because of the error the Staff made,
17 I made, and might as well be honest about it, and how
18 I categorized IFSN-A14, 15, 16, also internal flooding
19 QU-A3. So, we now say, you'll notice that IFSN-A14, 15,
20 16 got moved from not applicable to replace. QNS-C1
21 which is in the fire area, I believe, it got moved from
22 not applicable to enhance because we put in the
23 requirements for the 5 percent. The same happened with
24 LEF-2, so it's on this chart as an enhance. IFQU D8 was
25 an enhance, so it got out, and IFQU A12 was an

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1 enhancement. I believe you see IFQU A3 disappears
2 because it's now can meet, if I remember right. Yes,
3 it goes from not applicable to can meet. So, this just
4 added some language at the bottom about the insurance
5 that you don't screen out things that turn out to be
6 significant.

7 This one I'm just going to show, the
8 plant-specific layouts and capabilities, nothing
9 changed. These are all fire-related areas where you
10 don't have cable information, and such, so you're not
11 going to be able to meet those requirements.

12 Plant-specific operating experience,
13 SY-A19 and A20, I showed as an example earlier. They
14 disappear from this list, and they show up on the next
15 list because these are not actual operating experience
16 and data. Again, I mistake I made when I was reading
17 it and saying oh, you can't do it because it's asking
18 for maintenance unavailability, and my mind was
19 thinking data, not modeling. So, that's been corrected.

20 DAC-4 goes from a cannot meet to actually
21 being not applicable. It's actually a condition, a
22 supporting requirement, sort of change of state. DAC-14
23 is now a can meet. ESB-1 is a can meet, so they disappear
24 from the list. IE-A4 and A7 are removed from the list
25 because you can meet those now in our final draft. And

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1 PRMB-2 is a can meet, so it disappeared. Mission B4 went
2 from a can meet to not applicable. After we reread it,
3 we realized that it was condition, and you could meet
4 it. I believe that was the criteria for that.

5 Plant-specific guidance. This just shows
6 the SY-A19 and A20 coming over here. You can actually
7 do those, you'll just be using general industry
8 practices and information. I'll also point out that in
9 preparing for the ACRS meeting today, I realized that
10 F2 down there, HR-F2 has been missing the F since the
11 draft. I caught that as we were preparing for this
12 meeting, so that's something I need to --- will be fixed
13 before we go final with this.

14 Interviews, again, this is the example I
15 used with the human reliability E3 and HRA-A4, they went
16 from cannot meet to can meet, which for this topic meant
17 everything disappeared except for SF-A5. And that was
18 on fire brigade training that you were supposed to look
19 at fire brigade training procedures and see if the
20 realism of your actions matched up with the brigade
21 training. And actually kind of gave the impression you
22 should have drill data to be able to do that, so that's
23 the only one that we've maintained as a cannot meet in
24 this category.

25 Walkdowns is similar. Again, this is the

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1 same as it was before, and this is where we caught the
2 error in WFR-A1 and XFR-A1 under the can meet. It was
3 on this list the whole time, but we had the wrong
4 designation in the data, so we caught that for our
5 internal editing.

6 Treatment of uncertainties, this is
7 another --- we have a PP-C5. At one point, we had
8 created a C5, and then we deleted it, but we forgot to
9 take it off this table. And then we had a typo where
10 we had a B that should have been a C for the component
11 selection criteria as a new requirement. And you'll
12 notice just a little editing that I did where we added
13 the word "additional sources," but took out the word
14 "model" just so that we wouldn't cause a problem with
15 the definition that's in the standard. When I was using
16 this, I was thinking that PRA model as its whole,
17 because you're doing so many assumptions, there's
18 uncertainty; whereas, it's got a much newer definition
19 within the PRA standard.

20 Okay. This table shows a summary of the
21 supporting requirements where we changed the
22 designations. If I don't count seismic hazard,
23 there's 22 of them that I don't want to change in the
24 table. And I've included on this list what the main
25 influence for the change was. For example, IE-A4 was

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1 not applicable, we now say it can meet. And that's a
2 result of our meeting last year with the ACRS, as well
3 as an internal review, and the PRA standards
4 activities. And the same with A7. Things in the
5 supporting requirement column that are purple means I
6 had a comment from the industry, and you'll see SY-A19
7 changed, and the main influence was industry. But
8 you'll see on VAC-12 we had an industry comment and it
9 was not the industry position that made us change it,
10 it was the fact that what we're doing on the PRA
11 standards internal review was.

12 MEMBER STETKAR: Can you --- since you've
13 mentioned that one. You've got the stuff on the screen.
14 I'm having problems pulling up the standard. Can you
15 search on VAC-12 in the standard?

16 MR. HARRISON: See if I can do it this way
17 for you. Here we go. I've got it here as a summary of
18 what happened.

19 MEMBER STETKAR: Yes. The standard says,
20 "when an unavailability of a front line system
21 component is caused by an unavailability of a support
22 system count the unavailability towards that of the
23 support system and not the front line system in order
24 to avoid double counting, and to capture the support
25 system dependency properly." That means that if I have

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1 a service water pump out of service, and because of that
2 it disables component cooling water, assign that
3 because of support system, but assign the
4 unavailability to the support system, not the front
5 line system. And you say well, that's not applicable.
6 I don't know what that means, because I can use generic
7 maintenance data, and I don't know why this is not
8 applicable to me if I'm developing a model.

9 MR. HARRISON: Right. In the context of the
10 data section of the standard, this is actually counting
11 the unavailabilities for your plant. So, we said, well
12 ---

13 MEMBER STETKAR: I'm sorry. It says,
14 "Generic Parametric" --- at the top of this it says,
15 "Generic Parameter Estimates shall be chosen and
16 collection of plant-specific data shall be consistent
17 with the parameters," yada yada. Obviously, they can't
18 collect plant-specific data, but they can use generic
19 parameter unavailabilities.

20 MR. HARRISON: The reality is in DAC-1,
21 that's where you're going to actually do the generic
22 estimates. So, DAC-1 you collect all the generic
23 information, and then as you go through the rest of C-

24 CHAIRMAN BLEY: Including service water
25 unavailability.

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1 MEMBER STETKAR: Including service water
2 unavailability.

3 MR. HARRISON: Right. That's done
4 generically. But then at this point then you start
5 looking and saying -- maybe I'm misreading it. I should
6 probably bring it --- I should bring it up and look at
7 it.

8 But this was read as, if you're going to
9 use the generic information you collect under C1, and
10 use that, so I don't need to worry about C12.

