

Official Transcript of Proceedings
NUCLEAR REGULATORY COMMISSION

Title: Integrated Action Plan to Modernize Digital Instrumentation and Controls Regulatory Infrastructure: Modernization Plan (MP) #1D, Revision of BTP 7-19 and MP #4B, Strategic Assessment

Docket Number: (n/a)

Location: Rockville, Maryland

Date: Thursday, April 4, 2019

Work Order No.: NRC-0265

Pages 1-367

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UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

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PUBLIC MEETING

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INTEGRATED ACTION PLAN TO MODERNIZE DIGITAL
INSTRUMENTATION AND CONTROLS REGULATORY
INFRASTRUCTURE: MODERNIZATION PLAN (MP) #1D,
REVISION OF BTP 7-19 AND MP #4B, STRATEGIC
ASSESSMENT

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THURSDAY,

APRIL 4, 2019

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ROCKVILLE, MARYLAND

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The Commission met in the Commissioners'
Hearing Room at the Nuclear Regulatory Commission, One
White Flint North, 11555 Rockville Pike, at 9:00 a.m.,
Eric Benner, presiding.

1 NRC STAFF:
2 ERIC BENNER, NRR
3 SUSHIL BIRLA, RES
4 HO NIEH, Director, NRR
5 HUDA AKHAVANNIK
6 ROSSNYEV ALVARADO, NRR
7 ERIC BOWMAN, NRR
8 NORBERT CARTE, RES
9 BERNARD DITTMAN, RES
10 TEKIA GOVAN
11 WENDELL MORTON, NRO
12 KEN MOTT
13 JASON PAIGE
14 DAVID RAHN, NRR
15 PAUL REBSTOCK, RES
16 MICHAEL WATERS, EICB
17 KHADIJAH WEST, NRR
18 DEANNA ZHANG, NRR
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1 ALSO PRESENT:
2 MARK BURZYNSKI, Rolls Royce
3 JOHN CONNELLY, Exelon
4 STEPHEN GEIER, NEI
5 PAREEZ GOLUB, EXCEL Services
6 RAYMOND HERB, Southern Nuclear
7 DAVID HERRELL, MPR Associates
8 GEORGE HUGHES, Framatome
9 WARREN ODESS-GILLETT, NEI
10 PAUL PHELPS, Dominion Energy
11 JOHN SCHRAGE, Entergy
12 JENNIFER UHLE, NEI
13 STEPHEN VAUGHN, NEI
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P-R-O-C-E-E-D-I-N-G-S

(9:01 a.m.)

MS. GOVAN: Good morning. My name is Tekia Govan and I am the interim project manager for the Revision of Branch Technical Position 7-19, Guidance for Evaluation of Diversity and Defense in Depth in Digital Computer Based Instrumentation and Control Systems. It's a very long title.

(Laughter.)

MS. GOVAN: My colleague who is running around the room with last minute details, Jason Paige, is the project manager for the topic we'll be covering this afternoon, strategic assessments and barriers.

This meeting is being held to discuss the proposed revision to BTP 7-19 and to gain a detailed understand and obtain real-world examples of why or how NRC, an NRC generated list that was discussed during the January 2019 meeting, for causing delays in the efficient use of digital technology and nuclear power plant.

This is a Category 2 meeting, therefore the meeting agenda allows for questions and comments from members of the public to the NRC staff, after the business portion of the meeting has concluded. I ask that all members of the public please hold your

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1 questions and comments until that designated time in
2 the public's agenda.

3 Just a few logistics before we get
4 started. We do have a court reporter in the room who
5 will be transcribing this meeting. Has microphones on
6 the table.

7 So, for those in the room, try not to
8 touch them, they're very sensitive. And also, please
9 make sure that before addressing the meeting
10 participants that you identify yourself and your
11 affiliation.

12 This meeting is also being hosted via
13 teleconference. For those on the line, all of the
14 presentation material has been posted against the
15 meeting notice, so you can obtain all meeting
16 information all there.

17 And for those in the room, as well as on
18 the line, please silence your phones, not to disturb
19 the meeting. And for those on the phone, if you are
20 not engaging the meeting, please have your phones on
21 mute so we don't get any background noise.

22 For the guests in the room, the agenda
23 calls for a 15 minute break in the morning, ten minute
24 break in the afternoon, as well as a 45 minute lunch
25 break. Should you need to step out of the room,

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1 please do so quietly. However, this is a controlled
2 floor, so you will need a NRC escort to move about the
3 floor.

4 With that being said, well, one last
5 thing. If we have a fire alarm, and I hope that we do
6 not, but if we do, please follow a NRC Staff Member to
7 a designated area. Check in with myself or Jason
8 Paige so that we can account for all visitors in the
9 building.

10 So, with that said, we'll start
11 introductions. We'll start with those in the room.
12 Again, my name is Tekia Govan, project manager.

13 MS. ZHANG: Deanna Zhang, NRC technical
14 reviewer.

15 MR. MORTON: Wendell Morton, NRC. I am
16 the lead for this project update.

17 DR. ALVARADO: Ros snyev Alvarado, NRC
18 technical reviewer.

19 MR. BENNER: Eric Benner, NRC Director of
20 the Division of Engineering in the Office of Nuclear
21 Reactor Regulations.

22 MR. GEIER: So, Steve Geier, I'm with NEI.
23 I'm the senior director for engineering and risk.

24 MR. HERB: Hi, this is Ray Herb, I'm with
25 Southern Nuclear, I'm Fleet Design I&C.

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1 MR. ODESS-GILLETT: Warren Odess-Gillett,
2 NEI.

3 MR. VAUGHN: Steve Vaughn, NEI.

4 MR. CONNELLY: John Connelly, Exelon.

5 MR. PHELPS: I'm Paul Phelps, Dominion
6 Energy.

7 MR. SCHRAGE: John Schrage, Entergy.

8 MR. DITTMAN: Bernie Dittman, United
9 States Nuclear Regulatory Commission, Office of
10 Nuclear Regulatory Research.

11 MR. HUGHES: George Hughes, Framatome.

12 MS. GOLUB: Pareez Golub, Excel Services.

13 MR. BURZYNSKI: Mark Burzynski, Rolls
14 Royce.

15 MR. HERRELL: David Herrell, MPR
16 Associates.

17 MS. WEST: Khadijah West, NRC technical
18 review.

19 MR. BEATON: Robert Beaton, technical
20 reviewer in the Reactor Systems branch.

21 MR. BOWMAN: Eric Bowman, NRC.

22 MR. KOSHY: Thomas Koshy, NRC Office of
23 Research.

24 MS. AKHAVANNIK: Huda Akhavannik, NRC
25 technical reviewer.

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1 MR. WATERS: Mike Waters, instrumentation
2 and controls branch.

3 MR. RAHN: David Rahn, instrumentation and
4 controls branch.

5 MR. PAIGE: Jason Paige, NRC project
6 manager.

7 MR. REBSTOCK: Paul Rebstock, Office of
8 Research, Digital I&C.

9 MS. GOVAN: Okay, we'll have those on the
10 line introduce themselves. We'll start with NRC
11 Staff. Are there any NRC Staff Members on the line?

12 MR. BURZYNSKI: Yes, John --
13 (Simultaneously speaking.)

14 MS. GOVAN: John, you can start.

15 MR. GARCIA: Ismael Garcia.

16 MS. GOVAN: Ismael.

17 MR. GARCIA: NRC.

18 MR. BURZYNSKI: John Burzynski, Reactor
19 Systems.

20 MR. MARTINEZ: Eric Martinez, Research.

21 MR. JENKINS: Ronaldo Jenkins, NRC.

22 MR. GUTIERREZ: Mauricio Gutierrez,
23 Research NRC.

24 MS. GOVAN: Can you repeat --

25 MR. DARBALI: Samir Darbali, NRC.

1 MR. STATTEL: Richard Stattel, NRC.

2 MS. SEGARNICK: Maxine Segarnick, NRC,
3 OGC.

4 MS. GOVAN: Okay, is that it for NRC
5 staff? Any NEI staff members on the line?

6 Entergy staff members?

7 NextEra staff members?

8 (Off-microphone introduction.)

9 MS. GOVAN: I'm sorry, can you repeat
10 that?

11 MR. JARRETT: Ron Jarrett, TVA.

12 MR. HERNANDEZ: John Hernandez, Palo
13 Verde.

14 (Off-microphone introduction.)

15 MS. GOVAN: Okay. Any licensees or
16 vendors on the line?

17 MR. SOTOS: Bill Sotos, Certrec.

18 MR. BERG: Ron Berg, EPM.

19 MS. GOVAN: Okay. Any members of the
20 public on the line?

21 MR. MOCK: Jerry Mock, TR resources.

22 MS. HORTON: Jan Horton, Curtiss-Wright.

23 MR. ROSCOE: Bill Roscoe, Rolls Royce.

24 MR. DOYLES: Jim Doyles, Westinghouse.

25 MR. DOLPHI: Mitsubishi Electric, James

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1 Dolphi and Ken Kravo (phonetic).

2 MR. CLEFTON: Gordon Clefton, Idaho
3 National Laboratory.

4 MS. GOVAN: Okay, anyone else on the line?

5 MR. CARTE: Norbert Carte, NRC.

6 MR. THOMAS: Brian Thomas, NRC.

7 MS. GOVAN: Okay, with that, we're going
8 to move on from introductions. Let me ask, for those
9 on the line, it was very hard for us to kind of keep
10 up with who was on the line. Can you please visit the
11 meeting notice and get the contact information from
12 myself, of Jason Paige.

13 We will collaborate the information
14 together. Send us your email so that we can have an
15 accurate account of the participants of this meeting.

16 Before we get started with the meeting
17 information, I just want to let you know that although
18 the Staff will be discussing BTP 7-19, as well as
19 strategies and barriers, it should be noted that NRC
20 will not be taking any NRC positions or making any
21 decisions at this time or at this meeting.

22 So with that, I'll turn it over to Eric
23 Benner, director of the division of engineering and
24 the office of nuclear reactor regulation, to provide
25 opening remarks.

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1 And then after, we'll have opening remarks
2 from the executives on the side of the table, if you
3 wish to do so. And then we'll turn it over to Wendell
4 Morton, who will lead us into the presentation.

5 Okay, Eric.

6 MR. BENNER: Okay. Thanks, Tekia. I'm
7 excited about the people we have in the room because
8 --

9 (Laughter.)

10 MR. BENNER: And for those of you on the
11 phone, the reason we're snickering is that the NRO
12 office director, Ho Nieh, just came by to absorb a
13 portion of the meeting and didn't want to sit in the
14 seat we had assigned for him.

15 (Laughter.)

16 MR. BENNER: He has that authority to sit
17 where he wants, so we'll let him sit wherever he
18 wants.

19 So, like I was saying, I think I'm excited
20 about this meeting because, for a lot of the progress
21 we've made in the last year, it's really been what I
22 would call process oriented. I mean, the RIS talked
23 about how people could use 50.59. ISG 06 laid out
24 what I think is a really good process for getting a
25 LAR approved.

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1 Particularly in a manner that would allow
2 an applicant to have regulatory certainty before they
3 extend it. You know, significant resources.

4 BTP 7-19 is the Staff's technical guidance
5 for reviewing LARs. And we've gotten feedback from a
6 range of stakeholders as to where there are concerns
7 with that guidance.

8 So this meeting, the Staff has heard all
9 of that. And there is two things. There's things
10 where clearly we want to change and there are things
11 where we think maybe the guidance has been
12 interpreted. You know, maybe too rigorously by people
13 reading it. External stakeholders reading it.

14 So, the Staff has heard all that and is
15 here today to make a proposal for how this document
16 could be revised to address both of those concerns.

17 And one of the things we did was, because
18 there has been a lot of question of, hey, what
19 constitutes and adequate D3 analysis, the Staff went
20 back and captured, probably not all but a large subset
21 of the major D3 analyses that have been submitted by
22 applicants, to sort of get a sense of what is
23 adequate.

24 Now, it's not to say that, yes, what's
25 there is the only answer, but I think when we delve

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1 into that table little, you'll find that it counters
2 some of the messaging that's going on around what the
3 NRC requires or doesn't require. So I'll probably
4 interject when we get to that point again, because
5 talking about it right now is sort of cryptic.

6 So, we believe that our proposal has
7 clearly, when translated to the actual document,
8 clearly will translate a lot of additional
9 flexibilities.

10 Including where a D3 analysis is needed,
11 some idea of the level of detail of what that analysis
12 needs. Almost more importantly, where a D3 analysis
13 is not needed, what kind of reliance can be given to
14 things such as manual actions or existing systems, say
15 ATWS as diversity for reactor protection system.

16 But we're not, this is by no means a final
17 product, right? This was the Staff hearing all the
18 feedback they've heard, trying to put it down into a
19 proposal.

20 We understand that NEI, in particular, has
21 another proposal. We've talked a little about how we
22 think where NEI is going fits in with the proposal.
23 So this truly is, today, a dialogue to say, what
24 should this document look like in the future so that
25 people have the right amount of clarity but the right

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1 amount of flexibility given the safety significance of
2 whatever upgrade is being considered.

3 But I will say, we want to move pretty
4 quickly. So we're looking to make sure we have the
5 right support on this activity moving forward, because
6 given the concerns we've heard expressed, we don't
7 want this product, this document, to be a barrier to
8 getting application.

9 So the sooner we can move forward on there
10 being clarity of the expectations, and ideally this
11 document being published, we want to get there. So
12 with that, I'll turn it over to the NEI folks.

13 MR. GEIER: Okay, thanks. This is Steve
14 Geier from NEI.

15 And, again, like Eric said, we're looking
16 forward to this discussion today and I appreciate the
17 work that's gone in.

18 Quite honestly, we did go through the
19 slides. We haven't had a lot of time, I think we just
20 got them a couple of days ago, but I think we've got
21 enough kind of review done so that I think we can have
22 a very engaged discussion.

23 Also I want to mention that we have
24 several industry reps here and licensees available
25 that have been kind of part of the team, as well as

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1 some new players. And I think that we're prepared to
2 be able to discuss some examples, some possible
3 projects that are out there that utilities are now
4 contemplating.

5 One of the things we found is that, from
6 the RIS that was developed, the RIS supplement is, a
7 lot of stations are very excited about using that and
8 moving forward. And I think clarifying the BTP with
9 a BTP fits into those that are going, those projects
10 that would not be RPS and SFAS.

11 If indeed there is, there is a link there,
12 I think that needs to be clarified during this meeting
13 today. And also how we can use graded approach going
14 forward and what that body of information, given a lot
15 of the risk-informed initiatives that are going on.

16 I think there's been a lot of work in
17 recent years on risk-inform and how do we use existing
18 margins within plants and how do we now apply those to
19 other projects that really may be less risk-
20 significant, including treatment of software CCF.
21 Which of course is kind of the central discussion
22 today.

23 So, we certainly look forward to this.
24 Our main interest is to determine how we can move
25 forward with projects so that stations can be

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1 confident that they don't require backup, hardware
2 backup systems for any, except for the most risk-
3 significant projects. Or systems.

4 That's our main interest. And what other
5 tools and approaches we can use that we can all align
6 around, that's really what we're interested in, most
7 interested in aligning around so that we can get to
8 the point that software CCF can be considered low
9 likelihood and we can remove it from further
10 consideration. Without backup hardware system of some
11 sort.

12 So, look forward to the discussion. I did
13 want to mention, we did provide some slides. I think
14 as we go through the NRC slides we'll decide, we'll
15 have to decide if we even need to go back and revisit
16 those and how many of those, because I think there's
17 a lot of linkage there and I think we'll find that
18 we'll discuss many of the points during the NRC
19 presentation.

20 MR. BENNER: Yes. I think there's a
21 structure here where we present, we discuss, you
22 present.

23 MR. GEIER: Right.

24 MR. BENNER: Certainly, as we get into the
25 discussion, if you want to sort of reference your

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1 slides or just have the discussion, and when we get to
2 your slides, if it's an area we've covered, we don't
3 probably need to, or I think we can do some of that on
4 the fly to make sure, I mean, the important thing is
5 these different topics.

6 MR. GEIER: Right.

7 MR. BENNER: Have the right discussion as
8 we move through the --

9 MR. GEIER: Yes, we did not update the
10 slides after we --

11 MR. BENNER: Yes.

12 MR. GEIER: -- got your --

13 MR. BENNER: And we understand --

14 MR. GEIER: -- your information, so
15 they're kind of done independently. So, there could
16 be a lot of overlap, but maybe, when it comes to our
17 part, we'll throw them up there and just see if there
18 is, what new that maybe we hadn't yet talked about.

19 MR. MORTON: All right.

20 MS. GOVAN: Okay.

21 MR. BENNER: We're good.

22 MS. GOVAN: So with that, we'll turn it
23 over to the Staff.

24 MR. MORTON: Okay. Good morning, again,
25 everyone, my name is Wendell Morton, and as I said,

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1 I'm the working group lead for update BTP 7-19. I'd
2 also like to introduce other working group members.
3 Deanna Zhang, Rossnyev Alvarado, Paul Rebstock and
4 David Rahn, sitting behind me.

5 So, on the agenda we have an item on there
6 for setting the expectations and goals status,
7 understanding of the industry concerns and,
8 specifically, how we're going to move forward trying
9 to address them with this particular update. As well
10 as refining some other areas in the document itself.

11 So, we have urgency with this particular
12 project, similar to all the other projects we've done
13 under the integrated action plan.

14 Our understanding from talking to industry
15 a number of times is, you have a number of
16 modifications sitting on the shelf, similar to
17 concession of the RIS, of lower safety significant
18 systems and we need a way to help sort of grease the
19 wheel in term of modernizing plants and getting those
20 mods done and getting clarification in guides to help
21 do so. So that was the goal of the RIS and I think
22 that was pretty successful in doing that.

23 We're taking the same approach with the
24 BTP 7-19 update. But part of that is engaging in
25 industry and industry giving its feedback on what the

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1 specifics are of the issues you're having with
2 implementing the BTP 7-19, whether in advance reactors
3 or, and operating reactors.

4 And this update will be a lot more
5 productive and fruitful, with that feedback. So we
6 can actually have actionable comments in terms of,
7 hey, NRC.

8 That's a specific area of concern because
9 that makes it more challenging. We don't understand
10 this particular aspect of the document, et cetera and
11 so forth. And that will help inform our
12 considerations of what things we need to do and move
13 this forward.

14 Oh, for the folks who are on the line, can
15 you all mute your phone? I think it's *6, if you're
16 not speaking. Thank you.

17 So, as I was saying, we have a fairly
18 aggressive schedule to get this document out for
19 dealing with near-term LARs. And similar for the RIS
20 supplement, that was for near-term lower safety
21 significant systems.

22 From what I understand, there are some
23 near-term LARs we'd like to do in terms of modifying
24 RPS and ESF systems. That's the goal of this project
25 is to get this thing out on the streets.

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1 When in a quick expeditious way to get
2 those sort of modifications moving. And that's part
3 of the entire scheme of that digital I&C integrated
4 action plan with the staff.

5 So, consistent with the Appendix D work,
6 consistent with the RIS work and consistent with the
7 work we did with ISG 06 and consistent work we're
8 doing like here.

9 We understand there's a lot of near-term
10 miles for modernization we want to do and we're trying
11 to support those efforts with this project. So, that
12 was the expectation, just to kind of get that out of
13 the way so we can move forward with the presentation.

14 Yes, thank you. So, quickly for the
15 agenda, we're going to kind of run through quickly how
16 we got here.

17 And as Eric alluded to earlier, we're
18 going to talk about some of the previous D3
19 assessments we've done, both in operating reactors and
20 advance new reactors, to see if there have been
21 different solutions that various licensees came up
22 with. And there is not one specific solution the NRC
23 has accepted as part of our review, so we want to
24 dispel some of those concerns.

25 And we have some slides that we'll

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1 specifically cover that are going to dispel some of
2 the concerns that we've heard in public meetings and
3 personal interaction we've had in terms of what the
4 Staff's expectations are. What we're looking for when
5 it comes to the D3 itself.

6 And that's kind of getting into the next
7 bullet where we talk about some of the stated
8 concerns.

9 Introducing some risk insights in the BTP
10 itself. And we have proposals within this
11 presentation that we're considering.

12 And we love to get your feedback on that
13 and the benefits pros and cons et cetera that you
14 would have, or sights you may have, on risk informing
15 the BTP itself. So, we'll cover some of that as well.

16 And then as I alluded to earlier, we'll
17 talk about the schedule update, which essentially will
18 give you some of the milestones of the SRP update
19 processes and stuff as a BTP. It's that dissimilar
20 from a reg guide, and we'll talk about some of the
21 schedule milestones and that.

22 The schedule itself is not set in stone.
23 If it was intended to be aggressive to support near-
24 term LARs. But based upon interactions we have today,
25 potential feature interactions we may have, that will

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1 clearly affect scheduling. Just to put that up-front
2 so we all understand that.

3 Okay. Just as a quick note for today's
4 discussions, the major update errors we'll talk about.
5 We will pause for a few seconds to take a few
6 questions because I know there's a lot of energy in
7 some of the things being proposed, but we have a
8 designated Q&A session that we actually have for
9 industry comment.

10 But we will stop during each major portion
11 of the presentation to give a few kind of quick
12 follow-up questions to kind of let you know that.

13 All right, next slide. Thank you. So,
14 just some of the key messages.

15 So, some of these we've covered in
16 previous meetings before, the January meeting and
17 other meetings.

18 Just to make it known, we do support the
19 safe modernization of digital I&C for power plants.
20 We always want to make that clear that we're all on
21 the same page in that regard.

22 We're following the guiding principles of
23 the info SECY 18-0090, which basically clarifies the
24 Staff's position from SRM 93-087, and giving us the
25 additional flexibilities we can use to actually make

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1 some of the updates we are looking to make within the
2 BTP itself.

3 And lastly, energy participation is
4 essential. In order to help address your concerns, we
5 got to make sure we understand your concerns so we can
6 address them to the best of our abilities with this
7 update.

8 So how did we get here? Similar to the
9 other modernization plans we had under the industry
10 action plan. BTP 7-19 has caused some consternation
11 for licensees and applicants in a number of different
12 ways.

13 We received this feedback both in public
14 meetings, talking to you individually, even during
15 some of our licensing reviews we've seen some of the
16 concerns on how the guidance is constructed. So, we
17 understand that, at least in feedback we have, we
18 understand that some of the things that there is,
19 certainly been in our power to clarify, we intended to
20 do so as part of this effort.

21 One of the things we're trying to do with
22 this update is provide the right balance between
23 flexibility and clarity so that we are maintaining
24 safety. So you can make a reasonable, adequate
25 protection finding with this document.

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1 So the balance we're trying to make is
2 trying to provide additional flexibilities, trying to
3 find clarifications where there need to be. But we're
4 not in your heads and we're not at the site so it's
5 really important that you let us know where parts are
6 not clear. Because we like to nail all these things
7 with this particular evolution.

8 Because we don't want to come back five
9 years from now and we're having the same sorts of
10 discussions concerning, well, it's still a barrier to
11 modernization for these particular systems, we still
12 need to do some things. We'd like to nail all these
13 things here and get this process going.

14 Next slide. So in, for those of us who've
15 been involved in some of these meetings before,
16 similar to RIS 2002-22, well, not so much here, in
17 alignment with RIS 2002-22, the directional update
18 will be aligned with the indicated SECY in terms of
19 providing flexibilities with the D3 approach.

20 Potentially providing the potential for a
21 graded approach and getting information from industry
22 in terms of what's some ideas you have in terms of
23 accomplishing those particular goals.

24 The most important thing I want to point
25 out on this slide is the last bullet which is, we do

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1 want to support efforts going forward similar to the
2 RIS efforts which is, industry has sponsored training
3 workshops which NRC staff, who were involved with RIS
4 development, have intended to kind of oversee things.

5 You've been training, do a really good job
6 actually training on the new RIS supplement. We
7 foresee a similar evolution with the BTP 7-19 update
8 as well, and we would also be willing to support those
9 efforts if the industry not desire so.

10 So, we really want to make sure that when
11 we complete the update that that's not the last step.
12 We want to make sure that this document is fully
13 illustrated by industry. And that it actually does
14 get used and get a feedback on projects you intend to
15 use with this document.

16 Okay. So, with that, I'm going to turn
17 the presentation over to my colleague, Rossnyev
18 Alvarado to cover the next slides.

19 DR. ALVARADO: Hi, everyone. So, in
20 addition to what Wendell mentioned, the directions
21 that we were given to update BTP 7-19, we also wanted
22 to take this opportunity to address some of the
23 concerns that industry has been raising and presenting
24 to the NRC.

25 So, in the next two slide we identify four

1 of these concerns. I'm sure there are more, and
2 that's part of what we want to hear today.

3 But, I want to start with, the first one
4 is that the NRC requires BTP, that licensees use BTP
5 7-19 for modifications on their 50.59, for non-RPS and
6 ESF system modernization.

7 Actually, that is not correct. The
8 licensee is not required to reach BTP 7-19. You can
9 always use it as an approach, but it's not mandatory.
10 It's not required for 50.59.

11 (Off record comments.)

12 MR. MORTON: Hello. Once again, for those
13 of you on the phone not speaking, can you mute your
14 phones please? Use *6 please. Thank you.

15 DR. ALVARADO: BTP 7-19, the scope, the
16 purpose of BTP 7-19 is to provide guidance for the
17 staff to evaluate D3 assessments that the applicants
18 submit for certifications and license amendment. It
19 never say anything about 50.59.

20 Nevertheless, like I say, yes, you can use
21 it as a guidance for a particular approach, to perform
22 a detailed assessment, but it's not required.

23 The next one is whether the NRC requires
24 a full D3 analysis. And we want to clarify that.

25 And when we see, when I move to the table

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1 that we did summarize an old D3 assessment, that what
2 we require is just to perform a defense-in-depth to
3 evaluate who really is against CCF, but this analyses
4 are not the full thermohydraulic analysis. And they
5 very in degree, depending on the application that has
6 been submitted to the NRC.

7 MR. ODESS-GILLETT: Excuse me for one
8 second, Ross. So, the analysis that's in BTP 7-19,
9 you said that it was not, the licensees don't need to
10 use BTP 7-19 if it's a 50.59.

11 So, I guess it really comes down to, what
12 you're saying here is that for any modification, BTP
13 7-19 only applies when it's submitted to the NRC for
14 a LAR?

15 DR. ALVARADO: Yes.

16 MR. MORTON: Yes.

17 DR. ALVARADO: I mean, there is no
18 impediment user, like I said.

19 MR. ODESS-GILLETT: Yes.

20 DR. ALVARADO: But I think that was one of
21 the concerns that was addressed with the RIS --

22 MR. MORTON: Yes.

23 DR. ALVARADO: -- because it was another
24 concern to whether you needed to perform a detailed
25 analysis as BTP 7-19, when the licensees were doing

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1 their 50.59 evaluation.

2 MR. MORTON: Agreed.

3 DR. ALVARADO: So part of that got
4 resolved --

5 MR. MORTON: Correct.

6 DR. ALVARADO: -- last year with the RIS.
7 So what we're trying to do now is like, include that
8 clarification as part of --

9 MR. BENNER: Reinforce that here.

10 DR. ALVARADO: Yes.

11 MR. BENNER: That the BTP is the Staff's
12 guidance for review the LAR.

13 MR. MORTON: If it's not the 50.59. And
14 there's other reasons for that, but for the sake of
15 brevity and clarity, it is not required to be
16 implemented on the 50.59.

17 MR. GEIER: So that's pretty clear if I
18 read the document?

19 Is there a --

20 MR. MORTON: It's not clear now, which is
21 what it's probably going to take.

22 MR. BENNER: So, we haven't revised the
23 document yet.

24 MR. MORTON: Yes.

25 MR. BENNER: Part of this effort is to --

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1 MR. GEIER: So your action as part of this
2 is you intend to make it, to clarify in the document,
3 in writing, the --

4 MR. BENNER: It's painfully clear.

5 (Laughter.)

6 MR. GEIER: -- that it's really only --

7 MR. MORTON: Specific, it is for license
8 amendments, period.

9 MS. ZHANG: And design certifications in
10 here --

11 MR. MORTON: I'm sorry, thank you.

12 MR. BENNER: License and --

13 MR. MORTON: Thank you, I appreciate that.

14 MS. ZHANG: Yes.

15 MR. VAUGHN: Is there anything in the
16 standard review plan that could not be used in the
17 license amendment purpose?

18 MR. MORTON: You mean for --

19 MR. VAUGHN: I believe this is under
20 Chapter 7, right?

21 MR. BENNER: Yes.

22 MR. VAUGHN: The BTP falls under that
23 structure so you --

24 MR. MORTON: Yes.

25 MR. VAUGHN: -- I mean, you could sort of

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1 assume that.

2 MR. BENNER: Yes.

3 MR. VAUGHN: You never --

4 MR. BENNER: Right. This is an area for
5 us that, somewhat modification. And I understand that
6 maybe this was looked at in different ways.

7 For us, licensing guidance is license
8 guidance.

9 MR. MORTON: Right.

10 MR. BENNER: Right? So we wouldn't have
11 necessary thought such a clarification was needed, but
12 apparently it is and we're happy to make that
13 clarification.

14 MR. MORTON: Right.

15 DR. ALVARADO: But by all means, if you
16 want to do the full thermohydraulic analysis for the
17 chillers sure.

18 (Laughter.)

19 MR. CARTE: Norbert here, quick question.
20 Quick comment.

21 I mean, keep in mind, the point of 50.59,
22 or the current guidance for 50.59 says you can't
23 reduce diversity or defense-in-depth, redundancy, that
24 sort of thing.

25 So, in a sense, yes, BTP 7-19 is not

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1 required to do that demonstration, but you do have to
2 do some sort of assessment to make sure that you are
3 not reducing or that you're meeting the applicable
4 criteria.

5 So, the question then is, okay, 7-19 is
6 required, then what do you do in order to do that
7 assessment. But that's 50.59 and not the subject of
8 this meeting.

9 MR. MORTON: Thank you, sir.

10 DR. ALVARADO: Next slide please.

11 MR. HERB: Wait. That second industry
12 concern --

13 MR. MORTON: Yes.

14 MR. HERB: -- is that in the context, this
15 is Ray Herb, Southern Nuclear. Okay, so that's the
16 second industry concern.