11 MEMBER STETKAR: Let's see why you changed
12 that.

13 MR. HARRISON: Well, again, I changed it
14 because when I read it, I was looking at the counting
15 the unavailabilities, so this was --- I collected my
16 generic data and I looked at my plant and say how does
17 that influence the count? I may say well, just fill
18 that. Well, I'm just doing that generically at this
19 stage so I'm not going to have plant-specific data to
20 disconnect the support system from the front line
21 system. I'm just going to use the generic estimates I
22 had in C1 for that support system.

23 MEMBER STETKAR: I'm confused, because if
24 I have generic unavailability of a component cooling
25 water heat exchanger, and I have a model that has

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1 component cooling water heat exchanger in it, this to
2 me says I don't count the heat exchanger unavailability
3 in with the unavailability of my high pressure
4 injection. It put it on heat exchanger, doesn't it?

5 CHAIRMAN BLEY: Yes.

6 MEMBER STETKAR: Okay. And why can't I do
7 that?

8 MR. HARRISON: No, you will do that.

9 CHAIRMAN BLEY: The point Donnie is making,
10 the way you use the standard, you take the generic data
11 which has already had that done to it and use it for
12 the unavailabilities. And then you update with
13 plant-specific data according to the lower level
14 criterion. If you don't have any unavailabilities to
15 count for the plant, then you're staying with the
16 generic data.

17 MR. HARRISON: So, if you're looking at ---

18 CHAIRMAN BLEY: It's parsed the way you
19 said, but it isn't --- you don't rephrase it
20 generically, it should have already been done.

21 MR. HARRISON: Right. In DAC-1 you collect
22 all the generic parameter estimates for everything.
23 Then if you look at DAC-2 it says collect plant-specific
24 data, and it starts to go through and say okay, let's
25 start divvying up, and phasing, and updating.

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1 MEMBER STETKAR: You bet, and you can't do
2 that.

3 MR. HARRISON: Right. And then C5 says
4 collect the repeated plant-specific failures. So, from
5 that point, after C1 everything is trying to --- this
6 is how I read the standard. Everything else is kind of
7 trying to take that generic C1 and start manipulating
8 it. But if I've collected support system unavailability
9 in C1, when I get to C12 I'm not going to change it
10 because it's the generic information I'm using. I don't
11 need a lead count, I guess.

12 MEMBER STETKAR: Okay, maybe it's a ---

13 MR. HARRISON: That's how I've read it.

14 MEMBER STETKAR: --- different
15 interpretation of --- okay.

16 MR. HARRISON: Now, if someone got to C12
17 and they have some unique support system that didn't
18 quite fit the generic, you would have to re-figure out
19 what the generic unavailability is.

20 CHAIRMAN BLEY: Very carefully, because
21 you'd have to go back and understand where it all came
22 from.

23 MR. HARRISON: Yes.

24 MEMBER SCHULTZ: Donnie, can you go down to
25 the next page.

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1 MR. HARRISON: Yes. And, again, this was
2 just like C11 when using data from maintenance to
3 estimate uncertainties. Again, that was using data that
4 --- so, C11 is trying to take your maintenance
5 unavailability and look at the plant-specific
6 experience and see if there's an impact. And then C12
7 is saying when you have an unavailability, here's how
8 you should count it. Count it for the system that's
9 unavailable, not some front line system, or vice versa.
10 Yes, so if it's a support system that's caused the
11 problem, it was unavailable. You don't say that's a
12 front line system unavailability, even though it may
13 have had that consequence. So, if I lose service water
14 it's I lost service water. It's not that I lost the
15 diesels, or I lost like a tech spec would do, you're
16 saying your tech specs, you'd say it wasn't the diesel
17 unavailable because service water is unavailable. So,
18 this is just telling you how to count the information.

19 I think bottom line, John, is I totally
20 agree with you that ---

21 MEMBER STETKAR: It depends on --- I see
22 where you --- you know, that's why I have these
23 meetings. I can also see your interpretation of those
24 words in there, what it's trying to get across. I was
25 just ---

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1 MEMBER SCHULTZ: It's a very close read if
2 you just read the statements in the box.

3 MEMBER STETKAR: If you just read the ---

4 MEMBER SCHULTZ: Then I see it John's way,
5 and if you read it going right down ---

6 MEMBER STETKAR: My problem is I'm biased
7 because I saw one design certification applicant
8 completely not model a support system that I knew
9 existed in the plant and had PNIDs for it, and said well,
10 we've accounted for the unavailability of that support
11 system in the unavailability of this other stuff, where
12 the support system obviously affected not only the
13 stuff that they said they'd accounted for, but other
14 things that they hadn't even modeled. And I --- you
15 know, I'm tainted by that experience reading this in
16 that context. And you're reading it in the context of
17 when you're collecting data.

18 CHAIRMAN BLEY: When the standard was
19 built, it started with here's the generic data. Now,
20 when you get plant-specific, here's how you parse it.
21 And a lot of detailed work put in there to make sure
22 you count the plant-specific data correct.

23 MEMBER STETKAR: Okay.

24 MR. HARRISON: And I'm having screen
25 issues, so I'm going to put that away.

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1 MEMBER STETKAR: All right, thanks.

2 MR. HARRISON: But yes, so this walks
3 through. But, again, that was an example where we had
4 a comment from the industry and we actually did
5 something different, but it wasn't because of an
6 industry comment. We actually went in a different
7 direction.

8 I didn't know if you wanted to go into
9 detail on any of these in particular, or if there were
10 certain SRs that you wanted to look at. Again, at the
11 bottom of this list, the QU-D8 and the LE-F2, those were
12 things that were a result of an industry comment that
13 said IE-C6 on hazards and make it more understandable.
14 And in doing that, then we had to take some of the
15 information out of that supporting requirement and move
16 it to other places, so that resulted in some of these
17 changes.

18 The next shows some more of this. Again,
19 there's the error in A14, A15, and 16 there that we
20 fixed. Industry comments again drove some of the other
21 changes, again dealing with the string of hazards. As
22 you go down this list, again, the last two on the list
23 were, again, errors which were in the draft were front
24 table versus what we actually had in the back table,
25 the detail there within this hazard changed to all the

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1 seismic hazard COL entries.

2 MEMBER REMPE: So, on the last --- I know
3 we talked about WFR-A1 ---

4 MR. HARRISON: Yes.

5 MEMBER REMPE: --- before, and I've
6 listened to John and Dennis, as well as industry talk
7 about the wording. And I am still struggling with why
8 it's a cannot meet versus the fact that if I read what's
9 there about the generic data, I've heard you talk about
10 other ones where it's recognized because of the
11 requirement they are just going to use generic data,
12 and they do meet that. So, I know that --- could you
13 just clarify again what's in your thought process, and
14 why you decided to call it a cannot meet? Was it because
15 of the way that it's worded in the standard?

16 MR. HARRISON: It's because within the
17 standard there's --- within this support requirement
18 it's more than one action that's called for. So, when
19 you look at the action, it includes the requirement to
20 do a plant walkdown.

21 MEMBER REMPE: So, just because that
22 there's more than one.

23 MR. HARRISON: And that you cannot do at the
24 design cert or COL stage to verify the information.
25 However, it's got pieces in it that you can do, and that

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1 using not plant-specific but probably generic
2 information. So, that's where, again, maybe we've
3 created a partial --- you would have said well, you can
4 do part of it, but you can't do the other part of it,
5 or if we had done what was suggested earlier and provide
6 qualifications. We would have said well, we're taking
7 a qualification, or identifying a qualification for
8 this supporting requirement that would say this aspect
9 of it cannot be performed at these stages.

10 MEMBER REMPE: So, after listening to
11 industry and other Members' comments, are you planning
12 to do anything on that?

13 MR. HARRISON: I plan to take that back to
14 my management and talk to them. That's a worthwhile
15 topic to pursue.

16 MEMBER REMPE: Okay, thanks.

17 MR. HARRISON: If I can step, again
18 --- I've got backup slides that walk through these
19 requirements if you want to look at specific ones, or
20 how we --- if there's any comments from the industry
21 that you wanted a specific draft that we would do, I
22 can go through that. But this is my slide. It's next
23 steps, which is --- again, we'll take what we've heard
24 from this meeting back and have some discussions.

25 At the time I made these slides, the next

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1 step was to issue the final ISG for use. And just
2 recognize, there was only a few processing steps
3 remaining. I was told yesterday one of those processing
4 steps was cleared, so I believe from at least an
5 administrative standpoint we're done with the
6 administrative part that had to get through. So, we'll
7 take these comments back and consider what to do --

8 CHAIRMAN BLEY: Donnie.

9 MR. HARRISON: Yes?

10 CHAIRMAN BLEY: We're having a Full
11 Committee meeting with you in September, which is
12 pretty close.

13 MR. HARRISON: Right.

14 CHAIRMAN BLEY: You'll have --- you'll be
15 able to tell us what's happening then, do you think?

16 MR. HARRISON: I think by --- between now
17 and September 10th we should be able to come back and
18 tell you what we're doing.

19 CHAIRMAN BLEY: Okay.

20 MR. HARRISON: I don't think there's a
21 problem with that.

22 CHAIRMAN BLEY: Okay.

23 MR. HARRISON: We won't be done if we change
24 course, but we'll be on our course.

25 And the last part of this slide was just

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1 to point out, again, that parallel effort that we're
2 doing with the PRA standards as a working group
3 developing a similar but different product, some of the
4 things that we talked about here have been issues within
5 that activity, as well. I'll note that they're focusing
6 on all the Capability Categories and addressing the
7 pre-operational phase. So, again, in the situation
8 we've been talking about here about the cannot meet
9 versus can meet, in that context we're actually at least
10 proposing to write out the replacement requirement so
11 that everyone knows what it is and doesn't have to infer
12 it.

13 MEMBER STETKAR: Donnie, since we have a
14 lot of time and sort of wrapped up. Dennis mentioned
15 it at the beginning, I had heard I thought the same thing
16 that Dennis had heard, that the Standards Committee
17 basically was saying well, Category 3 is so far out
18 beyond what normal state of the practice is that it's
19 sort of useless to have it there. And Capability
20 Category 1 is so meaningless that it's useless to have
21 it, so that the Standards Committee was focusing on
22 let's think carefully, have a technical requirement
23 that now is called Capability Category 2, and let's
24 --- what have we learned over the last few years that
25 we need to enhance some of the information, you know,

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1 in that. But, essentially, do away with a
2 multi-category and have only one. You're saying that
3 for some reason the Standards Committee has decided to
4 retain Category 1.

5 MR. HARRISON: Those discussions did
6 happen. There was a push to go down to one Capability
7 Category, which would have been ---

8 MEMBER STETKAR: What's --- I mean, what
9 ---

10 MR. HARRISON: There was push-back from
11 participants on the standard that pushed to say there
12 are places where we use Category 1, they wanted to
13 retain it. There wasn't that anyone supporting keeping
14 Capability Category 3, so when it went to vote, 3 passed
15 to be eliminated, but 1 did not. And, Victoria, you can
16 help me on this if I'm characterized that.

17 MS. ANDERSON: I think that's an accurate
18 characterization, and I think Donnie referenced
19 earlier today that applications that Capability
20 Category 1 is sufficient for, and so that's why there
21 was support for maintaining Capability Category 1.

22 MEMBER STETKAR: Those are primarily,
23 though, the ISI tech.

24 MS. ANDERSON: ISI, ISG.

25 MEMBER STETKAR: Yes. And those are --- I'm

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1 not trying to down --- you know, the industry has gotten
2 a lot of really good benefit from those applications.

3 MS. ANDERSON: Right, but they're not the
4 --- they're not comprehensive, and not really
5 dependent on specific risk numbers.

6 MEMBER STETKAR: That's right.

7 MS. ANDERSON: So, that's why we wanted to
8 keep them.

9 CHAIRMAN BLEY: You don't have an
10 obligation to keep it going, but do you have something
11 more you'd like to pursue, John?

12 MEMBER STETKAR: No.

13 CHAIRMAN BLEY: Any questions from other
14 Members of the Committee for Donnie? Victoria, did you
15 want another round? We have you on the agenda for a
16 second round.

17 MS. ANDERSON: No, I think in general
18 --- other than the discussion we already had on the
19 Capability Category 1 versus 2, and the potential
20 conflict with ISG-3, I don't think there's really
21 anything more to say at this point. It looks like the
22 majority of our comments were addressed, or if they
23 weren't directly addressed, they were not really
24 high-priority comments.

25 CHAIRMAN BLEY: Okay, thank you. I guess we

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1 ought to go for comments. Hossein, can you get the line
2 open? I don't know if anybody's on it.

3 MR. NOURBAKHS: Nobody's there.

4 CHAIRMAN BLEY: Nobody's on it for sure,
5 you've checked.

6 MR. NOURBAKHS: Yes.

7 CHAIRMAN BLEY: Okay. Yes, Lynn?

8 MS. MROWCA: Dennis, I have one question.
9 After the Full Committee in September, were you
10 planning on writing a letter?