17 First of all, we went over this and we
18 were quite sure where the industry concerns sourced
19 from, other than it was just generally talking to
20 people or if it was through our formal communications
21 through NEI.

22 But that second one seems to contradict
23 the first. And so, is that in the context of stuff
24 that's not under a LAR?

25 MR. MORTON: You want me to, go.

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1 DR. ALVARADO: It's related entirely to
2 what Norbert is saying. Like, I mean, when you're
3 doing a modification, you still need to do a sort of
4 analysis, right?

5 It's just that the level and what we have
6 directions, or guidance, to review what you submit or
7 not.

8 MR. HERB: So I'm --

9 MR. MORTON: So, in addition to that, so,
10 NEI-101, they talk about the full echelons of defense-
11 in-depth for an I&C system absorbed from LAR. If RPS,
12 ESF control systems are an alter indication, right.

13 So, part of the focus, and I'll jump ahead
14 a little bit in terms of discussion. There was a
15 comment we did receive about the overly focused on
16 diversity rather than the focus on defense-in-depth.
17 We actually agree with that.

18 MR. HERB: Okay.

19 MR. MORTON: We actually agree with that.
20 So, as part of the sort of restructuring of the
21 document, we're going to place some of the focus on
22 defense-in-depth as an umbrella and diversity being a
23 tool --

24 MR. HERB: Okay.

25 MR. MORTON: -- to achieve that rather

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1 than diversity giving the impression that it's all
2 encompassing aspect of what Staff is looking for when
3 it comes to mods for RPS, EFS systems. So I just
4 wanted to --

5 MR. HERB: I --

6 MR. MORTON: -- that's why that's there
7 and --

8 MR. HERB: So you're saying, okay, because
9 it says, full D3 analysis of postulated, or currently
10 D3 is, and then you said no, we only needed to address
11 --

12 PARTICIPANT: You can add a change,
13 whatever you want.

14 MR. ODESS-GILLETT: Well, it says for all
15 safety significant systems, so we were a little
16 confused what that meant.

17 MS. ZHANG: So, I think we need to clarify
18 this.

19 MR. HERB: Is that bad for RPS and ESF?

20 MS. ZHANG: So --

21 (Simultaneously speaking.)

22 MR. HERB: -- the other things.

23 MS. ZHANG: -- what we're saying is that,
24 basically we're proposing a greater approach, we'll
25 talk about it later, but overall, defense-in-depth is

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1 the big umbrella. Sometimes you will need to do a D3
2 analysis, but that depends on the safety significance
3 of the system.

4 MR. MORTON: Right.

5 MS. ZHANG: And that's the greater --

6 MR. HERB: Within RPS and SFAS or with
7 accept --

8 MS. ZHANG: With accept.

9 MR. HERB: -- outside of --

10 DR. ALVARADO: Yes.

11 MS. ZHANG: With accept.

12 DR. ALVARADO: Yes.

13 MR. HERB: Okay.

14 MR. BENNER: I would say, jumping ahead a
15 little, I would say it's a little of both. And when
16 we get, we have our quadrant of what's required where,
17 I think that will make it clear.

18 But I would say, even in that upper
19 quadrant of safety related and risk-significant, and
20 I think this is where the interface with what you're
21 talking about may help.

22 There's likely room to talk about a graded
23 approach, even within that quadrant.

24 MR. HERB: Good.

25 MR. BENNER: We did not focus on that. We

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1 focused on safety related risk-significant, non-safety
2 related significant. Pretty much the 50.59 --

3 MR. HERB: I understand.

4 MR. BENNER: -- boxes.

5 MR. HERB: Yes.

6 MR. BENNER: So we just did the grading to
7 that level. We're open to grading even within that
8 box of the most risk-significant and safety related.

9 MR. HERB: Well, based on your, and I just
10 wanted to handle this one, because we read ahead so we
11 know where, Box 2 --

12 MR. BENNER: Yes.

13 MR. HERB: -- and so we see that only the
14 required part is that top left box. Everything else
15 is, we do it as part of our design --

16 MR. BENNER: You're taking Wendell's
17 thunder away.

18 MR. HERB: We do it as part of our design
19 --

20 MR. BENNER: We're going to pause --

21 (Laughter.)

22 MR. HERB: And there's --

23 MR. BENNER: So, let's consider that.

24 MR. HERB: -- so, I don't consider that
25 part of the great approach. I think the great

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1 approach is really in that top left box. That's where
2 it is.

3 MR. MORTON: That's perfectly fine.
4 Excuse me, Wendell Morton here.

5 MR. HERB: Yes.

6 MR. MORTON: That's perfectly fine.

7 MR. HERB: Okay.

8 MR. MORTON: We'll get to that pretty
9 soon.

10 MR. HERB: Okay, good. Good. But I'm
11 really heartened by the discussion I've heard so far
12 so --

13 MR. MORTON: Okay.

14 MR. HERB: -- we're on the right path.

15 DR. ALVARADO: So, I mean, we audit, we
16 were trying to use the language that is appropriate to
17 BTP 7-19 --

18 MR. HERB: Right.

19 MR. MORTON: Right.

20 DR. ALVARADO: -- because these are the
21 stuff that had created concern, and then we're trying
22 to address these concerns.

23 MR. HERB: Right.

24 DR. ALVARADO: And as we revise the
25 document, what is it that we need to clarify.

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1 MR. HERB: Right.

2 MR. MORTON: Right.

3 MR. HERB: Thank you.

4 DR. ALVARADO: Okay. Next --

5 MR. GEIER: So, just a question.

6 MR. MORTON: Sure.

7 MR. GEIER: NEI is, given the BTP 7-19
8 will not apply to anything except for, it does not
9 apply and it will not apply to anything except for RPS
10 and SFAS. How --

11 DR. ALVARADO: That's not correct.

12 MR. MORTON: That's not quite correct.
13 But please give your question though. What's your --

14 MR. GEIER: So my question will be, and
15 again, maybe this is reading ahead, but okay, where is
16 that going to be, you know, what's --

17 DR. ALVARADO: We will --

18 MR. MORTON: We'll get to it.

19 MR. GEIER: -- proposal? Okay.

20 MR. MORTON: We'll get to it.

21 DR. ALVARADO: Right. I mean, BTP 7-19 is
22 going to continue to apply for any license amendment
23 that we need to submit.

24 MR. HERB: So will LARs, right?

25 MR. MORTON: Right.

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1 MR. HERB: Okay.

2 DR. ALVARADO: So there is no, like, only
3 for license amendment for RPS, it's any safety system
4 that comes from a LAR we're going to follow the
5 guidance in BTP 7-19.

6 What changes now, or what we are trying to
7 develop, is the greater approach in which it depends
8 what level or what degree of the analysis you need to
9 perform to --

10 MR. GEIER: So you're still talking about
11 a graded approach within that population of --

12 DR. ALVARADO: Yes.

13 MR. GEIER: -- modifications or system
14 design, or have to come in for a license amendment.

15 MR. MORTON: So here, and to take off from
16 Ross' point, so what we were considering with the D3
17 assessment should apply to this.

18 MR. GEIER: All right.

19 MR. MORTON: What it should apply to. So
20 we're thinking a 50.59 space and 50.90 space you've
21 got certain mods, let's stick to our safety mode we
22 also talk about with the RIS.

23 And in theory, all of those mods should be
24 done under 50.59 with the RIS in place as it currently
25 stands. But we understand that there may be a small

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1 population of main control rooms, say, that may need
2 to come in for a LAR for whatever reason.

3 MR. BENNER: Uniqueness of individual
4 plants --

5 MR. MORTON: Uniqueness of, right.

6 MR. BENNER: So we're focused --

7 MR. MORTON: Right.

8 MR. BENNER: -- I think our focus is the
9 same place in RPS and SFAS, but we had a lot of
10 internal discussion of, we didn't want to strictly
11 limit it to that because --

12 MR. MORTON: Right.

13 MR. BENNER: -- we don't know, a plant may
14 come in with a LAR --

15 MR. MORTON: Right.

16 MR. BENNER: -- for a different system
17 just because of the uniqueness of their license, okay.

18 MR. MORTON: Right. And so, we covered
19 those --

20 MR. GEIER: Thanks for that clarification.

21 MR. MORTON: Thank you.

22 MR. GEIER: You know, I guess the concern
23 was when we were kind of discussing the slides is how
24 are we, you know, when you look at the four quadrants
25 you know, obviously your, most of the mods outside of

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1 the quadrant, one, are going to be under 50.59.

2 MR. BENNER: Under the RIS, yes.

3 MR. MORTON: Under the RIS.

4 MR. BENNER: And we agree with that.

5 MR. GEIER: Under the RIS, okay.

6 MR. MORTON: But there may be the
7 potential for that don't come under the RIS, and
8 that's why the quadrants are there --

9 MR. GEIER: Got you.

10 MR. MORTON: -- and we'll get into that a
11 little more, until later.

12 MS. ZHANG: And again, this is Deanna
13 Zhang, we want to make sure there is no gap in
14 guidance, right?

15 MR. BENNER: Right.

16 MS. ZHANG: And we want to be consistent
17 with the RIS. If there's a gap in the guidance and we
18 do get a LAR, we want to make sure that we're not
19 applying different criteria.

20 MR. BENNER: Right.

21 DR. ALVARADO: Correct.

22 MR. BENNER: Yes. If it's still a low
23 safety significance and we're just getting a LAR
24 because of, like I say, some uniqueness of the
25 licensing basis, we don't want to default to this more

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1 rigorous approach --

2 MR. MORTON: Correct.

3 MR. BENNER: -- we would sort of port what
4 we think are the right expectations from the RIS over
5 as, that's the right review standard for us, if we get
6 such a LAR.

7 MR. HERB: Okay, excellent. Thank you.

8 MR. MORTON: Okay.

9 DR. ALVARADO: Okay, next slide. This one
10 is one that we have heard lately. That is, that we
11 require a backup. And Steve, when he did his opening
12 remark mentioned it, a backup digital I&C safety
13 system. And furthermore, that each should be analog.

14 MR. MORTON: Right.

15 DR. ALVARADO: So, I want to be clear that
16 we don't require any diverse system. Even in the
17 current BTP 7-19, if you read about it, you are
18 required to identify vulnerabilities to CCF and then
19 you have different options.

20 One is to identify, is there any other
21 system in the plan that can still perform the
22 function, right?

23 Two is like, I can go and use a diverse
24 system, or three is like, I'm not doing anything, I
25 just need to provide specification for not doing

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1 anything. And that is currently in the language of
2 BTP 7-19.

3 So we want to be sure, and like Deanna
4 said, like we're going to now focus more into the
5 defense-in-depth approach for BTP 7-19. Like, making
6 it super heavy on the diversity part. But no, diverse
7 hardware system is not required.

8 MR. ODESS-GILLETT: And quickly.

9 MR. MORTON: Yes.

10 MR. ODESS-GILLETT: This is Warren Odess-
11 Gillett, NEI. So, it wasn't so much that the NRC
12 required a diverse system, it's just that the
13 application of BTP 7-19, as it is now, leaves the
14 licensee to be required to do a diverse system, simply
15 because of the manner in which you have to do a D3
16 analysis to every single AOO and DPD regardless of
17 this particular, let's say --

18 MR. BENNER: Applicability.

19 MR. ODESS-GILLETT: -- applicability,
20 right.

21 So, and we can get into that later. But
22 that was really, I think, the concern is that.

23 DR. ALVARADO: I think when we go into the
24 table that we did --

25 MR. ODESS-GILLETT: Yes.

1 DR. ALVARADO: -- we, that was part of the
2 exercise, why we decided to go and do these exercises.
3 It's not complete but only we didn't put all the stuff
4 that we have reviewed.

5 But we were trying to identify, what is
6 the source for this concern, right, and what is the
7 original, this concern. And that's why we did that.

8 So, I do agree with you, like, there is
9 the language that can be misinterpreted, as in, like
10 it's required. But at the same time, BTP 7-19 later
11 on tells you like, you don't need to do anything as
12 long as you justify not doing anything.

13 MR. ODESS-GILLETT: Right.

14 DR. ALVARADO: So, somehow that got lost
15 in the whole message for BTP 7-19, that we want to
16 bring up, up-front, to make that clear.

17 MR. ODESS-GILLETT: All right. So, again,
18 Warren Odess-Gillett, NEI.

19 I think what we want to bring up-front is
20 some points that have been introduced to BTP 7-19, its
21 original issuance, that has put us in a position --

22 DR. ALVARADO: Right.

23 MR. ODESS-GILLETT: -- to have to put in
24 a diverse actuation system.

25 MR. BENNER: Okay.

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1 MR. ODESS-GILLETT: And we can talk about
2 this.

3 MR. RAHN: Yes, we'd like to see, this is
4 David Rahn, we'd like to see real life examples of
5 that.

6 MR. BENNER: Yes, because again,
7 perception is reality, right. I think just like we've
8 talked a little about the policy. There is some of
9 this that may have been interpretations along the way
10 of the guidance.

11 So, we think, I'd say this is two tier.
12 We think there is more flexibility there, that maybe
13 some applicants believe is there. We still want to
14 clarify that.

15 If the language of the BTP is leading to
16 wrong conclusions, we want to clarify that. But we
17 also believe that we have some examples of where we've
18 taken advantage of those flexibilities and the
19 approvals we've done.

20 MR. MORTON: Right.

21 MR. BENNER: So, part of this is sort of
22 the fact base that we believe the flexibility there
23 and we believe we've utilized the flexibility. So,
24 part of it is, is that the right level, right?

25 If ultimately the flexibilities that are

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1 already there are the right level, then it's just a
2 matter of clarifying the BTP. It may be that we
3 disagree that's the right level, and that's another
4 conversation we need to have.

5 But those are two different, somewhat two
6 different conversations. And we want to have both of
7 those to get a good answer.

8 MR. ODESS-GILLETT: Understood. Again,
9 Warren Odess-Gillett from NEI.

10 When we get to the examples, and you show
11 sort of the flexibility, in some cases they deviated
12 from BTP 7-19 as written.

13 MR. RAHN: Okay.

14 MR. ODESS-GILLETT: Simply because of the
15 migration of revisions. So that's, we'll mention
16 those things as well.

17 DR. ALVARADO: Yes, that will be great.

18 MR. GEIER: Okay. Steve Geier, NEI. And
19 going back, I think what you mentioned is this third
20 path.

21 DR. ALVARADO: Right.

22 MR. GEIER: Is what's an appropriate,
23 whether it's design engineering evaluation or putting
24 in all the other measures, non-hardware measures such
25 as manual action, such as taking credit for the

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1 ability procedural, ability to cope with a software
2 CCF or defensive measures that are put in there, and
3 with that value of work.

4 Which of course was what we were trying to
5 do with NEI, with 16-16 a couple years ago. How do we
6 capture that and where would that be contained.

7 MR. MORTON: Okay.

8 DR. ALVARADO: It is if -- could be
9 something that we just need to, I guess --

10 MR. GEIER: Clarify our --

11 MR. MORTON: Clarify, yes.

12 (Simultaneously speaking.)

13 MR. GEIER: -- we can all agree with them
14 lying around.

15 MR. BENNER: Yes. Yes. The focus on
16 defense-in-depth with the verse being a potential way
17 to address that --

18 MR. GEIER: Right.

19 MR. BENNER: -- maybe helps give a better
20 framework for how something like that fits into
21 whatever evaluation is done.

22 DR. ALVARADO: Okay, so, for the last item
23 that I have here, I'm sure this is not the last
24 concern, so please, if there are some more you would
25 like to hear then, is that the NRC requires 100

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1 percent testing of the digital system to address
2 common cause failure.

3 So we want to clarify Section 1.9 of BTP
4 7-19, describe means to address CCF so you can
5 eliminate from further consideration. One of these
6 means is 100 percent stability. That came from ISG 02
7 when it was created to address diverse and defense-in-
8 depth.

9 So, this is just a means to say like, I
10 perform all these testability, all these tests, and
11 therefore I don't think we need to continue
12 considering CCF.

13 Obviously, this 100 percent testability
14 has created more problems than solutions. We
15 understand that, we agree on it. And actually, we are
16 proposing some corrective language to address this
17 confusion that it has created. But it has a merit.

18 I mean, yes, were you able to do 100
19 percent testing on something simple, yes, you can use
20 it --

21 MR. MORTON: Right.

22 DR. ALVARADO: -- to say like, oh, I'm not
23 vulnerable to CCF.

24 But we understand that it has created some
25 confusions and we're going to clarify it. And Wendell

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1 will talk about like the proposed language in part
2 derived from the review of the SSPS topical report.

3 MR. MORTON: Yes. We didn't want to
4 remove a tool because we've heard a lot of different
5 concerns --

6 DR. ALVARADO: Right.

7 MR. MORTON: -- about this particular
8 section of BTP 7-19 and its practicality of usage.
9 So, putting aside the sufficient diversity aspect I
10 think that speaks for itself.

11 The sufficiently simple through 100
12 percent testing has caused some consternation. So,
13 rather than simply removing that potential tool that
14 could be used we try to refine and clarify so that it
15 could be useable to some level within licensing
16 actions.

17 And that's sort of the goal. But we
18 wanted to clarify that it's not required, it's
19 something we can lose apart from the D3 assessment
20 itself.

21 It's all available on the D3. We didn't
22 want to scrap it just because we heard some
23 consternation about it.

24 MR. ODESS-GILLETT: All right. So this is
25 Warren Odess-Gillett from NEI. A couple of points.

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1 One is, the hundred percent testing
2 actually came from ISG 04 for the priority modules.

3 MS. ZHANG: Oh, I'm sorry. That's right.

4 MR. ODESS-GILLETT: And then it was
5 brought over --

6 MS. ZHANG: There were two places.

7 MR. MORTON: It was in both places.

8 MR. ODESS-GILLETT: They're in both
9 places?

10 MR. MORTON: Yes.

11 MS. ZHANG: Yes, it was in both. And they
12 talked about it slightly differently.

13 MR. ODESS-GILLETT: All right.

14 MR. MORTON: Right.

15 MS. ZHANG: So, when it got incorporated
16 into BTP 7-19 it was merge guidance.

17 MR. ODESS-GILLETT: Okay. Secondly, I
18 think industry understood that the NRC wasn't
19 requiring 100 percent testing for your system that
20 you're submitting, but rather than that the concept of
21 the way 100 percent testing was described for branch
22 technical position was not a feasible, achievable, no
23 matter how simple you got, for a component to exclude
24 it for consideration from CCF. I think that really
25 was the concern.

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1 Thirdly, IEEE impact in IEEE 7432 has, as
2 an intent, an industry consensus standard, come up
3 with other wording that we felt was more feasible for
4 addressing 100 percent testing. So you might consider
5 looking at the 2016 version of IEEE 7432 as a
6 consideration.

7 MR. MORTON: Okay.

8 MS. ZHANG: This is Deanna Zhang. I just
9 want to clarify, and we didn't have this in our table
10 that we'll be discussing later, we have applied the,
11 100 percent testing before, as intended, to designs
12 after certification applications.

13 For example, the priority module was in
14 the US EPR. They did propose 100 percent
15 combinatorial testing with internal states as
16 specified in BTP 7-19. And we did review that.

17 And as of -- we didn't have any open items
18 with respect to that part when we stopped our review.

19 MR. ODESS-GILLETT: Warren Odess-Gillett,
20 NEI. Right. Committing to something and then
21 actually performing it in an ITAAC or whatever is a
22 different perspective.

23 MR. MORTON: And this is a good place
24 where if you have specific examples or concerns, or
25 recommendations for the language.

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1 MR. ODESS-GILLETT: Yes.

2 MR. MORTON: But, some splitting example,
3 if you've run across it, have made it problematic.
4 Those are things we'd like to hear from.

5 MR. ODESS-GILLETT: We can definitely
6 point those out in your table.

7 MR. MORTON: Okay.

8 DR. ALVARADO: I think with the SSPS --

9 MR. ODESS-GILLETT: That's what I was
10 thinking.

11 DR. ALVARADO: -- they, right. I think
12 that provided a good approach to address these
13 concerns with 100 percent --

14 MR. ODESS-GILLETT: But it wasn't. It
15 didn't meet the BTP 7-19 --

16 DR. ALVARADO: No, no, no, I --

17 MR. ODESS-GILLETT: -- criteria, but you
18 accepted it.

19 DR. ALVARADO: Right. Right. And that's
20 why --

21 MR. MORTON: That's the --

22 DR. ALVARADO: -- we want to revise it and
23 make that clarification using, in part, what we saw,
24 it was proposed with SSPS cards and then what we
25 approved. So, yes. But you're right, it was in --

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1 MR. MORTON: It didn't meet the letter of
2 the guidance. But that's, the goal of this update is
3 to, as part of the clarification and flexibility, is,
4 if there is a better way to get there, or a more
5 efficient way to get there and still maintain the
6 safety case for that particular piece of the guidance,
7 we definitely want to consider that and incorporate
8 that. We can get that from you.

9 MR. ODESS-GILLETT: Yes.

10 MR. MORTON: So we're not, we understand
11 that there have been situations where the strict
12 consistency to every word of the guidance hasn't
13 always been there, but approvals have been reached.
14 And we want to leverage those experiences for this
15 update.

16 MR. ODESS-GILLETT: Right. So the
17 importance of the written word is for consistency --

18 MR. MORTON: Correct.

19 MR. ODESS-GILLETT: -- among reviewers?

20 MR. MORTON: Correct.

21 DR. ALVARADO: So, we're now going to move
22 actually to the table. The other handout attachment.

23 So, when we were looking at these concerns
24 and we were starting to review BTP 7-19, one of the
25 exercises that we decided to do was look at previous

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1 D3 assessments that have been submitted.

2 Like I said before, this piece is not
3 complete, we just, you know, this is what we have been
4 working and we're updating.

5 So we did operating reactors, like a
6 license amendment that we received. And the signed
7 certifications and also topical reports.

8 If you have any comments on this table it
9 would be great if we can get it because obviously this
10 is a work in progress. And we say, as of March 2019,
11 actually, we say, maybe we should add ESBWR and we
12 just didn't have time --

13 MS. ZHANG: Oh, we'll get at it.

14 (Laughter.)

15 MR. ODESS-GILLETT: I would like to speak
16 to, I would like Mark to speak to the Oconee, because
17 there is some clarifications --

18 DR. ALVARADO: Okay.

19 MR. ODESS-GILLETT: -- to the assumptions
20 in here.

21 MR. BURZYNSKI: Okay.

22 MR. ODESS-GILLETT: If that's acceptable.

23 MR. BURZYNSKI: Yes.

24 DR. ALVARADO: Yes, it is. I just want
25 to, before we go there, I know Oconee is a sensitive

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1 issue.

2 So, we do recognize that the review for
3 Oconee could have been different, right? And more
4 efficient and, but, we don't want to rehash what went
5 wrong or what was right.

6 The purpose of the table, not only Oconee
7 but all of that is like, what were the lessons
8 learned, what was the approach that was taken then and
9 why and then how can we be better. Or what is it that
10 we need to do better for this revision of the
11 guidance, right.

12 I mean, one of them that we notice,
13 Oconee, obviously we know. But overall it seems like
14 a dash was not needed. Like, the base of the review
15 that they did, right?

16 Like, either because it was another system
17 was provided with like the ALS and like to a cord and
18 internal diversity. But, so, we know it was not
19 perfect and we don't want to like revisit this
20 discussion, we just want to like, okay now, let's move
21 forward, what do we need to do.

22 MR. BURZYNSKI: Understood. All I had was
23 one minor comment that the bullet, the second
24 paragraph in the third column is not correct.

25 MR. MORTON: The non-LOCA.

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1 MR. BURZYNSKI: The non-LOCA.

2 DR. ALVARADO: Oh.

3 MR. BURZYNSKI: They use best estimate
4 methods, not the conservative Chapter 15 methods.

5 DR. ALVARADO: Oh really?

6 MR. BURZYNSKI: Yes.

7 DR. ALVARADO: Okay, I'm sorry.

8 MR. BURZYNSKI: They credit the control
9 system actions.

10 DR. ALVARADO: Yes. I saw, yes.

11 MR. BURZYNSKI: And they use --

12 DR. ALVARADO: And the non-actuation too.

13 MR. BURZYNSKI: -- nominal initial
14 conditions and not worst reactivity feedback
15 mechanisms.

16 DR. ALVARADO: Okay.

17 MR. BURZYNSKI: So.

18 MR. MORTON: Okay.

19 DR. ALVARADO: Thank you.

20 MR. BURZYNSKI: Thank you.

21 DR. ALVARADO: I guess I didn't get that
22 right.

23 So, because of time we're just going to
24 cover a few of these, otherwise we would spend a lot
25 of time. But like I said before, by all means, if you

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1 have comments, that will be great. We can get it to
2 have like a good summary of all of the reviews.

3 So, obviously Oconee is the one that we
4 all talk about one way or another. So, for Oconee,
5 the D3 assessment, they consider all the functions of
6 the reactor protection system and the ESPS.

7 And the third column, like Mark was
8 pointing out, is the approach that they use to perform
9 the D3 analysis. And as a result of these approach
10 and these analysis that they perform, the fourth
11 column identify what diversity they took credit for,
12 what systems they consider and then what was found
13 that required some sort of diversity or means to
14 address the potential for a common cause failure.

15 So, Oconee did take credit for automatic
16 systems, like Mark was point out, that were not
17 affected by the CCF. It also took credit for the
18 existing dash that they had. And they also did take
19 credit for manual actuation.

20 They did like a, they identified like 17
21 design events. And there are different categories,
22 depending on the event.

23 And only 13 were required to have diverse
24 actuation. And they took credit, and only two turned
25 out that required diverse actuation.

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1 And Ocone decided to use analog. We
2 didn't require analog system.

3 The last two columns is just more like
4 information of what the Staff concluded and where we
5 got this information from. Like, the safety
6 evaluations and the different LARs of the review as a
7 part of our evaluation.

8 Then the next one that we also wanted to
9 talk about is Diablo Canyon. Diablo Canyon was
10 replacing this Eagle 21 for TriCon and ALS system.
11 Unfortunately, they decided not to install it but it
12 was approved.

13 For this one they evaluated all the
14 functions that were evaluated at the existing Eagle
15 21. So they wanted to see if with introduction of
16 this system did anything change the previous safety
17 evaluation that they performed for the D3 assessment.

18 In this case, the common case failure,
19 like the potential for a common cause failure, was
20 assigned to the TriCon portion of the system. And
21 then what they did is, like, if there was a potential
22 for a common cause failure, those functions were
23 allocated to the ALS system.

24 And for the ALS part of the portion, they
25 took credit for internal diversity. So this resulted

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1 in that they didn't need to include an additional
2 task. Because any function that could have been
3 effected in the TriCon portion was covered by the ALS
4 portion.

5 Another thing that they did as a part of
6 the analysis was like, any manual actuation function,
7 they also took credit for not having to perform those,
8 but instead, ALS was going to perform those functions.
9 That was not necessary, but they just demonstrated
10 that the ALS can do that.

11 Again, the last two columns is just to
12 show you what we did. And some of the ML numbers
13 where more information can be found.

14 Now, we're going to jump to new reactors.
15 And Deanna will help me here answer any questions,
16 because I'm not very familiar.

17 We go to Page 6, APR-1400. So, for this
18 one, they analyze all the functions that were
19 performed by the plant protection system. They use
20 best estimate methods to perform the D3 analysis.

21 They didn't take credit for any existing
22 diversity.

23 MS. ZHANG: Yes, I want to clarify that
24 column as a part for new reactors. We didn't, we
25 evaluated existing diversity as something that already

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1 is there.

2 So an operating plant, it makes sense.
3 For a new reactor nothing exists so it didn't make
4 sense to evaluate this column for new reactors.

5 DR. ALVARADO: Right. The outcomes
6 identify the different functions that require
7 diversity.

8 But in this case, they were part of the
9 DAS that they were already, the diverse protection
10 system that it was part of the design, correct?

11 MS. ZHANG: Yes. So they proposed a
12 diverse actuation system and it included three parts.
13 So it had a diverse, automated diverse protection
14 system that performed the reactor functions, as well
15 as a few SFAS functions.

16 It also had a diverse indication system,
17 which is to indicate safety critical parameters in a
18 diverse manner. And also, diverse manual actuation
19 switches. So those are the manual capabilities to
20 actuate some functions at a system level.

21 They are all FPGA-based. And they showed
22 how the FPGA-based diverse actuation system is, is
23 sufficiently diverse from the plant protection system.

24 And I just want to highlight that, for
25 this application, not only did they evaluate a loss of

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1 the function, they also evaluated the potential for
2 spurious actuations. And for that, they did a CCF
3 analysis of both the control systems, as well as for
4 the protection system too.

5 MR. BENNER: Right.

6 MS. ZHANG: And they used a combination of
7 segmentation in analysis, as well as other --

8 MR. BENNER: It's pretty much --

9 MS. ZHANG: -- several hydraulic analysis
10 to show that, even if you have a postulated spurious
11 actuation due to a CCF for control system or their
12 plant protection system, they're still within the 10
13 CFR 100.

14 MR. HERB: This is Ray Herb, Southern
15 nuclear. So was there an upper bound on those
16 postulated spurious actuations or are they just pick
17 a set and you all look at it and say, this looks good?

18 (Simultaneous speaking.)

19 MR. HERB: Because I don't know if there
20 is necessarily a requirement for spurious actuations
21 so they offered some up.

22 So are you suggesting that you are going
23 to make us start looking at spurious actuations and is
24 there going to be some sort bound on that because I
25 mean that quickly could blow up.

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1 And I think a lot of times in the new
2 reactor space they really, really, really want to get
3 a --

4 PARTICIPANT: Design certification.

5 MR. HERB: -- design certification. So
6 they sometimes go over and beyond what we would have
7 to do in the operating fleets, and so I don't know
8 that we would necessarily take some of those examples
9 as stuff that we should be doing in the operating
10 fleets, because like you said we already have existing
11 diverse systems in the plant and we are not looking
12 for a full plant design certification.

13 And so I just want us to make sure that we
14 don't apply some of those learnings from the new plant
15 into the operating fleet.

16 DR. ALVARADO: Right. And I'm sorry if I
17 wasn't clear about it, the purpose of the table is
18 just to look at the approaches we have used and what
19 we are doing.

20 MR. HERB: Okay.

21 DR. ALVARADO: But we understand they are
22 a very different type of --

23 MR. MORTON: Considerations based on the
24 level of digital implementation.

25 DR. ALVARADO: Yes, right, right.

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1 MR. MORTON: And the complexity of it
2 versus APR-1400 versus Oconee.

3 DR. ALVARADO: That's right.

4 MR. MORTON: But there is a difference
5 there, yes.

6 MR. HERB: Right.

7 (Simultaneous speaking.)

8 MR. BENNER: This exercise did not cause us
9 to say, oh, our evaluations of D3 evaluations for the
10 operating fleet were inadequate because we didn't
11 address this.

12 MR. HERB: Right. Okay, good.

13 MR. BENNER: This isn't just because we
14 have --

15 MR. HERB: Just because they included a
16 DAS doesn't necessarily mean you had to have a DAS.

17 MR. BENNER: Agree.

18 MR. HERB: They just may have --

19 (Simultaneous speaking.)

20 MR. BENNER: Agree. Where we have, again,
21 Deanna talked about we want some level of completeness
22 for our guidance so our guidance needs to address both
23 the operating fleet and the new reactor.

24 So we just want to be clear and we will
25 try to be clear in the guidance of that

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1 differentiation --

2 MR. MORTON: And we'll talk about that and
3 we have a slide.

4 MR. BENNER: Yes.

5 MR. MORTON: That you may have seen in our
6 other documents.

7 MR. BENNER: But a concern we have is
8 people read these documents and infer things. So we
9 want to remove that potential for inference but we
10 also want to challenge the industry to say don't
11 infer, right, but if you have a question come talk to
12 us as to whether you think something might be
13 inferring.

14 MR. HERB: Thank you. I think we're on
15 the same page.

16 MS. ZHANG: I just want to clarify even
17 for operating reactors spurious actuation have been a
18 concern in the past but, you know, was dealt with in
19 a different manner.

20 So, for example, in LaSalle, right, they
21 did do a change to the rod control system, it was a
22 potential to withdraw more rods than previously
23 physically, right.

24 But for that analysis they credited --
25 They did do an analysis eventually to show that it is

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1 still within the bounds of the safety analysis even if
2 four rods were pulled at the same time.

3 MR. MORTON: Right.

4 MS. ZHANG: And they showed that there are
5 defensive measures --

6 MR. MORTON: Defense-in-depth.

7 MS. ZHANG: Defense-in-depth measures to
8 prevent, to minimize --

9 MR. MORTON: To reduce the likelihood of
10 a particular event being possible --

11 MS. ZHANG: Yes.

12 MR. MORTON: -- beyond the analysis
13 already showing that it's a bounded particular
14 situation. And that's what you will see reflected both
15 in the advanced reactors as well.

16 So when Deanna is referring to the
17 spurious actuation issue, even in the non-A1 system,
18 so to speak, it's still a concern because you look at
19 -- the licensing basis and the requirements aren't
20 looking at failures of your digital system.

21 MR. HERB: Right.

22 MR. MORTON: Those failures can happen
23 both ways and -- Spurious actuation consideration is
24 in the current BTP now.

25 MR. HERB: Right. I know and we have --

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1 That's one of our concerns.

2 MS. ZHANG: Yes, and we know --

3 MR. MORTON: And we know.

4 (Simultaneous speaking.)

5 MS. ZHANG: -- clarification, yes.

6 MR. HERB: Right.

7 DR. ALVARADO: And even --

8 MR. HERB: But then you can what-if these
9 systems to forever.

10 MR. MORTON: Sure.

11 DR. ALVARADO: Yes.

12 MR. HERB: And I'm not saying that that's
13 your goal is to what-if us forever, but --

14 MR. MORTON: The goal is safety not --

15 (Simultaneous speaking.)

16 MR. HERB: But what happens is it adds
17 uncertainty to that review and we can't bound that
18 number and then we can't -- If we can't bound that
19 number then we can't really go forward with a
20 modification that would require a review because --
21 and you don't really know what the upper end of what
22 that cost is going to be or how that may impact the
23 implementation phase --

24 DR. ALVARADO: Right.

25 MR. HERB: -- and those are the things

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1 that really keep us up at night and it really prevents
2 my management from signing a check to say, you know,
3 you can open up a capital mod to do this.

4 MS. ZHANG: And we understand that and
5 later slides will talk about the spurious actuation
6 because when we read it we said, hmm, this could be
7 improved in this way and that way.

8 MR. HERB: Right.

9 DR. ALVARADO: Right. Okay.

10 MR. CARTE: Norbert Carte, I got a quick
11 comment. You know, in terms of spurious actuations
12 there is different ways to think about this, but one
13 issue is is spurious actuations congruent with an
14 event, which is kind of what you guys are talking
15 about, or you could also look at a spurious actuation
16 in the presence of no event, so is that a concern.

17 And then, finally, if you go to non-safety
18 systems, which basically you postulate the fail and
19 see what happens and can you handle it, do you need to
20 deal with CCF and spurious actuations on the non-
21 safety.

22 So a simple label of spurious actuations
23 yes or no it may be too simplistic because there are
24 at least three different categories of stuff that you
25 should consider.

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1 MS. ZHANG: So just to clarify, for new
2 reactors we did not treat it with concurrent with a
3 design basis event.

4 PARTICIPANT: Right.

5 MS. ZHANG: We treat it as a transient
6 initiator.

7 MR. HERB: Right. Correct, right. Good.
8 Anymore questions on that?

9 MR. SCHRAGE: This is John Schrage from
10 Entergy. I just wanted to clarify, you mentioned the
11 LaSalle example, would you say that was an adequate
12 way of addressing even though that wasn't the proof?

13 MS. ZHANG: It --

14 PARTICIPANT: It was a 50.59 --

15 (Simultaneous speaking.)

16 MR. MORTON: It was approved on the 50.59

17 --

18 (Simultaneous speaking.)

19 MR. SCHRAGE: -- rod withdrawal?

20 MR. RAHN: No, no. The licensing basis
21 for the plant was one single rod withdrawal.

22 MR. SCHRAGE: Right.

23 MR. RAHN: The software they put in
24 enabled multiple main rod withdrawals.

25 MR. SCHRAGE: Right.

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1 MR. RAHN: But they were able to
2 demonstrate using a defense-in-depth analysis that the
3 software that it would possibly engage the four rod
4 withdrawal was effectively defeated and it would also
5 take multiple operator actions to program those rods
6 in, so that modification was approved with the
7 software blocked.

8 MR. SCHRAGE: Right.

9 MR. DITTMAN: Approved by the licensee
10 under --

11 (Simultaneous speaking.)

12 MR. MORTON: Under 50.59, yes.

13 MS. ZHANG: Under 50.59.

14 MR. SCHRAGE: Right, but the license
15 amendment --

16 (Simultaneous speaking.)

17 MR. RAHN: No, it wasn't a license
18 amendment.

19 PARTICIPANT: They stuck within their
20 licensing basis basically.

21 MR. RAHN: Right.

22 MR. SCHRAGE: But they had submitted a
23 license amendment request to do that.

24 MR. RAHN: No.

25 PARTICIPANT: No.

1 MR. SCHRAGE: Yes, they did.

2 MR. HERB: Yes, they did a LAR. They
3 LAR'd it to do the four at one time and they --

4 MR. SCHRAGE: So they did change their
5 licensing basis?

6 MS. ZHANG: They tried.

7 MR. HERB: Well they did it after they did
8 the LAR.

9 MR. SCHRAGE: Right.

10 MR. HERB: I think there was like a timing
11 issue between the two.

12 MR. SCHRAGE: Okay.

13 DR. ALVARADO: But I don't think we deny
14 it, just I think it was withdrawn.

15 (Simultaneous speaking.)

16 MR. SCHRAGE: It would have been, yeah.

17 (Laughter.)

18 DR. ALVARADO: Well, you can resubmit it
19 now.

20 MR. MORTON: But the key is it was
21 approved on the 50.59. That's the key, so --

22 DR. ALVARADO: Okay.

23 MR. BENNER: But, yes, it sounds like less
24 a digital issue than one, but change a fundamental
25 licensing basis of, you know, my licensing basis is

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1 one rod withdrawal versus four rod withdrawals.

2 MR. MORTON: Right.

3 MR. BENNER: So, yes, it seemed like that
4 was linked to a digital issue, but I would want to
5 caution us calling that a digital issue.

6 MR. CONNELLY: Our intent was to never use
7 that functionality. The system had the capability but
8 our intent was not to use it.

9 DR. ALVARADO: Okay. So the last example
10 --

11 (Simultaneous speaking.)

12 PARTICIPANT: I just had another quick
13 question. You know, we're sort of making two sets of
14 issues and if you could kind of keep them in mind, one
15 is a technical, what is necessary for safety, ignore
16 all the regulatory requirements, what do we need to be
17 safe.

18 And another aspect is what are the
19 regulatory requirements. So the listing plants have
20 a current licensing basis and 50.59 for making changes
21 to that licensing basis, so that's one set of
22 requirements.

23 If a current plant would come in for a
24 license amendment that might be different requirements
25 associated with that and a new plant, because they are

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1 a 603 at a minimum has different requirements.

2 So you have different licensing or
3 regulatory requirements depending on which domain you
4 are operating in and then you also have the technical
5 issue of what is required to being safe.

6 And we're sort of mixing all that together
7 and trying to have one condition which may be
8 difficult to achieve.

9 DR. ALVARADO: Okay. We've got to start
10 like just speeding up a little bit so we can cover all
11 the material because I think it's going to get more
12 interesting.

13 MR. MORTON: Just a little bit.

14 DR. ALVARADO: Yes, just a little bit,
15 especially when we get to the graded approach.

16 MR. MORTON: Yes.

17 DR. ALVARADO: So the next example I
18 wanted to talk about, I think I am going to be super
19 quick about this, is the NuScale, but keep in mind
20 NuScale is still under review and things are changing
21 or not changing.

22 So we were looking at it based on the
23 information that we had and they did perform an D3
24 analysis using best estimate. Like Deanna said there
25 is no existing diversity because, obviously, this has

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1 all been designed so they couldn't take credit for
2 anything else.

3 Their outcome was that they didn't need a
4 DAS and they do talk a lot about taking credit for
5 internal diversity. A lot of this information is
6 proprietary and this is still under evaluation, but
7 they are using that.

8 The safety evaluation has open items, but
9 we didn't identify any open items associated with the
10 D3 analysis.

11 MS. ZHANG: Actually we have no open items
12 in Chapter 7 period.

13 DR. ALVARADO: Oh. This is just for the
14 entire --

15 MS. ZHANG: Yes, it's just called --
16 that's, yeah, it was open items, but no open items.

17 DR. ALVARADO: Okay. So can we go back to
18 --

19 MR. VAUGHN: I have a question on -- or
20 it's more of a comment.

21 MR. ODESS-GILLETT: Steve Vaughn, NEI.

22 MR. VAUGHN: Yes, Steve Vaughn, NEI. An
23 analytical approach for Vogtle 3&4 mentions PRA-based
24 analysis for selecting DAS functions --

25 DR. ALVARADO: Where are you, I'm sorry?

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1 MR. VAUGHN: AP1000 or Vogtle 3&4.

2 DR. ALVARADO: Okay.

3 MR. VAUGHN: Okay. So you use their PRA

4 --

5 PARTICIPANT: Yes.

6 MR. VAUGHN: -- to select what DAS
7 functions. They didn't use their PRA to determine
8 whether they even needed a DAS function?

9 MR. ODESS-GILLETT: No.

10 (Simultaneous speaking.)

11 MR. VAUGHN: They didn't. And, you know,
12 I know there is an advanced --

13 (Simultaneous speaking.)

14 MR. ODESS-GILLETT: Yes, they selected a
15 small limited scope DAS that only did certain risk --

16 PARTICIPANT: It was just to improve their
17 CFD and -- after a release.

18 MR. VAUGHN: Yes, that's my point here is
19 that there is an opportunity for the operating fleet
20 to use PRA insights to determine whether you need the
21 DAS or not, right?

22 MS. ZHANG: Yes.

23 MR. VAUGHN: I know there is a challenge
24 in risk informed digital I&C but there is an
25 opportunity to look at your PRA to see, hey, do I even

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1 need a DAS as opposed to the D3 analysis we have been
2 doing so far only to determine whether we need the DAS
3 or not, because they did it here for the new ones.

4 MS. ZHANG: So AP-1000 was a special case.
5 So this analysis was based on the AP-600, which came
6 out prior to the guidance BTP 7-19. So a lot of that
7 was done ad hoc at the time, right.

8 So when we then went to the AP-1000 review
9 for REV-15 we didn't re-look at the D3 analysis. It
10 was mostly to just pour over the AP-600 analysis, and
11 so that aspect never changed and even was a design
12 cert amendment.

13 MR. ODESS-GILLETT: So you are saying
14 today it wouldn't be acceptable?

15 MS. ZHANG: We're saying today it would
16 have, we would have to look at it again. It wouldn't
17 happen -- It may not happen the same. We would use
18 our existing guidance. The guidance didn't exist back
19 then.

20 MR. ODESS-GILLETT: Right.

21 MR. MORTON: The guidance in place would
22 have put that different type of scrutiny on that
23 particular aspect.

24 MR. VAUGHN: Understood that the guidance
25 is changing now there is no reason why a current plant

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1 right now and operating fleet couldn't look at that
2 PRA and leverage risk insights from that to remember
3 whether you need DAS or not.

4 MS. ZHANG: And then do recognize that,
5 you know, the AP-1000 is a passive plant.

6 MR. VAUGHN: Yes.

7 MS. ZHANG: So there is a limited set of
8 functions that you need to consider.

9 MR. VAUGHN: Yes.

10 MS. ZHANG: So, you know --

11 MR. VAUGHN: I understand.

12 MS. ZHANG: -- operating reactors,
13 obviously, I don't believe there are any passive
14 operating reactors out there, so the considerations --

15 (Simultaneous speaking.)

16 MR. HERB: But there is possibilities for
17 designs to those plants that could make them more like
18 a passive reactor. There is proposed modifications to
19 the aux feedwater system that we use and air coolers
20 in place that would be passively activated instead of
21 a steam driven auxiliary feedwater pump.

22 And so there are EPRI designs out there to
23 bolt on passive systems for the operating plants and
24 I'm not saying we're planning on doing that --

25 MS. ZHANG: Yes.

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1 MR. HERB: I'm saying you can't rule it
2 out.

3 (Simultaneous speaking.)

4 MR. MORTON: Yes. I would say our general
5 position on that comment as well as all the other
6 comments you have is --

7 MR. HERB: Yes, right.

8 MR. MORTON: -- we would love to consider
9 it if you have a system you would like to propose that
10 covers the various different types of operating plant
11 designs in that framework.

12 MS. ZHANG: Yes. And the technical basis.

13 MR. MORTON: Right.

14 MR. HERB: Right.

15 MR. MORTON: To support that, yes, thank
16 you.

17 DR. ALVARADO: So this is just my last
18 slide and just putting my summary of observations
19 after looking at the summary table that --

20 (Coughing.)

21 DR. ALVARADO: Could you please mute your
22 phone, Star 6. We noticed that the diverse systems
23 were not required except for some limited number of
24 protective functions like we point out.

25 And sometimes the applicants decided to

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1 include diverse actuation in the design, especially in
2 the certificate of design that were not necessarily
3 required by the NRC.

4 So with that, Wendell, we will turn to
5 your presentation.

6 MR. MORTON: All right. Thank you, I
7 appreciate that. This is Wendell Morton, NRC. So on
8 Slide 9 we're talking about the potential update areas
9 we've identified with BTP 7-19 to date.

10 This is based upon our own review of the
11 document and a lot of the input we received from
12 stakeholders up until the day of this meeting. So
13 these are areas we generally focused on.

14 So you're going to get a generally high
15 level conceptual discussion of all of these, and I do
16 want to make clear that none of these proposals are
17 set in stone. They are subject to change based upon
18 further information received from yourself and what we
19 look at internally.

20 Not every single detail of these proposals
21 has been fully sussed out because as I said we are
22 still in the conceptual planning stage of the update
23 and we're going to make sure that what we choose to do
24 is informed by industry concerns as much as possible
25 and the practical aspect that you are dealing with and

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1 how we can give some flexibilities within the guidance
2 to address those things.

3 So I just wanted to make that clear for
4 all the different proposals you are going to hear
5 going forward in this one presentation. Next slide.

6 So we kind of touched on this already, and
7 for those of you that have already seen the
8 presentation one of the most common and are probably
9 the highest priority comment we have received from
10 industry over the last few years in one of the bigger
11 challenges, and bear with me if you have seen this
12 document, is the scope of applicability of what has to
13 receive a D3 assessment for a Commission direction in
14 93-087 as implemented through BTP 7-19.

15 The current scope is interpreted as all
16 safety systems, so you are talking IPSI, LPSI, RPSI,
17 and your safety chillers of the support systems,
18 things of that nature.

19 So consistent with what we are doing in
20 terms of the entire licensing approach for the 50.59
21 and LAR space we thought that we did agree with
22 industry feedback that the scope really should be
23 focused where the highest safety significant case was
24 to be made for where it switches to protection systems
25 and we have given those examples.

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1 So going forward we do believe with regard
2 to the D3 assessment that the systems that should
3 receive a D3 assessment are protection systems and
4 those types of systems, the GDC 22 type systems, for
5 example.

6 And that makes us consistent with the
7 diversity requirements that are in existence for
8 different safety class. It keeps us consistent with
9 the Commission's original direction, SRM SECY 93-087,
10 as well as our info SECY 18-0090.

11 It also keep us consistent with what's
12 already in the SRP right now. The SRP is really
13 focused on protection systems in particular. You can
14 see the different references to the BTP 7-19 SRM as an
15 acceptance criteria.

16 So it brings the guidance more consistent
17 and it also aligns with our approach when it comes to
18 the technical review systems.

19 The risk is handling the lower safety
20 significant systems, such as for safety drills, for
21 example, in the 50.59 space and in license amendment
22 space we are talking the more high risk-significant
23 system that can protect your system and that's where
24 it is most appropriate for a D3 assessment to be
25 placed on those particular systems.

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1 When Deanna does her part of the
2 presentation we'll get more into the actual grading of
3 the approaches for handling those different systems,
4 because right now the BTP really focuses on safety
5 systems but reduction in scope, so just for the D3
6 central protection systems.

7 And what technical consideration that you
8 have for other non-protected systems that may come in
9 for a lot of the technical things like that, she'll
10 get into more of that in her part of the presentation,
11 but just understand that we are putting the scope back
12 for D3 to be specific to threat restriction.

13 Next slide, please. So we just want to
14 give more of a background and why D3 assessments are
15 needed for protection in the first place because we
16 have heard a number of different comments on the
17 necessity for a D3 assessment period, just different
18 comments about potentially PRA methods and things of
19 that nature.

20 What I really want to focus on is the last
21 bullet because this is something in this slide that we
22 have talked about with effectively every class that
23 we've done integrated action plan and the primary
24 focus which is with digital technology you have the
25 ability to, you're introducing software, digital

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1 networking communications, and the ability to combine
2 different design functions all with the same CAR or
3 multiple CARs.

4 These certainly give you more hazards and
5 challenges, we had previous earlier designs which
6 everything was physically separate communications,
7 separate electrical, separate -- all these things are
8 separate.

9 Because of the complexities introduced by
10 that it may negate for purposes of the BTP potential
11 diversity and/or separation had in the system right
12 now.

13 So part of the necessity for the D3
14 approach is to make sure you preserve your defense-in-
15 depth and preserve whatever diversity you have within
16 the space. Next slide, please.

17 And that's kind of what we touch on right
18 here. It's a necessity and sort of summarizing what
19 we are trying to achieve in the D3 assessment and why
20 the staff has pushed this approach with commission
21 direction and some of the things we're trying to
22 refine to ensure that we preserve the defense-in-depth
23 posture.

24 And there is a lot of different ways we
25 can get there and part of it we want make sure we have

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1 the flexibilities so industry has a number of tools to
2 arrive at that conclusion, which is to preserve your
3 defense-in-depth posture and if you have diversity
4 essentially that's something that preserves as well.

5 So at this point in the presentation I
6 will turn it over to Deanna Zhang.

7 MS. ZHANG: Okay. So now we will get to
8 the exciting parts of this presentation.

9 MR. MORTON: That wasn't exciting enough?

10 MS. ZHANG: I think this is where the
11 fireworks start to --

12 MR. MORTON: Or hair catch on fire maybe.

13 MS. ZHANG: Hopefully not.

14 MR. MORTON: Oh, okay.

15 MS. ZHANG: So I am going to introduce the
16 potential graded approach. This is again our initial
17 thoughts, it's not finalized, so we welcome any
18 feedback.

19 And the main reason we are proposing this
20 is, you know, we are trying to implement the guiding
21 principles with in SECY 90 which tells us to do a
22 graded approach when it comes to analyzing CCF and
23 addressing CCF.

24 So what we thought of is to use a graded
25 approach to first categorize the system. So this will

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1 be based on the safety classifications, so whether
2 it's safety related or non-safety related, and then
3 based on the safety significance, the risk
4 contribution of that system to plant safety. So I'll
5 go into that a little bit more later.

6 I want to highlight that for the initial
7 parts of the assessment it is deterministic. However,
8 we do believe that it is generally consistent with a
9 risk-informed categorization approach and 10 CFR 50.59
10 as well as generally was the new small modular reactor
11 designs, NuScale and advance reactors.

12 We do believe that risk insights can be
13 used to support that categorization, but that is all
14 dependent on specific plant designs and the PRA model.
15 Next slide.

16 So this table depicts the system
17 categorization concept, and there are four categories.
18 So for A1 we believe that would be a safety related
19 system that is risk significant.

20 And if you look, you know, at the examples
21 we put are mainly protection systems. However, we do
22 recognize there may be other systems depending on how
23 you combine functions and its role in the overall
24 plant safety and how their failures contribute to
25 plant safety, systems like a safety control system may

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1 fall into an A1 category.

2 So, again, that is really dependent on the
3 plant design, so an example would be in the EPR. They
4 had a safety control system called the safety
5 automation system that combined not only all the
6 safety control functions such as aux feedwater
7 control, so after initiation it would start to
8 control, the main steam relief train control, as well
9 as all of the other auxiliary safety control
10 functions.

11 So because this system performed almost
12 everything related to safety controls it needed to be
13 considered in the D3 analysis. So the next category
14 would --

15 MR. ODESS-GILLETT: Before you go -- Well,
16 maybe I'll wait till you go to A2. Never mind. Go
17 ahead.

18 MS. ZHANG: Okay. So A2 is the non-risk
19 significant safety-related systems, so this is your
20 safety chillers, maybe some segregated safety control
21 systems, and so those are A2.

22 And the next category is non-safety-
23 related but risk significant systems. So this could
24 be your rod control systems, your feedwater control
25 systems, as well as certain BOP control systems.

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1 But, again, that is really dependent on
2 the plant design and then for the non-safety-related,
3 non-risk significant that would be systems like your
4 plant computer storage, or service water control
5 system.

6 MR. ODESS-GILLETT: So this is Warren
7 Odess-Gillett, NEI. Can you give me some examples of
8 when a load sequencer would be risk significant versus
9 a load sequencer being not risk significant?

10 MR. MORTON: It depends on -- Wendell
11 Morton, NRC. I know we -- The reason we put load
12 sequences in both categories is it really depends on
13 how the licensee applicant defines load sequences for
14 the new licensing basis.

15 MR. HERB: You say describes, but like
16 really it's really how it impacts your licensing
17 basis?

18 (Simultaneous speaking.)

19 MR. HERB: For the description itself, I
20 mean it belongs to us, it doesn't belong to the -- It
21 is not part of --

22 (Simultaneous speaking.)

23 MR. GEIER: -- accident analysis.

24 MR. HERB: So that's a big argument we're
25 having in Appendix D, I apologize, but I just wanted

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1 to make sure we --

2 MR. GEIER: Just because it's describe
3 doesn't mean that the credit is given particularly --
4 or accidents that --

5 (Simultaneous speaking.)

6 MR. HERB: Right, yes.

7 MR. MORTON: Using that correction how it
8 is credited.

9 MR. GEIER: How it's --

10 MR. MORTON: But it's also how it's been
11 treated in terms of different licensees, whether
12 you've done in a 50.59 license amendment space or do
13 you consider it as part of your ESF actuation system
14 or you don't.

15 MR. HERB: Okay.

16 MR. MORTON: Credited or not the
17 description still matters insofar as 50.59
18 modifications, too, within the FSAR and that's why we
19 put them both in there and that's why we are asking
20 for your input on this because that's some great
21 insight.

22 We're looking for that kind of insight for
23 the graded approach because there are certain ways --
24 Those of us who have looked at advanced reactors
25 versus operating reactors we have our different

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1 opinions internally on where that should be
2 conservatively.

3 MR. HERB: Right.

4 MR. MORTON: But that would be an example
5 which you just brought up of the kind of feedback we'd
6 like to hear.

7 MR. HERB: Right.

8 DR. ALVARADO: Actually --

9 MR. BENNER: But, yes, truly how it's
10 credited plays into whether it's risk significant or
11 not, right?

12 MR. MORTON: Correct, yes.

13 MR. BENNER: The how it's described also
14 intersects with --

15 MR. MORTON: Yes.

16 MR. BENNER: -- 50.59 versus licensing but
17 I think for this segmentation I think that the word
18 "crediting" is the right characterization.

19 (Simultaneous speaking.)

20 DR. ALVARADO: Actually we had a lot of
21 discussion whether it was a good idea or not to
22 provide examples because of based where you are.

23 PARTICIPANT: Yes, right.

24 DR. ALVARADO: But at the end --

25 (Simultaneous speaking.)

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1 MS. ZHANG: -- because we wanted to hear
2 your input.

3 PARTICIPANT: Right, yes.

4 PARTICIPANT: Right.

5 MS. ZHANG: Okay.

6 MR. CARTE: Norbert Carte. Just another
7 comment on the load sequence, credited or used are
8 interesting distinctions. So some load sequences have
9 different uses.

10 Some plants have transformers that are not
11 large enough or could be larger and, therefore,
12 require load sequencing to load external power. Other
13 plants only use the load sequencers for the diesel, so
14 how the load sequencer is used and it's risk
15 significance.

16 So that's another dimension. It's just
17 not just a regulatory credited, there is other things
18 to consider.

19 MR. MORTON: It's complicated.

20 PARTICIPANT: Yes, I know it's
21 complicated.

22 (Simultaneous speaking.)

23 MR. MORTON: But that's why we are here so
24 we can discuss those potential complexities in
25 different licensing bases so that we can clarify as

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1 much as we can.

2 PARTICIPANT: All right.

3 MS. ZHANG: And I would like to say that,
4 you know, later on Wendell will have some proposals
5 regarding some discussions we have been having
6 internally, you know.

7 As you can see there is a lot of
8 discussions about the highly integrated systems, new
9 reactors, versus segregated systems, so how do we
10 treat them.

11 MR. HERB: Well we're heading that way,
12 highly integrated systems in the operating fleets. So
13 I mean that's -- So some of those arguments are going
14 to be applicable and --

15 (Simultaneous speaking.)

16 MS. ZHANG: Yes, and that's why we don't
17 want to say new reactors, operating reactors, we want
18 to look at the failures and the potential effects on
19 the plant.

20 MR. HERB: Right. That's right.

21 PARTICIPANT: I agree, right.

22 MR. HERB: On the plant, that's where we
23 -- That's what we need to raise it up to those plant
24 level effects, I mean you do.

25 MS. ZHANG: So, next slide. So this

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1 really goes into how would you determine what is an A1
2 system, an A2 system, a B1 system, or a B2 system.

3 I am not going to read each one of these,
4 but these are our initial thoughts and where this
5 comes from is I went into definitions of safety-
6 related systems and looked at the IEC 61226
7 categorization and then the types of systems they had
8 as examples for each category as well as our IEEE 603
9 definitions and those that are in our 10 CFR.

10 So, again, this is our initial proposal
11 for how do you determine it. We would welcome
12 feedback on this, the wording here, how we can improve
13 it and, you know, if you want to discuss it in detail
14 I would suggest we wait until a little bit later.

15 MR. BENNER: And acknowledging that this
16 is one slide, so even if we get alignment on this if
17 within the A1 category there is a desire for a finer
18 gradation we are open to having that discussion also.

19 MR. HERB: Right. I think this is your
20 last slide on the graded approach, right?

21 MS. ZHANG: No.

22 DR. ALVARADO: No.

23 MR. HERB: Okay. Before we leave graded
24 approach I have one comment that I would like to make.

25 MS. ZHANG: Okay.

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1 MR. HERB: Okay, because it's something I
2 think should be included in the graded approach.

3 MS. ZHANG: Okay.

4 MR. HERB: Okay. Sorry.

5 MS. ZHANG: So, again, you know, we do
6 believe that PRA insights can be used for this
7 determination.

8 However, it should also be recognized that
9 different plants have different levels of PRA, right,
10 some have Level 1, some have Level 2, some maybe have
11 more, and that level of detail within each PRA model
12 may be different.

13 DR. ALVARADO: For I&C systems.

14 MS. ZHANG: For I&C systems. So we can't
15 just say blanketly, you know, if you get this PRA
16 result it's fine because of that difference. And we
17 also have to understand the underlying uncertainties.

18 Not only in the data and the modeling of
19 digital I&C but overall in general, the model itself,
20 right. So we want to take a word of caution when we
21 talk about PRA that we have to get a sense of the
22 complete picture.

23 And for the NRC, this is what I heard
24 yesterday during my training class on risk-informed,
25 use of risk-informed decision making, if we want to

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1 use PRA data, PRA information, to risk inform our
2 decision making and you are providing that information
3 to us there has to be a request made.

4 It has to be a formal request that we are
5 using risk-informed information and here is our
6 request for you to use that information, okay. So
7 that's our Commission's policy.

8 That doesn't mean that we can't use risk
9 insights by itself, but how we use it may be
10 different.

11 DR. ALVARADO: Right.

12 MS. ZHANG: And, lastly, even if you use
13 PRA, you know, do risk informed, we still have to
14 maintain adequate defense-in-depths and safety margin,
15 okay. So that is the Commission's rule on --

16 MR. VAUGHN: Steve Vaughn, NEI. So just
17 to clarify, so if we were to do that, quoting my
18 previous example, using risk insights to maybe show
19 that you don't need a DAS it would be a Reg Guide
20 1.174 LAR is that what you are saying?