11 CHAIRMAN BLEY: Yes.

12 MS. MROWCA: Okay, thank you.

13 CHAIRMAN BLEY: Do you want one?

14 MS. MROWCA: I figured that you would. I
15 just wanted to clarify that.

16 MEMBER STETKAR: Why did you have to ask
17 whether she wanted it? Doesn't make any difference.

18 CHAIRMAN BLEY: Is there anyone in the
19 audience who would like to make a comment? In that case,
20 I'm going to go around the table and start with Joy for
21 comments, final comments from the Committee Members,
22 Subcommittee Members.

23 MEMBER REMPE: No, I don't have any
24 additional comments. Thanks for everyone's
25 presentations.

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1 MEMBER BALLINGER: Same.

2 MEMBER SCHULTZ: I have no further
3 comments. Thank you.

4 CHAIRMAN BLEY: I'm sorry, I skipped John.
5 Go ahead, John.

6 MEMBER STETKAR: I feel slighted, but I
7 don't have anything more to say, surprisingly enough.

8 CHAIRMAN BLEY: Dana? Okay. If any Members
9 of the Subcommittee have issues we've talked about that
10 rise to your attention level and you'd give me some
11 notes for beginning a letter, I would appreciate that.

12 Given nothing else, this meeting is
13 adjourned.

14 (Whereupon, the above-entitled matter was
15 concluded at 3:42 p.m.)

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Assessing the Technical Adequacy of the Advanced Light-Water Reactor Probabilistic Risk Assessment for the Design Certification Application and Combined License Application

DC/COL-ISG-028

ACRS Subcommittee Briefing

August 21, 2015

Presentation Outline

Background, Purpose, and Scope of DC/COL-ISG-028

General Topics of DC/COL PRA Standard Usage

SR-by-SR Evaluation Process

Summary of Comments and Dispositions (with Examples)

Examples of Other Types of Changes

Changes to the Summary of DC/COL Technical Challenges

Summary of SRs with Designation Changes

Next Steps

Background

PRA Standard (ASME/ANS RA-Sa-2009) endorsed in RG 1.200, Revision 2

- Developed based on current operating reactors
- Establishes high-level requirements (HLRs) and individual supporting requirements (SRs) for the “What” (aspects) of PRA; not the “How” (methods, approaches) of PRA
- Does not specifically address:
 - ALWR designs
 - Pre-operational phases (e.g., Part 52 licensing)
 - Large Release Frequency (LRF)

Purpose of ISG

Provide consistent consideration of the PRA Standard in assessing the technical adequacy of the PRA needed for the Part 52 DC/COL applications

- Supplements RG 1.200, which currently endorses the PRA Standard (ASME/ANS RA-Sa-2009) for current operating reactors
- Will incorporate into RG 1.200, RG 1.206, and SRP 19.0, as appropriate, at next revision of these documents
 - Following issuance of next Edition of PRA Standard

Similar, but broader, effort being developed by ASME/ANS PRA Standard ALWR project team

Scope of ISG

Use for PRA required for:

- DC Application per 10 CFR 52.47(a)(27)
- COL Application per 10 CFR 52.79(a)(46) & (d)(1)

Not for PRA required for:

- COL Holders/Licensees per 10 CFR 50.71(h)
 - PRA required by fuel load and beyond
- Risk-Informed Applications
 - ISI, TS, ILRT, etc.
- These PRAs and PRA applications should address the endorsed ASME/ANS PRA Standard, as appropriate for the application

Only addresses typical DC/COL application conditions

- Does not change current staff positions on approaches

General Topics of DC/COL Usage of PRA Standard

Scope and Capability of PRA

PRA Configuration Control

Peer Reviews/Self Assessments

Operational Guidance and Practices

Large Release Frequency

Scope and Capability of PRA

SRP 19.0: DC/COL applicant PRA is generally acceptable if it meets the HLRs and applicable SRs at Capability Category I (CC-I)

- Some SRs do not identify an action at CC-I
 - May be conservative or non-conservative
 - These SRs are evaluated to determine appropriate CC
- Part 7 (Winds) and Part 8 (External Floods) should use Part 9 (Other Hazards) for CC-I
- Part 10 (Seismic Margins Analysis [SMA]) is not endorsed by RG 1.200
 - Seismic analysis should follow PRA-based SMA approach outlined in SRP 19.0 and DC/COL-ISG-020

PRA Configuration Control

DC/COL applicants should have a PRA configuration control program consistent with the PRA Standard (Section 1-5)

- Reference to “as-built” and “as-operated” should be interpreted “as-to-be-built” and “as-to-be-operated”
- Should include guidance on when PRA needs to be updated/upgraded
 - Specifically should include guidance on addressing design/plant conditions that differ from PRA model

Peer Reviews/Self Assessments

SRP 19.0: DC/COL applicant must justify adequacy of PRA (scope, level of detail, and technical acceptability)

- DC/COL applicants may not be able to fully meet definition of peer review, but could still have independent review
 - Review Team may not have detailed knowledge of all aspects of the design, but should have some knowledge of design and operational philosophy
 - Review team documentation should identify the team's review limitations due to design and operational information and familiarity
 - Impact on use of risk results and insights
 - Technical elements that need additional future reviews when information becomes available

Operational Guidance & Practices

Many SRs refer explicitly to using plant-specific procedures and practices since the PRA Standard was developed for current operating reactors and the guidance/practices already existed

- DC/COL applicants may not have plant-specific procedures or established specific operating practices
- PRA should be based on available information regarding design, operating guidance/philosophy, and typical industry good practices
- Documentation should identify limitations and impacts on use of risk results and insights
- Documentation should identify sources of uncertainty and assumptions due to use of general information

Large Release Frequency

PRA Standard uses Large Early Release Frequency (LERF), which is a risk acceptance guideline for risk-informed applications (RG 1.174) for current operating plants

- DC/COL applicants address Large Release Frequency (LRF)
- The PRA Standard HLRs and SRs for developing a LERF model would be essentially the same for developing a LRF model
- DC/COL applicants should use the current HLRs and SRs replacing LERF with LRF

SR-by-SR Evaluation Process

ISG developed in a manner generally consistent with Section 1-3 of the PRA Standard – *Risk Assessment Application Process*

- *Identification of Application*
 - ***Application for a DC or COL***
- *Determination of Capability Categories*
 - ***Meet HLRs and Generally CC-I (with noted exceptions)***
- *Determination of the Standard's Scope and Level of Detail*