21 MR. BENNER: Like. Like. The mechanics
22 would need to be taught, right. I think thinking
23 about it in that way is a good way to think about it
24 to ensure the level of rigor.

25 Another way I would want to think about

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1 it, and this is -- We certainly haven't had any formal
2 discussions, but just like particularly for the new
3 reactors there has been questions of, well, what does
4 containment mean for a new reactor and basically we're
5 doing a lot of work on what's called functional
6 containment.

7 So it's not traditionally what's thought
8 of of a containment but how do you achieve the
9 containment function, and I would think that for
10 things like RPS and SFAS, right, there is an
11 acknowledgment that those things need to be
12 functional, right.

13 So, you know, I wouldn't want the risk
14 informing to go so far as to somehow make the case
15 that you know what RPS really isn't that important,
16 right.

17 At some point we need some confidence that
18 an RPS system is going to work and it's great that we
19 have these other things to mitigate it if it doesn't
20 work.

21 So I think that's where when you get into
22 the Reg Guide 1.174 I think it helps capture that
23 because the PRA number is one piece, right, but the
24 other components of Reg Guide 1.174 would hopefully
25 give confidence that whatever thing you are going to

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1 put in place is actually going to achieve the function
2 that it is intended to achieve.

3 MR. ODESS-GILLETT: This is Warren Odess-
4 Gillett --

5 (Simultaneous speaking.)

6 PARTICIPANT: -- just another quick input.
7 You know, we were just talking about 1.174, but also
8 there is another domain if the licensee were to adopt
9 50.69 that would be a different set of criteria, which
10 we're not talking about, so there are multiple options
11 on how to risk inform.

12 MR. ODESS-GILLETT: So this is Warren
13 Odess-Gillett from NEI. In regards to A1 it's assumed
14 that an A1 probably would be a LAR, I think in our
15 discussions, and that it would need a full D3
16 analysis.

17 I would like industry to have some time to
18 look at Number 2 criteria under A1 before just saying,
19 yes, we agree with the definition of A1 because I want
20 to make sure that the systems that are supporting the
21 mitigation of the consequence of the DBE really, it's
22 always going to be an A1.

23 PARTICIPANT: Right. And you're stealing
24 my thunder.

25 MR. ODESS-GILLETT: Oh, sorry.

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1 PARTICIPANT: No, that's okay.

2 (Laughter.)

3 PARTICIPANT: Well, thank you for the --

4 (Simultaneous speaking.)

5 DR. ALVARADO: So, Warren, let me just
6 repeat, what you are saying is that you want the
7 definition of A1 --

8 MR. BENNER: On Slide 15 the definition of
9 --

10 (Simultaneous speaking.)

11 MR. BENNER: -- digest that, which is
12 fair.

13 PARTICIPANT: Thank you.

14 PARTICIPANT: Number 2.

15 PARTICIPANT: We're not making any
16 regulatory decisions --

17 (Simultaneous speaking.)

18 MR. ODESS-GILLETT: I understand, but I
19 don't want our silence to imply that, oh, yes,
20 industry --

21 (Simultaneous speaking.)

22 MS. ZHANG: Yes. And, again, we had
23 internal discussion on this and so we -- This is our
24 initial proposal.

25 MR. ODESS-GILLETT: Okay.

1 MS. ZHANG: This is based on our
2 understanding of and trying to mix different
3 standards, definitions, together to make something,
4 but, obviously, you know, we want your input.

5 MR. MORTON: Yes, that me say to that
6 point just to make sure I will repeat again, the
7 proposals in the presentation are not set in stone --

8 PARTICIPANT: Right.

9 MR. MORTON: -- such that when we leave
10 here today we'll take your silence as tacit agreement.

11 PARTICIPANT: Okay. Good, good, good,
12 okay.

13 MR. MORTON: Just to make sure.

14 PARTICIPANT: Thank you.

15 MS. ZHANG: Although we would like to.

16 (Laughter.)

17 MR. MORTON: Now we can.

18 MR. BENNER: Did you say we would or
19 wouldn't?

20 MR. MORTON: We could.

21 MR. BENNER: We wouldn't.

22 MR. MORTON: Glad you confirmed that.

23 DR. ALVARADO: Nevertheless --

24 (Simultaneous speaking.)

25 DR. ALVARADO: -- caveat is when we get to

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1 the part of the schedule this is something that we
2 need to consider because of --

3 (Simultaneous speaking.)

4 PARTICIPANT: Yes, we have.

5 PARTICIPANT: We have --

6 (Simultaneous speaking.)

7 DR. ALVARADO: Just saying --

8 PARTICIPANT: Dave?

9 PARTICIPANT: We're holding out for the
10 end.

11 MR. HERRELL: So Dave Herrell, MPR. I had
12 a small comment. One thing that you guys need to be
13 careful about is if you are using IEC 61226
14 definitions they are designed to be deliberately
15 flexible because the regulators who are involved in
16 the IEC decisions wanted flexibility.

17 I am not necessarily sure that we want
18 that flexibility. I think we want more certainty than
19 the ability to say it's A or B or maybe C.

20 MS. ZHANG: Yes. So one of the concerns
21 is that we are trying to provide certainty yet still
22 flexibility, right?

23 So that balance, because we may get
24 different designs in advanced reactor world that you
25 need that flexibility.

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1 PARTICIPANT: True.

2 PARTICIPANT: Right.

3 MR. BENNER: Yes, and this is where I will
4 make my pitch. You know, whenever we give certainty
5 the next challenge we get from industry is to get more
6 flexibility and when we give that additional
7 flexibility, right, and it gets interpreted different
8 ways and licensing actions by inspectors we're
9 challenged to provide more certainty.

10 PARTICIPANT: Right.

11 MR. BENNER: So I need everyone in the
12 room to realize there is a balance between those two
13 and we need some alignment on what the right --

14 MR. GEIER: You need flexibility in what's
15 flexible and --

16 (Simultaneous speaking.)

17 MR. BENNER: Yes, well, there you go. We
18 need certainty in what's flexible and not -- I don't
19 know. There is some Escher print there that --

20 PARTICIPANT: I am just wondering about
21 application meanings.

22 MR. BENNER: Yes.

23 MR. BENNER: True.

24 PARTICIPANT: True.

25 MR. HERRELL: The discussion --

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1 MR. BENNER: Because it's still guidance.

2 MR. HERRELL: Yes, and the discussions
3 that I have had with the 61226 committee members is
4 that there are certain regulators that say you will
5 have a DAS period.

6 I don't -- That's the kind of flexibility
7 that I --

8 MR. BENNER: You don't want that certain.

9 MR. HERRELL: I don't want that certain.

10 (Laughter.)

11 MR. HERRELL: And I don't want --

12 (Simultaneous speaking.)

13 MR. BENNER: We get that.

14 MR. HERRELL: I don't want the rules
15 written, I would like to not see the rules written in
16 such a way that they could be interpreted,
17 misinterpreted by someone, and insist on that
18 certainty that we really, you guys really didn't
19 intend doing --

20 MR. BENNER: Fair enough. Certainly that.

21 We have a common objective.

22 MR. GEIER: Back down at criteria, just a
23 question, A1, A2, B1 all say safety-related non-
24 safety-related systems while B2 says systems or
25 components.

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1 I mean as we know that -- Was that
2 intentional that way?

3 MS. ZHANG: That was intentional.

4 MR. GEIER: So as we know 50.69 as Norbert
5 brought up is typically you take a safety-related
6 system and you could have a system that in itself is
7 safety significant, however the components within that
8 system they are non-safety-related, and that's what
9 the categorization process is all about is to look at
10 that.

11 I mean is there some, you know, I guess
12 just something to think about whether instead of just
13 categorizing entire say RPS the safety --

14 MS. ZHANG: Part of the entire --

15 MR. GEIER: -- but there may be some
16 functions and some sub-components, sub-functions
17 within that that may be not safety significant and it
18 seems like that in some of your examples that's what
19 they looked at.

20 They looked at some functions, maybe
21 diversity, while other functions don't.

22 MS. ZHANG: Yes.

23 MR. GEIER: So that's something to kind of
24 keep in mind.

25 MR. BENNER: And some of this is you only

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1 get here if you've already determined you need a LAR.

2 MS. ZHANG: Right.

3 MR. MORTON: Correct.

4 MR. BENNER: So if you've already done
5 your 50.59 for a component change you are making and
6 have determined you don't need a LAR you would never
7 look it.

8 MS. ZHANG: This part.

9 MR. BENNER: Yes, so --

10 MR. GEIER: And I think back, you know, if
11 you're doing a mod and say you're doing a mod to, you
12 know, some controller within a particular like, you
13 know, diesel generators, right, and diesel generators
14 safety significant, but when you look at some of these
15 sub-components, not safety significant, or you could
16 do it under 50.59. So that's --

17 DR. ALVARADO: Yes, but like Eric is
18 saying you wouldn't be getting to this point then.

19 MR. MORTON: Because the risk covers a lot
20 of those --

21 (Simultaneous speaking.)

22 MR. GEIER: So you're saying this may only
23 apply if you have already determined --

24 (Simultaneous speaking.)

25 MR. BENNER: Once you've crossed the

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1 threshold that you determined you need a LAR.

2 PARTICIPANT: Right.

3 MR. ODESS-GILLETT: So pretty much the RIS
4 has defined not, or defined A1 to be RPS SFAS.

5 MR. MORTON: And in particular a specific
6 portion of those systems.

7 MR. ODESS-GILLETT: The logic --
8 (Simultaneous speaking.)

9 MR. MORTON: -- logical portions.

10 MR. ODESS-GILLETT: Understood.

11 MR. MORTON: Yes.

12 MR. ODESS-GILLETT: Oh, by the way, this
13 is Warren Odess-Gillett, NEI. So there is still this
14 gray area of what you call safety control systems and,
15 of course, diesel load sequencers that are neither,
16 you know, identified in the RIS and but are falling
17 under this A1 criteria, so we need to discuss that.

18 MS. ZHANG: We understand and, again, we
19 were trying to apply this to different types of
20 designs and, you know, obviously for operating
21 reactors the most focus is on the RPS assessments.

22 But it's not always the case when you get
23 to a more advanced reactor where things are more
24 integrated. Even on the safety side, right, things
25 could be just -- One system does everything.

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1 MR. ODESS-GILLETT: Understood.

2 Understood.

3 MR. GEIER: And I still think though and
4 maybe that's something we need to discuss further is
5 whether given the fact that you are already, it
6 depends, if you're already in a LAR which means you
7 are already deciding to do a replacement, whether that
8 really should be safety related systems, components,
9 or functions.

10 MS. ZHANG: We just didn't want you to do
11 a D3 at the component level.

12 MR. HERB: Good. They were worried about
13 that.

14 MS. ZHANG: Yes, right. Even for new
15 reactors you are doing it at the -- You pick the
16 system then you look at the functions that is being
17 credited in the safety analysis for that system,
18 right, not at the component.

19 MR. MORTON: That's why the risk was
20 tailored the way it was is to cover the component type
21 changes to transmitters, power supplies, and things
22 like that that are part of even the high risk
23 significant safety systems, like RPS and ESF, and even
24 the lower safety systems --

25 MR. GEIER: Okay.

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1 MR. MORTON: It was designed to capture
2 all of those without putting into kind of, as Deanna
3 was saying, doing a D3 assessment on transmitters.

4 MR. GEIER: Okay.

5 MR. BENNER: But what -- I hear what you
6 are saying --

7 MR. MORTON: Yes.

8 MR. BENNER: -- and I think this -- And
9 we're happy to hear feedback about language, right,
10 because I think we have had a vision of now with the
11 RIS, typically we brought in the RIS to cover a lot of
12 stuff, right.

13 So kind of our view is, you know, the most
14 stuff covered under the RIS, like there is a small
15 amount of things, particularly with, you know, RPS and
16 SFAS logic that would require a LAR and then once you
17 get into that mode it's like so we, you know, we're
18 sort of focused there.

19 We're okay, you know, there is the counter
20 of we want to make sure that people don't interpret
21 this to say, you know, yes, I need a LAR and now I
22 need to do a D3 down to the component level.

23 We would want the D3 to be at sort of much
24 more in the functional level. So we just need to make
25 sure there is clarity in the document whenever it

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1 lands so that people understand the balance between,
2 you know, clarity and flexibility.

3 MR. GEIER: And then within that D3
4 identify which of the functions are critical and --

5 MR. BENNER: Yes, yes.

6 MR. GEIER: -- may require --

7 (Simultaneous speaking.)

8 MR. BENNER: And I think we do that now.
9 I think some of the examples show that you do the D3
10 and even with a system there was just a finite set of
11 functions that were of concern.

12 PARTICIPANT: Right.

13 MS. ZHANG: So, yes, that's why we chose
14 it, let's start with a system and then the function.
15 So this is my last slide and basically this already
16 summarizes what we are proposing.

17 So after the categorization of the system
18 then you start with what is the appropriate analysis
19 to address CCF. So for A1 systems we are looking at,
20 you know, the D3 analysis.

21 For B1/A2 systems we are looking at the
22 risk type of assessment, the qualitative defense-in-
23 depth assessments, and then for B2 systems we may not
24 need to do anything, however, you know, you still have
25 to consider, you know, depending on the design,

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1 depending on the combination of functions, you may
2 have to do, you know, some assessment --

3 PARTICIPANT: Some level of analysis --
4 (Simultaneous speaking.)

5 MS. ZHANG: -- and some level of failure
6 analysis or, you know, impose some sort of
7 preventative measure.

8 PARTICIPANT: Okay.

9 MR. BENNER: And for this this really to
10 us hammers home what the risk covers, because
11 particularly you look at, you know, A2 and D1 and --

12 (Simultaneous speaking.)

13 PARTICIPANT: Right.

14 MR. HERB: So that's a little confusing to
15 me because we keep talking in the context of a LAR.

16 MR. BENNER: Yes.

17 MR. HERB: And so you are saying this is
18 all within the context of a LAR?

19 MR. ODESS-GILLETT: No.

20 DR. ALVARADO: Yes.

21 MS. ZHANG: Yes.

22 (Simultaneous speaking.)

23 PARTICIPANT: Wait a minute.

24 DR. ALVARADO: This is all for a LAR.

25 MR. BENNER: Nominally --

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1 PARTICIPANT: Right.

2 MR. BENNER: Nominally we would only
3 expect LARs for A1 systems.

4 MR. HERB: I know, but you're saying --

5 MR. BENNER: But given some uniqueness of
6 a licensing basis --

7 MR. HERB: Oh, okay, you may get something
8 that's not an A1.

9 MR. BENNER: -- we may get something that
10 falls into those other boxes and that's where we want
11 to reinforce you still don't need to do a D3 analysis.

12 PARTICIPANT: Right.

13 MR. HERB: So but --

14 MR. BENNER: You'll do something like you
15 would do for the RIS.

16 MR. ODESS-GILLETT: Right. So you could
17 have a tech spec change.

18 PARTICIPANT: Correct.

19 PARTICIPANT: That's what I was thinking
20 --

21 (Simultaneous speaking.)

22 MR. ODESS-GILLETT: -- sink right into a
23 LAR.

24 PARTICIPANT: Right.

25 MR. ODESS-GILLETT: But it's one of these

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1 B1, A2, and B2 systems.

2 DR. ALVARADO: Right. We don't want you
3 -- We don't want to give you the impression that you
4 have to do a full D3 analysis for something.

5 MS. ZHANG: Yes, as soon as you complete
6 a LAR you have to do a D3, no, that's not the point.

7 MR. MORTON: Right. Yes, so conceptually
8 what we would be doing with the revision if we have
9 agreement on this approach is you would be considering
10 all of these different types of systems within the BTP
11 it's just for a D3 assessment specific for A1.

12 For everything outside of that it's what
13 we are proposing here, which is a defense-in-depth
14 risk quantitative assessment approach just for that --
15 in the circumstance you do get a statement that you'll
16 have to come in for a LAR even if it's just for a tech
17 spec change we're going to ask you to do something
18 completely off the reservation as opposed to what you
19 would do for RIS for something that would have passed
20 under normal circumstance.

21 MS. ZHANG: And this is the certainty
22 part, right.

23 MR. MORTON: Right.

24 MS. ZHANG: We want to give you the
25 certainty we're not going to apply different criteria.

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1 MR. HERB: Right. So back to that one,
2 and I'm going to get to my comment I want to make, or
3 my request really is is it -- We all know that it
4 seems that we have treated in the D3 space certainties,
5 zeros or ones, okay.

6 And so but we all know that from our work
7 with the assessment and the qualitative assessment
8 there is just a continuum of somewhere between zero
9 and one. It's never completely zero, it's never
10 completely one.

11 PARTICIPANT: True. True.

12 MR. HERB: Okay, and so -- And it's the
13 same way with your scoping in, you know, supports,
14 mitigating functions, well that's against also a
15 continuum.

16 So I want us to preserve that continuum
17 when we go forward so we can get some certainty about
18 where do we reside on that continuum and who gets to
19 decide and what level of assessment is required,
20 because even when I go and do one of these A1 system
21 D3 analysis I don't necessarily want to, I don't
22 necessarily believe that I have to assume that it's a
23 certainty that we have a common cause failure.

24 There may be some things I can put in my
25 LAR to say you know what I'm pretty sure through

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1 reasonable assurance that I am not going to have to
2 design for a common cause failure because I have
3 hardware, watchdog timers, I have maybe these other
4 things --

5 PARTICIPANT: Right.

6 MR. HERB: -- that you get to consider,
7 but -- and we're hoping that like in this graded
8 approach those things get right into it and it's not
9 like an argument about where we fall on a continuum as
10 long as we're somewhere at a reasonable place we still
11 get to -- Remember back in the old days when we were
12 arguing with NEI-101, it was reasonable approach,
13 reasonable assurance, and not absolute assurance.

14 And so I want us to keep maintaining that
15 reasonable assurance, even in the AI systems it still
16 has to be a reasonable assurance. There shouldn't be
17 an automatic, you know, the only way you're going to
18 get absolute assurance is provide a hardware diverse
19 component to --

20 (Simultaneous speaking.)

21 MS. ZHANG: And we understand that, but
22 recognize that in previous discussions we were looking
23 for the technical justification and that part was
24 missing, that the analysis to support why this feature
25 would then support not having to consider CCF.

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1 What prevents a CCF, you know, what is the
2 technical basis for that feature.

3 MR. HERB: And so there is different
4 aspects to that, you know, that gets back into the
5 risk-informed piece of probability piece, do you have
6 to assume that CCF in conjunction with a loop falling
7 off? I mean what's the probability of that really
8 happening?

9 MR. MORTON: So here --

10 (Simultaneous speaking.)

11 MR. HERB: So those are things, too,
12 right?

13 MR. MORTON: So we thought about this for
14 when we developed the RIS and we had a doorway open
15 for defensive measures, design attributes, quality of
16 the design process, and operating history.

17 But understand those were our
18 considerations for the lower safety significant
19 systems. For high --

20 (Simultaneous speaking.)

21 MR. HERB: Right. But even in the high
22 safety significant systems a loop falling off is a bad
23 day, okay.

24 MR. MORTON: Right, sure.

25 MR. HERB: And so the fact that, you know,

1 so I cannot demonstrate that I can like send an
2 operator and do a reactor trip in like one-tenth of a
3 second so it's off the table.

4 But there is no water in the core left, so
5 I mean --

6 MR. MORTON: Well and we understand that,
7 but as Deanna was saying for the higher risk
8 significant systems we're talking the A1 systems and
9 --

10 MR. HERB: Yes.

11 MR. MORTON: -- we would clearly need a
12 technical basis to support some rigor if you are going
13 to credit defensive measures --

14 MR. HERB: Right, okay.

15 PARTICIPANT: Right.

16 MR. MORTON: -- within a D3 assessment to
17 give you that continuum.

18 MR. HERB: Right.

19 MR. MORTON: You don't have absolute zero
20 probability of CCF, but it's significantly low,
21 sufficiently low.

22 MR. HERB: Right. But I want to find out
23 what that -- I kind of want to know --

24 MR. BENNER: Capital S --

25 MR. HERB: -- what that point is.

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1 MR. MORTON: Capital S.

2 MR. BENNER: Capital L sufficiently low --

3 MR. MORTON: Yes, for --

4 (Simultaneous speaking.)

5 MR. BENNER: -- little s, little l,
6 sufficiently lower.

7 MR. MORTON: Yes.

8 MR. HERB: Because I mean I kind of want
9 to know. I think the expectation is we shouldn't be
10 able to get to zero to be able to get -- And I know
11 that that's part of the LAR and you guys are part of
12 that discussion, but I don't want that to drag on for
13 two years, you know, over the argument. I think
14 that's --

15 (Simultaneous speaking.)

16 MR. MORTON: Yes, I don't believe
17 consideration is -- Verifying with the D3 assessment
18 you preserved your diversity in the system and
19 preserved the defense-in-depth posture of your RPS
20 system, not necessarily saying you need to change zero
21 to probably and likely to get a CCF.

22 MR. HERB: All right, but --

23 (Simultaneous speaking.)

24 MR. MORTON: So you preserve what was
25 there.

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1 MR. HERB: All right, but that means --
2 That's a tricky word, "preserve." I mean, you know,
3 often times people say if it's not zero then, no, you
4 have not preserved it.

5 I just want to make sure that we can get
6 to that point.

7 DR. ALVARADO: That's not --

8 PARTICIPANT: Well --

9 (Simultaneous speaking.)

10 MR. BENNER: And that's where we didn't
11 tackle that in our approach.

12 MR. HERB: Okay.

13 MR. BENNER: But I think you guys want to
14 tackle that with some granularity.

15 MR. HERB: Yes. Yes.

16 MR. BENNER: And we believe that with the
17 approach we are proposing, clearly if you say we want
18 additional gradation within AI systems and here is
19 what we propose to do that, that syncs up fine with
20 what we are --

21 MR. ODESS-GILLET: And it's not really a
22 gradation. This is Warren Odess-Gillett, NEI. It's
23 more of something some other design attributes that
24 you can credit to reduce the likelihood sufficiently
25 that you even have a CCF.

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1 MR. BENNER: Sure.

2 DR. ALVARADO: Right, but we're --

3 MR. BENNER: That you have to consider --

4 (Simultaneous speaking.)

5 MR. ODESS-GILLETT: That instead of just
6 saying, okay, we have to postulate a CCF.

7 DR. ALVARADO: Right. But, also,
8 understand that, and this comment was provided when we
9 were looking at NEI-1616, is not that you are going to
10 come and say I am missing this design attribute, I
11 don't need to do anything else.

12 Yes, but also you need to kind of tell me
13 like how is that design attribute really going to help
14 your system.

15 MR. HERB: Sure. Oh, yes, sure.

16 DR. ALVARADO: They have to be -- And that
17 is where talk about like assessment and --

18 MR. ODESS-GILLETT: Yes, the analysis
19 leads somewhere.

20 MR. ODESS-GILLETT: Sure.

21 DR. ALVARADO: It's that. It's not just
22 saying like, oh, I'm going to use design attribute
23 8.3.

24 MR. ODESS-GILLETT: Oh, sure.

25 PARTICIPANT: Right, right, right.

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1 (Simultaneous speaking)

2 MR. MORTON: Let me give you an example.
3 I'm sorry. Let me give you an example, but it's going
4 to be in a non-safety-related space for advanced
5 review when they have taken a look at CCF for
6 distributor control system they do a combination of
7 analysis, thermal hydraulic analysis, and they are
8 doing a combination of, a lot of times applicants are
9 using design features and measures specifically to
10 address the hazards within the system and to give a
11 technical base on why each particular defensive
12 measure addresses that particular hazard.

13 And they also do a great job of actually
14 demonstrating that these are the hazards of the system
15 and these are the defensive measures we have in place
16 and this is why it addresses that measure, whether
17 it's network traffic limitation to prevent data
18 storms, things of that nature.

19 That's kind of the level we are talking
20 about but that's in non-safety space. We would expect
21 more than such for higher safety significant space.

22 PARTICIPANT: Right.

23 MR. MORTON: If that's the idea the
24 industry has going forward like the design engineering
25 guide, if that's what you are talking about, that's

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1 something we would like to look at to see what your
2 ideas are on that without just --

3 (Simultaneous speaking.)

4 MR. MORTON: -- because the BTP already
5 open is the possibility for using design attributes
6 for the purpose of CCF. But we've got two, if you
7 have other ones we would need to see that as one
8 submittal.

9 MS. ZHANG: Oh, and we should recognize,
10 right, international consensus standard, IEC, they
11 don't get to that level of detail about defensive
12 measures that could be used with a system.

13 So they really talk about it using it
14 between different lines of defense.

15 MR. HERB: I understand that but I think
16 we all can agree that within a system there have been
17 approvals --

18 MS. ZHANG: Right, yes.

19 MR. HERB: -- for diversity within a
20 system. Some of the systems have multiple diverse
21 cores within a system and so you are saying, and the
22 current D3 analysis would not allow you to credit
23 that?

24 MS. ZHANG: No, it does.

25 DR. ALVARADO: No, it does.

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1 MS. ZHANG: It does.

2 (Simultaneous speaking.)

3 MS. ZHANG: We did it for Diablo Canyon.

4 They do --

5 (Simultaneous speaking.)

6 PARTICIPANT: Yes, and we'll do it for
7 NuScale.

8 PARTICIPANT: Yes.

9 MS. ZHANG: Yes.

10 DR. ALVARADO: So if we just -- We're just
11 trying to --

12 (Simultaneous speaking.)

13 DR. ALVARADO: Yes.

14 MR. MORTON: That's section 1.9, that's
15 not the --

16 MR. ODESS-GILLETT: But it's the diversity
17 tool.

18 MR. MORTON: It's Section 1.9, yes.

19 DR. ALVARADO: Well it is a diversity
20 tool, but what I am saying, what we are trying to say
21 is like we realize and we shouldn't stop at only
22 diversity of the 100 percent testing that it is in
23 there --

24 PARTICIPANT: Right.

25 DR. ALVARADO: -- the thing is that we

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1 want to hear the proposal.

2 PARTICIPANT: Sure.

3 DR. ALVARADO: So, yes, there are design
4 attributes and other stuff that you can use, but it's
5 just like what are those and how we would fit these in
6 this block.

7 MR. BENNER: Yes. Stepping back, you
8 know, the D3 analysis needs the right amount of rigor,
9 right, where we're okay with shifting the focus of
10 that to a defense-in-depth primarily, diversity
11 secondarily.

12 And these defensive measures I think fit
13 fine. I think internal diversity fits in that, I
14 think defensive measures fits in that of doing that
15 evaluation to make a safety case for the system.

16 MS. GOVAN: And with that wrap-up we're
17 going to take a 5-minute break. You guys have used
18 your break time. It may look like we are outside of
19 the scheduled --

20 (Simultaneous speaking.)

21 MS. GOVAN: Give me one second. It may
22 look like we are outside of our process as far as
23 timing, but we have been QA'ing the entire time, so I
24 think we're still on task.

25 We're going to get one more question and

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1 then we're going to take a 5-minute break.

2 MR. CONNELLY: A quick and I think easy
3 question. I think I heard a contradictory
4 understanding and I just want to make sure it's clear.
5 The only time this --

6 MR. ODESS-GILLETT: John Connelly, Exelon.

7 MR. CONNELLY: Oh, thank you. The only
8 time this framework would be invoked is if you hit the
9 trip wire for a license amendment, correct?

10 PARTICIPANT: Yes.

11 PARTICIPANT: Correct.

12 MR. CONNELLY: Okay. That's it. I heard
13 some discontinuities here and I just wanted to make
14 sure --

15 MR. MORTON: It will be made clear.

16 (Simultaneous speaking.)

17 MS. GOVAN: And with that we'll take a 6-
18 minute break. We'll be back at 11:00.

19 (Whereupon, the above-entitled matter went
20 off the record at 10:54 a.m. and resumed at 11:01
21 a.m.)

22 MS. GOVAN: So let's rejoin the meeting in
23 the room. We're ready to get started. It's a little
24 past 11 o'clock, so I'm going to go ahead and turn it
25 back over to Wendell, and he will continue the

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1 presentation.

2 MR. MORTON: Okay.

3 MS. GOVAN: We're on slide 17.

4 MR. MORTON: Thank you, Tekia. This is
5 Wendell Morton, NRC. Just picking back up where we
6 left off before the break, we're going to get into
7 another area of the update that the staff is
8 conceptually considering based upon some of the
9 feedback and concerns we've heard about Section 1.9,
10 which is titled, Design Attributes to Eliminate
11 Consideration of CCF.

12 So as you can see on the slide, we took a
13 hard look at this section to see what the staff
14 actually thought about technically whether that was
15 feasible, especially for a higher-state of
16 significance system, a protective system that we would
17 have that sort of language and design there, so we did
18 decide to tweak that language, really, starting off
19 with the title.

20 We're sticking the word further inside
21 there so that -- we don't want to put out as guidance
22 that people are following that we don't want you to
23 consider CCF as part of your modification or part of
24 the design certification.

25 We thought that that gave an impression

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1 that we, as the regulator, did not want to provide
2 that there's -- you don't have to consider it as part
3 of your design. So we're tweaking that language up
4 front to let you know remove further considerations so
5 that it's not something that you don't take into
6 account, even though it's part of your engineering
7 process.

8 And the rest of the change we're proposing
9 in the next slide is really about, as Eric and we were
10 alluding to, providing more flexibility while trying
11 to provide more clarity so that we can make this
12 particular section a useful, practical design tool so
13 that if we did include other types of design features
14 and add tweaks in the future, we want it to be under
15 the context of removing further consideration, not
16 eliminating consideration or precluding consideration,
17 period.

18 So just, in light of our discussion in the
19 lab before the break in terms of design attributes and
20 features, we did have something proposed to us, and we
21 accepted that that will be in under removing further
22 consideration, not precluding consideration, period.
23 I just wanted to be clear about that.

24 So as part of what I would call the
25 tweaking of Section 1.9, we really focused on the

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1 testability aspect, because that's where we've
2 received feedback and commentary about it being a
3 potential barrier, not so far as using the document in
4 terms of barriers, but being a useful tool as part of
5 your design tool set when you're engineering for
6 either modernizing your plants or, in fact, for your
7 design certifications.

8 So one thing we did was, if you look at
9 the first sentence of the description it refers to
10 system only, where we've actually seen the tool
11 practically used at the component level. So we didn't
12 want to eliminate the potential of you actually doing
13 100 percent testing on a system. If you can, and you
14 demonstrate that, that's all well and good.