Determination of the Standard's Scope and Level of Detail

Evaluate applicability of SR to DC and COL application stage

Evaluate feasibility of meeting SR at CC-I for DC and COL application stages

- Determine if clarification is needed or additional guidance is needed

General SR Evaluation Outcomes

Can Meet (75%)

- Aspects of SR may need to be clarified for DC/COL application stage

Cannot Meet (5%)

- Aspects of SR may need to be performed - identified by comment/clarification

Not Applicable (6%)

- SR is conditioned on an activity or input that does not exist or is not performed **OR**
SR is not appropriate for ALWR
- Aspects of SR may need to be performed - identified by a comment/clarification

Replace (1%)

- SR is not appropriate for ALWR and a modified/different requirement is needed

Enhance (11%)

- SR needs to be supplemented to address DC/COL application stage conditions

New (2%)

- No SR addresses the specific topic for which a requirement is needed

END OF OPENING PRESENTATION

Comments on Draft ISG

Draft ISG issued for Use and Comment in November 2014

1 set of comments received (submitted by NEI)

- 49 specific comments

Also considered

- 2014 Subcommittee discussions on Draft ISG
- Internal comments/edits
- Similar, but different, effort being pursued in PRA Standards community (developing appendix to address the PRA Standard for ALWRs in the pre-operational phase)

Summary of Industry Comments

24 – Edits/Clarifications/Consistency/Corrections

- Editorial/ALWR Terminology (10)
- Consistency (7)
- Clarifications (5)
- Corrections (2)

15 – Assumptions/Uncertainty/Limitations

- COL assumptions (11)
- Uncertainty documentation (2)
- Limitations in peer reviews (1)
- Limitations in computer codes used (1)

10 – Screening Initiating Events/Hazards/Components

- IE-C6 (3), EXT-B1 (2), IFSN-A13-16 (4), SFR-E2

Example: Editorial/ALWR Terminology

Comment – SY-A4: Should the Clarifications and Comments section reflect the “as-to-be-built” terminology as presented in the SY-A2 Clarifications and Comments section?

Resolution: Added discussion to Clarification and Comment section for SR

For the DC application and COL application, the pertinent information used for the systems analysis will be that which reflects the “as-to-be-built” and “as-to-be-operated” design appropriate for that application stage...

Example: Consistency

Comment – IE-A8: As written this exceeds the PRA Standard requirement without having a basis provided.

Resolution: There is no CC I action, and in the general ISG discussion the staff states under these conditions, CC II was considered to determine if an action was appropriate. Thus, no change to the ISG.

CC I contains no requirement for interviewing plant personnel, while interviews are needed to achieve CC II. The DC application and COL application PRAs should include interviews of the design/plant staff appropriate for that stage ... recognizing that the interviews will not reflect plant-specific experiences, but design and general experiences.

Example: Clarifications

Comment – General-Multiple Module Issues: The ISG does not address multiple module issues. This is apparently in keeping with the PRA standard ... If ISG-028 will not address multiple module PRA issues, suggest clearly stating so and pointing to draft SRP 19.0 rev 3 for the staff position.

Resolution: Footnote added to ISG (Page 4) to make it clear that the ISG does not address any additional considerations for multiple module designs.

This ISG does not discuss any additional considerations for PRAs for multiple module designs. SRP Section 19.0 provides guidance on the additional considerations related to developing risk insights for multiple module designs.

Example: Corrections

Comment – SY-A19 and SY-A20: These supporting requirements do not invoke plant-specific data. They are modeling supporting requirements which can be met.

Resolution: Changed entries to Can Meet with a clarification regarding the use of “actual practices and history of the plant,” “procedures,” and “planned activities.”

For these application stages actual practices and plant history will not be available to develop component and train unavailabilities, especially those related to corrective maintenance. Therefore, the applicants should use **general industry practices and the available design information for identifying** component and train unavailabilities in the system models.

Example: COL Assumptions

Comment – ES-A2 and ES-B4: Assumptions may still be needed for a COL.

Resolution: Assumptions may still be needed for a COL application. Clarified the discussion in the ISG.

... Further, DC applicants may make assumptions regarding the design of some of the support systems, while the COL applicant can **more** directly address the site-specific support system design **if the design information is available;** recognizing that even at this stage some assumptions will be made regarding the design and operations of systems.

Example: Uncertainty Documentation

Comment – Added Documentation Sections: It will be difficult to ensure completeness in identifying model uncertainties for a new, passive design with a significantly lower CDF, and in a model that includes differences from typical industry PRAs (e.g., 72 hr. mission time).

Resolution: Additional documentation needed due to significantly more assumptions at these stages, which will support the evolution of the PRA as more information becomes available (e.g., knowing where assumptions can be validated or changed) and enhance reviews. Slight changes to SRs for clarity (i.e., dropped “model”).

FSS-H9 Enhanced to Add: DOCUMENT the **additional** sources of ~~model~~-uncertainty and related assumptions resulting from the status of the design, site, operational, and maintenance information or data.

Example: Limitations in Peer Reviews

Comment – Peer Reviews or Self Assessments: As described it is very difficult to perform this on an application specific basis.

Resolution: Need to document limitations in these reviews due to the limited information and data available, or areas not fully developed, to understand impacts on future PRA changes/applications (e.g., need for focus-scope peer reviews for areas not fully developed or involving significant assumptions). Similar to documenting areas not reviewed or limits in scope of peer review. Some changes made to be more general than risk-informed applications and clarity.

... In addition, the review documentation should identify any limitations associated with the review ~~that would impact risk-informed applications~~(e.g., aspects of the PRA that were not able to be fully reviewed) due to the status of the design, site, operational, and maintenance information or data that would impact the use of the risk results and insights. Further, the review documentation should identify the specific technical elements that need additional future reviews when the information becomes available.

Example: Screening

Comment – IE-C6: The intent of the 10% and 1% are unclear.

Resolution: The intent was to reasonably ensure individual initiating events were not screened out based on their initiating event frequency, if it is later determined that this frequency is greater than the cited percentage for the total hazard group (thus potentially screening a “significant” contributor). Recognizing that these percentage values are similar to the other enhancement to ensure cumulative contributions of screened initiating events are not significant, these percentage checks were removed.

USE the following screening criteria to eliminate initiating events or groups from further evaluation: (a) the mean frequency of the initiating event is less than 1×10^{-6} per reactor year (/ry) ~~and less than 10% of the internal events mean CDF~~ and core damage could not occur unless at least two trains of mitigating systems are failed independent of the initiating event.