15 But we wanted to clarify, as part of that,
16 that this also okay for components as well, and Deanna
17 referred the prioritization modules, ISG 04 type
18 style, like the Pax (phonetic) modules for the APR
19 design. It's an example of 100 percent testing, for
20 example. So we just wanted to tweak that for more
21 clarification.

22 The second part, and I think we've kind of
23 talked about this before, we were looking at the
24 actual practical experience we've had with different
25 licensees and applicants using the tool is the

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1 feasibility of actually doing 100 percent testing as
2 it's stated within number 2 of Section 1.9.

3 So when we looked at it, we're taking more
4 of a global approach to say, Hey, is it possible that,
5 in terms of trying to find flexibility, that we can
6 reduce the scope of inputs, outputs, that actually
7 need to be tested and verified, if you are taking a
8 component as part of a license amendment or design
9 certification?

10 And based on what have looked at and
11 spoken about and talked about -- we talked about the
12 SSP topical report review that Deanna and Dave were
13 referring to earlier -- we did think that it was just
14 a matter of focusing on the input-output logic on the
15 devices actually used within the design function.

16 Conversely, if you can demonstrate that
17 unused logic or unused portions of device itself do
18 not affect the design function in any way, if it's a
19 failure or a system re-start that the logic doesn't
20 play a part in the design function, if you can kind of
21 demonstrate those, then 100 percent testing of the
22 actual logic that's being used as part of design
23 function may be an acceptable approach.

24 Now, conceptually we're okay with that
25 particular aspect. We'd be looking for industry input

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1 on the correct kind of wording that characterizes it.

2 MS. ZHANG: For example, if you have an
3 FUJ module only one block of it is used, and the other
4 blocks are completely separated and not providing any
5 sort of connection. Doesn't introduce any sort of
6 failure modes for the block that you're using. That
7 would be --

8 MR. HERB: What about if you could
9 demonstrate that the failure of that block or that
10 whole chip had no consequence to the system at all?
11 So you wouldn't even have to really test that whole
12 piece.

13 (Simultaneous speaking.)

14 MR. HERB: I mean, so you're not driving
15 inside. Just because it's softer, just because it's
16 in a component doesn't necessarily mean you're driven
17 to 100 percent testing --

18 MR. MORTON: Correct. You can demonstrate
19 from the outside-bounded analysis that that has no
20 real bearing on the --

21 MR. BENNER: You can help us clarify the
22 document, because for us, these are all tools that can
23 be used to make an argument.

24 MR. HERB: Right.

25 MR. BENNER: And there's no presumption

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1 that you do all of them, right? So it's permissive.
2 If you wanted to rely on testing, here's the ways you
3 do it. What you're describing is, you're not relying
4 on testing.

5 MR. HERB: That's right.

6 MR. BENNER: All those are valid tools as
7 an input into a --

8 (Simultaneous speaking.)

9 MR. HERB: So we're considering it
10 different than the actual D3 assessment argument.

11 MR. MORTON: We're bounding your analysis
12 of the D3 assessment for the system, then. You're not
13 worried about 100 percent testing, but if you want to
14 take the testing sufficient diversity route, that's
15 fine too.

16 MR. ODESS-GILLETT: So this is Warren
17 Odess-Gillette of NEI. So there's more to the
18 description of 100 percent testing at BTP 7-19 than
19 just 100 percent testing of logic?

20 MR. HERB: Right.

21 MR. ODESS-GILLETT: Are you planning on
22 simplifying that wording to just 100 active logic?

23 DR. ALVARDO: We haven't honestly gone to
24 that level. We recognize that that's an item that
25 needs to be resolved. We're now trying to --

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1 MR. ODESS-GILLETT: Because I don't think
2 the inactive logic was really our --

3 DR. ALVARDO: -- concern, concern.

4 MR. ODESS-GILLETT: Area, right. Okay.
5 That's good to know.

6 DR. ALVARDO: But we recognize that it's
7 the internal state, the definition of internal state
8 and how that is using the common trial or testing.
9 But we haven't gotten to the point of discussing how
10 we would project that.

11 MR. BENNER: And we're hoping that
12 collaborative work with industry can help provide the
13 appropriate clarity of the language in the document.

14 MR. ODESS-GILLETT: And I again direct you
15 to IEEE 7432, 2016, the consensus industry consensus
16 position one? One-hundred percent testing?

17 DR. ALVARDO: Deanna should know, right?

18 MS. ZHANG: But just recognize that I was
19 only part of the working group.

20 MR. ODESS-GILLETT: There was no
21 dissenting opinion to the position, let's put it that
22 way.

23 MR. MORTON: Well, we'll take that
24 feedback into consideration. But like Rob was saying,
25 this is not all fully fleshed-out in terms of

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1 execution. But conceptually, as a caveat to the
2 testability of these outside components, we'll be
3 willing to add to it as far as flexibility. But
4 clarifying the language of the access to it, that's
5 going to take us longer.

6 Mr. HERRELL: Dave Herrell with MPR. Part
7 of the problem that drove me up the wall the last time
8 I tried to apply 100 percent testability was the use
9 of the word all. All possible combinations, all
10 possible states, and even an FPGA that had three
11 active inputs and 10 active outputs, I could not test
12 to all possible combinations of internal states. All
13 possible combinations of inputs, that's not a problem.

14 But when you have a machine that had at
15 least seven different internal state machines, all
16 running asynchronously, that's a very difficult thing
17 for me to demonstrate no matter how disconnected those
18 state machines are from each other.

19 MR. CONNELLY: John Connelly, X1A. I had
20 a similar comment, and it's the language. Sure we
21 could fill it in, but just the use of 100 percent
22 testing just opens up the unending, imponderable what-
23 if scenario.

24 MR. MORTON: But in the RIS you use the
25 phrase highly tested as a way to sort of bridge that

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1 gap, rather than saying 100 percent testing. There's
2 been for barring that kind of language to augment what
3 we have here too.

4 PARTICIPANT: This is Rich Dottle
5 (phonetic). Can I speak for a second?

6 MR. MORTON: Sure, go ahead, Rich.

7 PARTICIPANT: Okay. I just want to point
8 out, we've revised this language several times over
9 the years. The current language, every possible
10 combination of inputs, and every possible sequence;
11 that was actually proposed by NEI, and the NRC
12 accepted that language. So that's how we got to where
13 it exists today. That was preferred by industry.

14 So I also heard a discussion of internal
15 states. That was language that was in the interim
16 staff guide that the NRC and industry worked together
17 on, and that was being very problematic, and we
18 decided not to use that language and not try to define
19 internal states when we updated the 18-19 on the last
20 revision. I just want to point that out.

21 MR. MORTON: Thank you, Rich.

22 PARTICIPANT: I just wanted to say, I'm
23 one of the culprits that created the 100 percent
24 testing when we wrote ISG 04 back a long time ago.
25 The point was to make things simple. What we were

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1 talking was priority modules are simple logic things
2 that you could have a deterministic plate (phonetic).
3 There was a set of inputs and a set of outputs. You
4 put every combination of inputs in, you get the right
5 outputs, and you're done, and it was intended for that
6 purpose.

7 It was never really intended for state
8 machines and for other kinds of complex stuff that
9 people seem to be trying to apply it to now, with
10 predictable frustration, because you can't do it. It
11 was never intended for that.

12 MR. MORTON: Right, the title of it was,
13 it needs to be sufficiently simple, so if you have a
14 hard time testing it, it's not really sufficiently
15 simple. But to Paul's point, that the logic going
16 into that frame originally.

17 PARTICIPANT: I was one of your people you
18 can blame for ISG 04. It was viewed as appropriate
19 for a priority logic module because it really only has
20 a very limited number of inputs and very limited
21 number of internal states. It's misapplication to
22 anything beyond a priority logic module -- it's not
23 just problematic, it doesn't work.

24 MR. MORTON: Well, one thing I would say,
25 then, as part of industry's feedback is, what

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1 component devices do you believe it's most appropriate
2 to use for? Because we've only really got examples of
3 priority modules for this testing, but if you're
4 trying to test other devices beyond that, then what
5 examples would you have or criteria would you place on
6 them in terms of highly tested?

7 PARTICIPANT: Or another thing you could
8 do is just say, If it works, use it. If it doesn't
9 work, don't use it. You don't really need a list of
10 what kind of equipment it might apply to or might not
11 apply to. If you have a gizmo, and you can
12 demonstrate that you can do this, then do it. Then
13 you win.

14 MR. ODESS-GILLETT: Well, we do it, but
15 does it meet the criteria for exclusion as a potential
16 CCF?

17 DR. ALVARDO: And that's what we need to
18 clarify and change the language, because 100 percent,
19 it's that number that's creating -- turning back to
20 your zero.

21 MR. HERB: Yes, that's right. Thank you,
22 it's back to that. There's somewhere on a continuum,
23 so we ought to be able to get to it.

24 MS. ZHANG: So thanks for the
25 clarification, Rich. The language in the BTP is every

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1 possible sequence of device states, and I remember we
2 talked about what that means at the IEEE meeting as
3 well as internally, so this is something that we need
4 to address again.

5 MR. MORTON: Yes.

6 PARTICIPANT: Well, as Warren mentioned,
7 we addressed this during the IEEE meeting and in the
8 standard, we've added clarity to that. The possible
9 sequences was interpreted differently than it was
10 intended when it was written in there. So,
11 absolutely, we need to add clarity to what that means.

12 I would also defer to the work we've done
13 in IEEE 7.32; I think that language is much more
14 clear.

15 MR. MORTON: All right, thank you. So if
16 there's no more questions, we'll move on to the next
17 one.

18 This is where the final part of the
19 conceptual changes of direction the staff is looking
20 at for the BTP update, and we've kind of alluded to it
21 with all these discussions so far, different industry
22 stakeholders within current operating fleet, plant
23 reactor fleet, Part 52 folks versus the Part 50 folks,
24 and highly integrated versus less integrated. We were
25 challenged to find a way to distinguish how we're

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1 conceptualizing this, but for the sake of argument
2 we'll simply say new reactors versus older operating
3 fleet right now.

4 There's been challenges in balancing the
5 considerations of technical rigor between the
6 different houses because of the different levels of
7 licensing basis. You have pre-existing license basis
8 versus establishing one. You are doing digital mods
9 and updates with pre-existing systems versus putting
10 in systems that are fully digital, fully software-
11 based, and network connections between safety devices,
12 between safety and non-safety equipment like we've
13 seen in advanced reactors.

14 Balancing those considerations will be
15 challenging, and you can kind of see the D3 table that
16 Roz and Deanna talked about as an example of, even
17 within the operating fleet, there's challenges from
18 different licensing bases and even within the advanced
19 reactor applications, we've seen different levels of
20 implementation and design for digital I&C. So like I
21 said earlier, it's complicated.

22 One of the potential approaches that may
23 be beneficial for the state going forth, especially
24 for the document so that we can best address
25 individual stakeholder concerns between the different

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1 laws of limitation, is to simply treat them
2 separately.

3 Right now the document treats new
4 reactors, operator actions, the same way. So when
5 you're looking at doing a D3 analysis currently for
6 all safety systems, that's a different level of a
7 challenge for an advanced reactor submitting a DC
8 science certification to the docket and performing a
9 D3 assessment across the board versus an operating
10 plant doing that for all -- it's a different
11 challenge.

12 In speaking to the technical folks and
13 speaking to the lawyers about this particular
14 conception, it is feasible to do that if we chose to
15 go in that direction and have a separate treatment for
16 new reactors versus the operating fleet.

17 So we wanted to provide that as a
18 potential option to go forward with, and let's see
19 what industry's concerns would be for doing that. It
20 would give us the ability to better customize specific
21 concerns when doing a D3 assessment and advanced
22 reactor design versus doing one for digitalizing
23 modification or upgrade.

24 It's a different technical consideration,
25 and, Ray, I understand your comment about, Well, an

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1 operating fleet, you're going to spurious actuation.
2 Then the concerns about, Hey, in operating plants
3 they're going to do more digital modernization anyway,
4 so the arguments may end up being the same.

5 But for right now as of April 4th, 2019,
6 there's a big difference between the two houses in
7 terms of the level of implementation, the license
8 basis differences, and at least for this particular
9 update at this time, it may be simpler to treat them
10 separately.

11 So I will open it up to questions or
12 comments if anyone has anything, but that's --

13 MR. BENNER: Acknowledging we're not going
14 to get a definitive answer, right?

15 MR. MORTON: Right.

16 MR. BENNER: It's just something that you
17 need to cogitate on.

18 MR. MORTON: Yes. Think about, throw it
19 around.

20 MR. ODESS-GILLETT: So this is NEI,
21 Warren Odess-Gillette. So I think Ray brought up a
22 good point that instead of maybe making the
23 demarcation line is level of integration of digital
24 I&C. Because your new plants, basically it's a
25 digital plant class control room, and as Ray says,

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1 we're marching forward with these operating plants in
2 that direction.

3 MR. GEIER: Incrementally.

4 MR. ODESS-GILLETT: Incrementally, yes,
5 long term. But it might be another approach to
6 looking at it from a level of integration versus just
7 new plant versus --

8 DR. ALVARDO: I hear you, but here's the
9 thing, Warren: obviously we're here sitting around
10 the table. We're developing the guidance. Five, 10
11 years from now, you're going to have different staff.
12 So we're trying to get to avoid what we are seeing
13 now, that people interpret stuff differently.

14 For example, as far as spurious actuation,
15 if we go and use the level of integration, who does
16 then be considered later for an operating plant? You
17 know what I mean? The comment that Ray was pointing
18 out, for new plants you can have that flexibility, but
19 do you want that then be imposed as -- not imposed.
20 Some people will say, Well, are you considering
21 spurious actuation? What is your upper level?

22 MR. ODESS-GILLETT: It's something we can
23 cogitate on. I'm just thinking that even for new
24 plant designs, we may want to reconsider spurious
25 actuation.

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1 DR. ALVARDO: I'm using spurious actuation
2 as an example, okay? Not like their only item.

3 MR. ODESS-GILLETT: All right. Mark?

4 MR. BURZYNSKI: Yes, I have just a thought
5 on that. I think the difference will manifest itself
6 more in the kinds of solutions and the analysis you
7 pursue. A new plant, where you don't have an existing
8 Chapter 15 with a lot embedded in it, you could change
9 the AOOs and expand the scope of feedwater heater or
10 things that you consider.

11 DR. ALVARDO: Right.

12 MR. BURZYNSKI: You wouldn't necessarily
13 want to do that on an operating plant. An operating
14 plant would more consider, how do I make the segment,
15 the control systems do help to reduce those hazards,
16 and you would go in some different directions. I
17 think of solutions as a type of analysis issue.

18 MR. BENNER: And that opens up a
19 philosophical debate, because as Wendell talked about,
20 our focus today is our revision to BTP that best
21 enables the upgrades you see in the near future. So
22 that's another challenge on the whole flexibility and
23 clarity thing of, that may not be the best guidance
24 for the things you may envision long-term for the
25 operating fleets.

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1 So part of this is, do we try to deal with
2 all that in this revision, or do we make it clear that
3 the reason this revision is segmented and cut up this
4 way is because of today's problems? We want to avoid
5 that people go back 10 years later and look at
6 something and say, Well, this is all hosed up.

7 As long as we acknowledge that it was
8 focused on a certain set of problems, and we need to
9 be mindful if people are using it in a different way
10 10 years from now, it wasn't designed for that.
11 Doesn't mean it can't be used for that, but use it
12 cautiously if you're going to use it in that way.

13 MR. MORTON: That's generally -- thank you
14 for kind of summarizing that as well -- so that's
15 generally what we're thinking in terms of long-term
16 structurally as part of the update itself.

17 Beyond refocusing the document to be more
18 of a defense-in-depth focus in putting diversity as
19 more of a tool under that umbrella, this would be
20 another potential structuring of the document to treat
21 highly-integrated versus less-integrated, or maybe
22 newer licensing basis versus old licensing basis,
23 however you want to slice it. This kind of conceptual
24 thing might be the way to go in terms of customization
25 flexibility.

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1 MR. GEIER: I'm just kind of thinking
2 about this. Steve Geier of NEI. A caution throughout
3 is for new plants, just want to make sure that
4 whatever guidance we put out doesn't contradict what's
5 already been approved.

6 MS. ZHANG: Exactly.

7 MR. GEIER: So you look at Nuscale and the
8 AP-1000s; you can't have anything put out there that's
9 going to impact on their systems and where they're
10 going.

11 As far as advanced reactors, I think
12 they're still a few years down the road, so I think
13 that's kind of lesser priority. I mean, keep an eye
14 on it, but not something we necessarily need to tackle
15 right now. So really the focus is on what we can do
16 to kind of clarify the rules and open it up for
17 operating reactors to be able to move forward with
18 confidence and doing it as efficiently as possible.

19 MS. ZHANG: This is Deanna Zhang. We
20 recognize that, and we're developing separate guidance
21 for advanced reactors, even digital ones in this
22 arena. So we may separate those out even further.

23 MR. GEIER: It's certainly aptly critical
24 as though we can't affect the current new reactors
25 that are moving forward and what's already approved.

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1 MR. HERB: But I want to caution us going
2 forward with it. Even with the advanced reactors in
3 and new reactor space, we shouldn't have a second set
4 of more stringent requirements on those arguably safer
5 reactors than -- it seems like if they have a more
6 stringent requirement base because of all the stuff
7 than we do in our -- and they're passive plants
8 generally, and they're generally safer going forward,
9 and so I just wanted to make sure and say, Well, you
10 know, they haven't been built yet, so they don't have
11 as many concerns about it. So we can just lump all
12 the requirements and -- let's try not to do that too.
13 Let's try to maybe back off of the requirements.

14 MS. ZHANG: So with that, I just want to
15 add a clarification. Their categorization system is
16 even different than the small logical reactors. So
17 what they're proposing in NEI 1804 for categorization
18 -- it's not necessarily the same as what was in the
19 SMR.

20 So you want to be careful that, as we're
21 proposing categorization schemes here, it may not
22 apply to advanced reactors.

23 MR. MORTON: Okay. And the idea is not to
24 invent or impose new requirements analysis just
25 because we've split them up conceptually. That's not

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1 at all the goal. The goal is to ensure that, for the
2 different houses, that you're doing what you can do to
3 make the adequate protection case when you're doing
4 like design certification. That's it.

5 MS. UHLE: Well, the saving grace of it
6 is, reactors in the IEC systems are much less complex,
7 so they'd mostly be easier to design and review.
8 That's our hope.

9 MR. MORTON: So if there's not any more
10 questions, I'll go on to the next slide. So this next
11 slide really is just a little more -- Wendell Morton,
12 NRC. This is just sort of supplementing the previous
13 proposals. Staff has made presentations on areas of
14 interest that we've heard certain feedback on.

15 I will focus your attention on that second
16 bullet, because that's the one that we talked about
17 the most in terms of clarifying particularly D3
18 approaches within the A1 box itself.

19 So that's basically if there is a desire
20 to provide a more refined or granular grading within
21 that box, the staff would like to hear industry's feed
22 on proposals on how to structure that. Not just
23 comments, but a framework for it, something that we
24 can actually take a look at and evaluate it for
25 ourselves for potential consideration and

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1 incorporation into the document itself.

2 So I really want to hammer home that fact
3 that we want to get beyond just getting comments. We
4 want specific solutions in the form of framework or a
5 concept. That's really something the staff can
6 actually act upon for this update. So we want to sort
7 of raise the level of what we've seen so far in terms
8 of some of the concepts we've seen so far. So I just
9 kind of want to set the expectations for that.

10 MR. ODESS-GILLETT: So this is Warren
11 Odess-Gillett of NEI. I think we did that with the
12 slides that we provided you for this meeting. They
13 were very specific changes to BTP 7-19 to provide
14 flexibility in the evaluation of CCF and D3 analysis.

15 MR. MORTON: Well, I will say that in some
16 slides when you're saying incorporate RIS inside sort
17 of approach --

18 MR. ODESS-GILLETT: There were some slides
19 specific about taking credit for, let's say, leaking
20 before break detach --

21 MR. MORTON: I saw that, yes.

22 MR. ODESS-GILLETT: So these are very
23 specific suggestions for implementation of BTP 7-19.

24 MS. ZHANG: And we do have questions when
25 we get to those slides. We just -- right now we're

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1 just discussing our proposal, and we want to hear you
2 out when you get to your presentation.

3 MR. BENNER: This is Eric Benner from NRC.
4 Some of this is, how much of this do we try to pour
5 into the BTP versus, how much of this is, there's just
6 enough whatever, framework type language in the BTP
7 that allows for that gradation? Then if NEI is coming
8 in with a separate thing that will lock down the
9 specifics that we could endorse, that could be plugged
10 in.

11 MR. ODESS-GILLETT: Okay. Warren Odess-
12 Gillette, NEI. What we actually specifically state in
13 that slide package used to be in BTP 7-19.

14 MS. ZHANG: We understand; we'll get to
15 that.

16 MR. ODESS-GILLETT: Okay.

17 MR. MORTON: We're looking forward to
18 getting to that piece. But just lastly, the last
19 bullet, the third bullet on the slide in terms of the
20 guidance review in CCF for A2 and B1, we touched on
21 this briefly. For considering the graded approach for
22 those A2 systems that don't go pass through 50.59,
23 we've suggested a technical rigor framework for those
24 systems, getting their feedback on, based on the RIS
25 supplement 1 framework.

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1 Is that sufficient? Does that seem
2 reasonable? Because that's where we think we need to
3 be in terms of the technical. We're going to make an
4 accurate protection case for LAR, for those types of
5 systems.

6 MR. BENNER: Again, getting into context
7 and how people could interpret things, none of that is
8 to drive people to submit LARs for those things. If
9 someone goes, does their 50.59 and can't get there,
10 it's from a completeness standpoint to say, This would
11 be the standard we will apply there.

12 MR. HERB: Ray Herb from Southern Nuclear.
13 I have a question about that, because some of those
14 reasons for breaking the plane of 50.59 and going into
15 LAR space may not be the technical piece. It may be
16 the operation of the plant piece.

17 Those highly-integrated control rooms, the
18 use of maybe computerized procedures, are those things
19 that we might do that are currently being utilized in
20 places like Vogtle 3 and 4?

21 Would that open us up to this D3 and
22 spurious actuation analysis for those A2, B2, B --

23 MR. BENNER: What's in the RIS --
24 (Simultaneous speaking.)

25 MR. HERB: Okay. A little bit of my

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1 concern is that if it -- it's only applicable to a
2 LAR, but if it comes in for a different reason like a
3 tech spec change, are you going to open up your review
4 to --

5 MR. MORTON: No, we are not going to
6 safety chillers with a higher-level technical rigor
7 for the BTP than we would under 50.59 when we were
8 actually doing it without us reviewing it.
9 Conceptually, that's where we are.

10 MR. BENNER: That's our exact reason to
11 include it, so we would have that discreet
12 differentiation in the level of review we would for
13 Phase 2. But we know that could be interpreted as,
14 Oh, now they're saying I need LARs for all this other
15 stuff. So we're trying to make sure we get that
16 language right.

17 MR. HERB: And I know you're probably
18 getting into this next because we have the schedule
19 piece, but I want us to say that there is an urgency
20 a little bit. I think most of the urgency is probably
21 on the NRC side, not on our side, because these
22 designs -- you know, we talk all the time about
23 designs on the shelf.

24 But when we say designs on the shelf,
25 those designs are in LTAM process. They're in the

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1 conceptual phase. They have not been funded, so
2 there's no actual design on the shelf anywhere.
3 They're ideas that we may say, Can we do this? Well,
4 how much is it going to cost? Well, we estimate
5 that's going to cost this. So they say, No, we're
6 going to push it out to 2026, 2027.

7 So that's what we mean by on the shelf.
8 So we're not looking for something by June, okay?
9 We're a very seasonal industry. We have outages in
10 the spring, we have outages in the fall. We have time
11 to do stuff in the summer, but oftentimes those times
12 in the summer I like to prepare for the next outage
13 coming up.

14 So our time is -- in the June time frame,
15 a lot of industry meetings are going on at that same
16 time, so I would say to just be conscious of that. We
17 want to be involved with this. We want to provide
18 feedback. We want to be able to be a partner with you
19 to provide our concerns and our input, but if we don't
20 have the time to do that, we're not going to be able
21 to provide a really good input to you.

22 MR. MORTON: Let me challenge you on that
23 then, because we spent the last three years since I've
24 been involved with these various projects in 50.59
25 here. We've heard this message from NEI on various

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1 things. We've got mods on the shelf. We can't do
2 these updates, RPS and ESF systems. It's been across
3 the board. It hasn't just been in 50.59 space either.
4 So I know -- we've heard various voices from industry
5 on this point, so it's not just --

6 MR. HERB: It's not just Southern.

7 MR. GEIER: But I think they kind of
8 raised messages. It takes time to kind of re-gear a
9 machine. So by saying, Hey, I issued ISG 6, hey,
10 where's the mod? It's like planning horizons for big
11 mods like that are typically at least five years. So
12 really, even if people are going to say, Pick this up
13 to start moving it forward, it's going to be months,
14 if not a year or two before you start seeing those get
15 approved by capital management committees do move
16 forward. In an outage probably, as Ray said, 2023,
17 '24, '25. So that's the kind of horizon it is.

18 MS. UHLE: But at the same time, we want
19 to make a lot of progress quickly in order to get the
20 investment to talk about, Hey, look. We have this new
21 guidance. This is a much more viable path, much more
22 efficient path. Now we need to make this investment.
23 So we're not backing off on pace at all.

24 DR. ALVARDO: Well, but we just need time
25 for --

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1 MS. UHLE: Maybe Southern has a
2 reservation, but we have other members in the audience
3 that want to speak.

4 DR. ALVARDO: Mark has been trying to talk
5 for a while.

6 MS. UHLE: Well, on this issue I'm not --

7 MR. CONNELLY: Well, this is a quick
8 comment. There is urgency to this, because we do want
9 to proceed forward with modernization because it does
10 take a long time to get it through the approval
11 process. So the faster we can get this done, the
12 faster we can put it into action.

13 MR. MORTON: And we understand --

14 MR. GEIER: That's what my conclusion was
15 going to be.

16 (Laughter.)

17 MR. GEIER: Some of these horizons are so
18 long, getting this approval in place, getting these
19 documents in place to kick off that process, is
20 urgent, and I know from our interface with a lot of
21 utility managers and CNOs, there's a lot of impetus
22 behind, certainly move forward with these. But we've
23 still got to be appreciative.

24 (Simultaneous speaking.)

25 MR. HERB: I'm not saying June, two years

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1 from now is what we're looking for. I'm saying that
2 maybe we need until August or October, because the
3 review cycles in these things oftentimes we get your
4 -- we got your presentation a day before, and so we
5 had to all look at it, and we haven't formulated all
6 our opinions on that. So hopefully whatever you give
7 us for our input, we have more than a day and a half
8 to provide an input. That's all.

9 MR. MORTON: This is for the record. The
10 priority for this task is to get it right, not
11 necessarily get it on schedule. We're not so beholden
12 to the schedule that we're going to ignore and not fix
13 all the things we can fix with this update.

14 So to get right to your point, no, the
15 schedule will be what it needs to be to get the job
16 right.

17 MR. HERB: Okay. And I previewed the
18 piece-wise approach so we can get -- let's get this
19 big benefit here for this piece, and then address how
20 we're going to pull in new plants like that later.
21 Because really, we are looking for the stuff that's
22 going to help us --

23 MR. MORTON: To Jennifer's point that the
24 staff's perception, the train is moving. We've been
25 operating all these modernization plans at the same

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1 level of urgency because of -- we're interested in
2 getting these plants modernized as much as you are.
3 So let's put the hammer down for Appendix D for the
4 RIS, and now this project too.

5 The schedule is flexible; we'll get to
6 that. We can go ahead and get the schedule for it.
7 I'm sorry, Mark has a question.

8 MR. BURZYNSKI: I wanted to offer you a
9 suggestion on how you can maybe get it right. With
10 regards to guidance related to A1 and B1, my
11 suggestion would be to consider maybe separating those
12 and putting them in different documents, because the
13 nature of what you do for A1 is different than what
14 you do for B1.

15 Separate them, because A1, you're looking
16 at safety system, and you're looking at them not
17 performing, and the redundant systems: common cause
18 failure across divisions. B2, non-safety control
19 systems: different animal and different problems, and
20 it's got a different link.

21 You could maybe take the opportunity to
22 synch it up with SRP 7.7 and the guidance in ISG 04.3.
23 Because those all have relationships that could be
24 strengthened and better explained, and it would avoid
25 the confusion of, Am I dealing with a control system,

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1 and what is common cause failure mean, versus a safety
2 system and a common cause failure?

3 MR. MORTON: Mark that's a great point.
4 That's something we've kicked around internally a lot
5 in terms of -- technically, the B1 systems are handled
6 by the RIS right now, as of May of last year. What we
7 are considering as part of the graded approach is
8 accounting for those B1 systems that need to come in
9 for a LAR or whatever particular reason, and having
10 adequate level technical order imposed on that for the
11 purposes of this BTP.

12 Now, I pose the question to industry: for
13 that small subset of systems that may come in for a
14 LAR that are not A1 systems; so that's B1, A2, B1, and
15 B2 -- I'll throw A2 systems in there as well, since we
16 are focusing the D3 on protections systems, that
17 leaves your other A2 systems out of the D3 accounted
18 for.

19 Do you think for those small subset of
20 systems that would come in for a LAR that can't be
21 used for a 50.59, should they be considered within the
22 BTP? Should we consider to go forth with just a
23 consideration of protection systems only, and do you
24 feel that addressing those small subset of A2, B1, B2
25 systems is worth actually addressing in the BTP?

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1 MS. ZHANG: And recognizing that we have
2 two different types of -- we have the new reactors,
3 and we have operating reactors. We may not see a LAR
4 or a B1, A2; however, we will probably see the entire
5 design for a new reactor that includes those systems.
6 So we need to have guidance for those systems as well.

7 MR. HERB: I know, but I don't want that
8 guidance to slow down what we need for the operating
9 plant. I really liked when you said that maybe we
10 could segment that out and do that four, because if we
11 had to consider all that other stuff, that could just
12 slow it down, and it's just an additional piece that
13 complicates our input to you and your integration of
14 that input.