Example: Screening

Comment – EXT-B1: Removal of the use of design capability in the use of screening leads to the inability to judge the consequences of an external event. For example: If the design load rating of the roof for a snow load cannot be used, then how can the frequency of exceeding the load for consequence analysis be determined?

Resolution: Criterion 1 (event is of equal or lesser damage potential than events for which the plant has been designed) uses the design bases to screen out hazards without consideration of the frequency of exceeding that design bases and the SR note refers to meeting the 1975 SRP. Actual design capability can be considered in screening and evaluating hazards, but needs to include the potential impacts of all SSCs (e.g., potential impact from non-safety SSC failures or frequency/impact of lower wind speeds). Clarified SR discussion to make it clear design capability can be considered.

... In screening out hazards, meeting specific design ~~capability~~ criteria for some structures and components (similar to relying on meeting the SRP or GDC) should not be the basis for screening. Events within the design criteria may have a higher frequency of occurrence with similar effects as that of the design basis and events greater than the design criteria may have significant effects with only slightly less frequency of occurrence... With that clarification, the applicant can consider the capability of the design of the SSCs, including the lower capability of some SSCs onsite, to support the determination of the frequency of events that will exceed these capabilities...

Other Examples of Changes

Comment – IFSN-A15 and IFSN-A16: This is contrary to the PRA Standard with no basis provided.

Resolution: The staff disagrees with the comment that the ISG position is contrary to the PRA Standard in stating an SR should not be used. The ISG specific entries explain the staff's positions as they relate to the specific use of the PRA Standard for the DC application and COL application, such as described for IFSN-A13. However, **[based on staff activities on the development of the draft ALWR Appendix to the Standard and internal staff review]**, it was determined that the staff's determination that these SRs were redundant with previous SRs was incorrect (IFSN-A12 and A14 are for flood areas, while IFSN-A15 and A16 are for flood sources) and they were changed from Not Applicable to Replace to be consistent with the other SRs.

Consistent with the previous clarifications and comments related to screening flood areas (IFSN-A12 through IFSN A-14), this supporting requirement, related to screening flood sources should also be replaced with the following criteria: Use potential human mitigative actions as additional criteria for screening out flood sources if it can be demonstrated that the credited actions and associated equipment have an exceedingly low probability of failure (i.e., collectively less than or equal to 1×10^{-5}) following the applicable supporting requirements of Part 2 (e.g., Human Reliability Analysis – Subsection 2-2.5) for the worst flooding initiator.

Other Examples of Changes

ACRS Subcommittee Discussion regarding operator/trainer reviews of materials: Questioned narrow reading of some SRs, using HR-E3, HR-E4, and HRA-A4 as examples.

Resolution: The staff reviewed these SRs, and others that were similar, and revised the designations and clarifications and comments, as appropriate. HR-E3 and HRA-A4 were changed to Can Meet (HR-E4 already was Can Meet) and the clarifications were enhanced for all these SRs.

This supporting requirement requires the review of the procedure interpretations with plant operations and training personnel to verify that they reflect the operations and training practices. For DC and COL applications, the model will likely be based on design and guidance documents; because procedures will not be available. In addition, ~~plant operators and training practices will likely not be available to perform this review. That being the case, this supporting requirement is not feasible in these application stages.~~ the reviews should involve the design and/or plant disciplines responsible for developing and implementing the operational guidance.

DC/COL Technical Challenges

Site-Specific Features and Characteristics

Screening Events/Hazards for Analysis

Plant-Specific Layouts/Capabilities

Plant-Specific Operating Experience and Data

Plant-Specific Guidance

Interviews

Walkdowns

Treatment of Uncertainties

Site-Specific Features & Characteristics

Cannot Meet for DC:

~~SHA-I~~, SFR-C1, EXT-A2

Not Applicable for DC:

~~SHA-A1, SHA-A2, SHA-A3, SHA-A4,
SHA-A5, SHA-B1, SHA-B2, SHA-B3,
SHA-C1, SHA-C2, SHA-C3, SHA-C4,
SHA-D1, SHA-D2, SHA-D3, SHA-D4,
SHA-E1, SHA-E2, SHA-F1, SHA-F2,
SHA-F3, SHA-G1, SHA-H~~, SFR-C2,
SFR-C4, SFR-C6

Not Applicable for DC & COL:

SHA-A1, SHA-A2, SHA-A3, SHA-A4,
SHA-A5, SHA-B1, SHA-B2, SHA-B3,
SHA-C1, SHA-C2, SHA-C3, SHA-C4,
SHA-D1, SHA-D2, SHA-D3, SHA-D4,
SHA-E1, SHA-E2, SHA-F1, SHA-F2,
SHA-F3, SHA-G1, SHA-H, SHA-I

The staff recognizes that DC applications will not have regional or site-specific information on which to base their external hazards analysis or to ensure the information characterizes all credible hazards/sources at the site. DC applicants will establish site characteristics and site interface requirements upon which the specific hazards analysis will be performed. For COL applications, site-specific hazard information will be available to ~~address these supporting requirements directly and/or~~ confirm that the DC hazard bounds the actual site and regional characteristics.

Screening Events/Hazards for Analysis

Not Applicable for DC & COL:

IFSN-A13, ~~IFSN-A14~~,
~~IFSN-A15~~, ~~IFSN-A16~~,
~~IFQU-A3~~, ~~QNS-C1~~, EXT-B2,
EXT-B4

Replace for DC & COL:

IE-C6, IFSN-A12, IFSN-A14,
IFSN-A15, IFSN-A16, EXT-B1,
EXT-B3, EXT-C1

Enhance for DC & COL:

LE-F2, QNS-A1, QNS-C1,
WPR-A6, XFPR-A6, XPR-A6

New for DC & COL:

QU-D8, IFQU-A12

... However, when performing this screening analysis, the qualitative and quantitative criteria (provided directly or as implied) in the PRA Standard should not be used for internal and external events/hazards. This is because of the potentially low plant CDF and LRF. Screening based on the PRA Standard's cited CDF criteria is not appropriate for ALWRs because it infers a CDF of up to about 1×10^{-6} /year and some qualitative criteria for screening external hazards can be even higher, which might be orders of magnitude greater than the base CDF at the site. The current version of the PRA standard does not identify unique screening criteria for new reactor designs that can have substantially lower risk profiles (e.g., plants with internal events CDF well below 1×10^{-6} /year). As stated in RG 1.200, the quantitative screening value should be adjusted according to the relative baseline risk value. Therefore, screening values lower than those in the PRA Standard need to be used commensurate with the lower CDF and LRF estimates expected for ALWRs. A number of supporting requirements are identified as not applicable and should not be used for screening purposes or are identified as needing to be replaced or enhanced with the criteria provided in the clarification. In addition, to ensure that internal and external hazard screening does not result in the screened out contribution being significant relative to the risk of the hazard group, a number of supporting requirements were enhanced (or new supporting requirements created) to check for this condition.