15 DR. ALVARDO: Right, but where is it
16 trying to get started to hear that what if someone
17 were to submit a LAR in a system's B1? Then the staff
18 imposes --

19 MR. HERB: I know, but we have pre-
20 application review meetings, I think --

21 DR. ALVARDO: No, no, no. I agree with
22 you. It's just the time --

23 MR. BENNER: Could that subset be really
24 handled on a case-by-case to get more flexibility?
25 But as soon as we do that, and we start talking, is

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1 there going to be the counter of, Oh, I have no
2 certainty? So we're not prescribing what's the right
3 answer. We genuinely want to hear the feedback of
4 what would serve your needs better?

5 MR. ODESS-GILLETT: Warren Odess-Gillette.
6 So we had that discussion in our own industry pre-
7 meeting of this meeting, and our inclination at the
8 time was that the BTP 7-19 would be strictly for
9 protection systems. But let's not make that the final
10 call.

11 MR. BENNER: No regulatory decisions.

12 MR. ODESS-GILLETT: Right, go cogitate on
13 it.

14 MR. MORTON: That's an important piece for
15 a large portion of our proposed direction. If we
16 don't think we should cover that small subset, then
17 that would clearly alter, not only the scope of it,
18 but it with affect the schedules as well.

19 MR. WATERS: This is Mike Waters. What I
20 want to consider is the work to address (Simultaneous
21 speaking) systems has already been thought of, so
22 you're working up into BTP and that area is probably
23 much less work overall, and maybe an additional
24 section, right? But the groundwork has already been
25 well-laid for the RIS, so that's a consideration.

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1 MR. HERB: But we have the RIS out there,
2 and we're utilizing it. We're very happy with the RIS
3 and where's at today. So I don't know that we
4 necessarily have to integrate that in to complicate
5 it.

6 MR. MORTON: That's fine. Looking for
7 that input. We wanted to put that question to you
8 because that would clearly affect --

9 MR. HERB: But the other people are
10 waiting for the appendix date.

11 MR. MORTON: Well, it's on its way.

12 MR. HERB: Because that determines what
13 goes into the LAR space and what stays out.

14 DR. ALVARDO: Schedule.

15 MR. MORTON: Schedule, thank you. So
16 we've been touching on the schedule piece already a
17 lot, so I'll just reiterate that the schedule was
18 intended to be aggressive based upon the feedback
19 we've received in terms of, we need to get these
20 documents on the streets as soon as possible so we can
21 actually start our planning for the mods we're doing,
22 for the highly-significant systems.

23 We completely support that, and that's
24 where the schedule is targeted and geared towards.
25 Based upon the feedback we've received, based upon

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1 what we hear today and going forward between now and
2 going to the public comment period and ACRS meetings,
3 which you can see, we can adjust the schedule as
4 needed. It's not set in stone.

5 MR. ODESS-GILLETT: So this Warren-
6 Gillette, NEI. I think what we saw missing was
7 something between step A2 and A3. We didn't see any
8 industry engagement, and we need to accommodate --
9 industry's busy, so we need to accommodate industry
10 availability in that engagement, I think, prior to
11 A.3.

12 MR. MORTON: Yes. The staff is perfectly
13 willing to support another public meeting on this.

14 (Simultaneous speaking.)

15 MR. ODESS-GILLETT: Something between PMs,
16 you know, to work that out.

17 MR. HERB: That's fine.

18 MR. GEIER: And I think certainly that
19 will streamline things when we get to the public
20 comment period, because we've addressed a lot of the
21 -- we've got pretty good alignment before you actually
22 do the final draft to go out for public. We won't get
23 the quantity and quality of comments back.

24 DR. ALVARDO: But are you saying that
25 before that meeting NEI will propose or provide

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1 information on these topics that we identify? Because
2 that will help us try to focus on the modifications
3 that we need to tackle first, if you want to call it
4 that way.

5 MR. ODESS-GILLETT: The answer is yes.

6 MR. BENNER: Eric Benner of NRC. Yes,
7 because I think our vision was, there's a level of
8 feedback we're getting from this meeting. We haven't
9 put pen to paper, really, on the revision to the BTP.
10 Kind of our thought was, We would get, and I think we
11 are getting, enough feedback here where we can at
12 least start drafting a revision. And we can talk
13 about the exact sequence of events, because I would
14 hate for us to just go all stop until we get something
15 from you.

16 So we're going to be taking, as far as we
17 get in this meeting and start doing some drafting, we
18 can talk about the right touch points for when you
19 think you can reasonably provide input. We can have
20 a public meeting where it's either right after you
21 provide the input, or it's a little time after the
22 input so we could digest it and say, Okay, were we on
23 with our draft, or does our draft need revisions?

24 This high-level schedule does not
25 accommodate all of that. As Jason used to say, I

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1 don't know what the account number was for meetings,
2 100, 200, whatever. So yes, the fact that there
3 aren't explicit additional meetings here, there will
4 be additional meetings on this product. There's no
5 way it won't happen. But part of that is the purpose
6 of this discussion is to say, What are some of those
7 next sub-milestones we want to have in this schedule?

8 MS. ZHANG: And this is Deanna Zhang. I
9 just want to emphasize, we didn't hear a consistent
10 voice within industry on some things. So because of
11 that, we may choose a direction and then wait for your
12 -- and then get your feedback with a consistent voice
13 so that we can adequately incorporate it.

14 MR. VAUGHN: Steve Vaughn, NEI. Is this
15 the voice today or over the past recent history, I've
16 heard a consistent voice?

17 MR. MORTON: Yes.

18 (Laughter.)

19 MS. UHLE: Can you highlight where you
20 feel that there are --

21 MR. VAUGHN: So going back -- we should
22 have mentioned this earlier -- they issued concerns on
23 slides 6 and 7. We read those, and we were, like,
24 That's part of our concern; the other part is
25 completely not our concern. So we really didn't know

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1 where you got those, if it was from recent history or
2 if was from the slides we sent 14 days ago. We were
3 confused.

4 MR. MORTON: I can speak to -- yes, it's
5 all of them. So I will tell you that the first thing
6 we present in terms of proposal was the scope change.
7 That's the one consistent thing everybody across the
8 board said, Yes, we need to reduce the scope of what
9 applies to a D3 assessment.

10 Beyond that comment, it's different ideas
11 about different things that are problematic versus not
12 feasible versus, well, maybe we should add that in.
13 Not that people are contradicting each other; it's
14 just a lot of different directions that comments have
15 come in.

16 And that's not just the subset we
17 solicited for this meeting; that's going back for
18 things we've received over the last couple of years.

19 MR. JARRETT: Hi, this is Ron Jarrett from
20 TVA. Could I speak?

21 MR. MORTON: Sure, Ron, go ahead.

22 MR. JARRETT: On that subject, I guess my
23 question is, why do we have this diversity in
24 opinions? I'm a little confused by some the
25 statements made during the statement meeting that we

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1 use our existing guidance for operating plants, our
2 commitments and requirements.

3 We have plants that were designed back in
4 the '70s and '80s, and the requirements back then
5 really don't define how to deal with CCFs. So there
6 were some statements, Hey, use your existing licensing
7 statements, and I'm not sure that's adequate for this.

8 So you're advising BTP 7-19 which you say
9 is not our technical guidance for industry, it's your
10 reviewer status. So will there be guidance to
11 industry later on that comes out of this that puts
12 everybody on the same page, like a reg guide?

13 MR. BENNER: Well, we're open -- I will
14 say -- this is Eric Benner, NRC -- going back to the
15 entire integrated action plan, we keep working on what
16 we think is the highest priority. So part of that is
17 feedback of what is the highest priority. If there's
18 some thought that the appropriate companion reg guide
19 that gives clear guidance to industry is a priority,
20 we can work on that.

21 I thought that in some ways that, because
22 industry wants to have some more detail on gradation
23 of A1 -- again, we can talk about whether we report
24 all of that to the BTP, or there's a separate industry
25 proposal that we would endorse by a reg guide.

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1 I will say there's many of us, I think, in
2 this room, likely both on the industry side and the
3 NRC side, that wonders why there is an artificial
4 divide between guidance to the staff and guidance to
5 the industry, because oftentimes we are expecting the
6 same thing. I will say that in our discussions with
7 our lawyers they make it clear that you need that
8 differentiation. We continue to discuss with our
9 lawyers how close those things could get.

10 So while, strictly speaking, we say this
11 is guidance for the staff, if there's a push to do a
12 companion reg guide, we'll do a companion reg guide.
13 I would say there also can be acknowledgment that if
14 an applicant knows exactly what the staff is going to
15 be looking for, they should kind of know what they
16 need to provide.

17 That might not be satisfying, but like I
18 said, if really there's a desire to do a companion reg
19 guide in conjunction with the BTP update, we'll do
20 that.

21 MR. MORTON: And this is Wendell Morton
22 with NRC. So Ron, also from what Eric was saying, we
23 kind of kicked around the idea of the way industry is
24 using the BTP functionally as a reg guide for all
25 intents and purposes. We kicked around the idea of

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1 doing that; now, if the reg guide process is not
2 dissimilar from the actual SRP process, we are fairly
3 early in the conception of the process.

4 Like Eric was saying, if industry thinks
5 that converting this from a companion document to a
6 reg guide is something that you find beneficial,
7 please give us that input sooner rather than later.
8 This should be something you provide to us before we
9 get to public comment period. This should be
10 something you provide to us now.

11 MR. BENNER: Yes. We'll start having a
12 turning the team for the appropriate processes now.

13 MR. JARRETT: I guess I, from a user's
14 standpoint and giving inputs, and I have several
15 examples where our licensing people have dictated
16 designs to the engineering based upon their beliefs of
17 what the NRC, not based upon clear technical defined
18 requirements.

19 I have two analog chiller designs going in
20 because the supplement was too late to help those
21 projects. So there is lack of consistency as far as
22 the requirements out there, truly documented
23 requirements, so you get this uncertainty because
24 everybody has their different opinion.

25 So there should be some sort of concepts,

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1 basic concepts, that are true regulatory requirements
2 that are in a reg guide, and I think the BTP 7-19, I
3 think that's a very good start. But don't lose sight
4 that different opinions come from lack of guidance in
5 this area, published guidance in this area for the
6 users.

7 MR. THOMAS: If I could chime in -- this
8 is Brian Thomas. I think it's a very good comment.
9 I do want to remind folks, we do have another working
10 group or a modernization plan effort where we are
11 taking a holistic look at the overall regulatory
12 infrastructure, and we're starting out with the
13 approach, and then we come to sessions on this later
14 on this afternoon in this meeting.

15 We're starting out with the approach of
16 doing a strategic assessment, if you will, but that
17 whole assessment is to look at, in our infrastructure
18 for digital I&C, where do you see that there are
19 impediments, where do you see that there are barriers,
20 do you see things like the infrastructure is
21 navigable?

22 I think I heard before that the
23 infrastructure is so broad and so diverse that
24 navigation puts a challenge on the industry. So we're
25 looking for that type of feedback in that exercise.

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1 There are areas in our infrastructure that we probably
2 need to make the guidance more durable, rather than
3 have a number of ISGs out there, I think there are
4 quite a few ISGs that have not yet been folded into a
5 durable guidance, either an SRP or into some sort of
6 reg guide.

7 So some of those kinds of considerations
8 are what we will undertake in that effort. We are
9 very much open to ideas and suggestions with respect
10 to how we enhance the infrastructure, and what are the
11 elements of the infrastructure that poses some sort of
12 challenge, or is it comprehensive enough, or is it
13 complete enough? Does it satisfy the entire
14 community? Is it technology neutral? Do folks have
15 what they really need to embark upon digital upgrades?

16 So I just want to offer that. This
17 guidance in the BTP is very focused, and even the BTP
18 would be taken into consideration in that it's a
19 branch technical position. Somewhere down the line we
20 have to take a harder look at it. I think that some
21 of the things you're talking about in terms of how we
22 make it more durable, and translate it into a reg
23 guide, which is bound to be the preferred method of
24 communicating on guidance to licensees, or do we leave
25 it as is for a while?

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1 But those are the kinds of things we'll
2 take into consideration, so thanks for that thought,
3 and that's the kind of feedback I think we want to
4 have, those kinds of discussions we do want to have in
5 this afternoon's session, along with your suggestions
6 of where else you see that there are challenges that
7 better enable use of digital mods. Hope that helps.

8 MS. UHLE: This is Jennifer Uhle from NEI.
9 So I think there's a lot of work that could be done in
10 digital I&C, so the industry has tried to prioritize
11 what pieces should be done first. So how about we go
12 back and just make sure that the current
13 prioritizations, you know that prioritization, and
14 that it's still consistent? Is that an acceptable
15 approach?

16 PARTICIPANT: Yes.

17 MS. GOVAN: Okay. With that, we are about
18 five minutes to break. We still have NEI's
19 presentation, so we are going to rearrange the
20 schedule just a little bit. We're going to take a
21 break, come back at 12:45 for the published agenda so
22 that members of the public and those on the line can
23 be back at the time that was stated.

24 We'll do the NEI presentation, opportunity
25 for public comment, and if necessary, come back and

1 revisit the schedule and talk about action.

2 MR. VAUGHN: We can do it later, but three
3 times you mentioned the whole change to BTP 7-19 is
4 going to be based on SECY 1800090. Is that those five
5 principles? Informed by? We haven't talked -- and
6 the RIS. RIS comes up, we need to talk about those
7 five principles, though. We read them a lot, had a
8 lot of discussion yesterday. I know we've already
9 talked about details, so there's value in making sure
10 that those five principles are well understood, and if
11 you have some concerns, we can hash them out. We can
12 do that after lunch.

13 MS. GOVAN: Is that part of your
14 presentation as well?

15 MR. VAUGHN: Well, it's hard to tell,
16 because it might be embedded in there, but we ran the
17 background slides, so we went through word by word and
18 circled, lined, and question mark --

19 MS. ZHANG: I think -- we didn't get an
20 opportunity for us to go through the background
21 slides.

22 MR. VAUGHN: We thought about doing it
23 right away, but we figured, Let's wait until the end,
24 but we ran out of time.

25 MR. BENNER: You probably remember this

1 from the January 31st meeting. Those are words, those
2 principles are words, and to the extent we spend a lot
3 of time trying to evaluate those words, I don't know
4 if that's valuable.

5 MS. UHLE: Unfortunately, the regs are
6 words too.

7 MR. BENNER: Yes, but the regs, we have to
8 live by. So those words have a lot inferred, so to
9 the extent -- and this is what I said on January 31st
10 -- we can have the discussion, but I'm going to start
11 with the same thing here. To the extent you see those
12 words and how we're applying them in a dialogue as
13 actually impeding something you're proposing, that
14 clearly has value.

15 To the extent we're trying to just have a
16 high-level discussion of those words in the absence of
17 it impacting something they're trying to do, I would
18 like to minimize that discussion.

19 MR. MORTON: We want to make sure we focus
20 on the words in the BTP, not within the --

21 (Simultaneous speaking.)

22 MR. VAUGHN: But again, you can over-
23 analysis words; I get that. But some of these words,
24 they're really -- they're concepts, and if these
25 concepts are the wrong way to look at everything

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1 changing, it could be going down the wrong path. It
2 really gets into this 01. If a possible CCF could
3 disable, then a diverse needs. Those whole absolute
4 01s, it's digital, but it's a threshold question.

5 Of course it can. There's a non-zero
6 number to it. If the question is, what's the
7 threshold, then when we talked about what the
8 threshold is, it's what's currently okay now with
9 analog RPS. Whatever that is, that is the threshold
10 we're reaching for, right? Maybe do better, but we
11 don't have to go above that, right?

12 If it could ever happen, then do this, is
13 the wrong way to look at it. So that's -- I want to
14 make sure there's a unity of effort and unity of --

15 MR. MORTON: We need the implementable
16 guidance for the SRM and SECY. It's the status of
17 interpretation of it, so that's why, to Eric's point,
18 we should focus more on the words of the BTP and
19 concerns with the implementation guidance rather than
20 trying to discuss the SECY or the SRM itself.

21 MR. VAUGHN: I agree.

22 MR. BENNER: And we don't want to belabor
23 the point, but if you read that whole thing, it also
24 says, If the defense in depth and diversity analysis
25 demonstrates that a CCF, when evaluated, da, da, da,

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1 can be reasonably mitigated through other means, a
2 diverse means that performs the same or different
3 function may not be it.

4 So that all of a sudden gets into the
5 defense in depth piece where maybe we could have put
6 those in a different order, but -- we're saying we
7 think we can do what you're trying to do, even with
8 those words. So if all of a sudden, you're trying to
9 do something, and I say, Aha, you can't do that
10 because of these words, I get we need to have that
11 dialogue.

12 MR. VAUGHN: Okay. Got it.

13 MS. GOVAN: So the floor will go to NEI at
14 12:45. You can use your time as you like, but we'll
15 be back at 12:45. Those on the line, thank you.
16 We'll be back at 12:45.

17 (Whereupon, the above-entitled matter
18 went off the record at 12:00 p.m. and resumed at
19 12:48 p.m.)

20 MS. GOVAN: Okay. Good afternoon on the
21 phone. I would want to resume this morning's
22 discussion. We left off --

23 MR. BENNER: This morning?

24 MS. GOVAN: What did I say?

25 MR. BENNER: You said this morning's

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1 discussion.

2 MS. GOVAN: Yes, okay. We're going to
3 start this afternoon's discussion with NEI's
4 presentation on proposals related to BTP 7-19. So
5 I'll just go ahead and turn it over to NEI. The
6 slides are posted on the meeting notice.

7 MR. VAUGHN: Appreciate it. Steve Vaughn,
8 NEI. So I'm going to walk through these and I'm sure
9 we've discussed some of these points already, but I'll
10 ask them to keep all that's added to these slides, so
11 please chime in as necessary.

12 All right. So let's go to the first one.
13 I got the purpose from the Integrate Action Plan, so
14 this shouldn't be anything you haven't seen before.
15 And, again, a high-level, the staff's thoughts and
16 views on it this morning. High level, make it risk-
17 informed, and a graded approach, so these sort of
18 solve at least the graded approach piece. So we'll
19 talk more in detail about this.

20 Slide three, please.

21 MR. RAHN: (Off mic comment)

22 MR. VAUGHN: So at first, we had RPS SFAS,
23 and then we went to the branch technical position and
24 saw that you had all this description of RPS, under
25 that is RPS and SFAS.

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1 MR. RAHN: Okay.

2 MR. VAUGHN: So then we just included
3 both.

4 MR. RAHN: As a shorthand for both RPS and
5 SFAS?

6 MR. VAUGHN: Because the BTP 7-19 notes
7 that, right?

8 MR. RAHN: The BTP is a little funky in
9 terms of protection systems, safety system, and all
10 those others, so that will be clarified, too. But
11 from your standpoint, we want to make sure you weren't
12 just referring to putting the rods in.

13 MR. VAUGHN: Correct, yes.

14 MR. RAHN: Okay.

15 MR. VAUGHN: Reactor trip and SFAS.

16 MR. RAHN: Okay.

17 MR. VAUGHN: It falls under RPS. This is
18 slide three. Here, you know, we don't need to spend
19 much time on the background. I think you've covered
20 a lot of the background already. One thing I will
21 point out in the second bullet, you know, as you know
22 there were revisions. From four all the way through
23 six had changed a lot. The biggest change we saw was
24 from Rev 5 and Rev 6 where a lot of guidance was added
25 from 2007 and 2012.

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1 And, you know, the fourth bullet is really
2 the key takeaway. After reporting of that validated
3 operator actions were eliminated, and this is where
4 you heard Warren mention about the large breaks for
5 LOCA, so I'm going to turn it over to Warren to key in
6 on that, that last bullet.

7 MR. ODESS-GILLETT: Yes, sure. So Rev 4,
8 for the large breaks, the Rev 4 allowed for crediting
9 leak-before-break detection in conjunction with
10 predefined operating procedures to basically say that
11 if you have that you really don't need to address, you
12 know, these large-break LOCAs concurrent with a CCF or
13 reactor protection system. That got removed, and we'd
14 like it back in.

15 DR. ALVARADO: You want this exact --

16 MR. ODESS-GILLETT: We can --

17 MR. MORTON: Conceptually for those
18 particular events.

19 MR. ODESS-GILLETT: Yes, go back to Rev 4
20 and what's in Rev 4 we'd like to be put back in Rev 8?

21 MS. ZHANG: So, actually, I had a question
22 about that. So for large-break LOCAs, typically
23 that's an event that's on the 10 to the minus 6,
24 right? So it's a rare event. These rare events, you
25 know, even just postulating the frequency of a rare

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1 event was based on expert judgment, so why do we worry
2 about these rare events, you know? We're more focused
3 on the consequence of such a rare event and then how
4 does the plant respond?

5 So if such a rare event were to happen and
6 you don't have your reactor protection system, what
7 would be the consequence?

8 MR. ODESS-GILLETT: Okay. So let me
9 clarify that. So first of all, you have the rare
10 event, ten to the minus six. Then you have the rare
11 event of the CCF of the protection system and you have
12 the rare event that you don't have really report break
13 detection, so you really are getting rarified. So I
14 think the concept is that, you know, at some point,
15 you have to be risk-informed to what degree. So do
16 you have to add a DAS to cope for large-break LOCA and
17 main steamline break because of the possibility of a
18 large-break LOCA concurrent with your CCF, concurrent
19 with (unintelligible). And so it's all about risk
20 informed.

21 MS. ZHANG: So, I mean, this is why we
22 want to talk about the risk informing a little bit
23 more. That's what we're going to explore internally
24 with our PRA folks. So we just want to hear you out
25 as far as what's your reasoning.

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1 MR. ODESS-GILLETT: Yes, we took the
2 comment. We saw it.

3 MR. BENNER: So I would say you're billing
4 that as risk informed, but those words there aren't
5 really about risk. It's about sort of mitigation. So
6 I don't care how we -- I think, conceptually, we want
7 to look at that and say if we took that out
8 inappropriate we're look at it.

9 MR. ODESS-GILLETT: Maybe Mark would like
10 to expand on that because, actually, Mark brought it
11 to my attention.

12 MR. BURZYNSKI: I would add that -- Mark
13 Burzynski here -- is that you have accepted that
14 solution in the past in some cases, so you can look at
15 all of the Eagle 21 mods that did a D3 analysis.
16 There were some that predated that. They used that
17 concept and did not require a diverse actuation, so
18 they credited the operator actions, leak before break,
19 and availability indication.

20 MR. BENNER: This is my complete
21 ignorance. After Rev 4, did someone propose that and
22 it was denied?

23 MR. ODESS-GILLETT: No, it was in Rev 4
24 and it got deleted for some reason.

25 MR. BENNER: Right. But just because it's

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1 deleted doesn't mean we would deny an application. So
2 I'm asking did this really have an impact on anyone or
3 did people say I'm just not going to try it?

4 MR. ODESS-GILLET: It did have an impact
5 because the issue that Rossnyev asked me not to bring
6 up, Oconee, the original Oconee solution was that and
7 the final accepted one was a DAS.

8 DR. ALVARADO: Let's not get into, like,
9 what happened and didn't happen. And this is --

10 MR. BENNER: She said for you not to bring
11 it up because then she was going to have to talk about
12 it.

13 DR. ALVARADO: Yes, exactly. So it goes
14 back to what I said earlier today. In ten years, you
15 have older staff. At that time, I'm not justifying,
16 well, maybe I am. So at the time the staff made those
17 requirements, which, by the way, everybody that worked
18 on that retired, and the guidance that we had at the
19 time made the staff, directed the staff's decision for
20 requiring that.

21 But, nevertheless, yes, in Oconee, they
22 did provide a manual operator action as a way to cope
23 with this event. And what the analysis show was that
24 they have some sort of time allocated. And if you
25 remember back, IEC 2, there used to be these 30-minute

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1 operator minimum time that was being proposed.
2 Actually, it came from IAEA at the time, but there was
3 all these proposals. So at the time, the guidance
4 that we were using, the staff was using, she was
5 using, made us reach that conclusion, which I
6 understand.

7 But I think now what Eric sort of
8 suggested -- hold on, hold on -- is that the current
9 version of the BTP 7-13 does allow for using manual
10 operator action, and we recognize that we haven't been
11 good at approving those kind of requests. But I don't
12 think, at this point, it will be denied.

13 MS. ZHANG: So correct me if I'm wrong,
14 Rossnyev, but we had a discussion on this about how
15 many minutes was the initial proposed manual action.
16 It was two minutes, so it was the sufficient
17 justification that enough time for the operator to
18 perform that action was in the two minutes. So it was
19 never a thing about crediting but how long, you know,
20 you needed that operator before --

21 MR. BURZYNSKI: I understand what you're
22 saying, but it was the same argument that was accepted
23 on so many earlier precedents with the same kind of
24 time frames.

25 MR. BENNER: Yes. So I don't know want to

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1 try to defend. You have a tangible situation where
2 this change in the guidance appears to have an impact
3 in the decision the staff made. I'm not here to
4 defend that or anything, but I think --

5 MR. MORTON: But you're interested in
6 hearing in terms of --

7 MR. BENNER: Yes, I just wanted that data
8 versus -- because sometimes we talk about, okay,
9 something was changed in the guidance and there's a
10 perception of what the change is. Here you're
11 proposing that this played a difference in this
12 licensing action, so I don't want to go any deeper
13 than that.

14 MR. BURZYNSKI: In this case, the guide
15 was changed after the decisions on Ocone.

16 MR. REBSTOCK: A related area on that,
17 though -- this is Paul Rebstock, the Office of
18 Research -- this is presented as if all these things
19 happening simultaneously is a rare event, and that
20 hinges -- one of the tasks of the assumptions in there
21 is that the CCF is being treated in some people's
22 minds, I think, or some people have the tendency to
23 think of a CCF as a random failure. The CCF isn't a
24 random failure. It's a design error that is always
25 there from the time to the system was built until the

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1 end of eternity. And it may or may not get triggered,
2 it may or may not occur, but it's always been there.
3 So it's not the same kind of a thing as a random
4 failure, like a pipe burst. We have to be careful
5 about how we talk about that. I just wanted to get
6 that on the record.

7 MR. ODESS-GILLETT: But I also want to get
8 on the record that it's also considered a beyond
9 design-basis event.

10 MR. REBSTOCK: Yes, there's plenty of
11 discussion for that.

12 MR. HERB: And, again, it gets back to the
13 terms of what's a CCF. And so we've never really come
14 to an agreement on that because I know the staff's
15 position at CCF is a design defect, and our position
16 is that CCF is a design defect that gets triggered.
17 And so we don't consider that a CCF that's latent that
18 may or may not be triggered sometime. What triggers
19 that may not be that guillotine thing. So, again, I
20 think they're still ultimately rare.

21 MR. REBSTOCK: There's probably a
22 discussion to be had.

23 DR. ALVARADO: Well, you can move that
24 discussion for the 2 p.m. Please bring it up.
25 There's going to be a change of the staff sitting here

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1 on the table.

2 MR. GEIER: I think one of the things that
3 I would submit -- Steve Geier, NEI -- is the intent
4 here, though, let's try to capture this so that it
5 becomes durable guidance and not subject to desires or
6 interpretation of a particular moment. But by being
7 silent on it, it makes it sound like it's not allowed,
8 whereas you may say, maybe it comes to you, you might,
9 but the next reviewer or ten years ago might not. So
10 let's get it, let's take an action. Let's try to get
11 it captured in the right way.

12 MR. HERB: Right. And we've had this
13 same, we've had this same discussion on what does D3
14 mean, you know. Does it mean a screen in per, does it
15 mean a nod? And so I think that, I think it's good we
16 brought this up because I think, in this revision, we
17 need to really nail those terms down so everybody
18 really understands what D3 means, what CCF means, what
19 it doesn't mean.

20 MS. ZHANG: I also would like to caution
21 that, you know, we're here talking from an I&C
22 perspective, but we also, we get a lot of the input as
23 far as whether, you know, the acceptance criteria has
24 been met by our reactor systems staff and whether the
25 manual operator action is appropriate from our human

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1 factors staff.

2 So us here saying whether an action is,
3 you know, is acceptable or not, I don't think we can
4 make that judgment without input.

5 MR. MORTON: Which is saying we understand
6 your comment, we can submit it. This is a
7 multidiscipline effort, so she said some of these
8 things go necessarily beyond the consideration
9 guidance.

10 MR. HERB: Right. And there's been recent
11 revisions, NUREG-0700, too, probably trying to
12 complicate this, as well. So you're right.

13 MR. VAUGHN: All right. So we'll move on.
14 Diversity is going to be under the umbrella of
15 defense-in-depth. One thing we threw out, though, and
16 this is more of a global comment, but just changing
17 the title. I know D3 has a historical piece to it.
18 There's a NUREG written on it, the idea of common
19 cause failure. We thought what we're really talking
20 about is reliability. We thought about even getting
21 rid of using the term D3, getting rid of the term CCF
22 here and talk about just reliability, whether it's
23 hardware or software. And it kind of changes the way
24 you think about stuff when you don't have to be
25 blocked into those terms.

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1 DR. ALVARADO: But this is not really what
2 reliability means, and that will create another
3 problem in terms of trying to define system
4 reliability and the different things that you really
5 need to consider to perform consistent reliability.
6 So it wasn't clear to us the idea behind and then,
7 like, change it for something that this evaluation is
8 not focused on. We're trying to evaluate diversity
9 and defense-in-depth, that you were maintaining
10 diversity and defense-in-depth, but the concept of
11 reliability, it's --

12 MR. MORTON: It's a whole different
13 science. And if we were in 50.59 space, I'd be
14 talking criteria, too, in terms of digital
15 reliability. But that's not really what the
16 Commission's direction was ensuring and verifying
17 protected, really the defense-in-depth apparatus of
18 your claim.

19 MS. ZHANG: So we understand the
20 consternation about the title right now. We are
21 considering changing the title. We are open to input
22 on the names, you know, what to call this thing.
23 Right now, we have some initial thoughts about just,
24 you know, calling it guidance for evaluation of common
25 cause failure in digital I&C systems, a broad title

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1 still using common cause failure because we're
2 focusing on, we're not focusing on single failures.
3 So reliability, you know, you bring single failures.
4 We don't want to evaluate that in this guidance,
5 right? So we don't want to overly-broaden the title
6 so that it confuses people, too.

7 MR. ODESS-GILLETT: So I think we're
8 thinking this digital reliability piece will play into
9 the 1.9 tools to determine the likelihood of CCF, more
10 so than maybe the overall --

11 MR. MORTON: So onething I wanted to ask
12 you, so you're suggesting more for that exception than
13 the entire document?

14 MR. ODESS-GILLETT: Maybe so.

15 DR. ALVARADO: Also, I mean, another thing
16 is, like, if we go to change this title too much, then
17 we have to see what are the implications in the
18 standard review plan because, I mean, like I know it's
19 administrative changes, but do --

20 MR. BENNER: Well, that's why we'd just
21 make it a reg guide.

22 MR. VAUGHN: And the background, it
23 doesn't really talk about because staff's presentation
24 earlier covered that.

25 MR. BENNER: And, again, we shorthand.

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1 Whatever it is, we just want to be clear about it and
2 we can work to make sure the language is clear
3 because, again, people shorthand it and then there can
4 be different interpretations. So I think we just want
5 to be crystal clear as to what box we're primarily
6 talking about.

7 MR. MORTON: Because, I think, generally
8 speaking, we're going to be using the phrase
9 protection system consistent with GDC 22, which
10 includes all of it. Just as kind of a heads up, it's
11 probably where we're going to go when referring to
12 what's applicable for the D3 sensors in particular.
13 And then everything else gets differentiated from the
14 protection systems.

15 MR. VAUGHN: Here's some comments on the
16 four-point position, Section 1.4 of BTP 7-19. I'm
17 going to hand it over to Ray and the industry team to
18 go over the first two. The third one is mine, so I'll
19 address that.

20 MR. HERB: Maybe I'll start, Ray, and you
21 can chime in? So the credit again, this is kind of
22 reiterating what I just said before is that, you know,
23 in 1.9 where you have your tools for assessing
24 likelihood of CCF, we want to credit defensive
25 measures and nonconcurrent triggers, so that's pretty

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1 much that point.

2 And I think we say it later on possibly,
3 but, you know, I know there's one place in the BTP 7-
4 19, and we'll get into it in the next slide but it's
5 related, is that I think BTP 7-19 restricts operator
6 action within the control room. And what we're
7 thinking, it's a design-basis event, why can't you use
8 beyond design-basis coping mechanisms similar to
9 what's available for FLEX and other ways of coping
10 with beyond design-basis event and why are you limited
11 to the main control room.

12 DR. ALVARADO: So I have a question with
13 this one, and it's the same question for the next
14 slide where you are mentioning the flags. And you
15 have to help us understand these because station
16 blackout, it's the analysis where the station blackout
17 was for a particular event, like loss of off-site
18 power and they have to do something. For flags, it's
19 also an external event and they have equipment to
20 address an external event. This analysis, it didn't
21 consider the failure of a system due to a software
22 CCF. So I'm just trying to understand how are you
23 proposing to use this --

24 MR. ODESS-GILLET: But those mechanisms
25 could be also used double purpose.

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1 DR. ALVARADO: But then you will have to
2 provide that analysis --

3 MR. ODESS-GILLETT: Of course, of course.

4 DR. ALVARADO: -- that shows not just --
5 so when I saw this, it was more like, oh, we have
6 FLEX, we don't have to do anything.

7 MR. ODESS-GILLETT: No, no, no, no.

8 MR. BENNER: This goes back to my argument
9 of -- Eric Benner, NRR, speaking -- functional
10 containment, right? I think we all want these
11 protection systems to be functional, but, to the
12 extent, when you do your overall analysis of, you
13 know, mitigation or consequences or whatever, whatever
14 is out there is out there. Whatever systems you have,
15 whatever analyses you have, whatever stuff you want
16 leveraged, you know, you want to bring to the table.
17 I don't think we're dismissing any of that out of
18 hand.

19 MR. ODESS-GILLETT: Well, my point is that
20 BTP 7-19 does do that, does restrict you.

21 MS. ZHANG: So I think Mark has a
22 question.

23 MR. BURZYNSKI: I was just going to make
24 that clarification that what we're commenting on is
25 BTP 7-19 has a restriction that is not imposed on

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1 other beyond design-basis events that only limit
2 manual operator actions to the control room.

3 MS. ZHANG: So I do have a question about,
4 when you say crediting station blackout, are you
5 crediting the analysis or are you crediting the
6 equipment?

7 MR. HERB: Equipment.

8 DR. ALVARADO: Okay.

9 MR. HERB: Because a part of that station
10 blackout, there's a lot of things that we do manually
11 outside to do that. And I think what we wanted to
12 state is that, I think, from this morning, we really
13 welcome the fact that you want to talk about defense-
14 in-depth, okay, because we think that there's lot of
15 things we can credit in defense-in-depth for those
16 events that are kind of beyond, like the 10 to the
17 minus 6 events, like the loop falls off. You really
18 are worried about how you mitigate that going forward.

19 And so whether or not the plant trips
20 right away or it trips manually, you still have to
21 mitigate those events outside. And so we want to be
22 able to credit not only that station blackout
23 equipment but the FLEX equipment and all that stuff.

24 And on the other end of it, we would like
25 to credit in defense-in-depth our highly-integrated

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1 control systems to say, you know, those systems are
2 pre-actions so that they prevent the plant from
3 getting to those AOOs and challenging those systems.
4 And so just like in the Wen-wear (phonetic) models,
5 those are levels of defense that prevent you from
6 going there. So you got to be able to say my number
7 of challenges to my protection systems goes away down
8 if I have a highly-reliable new digital protection
9 system, control system, and I ought to be able to
10 credit that both directions, kind of forwards and
11 backwards, and as part of that defenses-in-depth.

12 DR. ALVARADO: Yes, no, it was, at least
13 when I saw this, I noticed, like --

14 MR. HERB: So we didn't really, we
15 couldn't put all that under the --

16 DR. ALVARADO: -- when you have a station
17 blackout and flag, so it was --

18 MR. HERB: That was just an example, but
19 we were just kind of saying, you know, within each of
20 these submittals, we would like to credit as many
21 things as we can to say these are all our defense from
22 the defense-in-depth perspective. And so rather than
23 saying you have to assume it happens, maybe we can
24 presume that we have these defenses-in-depth that
25 maybe prevent, some of them prevent, some of them

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1 mitigate, you know, on both sides of it.

2 MR. GEIER: Part of the discussion is
3 these actions and plans have already been developed,
4 it's already been analyzed, and if you can sit, you
5 know, it's obvious it's got to be analyzed, you got to
6 sit there and make a case but that you're taking
7 credit for actions that are already implemented at the
8 station.

9 MS. ZHANG: Right. So one of the things
10 I would like, you know, because we talk about defense-
11 in-depth, but, if you look at the IEC standards, they
12 actually lay out the different layers of defense-in-
13 depths from the categorization of the functions down
14 to, you know, how the architecture is supposed to be
15 laid out. So it's a lot easier to say, well, if I
16 lose this layer of defense-in-depth, this is my other
17 layer. It's a lot harder in current plans, even in
18 the newer reactors were getting, you know, that layer
19 isn't so clear, layering isn't so clear.

20 MR. HERB: I think it's not so opaque
21 either. We still have separation criteria we can't,
22 like, you know, between the two. So there's still
23 definite layers between control and protection.

24 MR. MORTON: The safety case can make that
25 clear.

1 MR. HERB: Because right now the BTP cites
2 the four, four layers, without much granularity.

3 MR. MORTON: But we have a new layer we
4 just added with FLEX, right? That's another one on
5 top that wasn't there, predated the BTP and all that
6 other stuff.

7 MR. ODESS-GILLETT: You had one that you
8 wanted to talk to. A point? Did you have a point?

9 MR. VAUGHN: The third one is mine. We
10 kind of discussed it right before lunch, but a lot of
11 language that mentions that, if this could happen,
12 then do this. It's a threshold question. We should
13 look at could it happen at all or we assume that it
14 does happen, assume it does happen concurrent with
15 this. I'd like to get away from that just mind set
16 and look at, analyze for all the hazards. CCF is one
17 of them, software CCF is one of them, analyze, and you
18 get towards that threshold and you make decisions
19 based on what you find.

20 MR. BENNER: And I think, from a holistic
21 standpoint, I think we're open to that. I think some
22 of the concern when we see this is if, indeed, you're
23 going to try to come up with a discreet, you know,
24 likelihood of a software CCF, that might be a red
25 herring to get something that has data behind it to

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1 support. So if it's more the broader, hey, we need to
2 put that possibility of that happening in context as
3 to how we would get to a situation where it could be
4 a problem and even, if it is a problem, other
5 mitigative capabilities, I think we're fine with that
6 discussion.

7 MR. MOTT: Let me just ask 1:14:22. Your
8 failure system and per event and accident analysis
9 would go to per event when you demonstrate diversity
10 that you can have the other systems, diverse systems
11 actuate per event. And you're saying we want
12 something different than that?

13 MR. HERB: We want credible events, rather
14 than, like, incredible events. So I think, in the
15 simplest terms --

16 MR. MOTT: But with Chapter 15 events I
17 thought you said you don't want those, you don't want
18 go per event.

19 MR. HERB: Well, failure is not events.
20 I think we're talking about system failure.

21 MR. ODESS-GILLETT: We address that away
22 in saying some of those events you need to use a risk-
23 informed approach, as we were talking about with the
24 large breaks, you know. Just don't assume you got a
25 large break with a CCF. You know, you have other, you

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1 know, risk-informed approaches, like leak before
2 break, that you should really be able to take
3 advantage of. So it's not just boom, boom, boom,
4 every design-basis event is treated equally.

5 MS. ZHANG: So I think the point is that
6 for rare events, like the large-break LOCAs, they
7 would like to look at other factors when considering
8 CCF. I think that's what they're trying to get at.

9 MR. VAUGHN: It goes into the second part,
10 the process of likelihood and consequence. Well,
11 there's some that, you know, might have a high
12 likelihood, but, you know, the consequences are not
13 significant. Therefore, we're not going to dedicate
14 a lot of energy to it. I think we all agree, as a
15 threshold question, what level is acceptable.

16 MS. UHLE: This is Jennifer Uhle from NEI.
17 Deanna, you mentioned you got to talk to reactor
18 systems, and so if you talk to reactor systems and say
19 what is the consequence of not starting in the diesels
20 right away, assuming you didn't have any time for leak
21 before break, then you'll say that they'll give you
22 the answer that was (unintelligible) the answer would
23 be, well, then your analysis is not consistent. And
24 you could be over the calculated peak clad
25 temperature, and, you know, we're not sure if you're

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1 leaving 2200, and that would be the answer.

2 But at the same time, the digital group
3 has got to say but CCF is a beyond design-basis event,
4 look at the likelihood of this happening event with
5 the concurrent CCF and the more time that you have to
6 take the action with leak before break. So, you know,
7 we can't be, I would say, it's not appropriate for
8 there to be consideration of CCF as if it is a design-
9 basis consideration.

10 MS. ZHANG: So I think we need to get the
11 complete picture, not only from reactor systems but
12 also from our PRA folks, too. So we're going to look
13 at this in more detail.

14 MS. UHLE: I agree. But it's the
15 Commission direction that it has to be considered, but
16 it is not a design-basis, beyond design-basis event.
17 And that changes what you can credit and what you
18 can't.

19 MR. WATERS: It is beyond design-basis.
20 That's why we accepted best estimate as --

21 MS. UHLE: No, best estimate is the
22 requirement under 50.46, I mean, is allowed under
23 50.46 for the LOCA analysis. So best estimate has
24 been allowed since about 30 years ago or more.

25 MS. ZHANG: So, yes, we'll consider this

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1 further. But if we were to take the SR per, you know,
2 interpreting literally, it would drive us to consider
3 the large-break LOCA concurrent with a CCF because it
4 didn't give us an event likelihood type of --

5 MR. ODESS-GILLETT: So this is where I'm
6 struggling because BTP 7-19 Rev 4, which supposedly
7 implemented the policy, had this available to us.

8 MR. RAHN: I got a question. I don't
9 remember the detail. This is David Rahn. Sorry. I
10 don't remember the details in that Revision 4, but
11 what are we using it as crediting to do? We're not
12 crediting it to not analyze whether there's adequate
13 diversity. You're trying to use it as a credit for
14 there not being adequate diversity.

15 MS. ZHANG: No, I think it was for, if I
16 remember the section correctly, it was for
17 justification for not addressing the vulnerability.

18 MR. RAHN: I don't ever see how you can
19 not do adequate diversity analysis.

20 DR. ALVARADO: But they did it. It says
21 use manual operator action.

22 MR. RAHN: So in the process of doing that
23 diversity analysis, you would look at things that you
24 can credit.

25 MR. ODESS-GILLETT: Right. So for large-

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1 break LOCA, you would, yes, that would be part of your
2 analysis, but you say what are my coping mechanisms
3 that are available to me before we could take leak
4 before break as a coping mechanism so that we can have
5 adequate manual actuation.

6 (Simultaneous speaking.)

7 MR. RAHN: What you're looking for is
8 different ways of coping.

9 MR. ODESS-GILLETT: Bingo.

10 MR. RAHN: Okay.

11 MR. MOTT: In the criteria, you've got,
12 like, three options. One option is, obviously, if you
13 use reactor protection, use reactor trip, and that's
14 a certain (unintelligible) says in the criteria that
15 you need to provide equipment function. So that could
16 be emergency operation system. You could use that in
17 negative reactivity. But if there's also a Charlie to
18 it that says, okay, you do not provide a negative
19 reactivity, but do you have something else that also
20 can help the vulnerability, and that's what Rev 4
21 allows you to do is to look at them. And that's
22 removed, so now you're locked into trying to find some
23 way else to add in to negative reactivity.

24 MR. BENNER: And, again, I'm a manager so
25 I'm ignorant about the details. So this is Eric

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1 Benner again speaking. So just for my understanding,
2 so the leak before break, are you crediting it from
3 the standpoint of preventing the need for the reactor
4 protection system to operate -- let me finish -- or
5 giving you more time to take other actions, potential
6 manual actions or whatever, or both? And I don't even
7 really care what the answer is, but it's really just
8 an intellectual question because I think we will talk
9 with you about any of those. But the way it's being
10 talked about, I think it's both. I'm not even sure
11 which one is predominant. I think the part of giving
12 you more time to take manual actions is a much easier
13 sell because I will say our human factors folks get
14 antsy about really short times to do things.

15 MR. ODESS-GILLETT: So, Eric, if you have
16 to analyze large-break LOCA occurring concurrent with
17 a CCF of your reactor protection system, by
18 definition, you're going to have to add a DAS. You
19 can't get around it. However, if you can credit,
20 well, I can actually have leak-before-break detection
21 systems that could allow me to do those coping actions
22 in the interim, then I've coped.

23 MR. BENNER: Okay, okay, good. Thank you.
24 Again, it was just a clarification. Mainly the
25 second, and that I think is an easier sell as we talk

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1 to the different technical branches. I think.

2 MR. MORTON: It would really help to --
3 yes. Because as part of this update is, when we have
4 the actionable comments, perhaps helping us with a
5 basis for why it's an issue operationally and when
6 performing the D3, of the benefit of it, then it helps
7 us understand when it makes things --

8 MR. BENNER: It tells a better story. At
9 the end of a day, a D3 is analysis, but if it can tell
10 a good story that we can rely on to say this is safe,
11 I think that's the right answer.

12 MR. VAUGHN: Next slide. All right. We
13 had discussed this a little bit. A thought here was,
14 since CCF is a beyond design-basis event, we can
15 leverage other beyond design-basis strategies. FLEX
16 and B.5.b are two of them. This is only the situation
17 where you'd have time, obviously FLEX, but in B.5.b
18 you're going to need at least four hours to get it.
19 So we're looking long term, 8 to 12 hours, if that's
20 where your concern is. From an accident prevention
21 standpoint, you should be able to leverage these. The
22 ones that happen in an hour, of course you can't. But
23 it makes sense to use it.

24 MS. ZHANG: So one of the things that we
25 did discuss internally was 0.4 of the SRM, which

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1 talked about providing the manual controls and diverse
2 indication in the control room for safety-critical
3 functions. I was very explicit. This actual point
4 wasn't included in the info SECY as one of the ones
5 that we're, you know, clarifying because the staff and
6 OGC felt there was no clarification to be made. The
7 language was very, very specific.

8 So in this case, if we were to say, you
9 know, let's credit operator action outside the main
10 control room to address that particular point, it may
11 be a policy change.

12 MR. HERB: We're open to a policy change.

13 DR. ALVARADO: You know that takes longer.

14 (Simultaneous speaking.)

15 MR. HERB: For the longer term items, that
16 maybe -- for the short-term items, we do care about
17 schedule.

18 MR. VAUGHN: Section 1.7 and 1.8. 1.7 is
19 diverse means. I think we already talked about this
20 a little bit, but, again, crediting actions outside of
21 the main control room. I didn't --

22 MR. ODESS-GILLET: That was something
23 that was, that limitation was added after Revision 4.
24 So it used to be in the implementation guidance for
25 the policy.

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1 MR. VAUGHN: So no question on that? So
2 1.8, digital effects of CCF is failure to actuate and
3 spurious actuation. I think, actually, this links to
4 Ray's discussion about the what-if analysis. You
5 could what-if yourself to death on spurious
6 actuations, so we didn't know if there was a scope
7 limit there or potentially just limit the failures to
8 actuate. That would bound it.

9 MR. MORTON: So let me challenge you on
10 this particular point, especially in our advanced
11 reactor reviews where spurious actuation is clearly a
12 potential result of a failure of an SSE. So I would
13 simply ask you --

14 MR. HERB: Say it's early actuation,
15 right?

16 MR. MORTON: What do you mean by early
17 actuation? Versus late actuation? I mean, delayed
18 actuation because it's a control function.

19 MR. HERB: So you're saying that it's
20 both. You have those all --

21 MR. MORTON: I'm asking why you would not
22 think to consider a potential failure mode of a
23 digital system being spurious actuation.

24 MR. ODESS-GILLETT: Is it a CCF?

25 MR. MORTON: It could be the result of a

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1 CCF or not. But in terms of this discussion, for a
2 CCF.

3 MR. ODESS-GILLETT: If it's CCF, then
4 don't you need to postulate all four divisions
5 spuriously actuating? And that, to me, is way beyond,
6 you know, the scope of what the CCF analysis was
7 before.

8 MR. MOTT: I just want to say on 63.03,
9 it's 1994 (unintelligible) according to the SRP and
10 according to Technical Position 1997 it does state
11 (unintelligible) that you should postulate the worst
12 failure, so you could postulate things by just saying
13 actuation of all divisions versus all divisions not
14 actuation (unintelligible). But for the most part, we
15 just only look at it failing to actuate. I'm just
16 saying I just want to note that, if you're making that
17 policy change, we also have to go back and change
18 63.03, because the way it's actually written is to
19 postulate the worst case, the rarest cases, everything
20 --

21 MS. ZHANG: So we're looking at it per-
22 function basis, right? We're not saying all the
23 functions spuriously actuate completely in a four
24 division. We're just saying per functional basis, you
25 know, like the Stage 4 ADS valves in PMS. If those

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1 were to spuriously actuate, what be the consequence?
2 And, you know, it might be acceptable from an
3 analytical perspective, but I think Westinghouse did
4 put in a permissive in there that was separate from
5 the logic to mitigate or prevent such an event,
6 prevent such an event from occurring, to minimize that
7 event.

8 MS. UHLE: It was prevented from occurring
9 because, if you blow ADS 4, then (unintelligible).

10 MR. MOTT: Well, no, at full power, it
11 could stimulate a large-break LOCA.

12 MS. UHLE: No, I agree. But the
13 permissive was put in because of the economic impact.
14 If you were to blow ADS 4, it will (unintelligible)
15 it's a large break LOCA, it's a design issue.

16 MR. MOTT: Just remember (unintelligible)
17 staff's concern that ADS 4 would go, I think it was
18 also the (unintelligible) we're making changes that
19 (unintelligible).

20 MS. ZHANG: ADS 4 blowing is a large-break
21 LOCA. Right. And so the system is designed to
22 respond to a large-break LOCA. The permissive was
23 protection of the, again, of the cost of the plant
24 because you don't want to have this investment and
25 then have to clean up from ADS 4 blowing down.

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1 MR. MOTT: That's outside of the scope.

2 MS. ZHANG: This is Deanna. So we have
3 also seen a lot more integration between new reactor
4 designs where non-safety systems can control safety-
5 related equipment where sometimes it's not just
6 individual confluence but at a function level, and
7 it's usually not divisional. It could have some sort
8 of failsafe backup system, but it's still one
9 controller controlling at a time. And if that were to
10 spuriously actuate the safety function, you could, in
11 the EPR case, you could exceed your 10 CFR Part 100
12 limits.

13 So even in that case, for OL3, they remove
14 those functions from the non-safety control. So all
15 those, you know, you get into high integrated designs,
16 you have to consider what are the failure modes, maybe
17 more so than segregated designs.

18 MR. MORTON: Yes, I would say, not to
19 belabor this particular point too much, but this is
20 one of the comments, when we looked at it, we said
21 we're probably going to need some more technical basis
22 from industry to understand this as removing this
23 consideration from the BTP.

24 MR. ODESS-GILLETT: The other side of that
25 window is that the current wording is incredibly

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1 vague.

2 MR. HERB: We don't pretend it's crystal
3 clear.

4 MR. MORTON: We're okay with some spurious
5 actions, but I think we've heard in some of these
6 meetings half the train actuates, the other half does
7 not, you know. Those are kind of things that, like,
8 you know --

9 MS. ZHANG: Yes, we understand.

10 MR. HERB: -- become untenable.

11 MR. BENNER: Endless what-if analysis is
12 a real concern. So to the extent there is some amount
13 of this arena that needs to be part of the evaluation,
14 it seemed to have alignment on that. It's drawing a
15 much more objective box over what goes into that part
16 of the analysis. Regarding high-level message,
17 anything we do to have better objectivity on these,
18 well, how much is this, we want that and definitely
19 think you can probably help us clarify language that
20 a reader on the industry side would interpret.

21 MR. MORTON: So I think in the example
22 Deanna is referring to, especially in EPR, one of the
23 functions they actually removed from the ability to
24 control from the non-safety related HMI was the MSID
25 --

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1 MS. ZHANG: Group function.

2 MR. MORTON: Group function control.

3 Because of the issue that all the spurious actuations
4 from the non-safety HMI could be bounded by the
5 plant's Chapter 15 analysis with the exception of that
6 particular function.

7 MS. ZHANG: That function and main steam
8 relief train.

9 MR. MORTON: Right. So we were
10 principally looking, as I said, for the ones that are
11 a safety issue. We're not saying you got to project
12 the entire universe but the ones that are a safety
13 issue and why is that and have those addressed.

14 MR. HERB: And we hear that. We just want
15 some, I think we want some detail around that, just to
16 bound it.

17 MR. MORTON: That's fine. And we
18 understand the wording is not clear, yes.

19 MR. VAUGHN: Let's move on to design
20 attributes among a consideration of CCF, I think we
21 added the word "further" to it. So Warren and I think
22 Mark added most of these. I'll turn it over to Warren
23 and Mark to go through.

24 MR. ODESS-GILLET: Yes, I can address the
25 first two. You know, we'd like to be able to present

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1 a safety case in which, if we demonstrate that the
2 watchdog timer is independent of a software CCF and
3 puts the system in a safe state, that that would be a
4 defensive measure such that you don't have to consider
5 the system having to cope with a CCF concurrent with
6 a design-basis event, that you've covered it with your
7 defensive measures. I mean, we have to present the
8 safety case, but the idea is that, you know, there's
9 other defensive measures we can present to you in
10 addition to diversity and a hundred percent testing.

11 DR. ALVARADO: So one question that I have
12 about it is that, obviously, you provide three
13 examples. Are you looking for something, like, listed
14 or --

15 MR. MORTON: No, similar to the risk, we
16 have a listing of design features and attributes.

17 DR. ALVARADO: But you don't want us to be
18 limit because I think that's where we got in trouble
19 with Section 1.9 by limiting diversity and a hundred
20 percent. Just spelling it out, if you do this then
21 this, I don't think that's what you're --

22 MR. ODESS-GILLETT: No, but the BTP, I
23 think, should say if the applicant can present
24 defensive measures that would adequately address, you
25 know, CCF to the point that we don't need to then

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1 postulate that that CCF is going to be, needs to cope,
2 the plant needs to cope with that CCF concurrent with
3 the design-basis event because --

4 MR. GEIER: You could eliminate it from
5 further consideration.

6 MR. ODESS-GILLETT: Yes, because if it
7 happens you got it, you know it. It's not something
8 hidden.

9 MR. GEIER: This is where the third pass
10 comes in --

11 MS. ZHANG: I'm trying to understand --

12 MR. CARTE: A quick question. Norbert
13 Carte, NRC. So conduct of failsafe, I mean, okay,
14 fine, that's why you would consider that a defense
15 measure, and that works for reactor trip. It doesn't
16 really work for safety injection or containment spray.
17 But I'm wondering why you don't think that is a
18 diverse means of accomplishing the function.

19 MR. ODESS-GILLETT: I don't understand the
20 second half of the question.

21 MR. MORTON: When you say diverse
22 function, what are you referring to in what Warren
23 said?

24 MR. CARTE: Well, he's asking about, well,
25 whether EPS is partially handling it. Well, if you

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1 have a watchdog timer and it fails to a safe state,
2 presumably a reactor trip at that same stage is easy
3 to say it's a reactor trip, and I assume that's what
4 you're meaning. But the safe state for safety
5 injection, I'm not sure what that would be and how you
6 would credit that. What you really want to have,
7 automatic safety injection on a watchdog timer.

8 MR. ODESS-GILLETT: Well, you can credit
9 it from the point of view of enunciation in that it's
10 a known, you'll know that it exists before you need
11 the system.

12 MR. HERB: That's right.

13 MR. MORTON: So Norbert is raising a point
14 I was going to raise, which is currently in Section
15 1.9 you have one design technique that helps you
16 prevent the CCF from affecting multiple channel
17 diversity. The other one is intended to eliminate the
18 potential cause of the CCF, which is potential design
19 defect within the device or widget.

20 When you're talking sort of a global
21 concept of defensive measures, you referenced watchdog
22 timers, which isn't really, it's coping with the
23 effects of the failure. The nonconcurrent triggers is
24 kind of on a different ballpark. If we go to open
25 that door, there would have to be some significant

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1 sort of alignment on what specific types of measures
2 we're referring to and what application would they be
3 applied to because Norbert is referring to what's a
4 failsafe state for a safety injection, and you're
5 saying, well, not to inject erroneously. Okay. Well,
6 we have to distinguish that from watchdog timers.
7 That's a whole different application. That's why
8 we're --

9 MR. HERB: It would tell you that you had
10 a failure of your safety injection system, it was no
11 longer going to function, and then you could take
12 actions at that time, which may be to shut the plant
13 down before because you don't have to wait until the
14 accident happens to, like, see that you had a common-
15 cause failure. You're going to prevent that from
16 happening. And that's what we're trying to say is
17 that sometimes these things are coping measures ahead
18 of time rather than after the fact.

19 And so you're right. They need to be
20 grouped up into --

21 MR. MORTON: We need different bins for
22 what we're looking for.

23 MR. HERB: -- these are coping, these are,
24 you know -- you're right.

25 MR. MORTON: Because if this is going to

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1 be part of a defense-in-depth analysis overall and
2 you're doing a B3 in this piece and you're doing
3 Section 1.9 in this piece, then we need to understand
4 how you would approach doing that. So we would need
5 some input on how you would bin those different types
6 of measures.

7 MS. ZHANG: Yes. And we're trying to
8 understand whether this is for A1 or --

9 MR. HERB: This is everything in the LAR.

10 MR. ODESS-GILLETT: I mean, you could use
11 it for A2, B1, B2, but we want to apply it to A1.

12 MR. HERB: The risk allows you to do that.

13 MR. BENNER: Say we use it for everything,
14 I'm saying that, for this BTP 7-19, our understanding
15 is that that's the stuff inside the LAR. And so that
16 would come to you for prior approval before we did it
17 anyway, so you would get a buy-in and approval process
18 for that piece to be able to see the veracity of our
19 --

20 MR. HERB: In the individual law.

21 MS. ZHANG: So for nonconcurrent triggers,
22 we typically see that for different systems,
23 nonconcurrent triggers for different systems you would
24 credit that. We haven't seen and really looked at
25 within a system.

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1 MR. HERB: Well, we could say is you have
2 four independent channels, you can still credit
3 nonconcurrent triggers, I think, in those, too.

4 MR. MORTON: We sort of generally open a
5 door for that with the risk where, if you make an
6 example of a model and supporting systems for four
7 independent safety-related diesels, and if there's no
8 digital connectivity between each channel, they're all
9 environmentally air-tight, water-tight, you know, if
10 you're maintaining your independence requirements per
11 603 or whatever it is, then you can feasibly make an
12 argument for denying the current triggers. There's no
13 common piece between them, other than the fact that
14 they're the same device.

15 MR. HERB: And you can make those same
16 arguments, and you have to get to the technical
17 details of it. And we're not going to get it out in
18 this meeting here, but I think you can make those
19 similar arguments that will be acceptable to the staff
20 and we're saying we would like to have that option.
21 It's another one of the paths to go down and say we're
22 not necessarily eliminating the CCF and trigger, but
23 we're eliminating that they happen at the same time.
24 And if you have a properly enunciated system, you'll
25 know it when those individual failures happen and they

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1 shouldn't happen at such a frequency that they happen
2 all simultaneously. And even if they do, you still
3 put the plant in a safe state before you have your AOO
4 or your accident or whatever that you have to use your
5 system to respond to that.

6 MR. MORTON: Now, one thing I will caution
7 because we couldn't get it to --

8 MR. HERB: There's a lot of pieces that go
9 into that, you know.

10 MR. MORTON: There's another piece, too,
11 and we couldn't get into the risk because the risk is
12 technically a licensing document or a clinical
13 document. Here the question we'd ask industry is how
14 many defensive features are enough? Because it
15 wouldn't necessarily be, well, I just do nonconcurrent
16 triggers and I'm done.

17 MR. HERB: There you go, there you go. So
18 that's --

19 MR. MORTON: So that's something we would
20 need to find within this group --

21 MR. HERB: That space between zero and
22 one, you know. Where do we end up landing? What's
23 enough? And so that's a big uncertainty piece that
24 gets into how much is this going to cost for you to
25 review it, for us to design it, and when do we know

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1 when to stop, when is good enough?