Plant-Specific Layouts and Capabilities

Cannot Meet for DC & COL:

CS-A2, CS-A3, CS-A4,
CS-A5, CS-A6, CS-A7,
CS-A8, CS-A9, CS-B1

Not Applicable for DC & COL:

FSS-F1, FSS-F2, FSS-F3

If the DC or COL applicant has specific information regarding equipment locations and layouts and cable routing, then these supporting requirements can be achieved. However, the staff recognizes that DC and COL applications might not have some plant-specific information; particularly associated with equipment layout and locations and cable routing. Under these conditions, the applicant will likely use design and operational guidance documents, general good engineering practices, and “exclusion” approaches in their analyses, which are acceptable to the staff.

Plant-Specific Operating Experience & Data

Cannot Meet for DC & COL:

~~SY-A19, SY-A20~~, DA-C2,
DA-C3, ~~DA-C4~~, DA-C5,
DA-C6, ~~DA-C14, ES-B1~~

Not Applicable for DC & COL:

IE-A3, ~~IE-A4, IE-A7~~, IE-C2,
IE-C4, DA-C4, DA-C10,
DA-C11, DA-C12, DA-C13,
DA-C16, DA-D8, IGN-A6,
PRM-B2IGN-B4

The staff recognizes that DC and COL applications will not have plant-specific operating experience and associated data on which to base component failure rates and maintenance, surveillance, testing, and train realignment frequencies. That being the case, applicants either cannot meet the supporting requirement or, for cases in which the supporting requirement is conditioned on another supporting requirement, it is not applicable. The applicants should address these supporting requirements using generic data and general industry operating practices and documenting the assumptions used in developing their PRA. ~~Supporting requirements ES-B1 and PRM-B2 require the use of other plant-specific information. For ES-B1 the staff does not expect the applicant to have fully identified the fire safe shutdown/Appendix R equipment. For PRM-B2 the staff does not expect the applicant to have performed full peer reviews. For both of these supporting requirements, the applicant should use the information available for that stage, as appropriate (e.g., initial fire safe shutdown equipment identification for fire safe shutdown and internal and external independent reviews) and to document associated assumptions.~~

Plant-Specific Guidance

Can Meet for DC & COL:

IE-C3, IE-C11, IE-C14,
AS-A5, SC-A6, SY-A2,
SY-A3, SY-A19, SY-A20,
SY-B12, SY-B15, HR-A1,
HR-A2, HR-A3, HR-D4,
HR-D5, HR-E1, HR-E2,
HR-F2, HR-G4, HR-G6,
HR-H2, QU-D2, LE-D6,
IFSN-A3, ES-A1, HRA-A2,
HRA-B3, WPR-A11,
XFPR-A11, XPR-A11

The staff recognizes that for the DC and COL application stages, plant-specific procedures and operating practices will not exist. The staff recognizes that the PRA at these stages will be based on design and operational guidance documents and typical industry practices, appropriate for that stage. That being the case, the staff believes applicants can meet these supporting requirements: using general industry practices and design and operational guidance.

Interviews

Can Meet for DC & COL:

SY-A2, SY-A4, HR-E3,

HRA-A4

Cannot Meet for DC & COL:

~~HR-E3, HRA-A4, SF-A5~~

There appear to be only a few supporting requirements that specifically require interviews or reviews to achieve CC I in the PRA Standard (and one other, SY-A2, identifies interviews as part of a list of sources of information).

~~For SY-A4, the~~ Most of the supporting requirements that require the review of procedure interpretations or confirmation that the system model reflects the design of the system can be achieved through interviews of knowledgeable design and/or plant personnel, appropriate for that stage.

~~This confirmation supporting requirement will be enhanced at the COL stage as additional system design information becomes available.~~

~~There are also a few supporting requirements that require the review of procedure interpretations with plant operations and training personnel to verify that they reflect the operations and training practices or the assessment of training on procedures. The staff~~ The staff also recognizes that, for DC and COL applications, the model will be based on design and guidance documents, ~~because most procedures will not be developed at these stages and plant specific procedures cannot be reviewed or assessed against. In addition, the staff recognizes that plant operators and training personnel will not exist to perform or support these reviews and assessments. That being the case, these supporting requirements are not feasible for these application stages.~~

Only SF-A5, which involves the review of plant fire brigade training procedure to establish the extent to which these procedures have prepared the personnel to respond to a fire, is not feasible at these application stages.

Walkdowns

Cannot Meet for DC:
EXT-D1

Cannot Meet for DC & COL:
IFPP-A5, IFSO-A6, IFSN-A17,
IFQU-A11, PP-B7, FSS-D10,
FSS-D11, FSS-H10, SFR-D1,
SFR-E1, SFR-E2, SFR-E4,
SFR-E5, SPR-B11, EXT-D2,
WFR-A1, XFFR-A1, XFR-A2

Not Applicable for DC & COL:
SFR-E3

The staff recognizes that, for DC and COL applications, walkdowns will not be able to be performed in most cases to collect or verify the information regarding specific site and design characteristics and features. The information considered in the PRA should be based on the available design and operational information for that stage.

Treatment of Uncertainties

Enhance DC & COL:

IE-D1, IE-D3, AS-C1, AS-C3, SC-C1, SC-C3, SY-C1, SY-C3, HR-I1, HR-I3, DA-E1, DA-E3, QU-F1, QU-F4, LE-G1, LE-G4, IFPP-B1, IFPP-B3, IFSO-B1, IFSO-B3, IFSN-B1, IFSN-B3, IFEV-B1, IFEV-B3, IFQU-B1, IFQU-B3, PP-C1, PP-C3, ES-D1, CS-C1, CS-C2, CS-C3, CS-C4, QLS-B2, PRM-C1, FSS-H9, IGN-B1, IGN-B3, IGN-B5, QNS-D1, QNS-D2, CF-B1, HRA-E1, SF-B1, FQ-F1, SHA-J1, SHA-J3, SFR-G1, SFR-G3, SPR-F1, SPR-F3, EXT-E1, WHA-B1, WHA-B3, WFR-B1, WFR-B3, WPR-C1, WPR-C3, XFHA-B1, XFHA-B3, XFFR-B1, XFFR-B3, XFPR-C1, XFPR-C3, XHA-B1, XHA-B3, XFR-B1, XFR-B3, XPR-C1, XPR-C3

New for DC & COL:

~~PP-C5~~, ES-D2, CS-~~DC5~~, QLS-B4, PRM-C2, FSS-H11, QNS-D3, CF-B2, HRA-E2, SF-B2, FQ-F3, UNC-B1, UNC-B2, EXT-E3

The staff recognizes that both increased uncertainty and reliance on more assumptions are associated with these application stages because of the status of the site, design, operational, and maintenance information and data. This additional uncertainty needs to be addressed in two aspects of how the supporting requirements are documented. First, by enhancing the existing supporting requirement related to documenting aspects that facilitate PRA applications, upgrades, and peer reviews, with the requirement to document limitations, and their bases, which would impact risk-informed applications because of the status of the site, design, operational, and maintenance information and data. (This might also include a discussion of sensitivity studies performed to provide a perspective on these impacts.) Second, by enhancing the existing supporting requirement related to characterizing the sources of model uncertainty and related assumptions with the requirement to document the additional sources of ~~model~~ uncertainty and assumptions specifically because of related to the status of the design, site, operational, and maintenance information or data. For a few technical elements, it was necessary to develop a new supporting requirement to capture one or both of these enhancements.

Summary of SRs with Designation Changes

SR	Draft	Final	Main Influence
IE-A4	Not Applicable	Can Meet	ACRS/PRA Standard/Internal
IE-A7	Not Applicable	Can Meet	ACRS/PRA Standard/Internal
SY-A19	Cannot Meet	Can Meet	Industry
SY-A20	Cannot Meet	Can Meet	Industry
HR-E3	Cannot Meet	Can Meet	ACRS
DA-C4	Cannot Meet	Not Applicable	PRA Standard/Internal
DA-C12	Can Meet	Not Applicable	PRA Standard/Internal
DA-C13	Can Meet	Not Applicable	PRA Standard/Internal
DA-C14	Cannot Meet	Can Meet	Industry
QU-D8	-	New	Industry
LE-F2	Can Meet	Enhance	Industry

Summary of SRs with Designation Changes

SR	Draft	Final	Main Influence
IFSN-A14	Not Applicable	Replace	PRA Standard/Internal
IFSN-A15/16	Not Applicable	Replace	PRA Standard/Internal
IFQU-A3	Not Applicable	Can Meet	Industry
IFQU-A12	-	New	Industry
ES-B1	Cannot Meet	Can Meet	Internal
PRM-B2	Not Applicable	Can Meet	ACRS
IGN-B4	Can Meet	Not Applicable	Internal
QNS-C1	Not Applicable	Enhance	Industry
HRA-A4	Cannot Meet	Can Meet	ACRS
SHA (all)	Can Meet (COL)	Not Applicable	Industry
WFR-A1	Can Meet	Cannot Meet	Internal
XFFR-A1	Can Meet	Cannot Meet	Internal

Next Steps

Issuance of final ISG for use

- A few processing steps remain

In parallel, engaging ASME/ANS PRA Standards working group on developing similar product as an appendix to the PRA Standard

- Focus on all Capability Categories in addressing the pre-operational phases
- Still need to engage industry/licensees on PRA technical adequacy expectations for fuel load and early operational phases (recognizing there will be limited operating experience and equipment performance data)

Acronyms

ALWR	Advanced Light-Water Reactor
ANS	American Nuclear Society
ASME	American Society for Mechanical Engineers
CC	Capability Category
CDF	Core Damage Frequency
COL	Combined License
DC	Design Certification
HLR	High Level Requirement
ISG	Interim Staff Guidance
ISLOCA	Interfacing Systems Loss of Coolant Accident
LERF	Large Early Release Frequency
LRF	Large Release Frequency
PRA	Probabilistic Risk Assessment
RG	Regulatory Guide
SMA	Seismic Margins Analysis
SR	Supporting Requirement
SRP	Standard Review Plan
SSC	Structures, Systems, and Components

Industry Comments on DC/COL-ISG-028

Assessing the Technical Adequacy of the Advanced Light-Water Reactor Probabilistic Risk Assessment for the Design Certification Application and Combined License Application

Victoria Anderson, NEI
ACRS PRA Subcommittee Meeting
August 21, 2015



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Background

- Draft ISG issued for comment in late 2014
 - Provides staff position on applicability of existing ASME/ANS PRA Standard to DC and COL plants
 - To be used for evaluation of technical adequacy of PRAs for new build plants one year prior to fuel load
- NEI provided comments on January 23, 2015
 - Focused on appropriateness of various supporting requirements for DC and COL applicants
 - Industry not yet cognizant of NRC staff's proposed resolution of comments

Capability Category Treatment

- Focus of DC/COL-ISG-028 is on Capability Category (CC) I
 - Consistent with DC/COL-ISG-003, *PRA Information to Support Design Certification and Combined License Applications*
 - Section 4.c.: PRAs that meet the applicable supporting requirements for Capability Category I and meet the high level requirements as defined in the ASME PRA Standard (ASME-RA-Sb-2005) should generally be acceptable for DC and COL applications.
- Some Supporting Requirements (SRs) state “no action” to meet CC I
 - DC/COL-ISG-028 gives expectation to meet Capability Category II in some of these cases
 - Potentially contrary to DC/COL-ISG-003

Potential for Improved Clarity

- DC/COL-ISG-028 unclear on “cannot meet” vs. “can meet” for use of generic and plant specific data
- References to using codes in “within known limits of applicability” should be expanded to included “within known or demonstrated limits of applicability”
- Beneficial to include more complete reference to applicability of LRF throughout the document
- Document could be restructured to better address potential differences for reference COL and subsequent COL

Additional DC/COL Specific Considerations

- May be difficult to completely identify model uncertainties for a new, passive design. Lack of data and operating experience to support quantification of uncertainty
- Several SR clarifications noted “as-built” instead of “as-to-be-built”
- For several SRs, the ISG states that assumptions may be included for DCs, but assumptions may also be appropriate for COLs
- For several SRs, COLs would be expected to develop fault tree models for support systems, which may lack sufficient detail to support such development

Conclusions

- DC/COL-ISG-028 addresses many DC/COL-specific considerations associated with implementation of the standard
- Critical to resolve issue of treatment of SRs with “no action” criteria for CC I
- Industry looks forward to reviewing disposition of comments