2 And so I don't know if we can get there on
3 this piece, but we can at least introduce the
4 possibility we can get there. And then some of that
5 stuff is negotiated in the pre-application meetings
6 ahead of time. So we know we can float this to you
7 and we say, you know, we have a system, you may be
8 familiar with it, I'm putting in a common queue system
9 and, in Vogtle 3 and 4, we're taking credit for self-
10 testing and diagnostics. And there is not a single
11 failure of that system. That essentially is, we treat
12 it in regulatory space like it's a passive protection
13 system, but, in reality, it is very active and it will
14 tell us instantly, long before we get into
15 surveillance testing to find an error, that the system
16 cannot perform its function. And so if we can
17 determine within a second of when it's not going to
18 perform its function, then we can certainly make the
19 argument it will happen before we need it to be
20 demanded.

21 MR. JARRETT: Yes, this is Ron Jarrett.
22 I'd just like to pile on to a great comment, as some
23 that's had a digital reactor protection systems for
24 almost 30 years, from a point of safety, and I'm
25 talking about getting plants to do digital RPS

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1 upgrades. That is a key benefit. You're not waiting
2 until the next surveillance to find that you've had a
3 failure there for three months. You know instantly
4 that, hey, I've got a problem, I'm in my tech specs,
5 I've got to do something about it.

6 So from a safety standpoint and getting
7 industry to upgrade their analog RPS, which there's a
8 large majority out there that are staying in analog
9 because they don't want to take home this risk. So
10 from a safety standpoint, I think we're increasing
11 safety, and any barriers that are low probability we
12 need to take into consideration and see if we can
13 alleviate or further define those areas.

14 MR. BENNER: Yes. So you're saying
15 there's a reduced duration/chance of latent failures.

16 MR. HERB: Yes. Because they --

17 MR. BENNER: And we should rely on that
18 somehow.

19 MR. HERB: Yes. And we ought to be able
20 to credit that as part of our story going forward to
21 say, you know what, our chances of having that latent
22 failure that shows exactly when you need that system
23 to demand is so minuscule that I think that we can say
24 it's somewhere in the middle, that it's sufficient.
25 Then you don't have to consider it. We have

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1 considered it, but we now have a system that is self-
2 aware and is going to tell us when they're doing fine.
3 And that's how you can get to that nonconcurrent
4 trigger. Concurrency now is, if you assume it is a
5 analog system, is between that three-month test period
6 or between that six-month test period that you have to
7 be able to identify you have that problem. But if a
8 system is self-aware and it's telling you, maybe that
9 concurrency is, you know, you can credit one second,
10 ten seconds, and it's not concurrent, right?

11 MS. ZHANG: I think we just need to know
12 more basis on the nonconcurrent triggers within a
13 system because we, you know, we've interacted with
14 other industries where, for example, in the airline
15 industry, they did have a triple redundant system
16 that, you know, they did a lot of testing, put all
17 the, you know, eggs in one basket. And it ran fine
18 for, I think, ten years. And then it was a timing
19 trigger that --

20 MR. MORTON: Well, we're not proposing
21 putting in the Boeing systems into our plants.

22 MS. ZHANG: But we're just saying, you
23 know, we need to understand the basis.

24 MR. VAUGHN: So the key thing here, and we
25 already discussed it with the DAS, but the whole point

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1 here, you know, adding a DAS can add flexibility to
2 the system, and there could be some unintended
3 consequences in doing that.

4 So the next slide. I think we've already
5 discussed these, as well. All right. The
6 conclusions, wrap it up. A general statement, more
7 risk informed, varied approach. Yes, and I don't have
8 anything else. Yes, we're out of time. But I'll open
9 it up to Steve or anyone else who wants to make
10 comments.

11 MR. HERB: I think we're just asking for
12 additional flexibility in doing this piece to be able
13 to credit the capability, the digital capabilities of
14 these systems. I think the thought that a CCF is
15 there, it's light and you have to assume it happens
16 really depends on the hardware you're planning to put
17 in rather than an assumption that it has to be
18 considered. In some cases, it probably has to be
19 considered, but in other cases we can say, we could
20 probably make a good technical argument that we don't
21 have to consider it in all cases. That's all. That's
22 all we're saying.

23 And, again, if we're just talking about
24 this in the LAR space, I think we can easily make that
25 argument early on in the presubmittal phase so that we

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1 can say, yes, we can get reasonable assurances that
2 you can agree with us up-front.

3 MS. ZHANG: So in terms of applicability,
4 I think we've talked about this before, even for these
5 A1 systems, for the proposals, are we saying this is
6 only for a LAR or are we saying this is for design
7 certification?

8 MR. ODESS-GILLETT: Saying it's for A1
9 systems.

10 MR. HERB: A1 systems. Well, I don't know
11 because you all have proposed this is just with LAR
12 space, but I don't really know --

13 DR. ALVARADO: Why wouldn't it apply to an
14 A2 system, too?

15 MR. HERB: Well, it would apply to
16 anything really in LAR space.

17 DR. ALVARADO: Well, if you're coming for
18 an amendment --

19 MR. ODESS-GILLETT: Well, then the BTP, we
20 already discussed that, too, that, you know, that
21 analysis should not change because it went into a LAR.

22 DR. ALVARADO: Right.

23 MR. ODESS-GILLETT: You know, we would be
24 consistent with this.

25 DR. ALVARADO: Right, right, exactly.

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1 MR. BENNER: For the operating fleet.

2 MR. BENNER: Yes, for the operating fleet
3 or for both.

4 MR. BENNER: For an integrated analysis
5 for a new reactor design.

6 MR. HERB: I'm sorry. I did bring up
7 Vogtle 3 and 4, but I was really talking about the
8 operating fleet because we do, that's one of the
9 capabilities we want to implement when we bring that
10 in. I think Ron talked about it, too. We want to
11 take advantage of those digital capabilities, and it
12 just happened to be coincidentally they were doing it
13 at Vogtle 3 and 4, which is new plant space. But we
14 want those same abilities.

15 MS. ZHANG: Yes. But from a hearing --
16 sorry. You know, hearing from Ron, it's a comparison,
17 right? To the existing analog systems. There's not
18 such a comparison to be made when you're putting a new
19 design in because you're starting from scratch, right?

20 MR. HERB: You're right.

21 MS. GOVAN: Okay. With that, we're going
22 to open it up to members of the public. We've had a
23 lively discussion with industry, so now is the
24 opportunity for members of the public to ask questions
25 of the NRC staff. So we're going to open it up to the

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1 room and on the line. If any members of the public
2 have a comment or question, now is your time.

3 MS. GOVAN: Okay. And with that, also we
4 did have one last item on the agenda. It was action
5 items and schedule. I know we talked about the first
6 part of the schedule and adding another meeting
7 between the April and June timeframe. Was there any
8 additional comments you all wanted to provide on the
9 schedule or anything the staff wanted to --

10 MR. MORTON: Yeah.

11 MS. GOVAN: Okay. Go right ahead.

12 MR. MORTON: Wendell Morton, NRC. And Ros
13 kind of alluded to this earlier. For whatever
14 meeting, the timeframe we scheduled between now and
15 June, follow-up conversation based upon some of the
16 questions we asked the, asked for the industry,
17 including some more clarification on these comments,
18 too, we would like to have those pretty much fleshed
19 out by that meeting in a similar timeframe so we have
20 some time to, like two weeks beforehand, so we have
21 some time to look at it and make decisions about it
22 and things like that. So --

23 MR. ODESS-GILLETT: So have we captured
24 these?

25 MS. GOVAN: The meeting is being

1 transcribed, so everything is captured.

2 MR. ODESS-GILLET: Okay. Very good.

3 DR. ALVARADO: Well, but let them -- I
4 want to ask some -- because I think I hear Ray saying
5 like June is not a very good target --

6 MR. HERB: Well --

7 DR. ALVARADO: So what I'm hearing now is
8 like we want to have comments or proposals for new
9 between April and June so we can meet between April
10 and June and get everything due. So I think the
11 intent is to move the June date so we have more time
12 --

13 (Simultaneous speaking.)

14 MR. HERB: That's what I heard.

15 DR. ALVARADO: Yeah, so I'm trying to
16 understand.

17 MR. HERB: We talked about that during
18 lunch. So let Steve about it.

19 MR. GEIER: Yeah, Steve Geier.

20 (Laughter.)

21 (Simultaneous speaking.)

22 MR. GEIER: So, I mean, we definitely want
23 to stay on an aggressive schedule. You know, I think
24 the challenge is, is if we, is to buy like incremental
25 type, you know, I mean, that becomes a timing thing.

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1 So one of the things I think that we'd be interested
2 in is maybe scheduling some more targeted, you know,
3 still a public meeting to kind of address the whole
4 document but some maybe targeted topics --

5 (Simultaneous speaking.)

6 MR. GEIER: We could do that via webinar
7 or via --

8 MR. MORTON: Much more final discussions
9 --

10 MR. GEIER: Yeah, we'd even be open to,
11 you know, scheduling a few weekly teleconferences --

12 MR. MORTON: Yeah, we did that with the --

13 MR. GEIER: -- or webinars. We've done
14 that before with success.

15 And if you do that, then you're only
16 hitting some very targeted, you know, sections, and
17 then maybe, you know, early June timeframe try to look
18 for, you know, a full day, day and a half type
19 workshop type thing to really sit down and roll our
20 sleeves up.

21 DR. ALVARADO: Okay. Just wanted to be
22 sure.

23 MS. GOVAN: To your point then, we are
24 pushing a final product in June on to August timeframe
25 at this point, because for every interaction we have

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1 to have, the staff has to read, review, and gain
2 consensus and then come to the meeting --

3 MR. GEIER: I mean, we, obviously, we've
4 got, you know, our SMEs that we need to make sure we
5 get engaged. There's a lot of industry activities
6 going. I think we can support that type of a
7 interaction on a more routine, you know, kind of
8 incremental basis but still targeted towards come into
9 alignment, you know, sometime late June, July
10 timeframe.

11 MR. MORTON: Yeah, that's fine.

12 DR. ALVARADO: No, I just wanted to be
13 sure, because you keep talking between April and June.
14 And I said wow --

15 (Laughter.)

16 MR. HERB: Well, I just didn't want our
17 industry feedback to come in public comment space. I
18 would rather have us provide the comment ahead of that
19 time. I also wasn't sure if there was enough time to
20 do all that considering how long it does take --

21 MR. GEIER: It definitely would be very
22 valuable to have these interactions before the final
23 draft. And I think that would basically streamline
24 the -- you know, not to say that you're not going to
25 get any comments because, you know, there's always

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1 comments. But I think the big hitters should be
2 addressed. And we should have alignment before you go
3 forward with that final draft.

4 MR. WATERS: Steve, so you mentioned
5 having a workshop in June. Would industry be willing
6 to comment on more of a specific hypothetical
7 figuration and a base plant model to see how this
8 really applies and --

9 MR. GEIER: By doing this incremental
10 approach, one of the things we could do is rather than
11 wait and give you input on everything that we're going
12 to give you input on, we could give you, here is a
13 section. Here are some things on defensive measures,
14 for example.

15 MR. WATERS: Well, no, I'm talking more of
16 part of what those presentations have in context to
17 what we're agreeing to, what we're changing. What
18 does it really mean? How will it play out in the
19 review?

20 I mean, we had workshops in RIS, which was
21 very helpful. I was just trying to understand is that
22 --

23 MR. GEIER: You mean workshops after it's
24 issued to --

25 (Simultaneous speaking.)

1 MR. WATERS: -- RIS and have to do the
2 upgrade.

3 MR. GEIER: Okay.

4 (Simultaneous speaking.)

5 MR. MORTON: -- and then per the draft or
6 per the agreed upon wording. And then as a group we
7 sat down and discussed it, the ins and outs and things
8 of that nature. And that informed the draft. That's
9 what Mike is referring to.

10 That's kind of what we're putting out
11 there is, if you're interested in doing that, we can
12 support that, too, but the timeframe of the schedule
13 changes, including some of the --

14 (Simultaneous speaking.)

15 MR. HERB: Right, because you all, I think
16 you all are proposing a new framework almost a little
17 bit with this graded approach just like that. So I
18 think, you know, somebody has to go first, propose the
19 new framework and then somebody has some comments.
20 And we just need to get started on that. And I'm
21 afraid that I know how things go really slow that we
22 just, we need time --

23 MR. GEIER: There's a little difference --

24 MR. HERB: -- or maybe we just need to
25 plan it better.

1 MR. GEIER: There's a little difference
2 with this because the RIS is really coming up with a
3 brand new kind of process. Here we're, you know,
4 there's a couple new concepts we're putting in, but
5 the overall document is the same. We're trying to
6 basically make it more effective and usable.

7 MR. WATERS: That's true. Some of these
8 sections are brand new to us. That's --

9 MR. GEIER: Yeah, so, if we do a workshop,
10 you know, my suggestion would be let's pick a topic
11 that's defensive measures or that third path of
12 additional design attributes and go after that, maybe
13 one on graded approach. But we don't necessarily have
14 to look at the, everything else that's in there.

15 MS. GOVAN: Something for us to think
16 about? Yes?

17 MR. VAUGHN: We should using the NRC or
18 the industry in a prioritized sections, you know, what
19 sections are we going to look at first, you know.

20 MS. GOVAN: Well, that's the approach
21 we're going to take. We probably --

22 MR. MORTON: We need to talk about that --

23 MR. HERB: -- because maybe you need a
24 framework before you divide it up in sections, because
25 the sections may change, right. So --

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1 (Simultaneous speaking.)

2 MR. MORTON: Some require more of a
3 conceptual discussion and some are probably more
4 simple and straightforward.

5 MR. HERB: Yeah.

6 MR. MORTON: So you guys need time to
7 write and we need time to think.

8 MS. GOVAN: So, with that, I'm going to
9 turn it over to Eric for closing remarks.

10 (Laughter.)

11 (Simultaneous speaking.)

12 MR. BENNER: I'm glad we achieved such
13 good alignment today --

14 (Laughter.)

15 MR. BENNER: -- because I did. I think
16 this is, this was I think for me, coming in sort of
17 late to the RIS, one of the benefits of, I felt that,
18 right, there are areas where maybe there's a
19 fundamental disagreement. And then there are areas
20 where there is just, hey, things could be interpreted
21 in different ways and we want to lock that down.

22 And I felt like on this document there's
23 the same, some of the same things going on. So I
24 think job one is get alignment, you know, conceptually
25 or not. I mean, if there's a conceptual disagreement,

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1 we know that we can try to work on it or we can agree
2 to disagree. I didn't hear any on their face
3 conceptual disagreements. So I think that's a
4 positive, right.

5 We all know the devil's in the details and
6 people get wrapped up on language. So to say it's
7 just getting the words on the paper should no way be
8 interpreted as there isn't some real work to do,
9 because getting those words in a way where there's
10 enough clarity but enough flexibility, that's hard.

11 So let's -- I think the segmentation of
12 it, that, you know, somehow we cut this BTP into
13 functional pieces, and we try to do short-term focus
14 deep dive on those functional areas to get them right,
15 and then have a checkpoint along the way where we put
16 the thing all together all on paper and put eyes on it
17 to say, yeah, does this now hang together the way we
18 thought it would, I think that's a great idea to
19 continue to make progress.

20 Like Wendell said, right, getting it right
21 is more important than the schedule. The schedule is
22 still very important. So that means getting it right
23 is very, very important. So I get you're busy. We're
24 busy, too. Right.

25 I keep making the point that in the

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1 absence of these products being used, right, the NRC
2 is getting squeezed on resources overall. So, you
3 know, we're doing our fiscal year 2021 budget now.
4 And there's questions of do you need all these, you
5 know, resources for additional I&C. What applications
6 will you have in house at that time, right?

7 And I make what I think are rational cases
8 for the resources we need. But at some point, I get
9 that there's planning. I get that, you know,
10 certainty changes over time.

11 But at some point, just like we do seem to
12 have with the RIS, I need some sort of demonstration
13 that the investments we've made in ISG 06 and the
14 investment we're making in this are going to bear
15 fruit.

16 And it can be future fruit, right. I'm
17 not saying I need for there to be a pre-application
18 meeting to say, but to the extent there becomes more
19 certainty as to when we're actually going to see
20 utilization of the ISG and the BTP, that helps, you
21 know, a lot for us to keep investing energy into, you
22 know, making this whole framework better.

23 Turn it over to NEI if they want to make
24 any closing remarks.

25 MR. GEIER: Yeah, I think this was very

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1 valuable. And I think it was kind of just a cold read
2 of the slides. There were some things that jumped out
3 at us.

4 This candid discussion I think was very
5 valuable so we kind of understand where you're coming
6 from and where there's flexibility. And I think we
7 were able to get our concepts and things on the table
8 and have that candid discussion so we kind of
9 understand each other. And that's a big thing for
10 moving forward.

11 You know, obviously, as you said, we're
12 all busy. But I think we can manage it. And I
13 certainly recommend we continue on that aggressive
14 schedule.

15 I do know, you know, we're hearing that
16 there's fleets out there that are ready to move and
17 ready to make decisions. And they need this clarified
18 to be able to support those decisions so that CNOs can
19 feel comfortable if they're going to make, you know,
20 major investment decisions, that if they've got a
21 clear path going forward, you know, efficiently and
22 with much more certainty than I think they're feeling
23 today.

24 So it's an important, very important
25 effort. And I think we've made good strides today.

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1 So thanks.

2 MS. GOVAN: So we ended at exactly 2:00.
3 I'm going to turn it over to Jason Paige and Ken Mott
4 for the MP4B discussion.

5 (Whereupon, the above-entitled matter went
6 off the record at 2:00 p.m. and resumed at 2:06 p.m.)

7 MR. PAIGE: All right. Good afternoon.
8 Welcome back. Hopefully, you saved some energy for
9 the second portion of the meeting.

10 So this is, the second purpose of the
11 meeting is to discuss real world challenges. And this
12 discussion will help support the staff's completion of
13 the strategic assessment that they're completing under
14 the MP4B activities in the integrated action plan.

15 Ken is the team lead for MP4B. So I'll
16 turn it over to Ken.

17 MR. MOTT: How you doing?

18 MR. PAIGE: I'm sorry. One other thing,
19 there is a presentation, if you haven't received a
20 copy. And it's also, for people that are
21 participating on the phone, that presentation is also
22 attached to the meeting notes. Sorry, Ken.

23 KEN: Okay. That's all right. I know
24 we're short on time. Does Eric or anyone want to make
25 any opening remarks or just move forward into the

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1 agenda?

2 MR. BENNER: Sure. You know, we, the last
3 however many hours, five hours plus, were in some ways
4 sort of deep dive. We talked. We need to go even
5 deeper.

6 But, again, that was what we see as a
7 quasi-tactical improvement, right. We heard. We've
8 talked. And apparently the next tactical barrier was
9 like resolving some of these issues with the BTP. So
10 that was a great discussion. As part of that
11 discussion, we heard from some stakeholders of like,
12 hey, well, why not a reg guide.

13 And so I think that sort of sets the stage
14 for some of what this afternoon's discussion is about.
15 We have all had nose to the grindstone, dealing with
16 top priorities, like trying to deal with the issues on
17 the ground.

18 And the IAP has always had this capstone
19 to say at some point you need to step back and take a
20 look at the big picture and say sort of both what's
21 left to do and did you sort of, to miss something.

22 So I think this concept of, you know,
23 we're doing guidance updates in a small piece part,
24 but we're not necessarily stepping back and making
25 sure that there's really good clarity on what is a

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1 licensee expected to do, what is the staff --

2 So some of that can play out here I think
3 to do some of that step back that, you know, maybe,
4 you know, yeah, okay, maybe we get the BTP really good
5 and we nurture it with some amount of training and
6 workshops about it and that's good enough.

7 But maybe given some of what I heard on
8 the phone, right, at some point that's still a band-
9 aid. And there needs to be, you know, clear, explicit
10 guidance to industry of what an application should
11 look like and a reg guide for that.

12 So this is an opportunity hopefully. You
13 know, we're just weighing the details. So hopefully
14 people can disconnect and try to step back a little to
15 start saying while we're still working on the details,
16 let's have a little more big picture discussion of
17 what the ultimate future looks like for the digital
18 I&C framework.

19 So, with that, again, I'll turn it over to
20 industry counterparts to see if they want to say
21 anything.

22 MR. GEIER: As we talked about -- Steve
23 Geier, NEI. As we talked about in the first part, you
24 know, we have been kind of involved in the details,
25 you know, over the past, particularly couple years.

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1 And I think stepping back, you know, we really got
2 into this I think three years ago.

3 And I always think of my colleague, John
4 Connelly from Exelon, had a chart that had kind of,
5 you know, a whole flowchart of all the different
6 regulations and everything that applies. And you
7 think of what that means to an engineer or a licensing
8 engineer looking at that saying, okay, you know, how
9 do I design my digital system and what rules apply to
10 it. You know, how can we streamline it and make it
11 simpler?

12 Make it clearer I think is the big thing
13 so that, you know, it gives the, you know, the
14 designers really a clear set of rules so they can
15 efficiently design their system and ensure that it
16 complies with the, with their license basis.

17 So I think that's the goal. And I think
18 this is one of those things that, you know, maybe we
19 didn't begin with the end of the mind, but we
20 certainly want to end with the end in mind and make
21 sure we really know when this particular initiative is
22 done, you know, the actions and the IAP are complete,
23 do we really have a system. At least the strip is
24 optimized, that we can all feel good about and live
25 with.

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1 So I think that's the goal. And I
2 appreciate you taking the time to kind of do this
3 assessment and look forward to talking about it.

4 MR. MOTT: And thank you for coming today
5 and presenting. It's really interesting hearing it.

6 And how you doing? My name is Ken Mott,
7 and I'm the team lead for the integrated assessment
8 plans, modernization plan 4B, tactical, strategical
9 broad assessment of the digital instrumentation and
10 control regulatory infrastructure.

11 On my team from the Office of Research is
12 Bernard Dittman. And we also have Paul Rebstock. And
13 also representing the Office of Nuclear Regulation,
14 Danej Taneja (phonetic), who is not here today, not
15 present. We have Huda Akhavannik. And we also have
16 Norbert Carte. Okay. They've got my back. Okay.

17 And I know time, I definitely want to save
18 enough time to hear all the discussion. So we can go
19 to the next page.

20 And this agenda, I'm going to be moving
21 through the slides pretty swiftly here. I'm going to
22 have an overview of MP4B, which is going to be real
23 quick. I'm going to provide a quick listing of the
24 January 31st industry digital I&C listed barriers that
25 were presented.

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1 We are going to have a section scheduled
2 to have industry present the real world examples. We
3 will have a discussion about the real world examples.
4 And we'll also have possible solutions with the real
5 world examples.

6 We'll also have an opportunity for public
7 comment. And then we'll end with an action line
8 discussion, as well as closing remarks. You can go to
9 the next slide.

10 The objective of this portion of the
11 meeting, this is the second half, is January 31st
12 industry presented a list of barriers. And, of
13 course, we're sitting here at the NRC. We wanted to
14 get some real world examples. As Eric has stated,
15 when you're sitting out at the plant, you know, the
16 licensee is sitting out there, what are the things
17 that may prevent or be a barrier to submitting an LAR,
18 a certification, what have you?

19 So we asked industry to please provide
20 some real world examples around those barriers that
21 were presented so we can really focus and really hear
22 and make sure we have understanding. That was part of
23 the meeting in the morning. Let's get understanding
24 and common ground between the two.

25 So the goal of this meeting is to, at the

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1 end of this meeting hopefully we will have a consensus
2 list, a consensus, both industry and NRC agree on a
3 consensus list of these remaining digital
4 instrumentation and control barriers, as well as the
5 real world examples.

6 And hopefully we can leave this meeting,
7 we can have that list, a consensus list. That would
8 be really great. Everybody would be on the same page.
9 And everybody would have a common understanding. And
10 we could move forward going from there. We can go to
11 the next page.

12 Just a real quick overview of the MP4B
13 broad assessment teams. We are currently in the
14 process of a comprehensive assessment. At the end of
15 the assessment, we would like to make recommendations
16 that will provide, recommendations to modernize the
17 digital instrumentation and control infrastructure.

18 Right now we are focused on these
19 remaining digital I&C barriers that are left. And we
20 wanted to focus and get really tight on them. So
21 we've kind of expanded the schedule a little bit from
22 what was stated in January 31st. And, of course, our
23 scope is identified in the staff requirements
24 memorandum of SECY-15-0106. We can go to the next
25 page.

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1 So I'm just going to put up here before I
2 let industry come and speak. And this is for people
3 in the room who may not, who weren't here for January
4 31st or didn't receive the slides. On January 31st,
5 industry provided four digital I&C listed barriers.

6 And number one was common cause failure.
7 A second barrier was software development standards
8 and guidance. A third barrier was instrumentation and
9 control system architecture development. And a fourth
10 barrier was limited functionality with I&C devices,
11 I&C devices of limited functionality.

12 Now, of course, some of these items we're
13 going to bring up and discuss today are going to be
14 more applicable for other groups. Of course, when
15 you're talking about common cause failure, of course,
16 some of that would fit into the scope of MP1D.

17 Since we had a broad assessment, we are
18 going to still listen to everything. And when we take
19 everything back, we'll make a determination and
20 document that this concern brought up this date
21 belongs to MP1D or something else of that nature. And
22 this is something that belongs to MP4B.

23 Of course, everything is not within,
24 everything common cause failure is not within the
25 scope of MP1 Delta, so please don't save or discuss

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1 it. If it's something we want to hear and capture as
2 well, we definitely want to hear it. We definitely
3 want to capture it. And like I say, we'll take it
4 back and go from there.

5 So, with that, we'll stop here with my
6 presentation. And we'll let industry speak.

7 MR. VAUGHN: So, Steve Vaughn, NEI. So
8 after the general session at the RIC on digital I&C,
9 Ken asked "It would be great if we had some industry
10 examples to, you know, justify some of these four
11 barriers we noted on January 31st." I thought that
12 was a fair challenge.

13 So right away I blasted out an email to
14 the working group. We started to mobilize some
15 examples. And we weren't at the point where we could
16 share in presentation. And I apologize for that. But
17 I did get a lot of feedback.

18 And so what we did was we printed out a
19 list for each barrier. And I'm going to turn it over
20 to some of the folks who provided those examples
21 because they, you know, they understand the details
22 and they lived through those. And if you want, we can
23 start with barrier one and two and go to like four or
24 we can --

25 MR. MOTT: It's no problem. I do just

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1 want to clarify. It's not a justification. It's just
2 we definitely accept the barriers as submitted. Just
3 a demonstration.

4 Like I say, I'm sitting at my desk, but
5 I'm no longer at the plant anymore. I'm just sitting
6 there. I used to have to go through a technical
7 review committee and justify my modification and then
8 go to a budget review committee to justify it so they
9 would give us the money. And I remember those days
10 sitting back there. And like I say, just so you know,
11 sitting up there yelling why did we do this. And
12 you're trying to prove it.

13 So, and it's different sitting at my desk
14 here what a designer is going through there. So
15 that's all. It's just a demonstration so I can fully
16 get the real world. And when we're sitting back
17 having our discussion here and what we need to do,
18 what's necessary, and knowing we're on the same page
19 with you all. It's not a justification.

20 MR. VAUGHN: But it will be a great
21 exercise for us, because you'll see when we get to the
22 fourth one, there weren't a lot of examples currently
23 with that, right. And we did sort of prioritize it at
24 times as it was before.

25 But, you know, when we got to that point,

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1 you know, there weren't any examples because the RIS
2 does handle a lot of that. But there were some
3 problems that some folks had. So, again, it was a
4 worthy exercise. So I appreciate the opportunity.

5 Okay. So we'll just start with barrier
6 one. A lot of this I think we said before. But we
7 wanted to, I think you've already captured it. But
8 I'll turn it over to -- anyone for barrier one?

9 MR. BURZYNSKI: Yeah, I'll go first. You
10 started with a good point. We just finished up BTP 7-
11 19. And that's a very important issue. And you
12 mentioned your previous project management experience.

13 MR. MOTT: Yes.

14 MR. BURZYNSKI: And the real driver there
15 is coming from a project management standpoint. Let's
16 just put it in those terms, that if I look at the
17 current BTP and I look at the experience out there,
18 there are several years of work up front in a project,
19 prepare your analysis, do the computer runs for all
20 the cases, submit a D3 report ahead of your LAR.

21 MR. MOTT: That's right.

22 MR. BURZYNSKI: So you add three years
23 onto a project. And project managers hate an extra
24 three years on a project, especially when it's
25 supposed to be an I&C project.

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1 Second one, that delays your final
2 definition of the scope of the project until you know
3 what your diverse actuation system decisions are going
4 to be. So you don't have the next piece of the
5 project management.

6 I got a schedule problem. Now I got later
7 scope definition. And then it turns into money on the
8 ways. And those then are just added costs to a
9 project that started out to be an I&C retrofit
10 project.

11 So the suggestions we made were trying to
12 minimize those project management concerns and project
13 risks in there. So that's why that one is important
14 to us, because anybody looking at one of these
15 projects, the bigger that number is related to D3 and
16 BTP 7-19, the harder it is to justify the project.

17 MR. MOTT: Okay. So, if I can quantify,
18 so when I'm sitting back here at the plant, the
19 licensee, and I'm considering a digital I&C, I'm going
20 to go with a digital I&C safety system upgrade. There
21 are concerns with project management with the amount
22 of time. Is that time the time for the designer to
23 design it? Or what time are you talking about?

24 MR. BURZYNSKI: Time to do the D3 analysis
25 before you can start your final design. So, no,

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1 you've got to do your architecture. Then you have to
2 do the D3 analysis. Then you have to wait for an NRC
3 buy-in on it.

4 And you can look at Oconee. You can look
5 at Diablo Canyon. You can look at Kepco. You can
6 look at Mitsubishi. All of those people ended up with
7 multiple year reviews of a D3 topical report before
8 they could finalize their overall I&C design --

9 MR. MOTT: Okay.

10 MR. BURZYNSKI: -- to get, you know, a
11 firm definition of what they had to do to address all
12 the various concerns.

13 MR. MOTT: So let me ask, so when I was --
14 I'm sorry.

15 MR. CONNELLY: Can I add to that?

16 MR. MOTT: Yes, sir.

17 MR. CONNELLY: So, just to kind of put
18 this in context -- John Connelly, Exelon. So we've
19 done dozens and dozens and dozens of large scale
20 digital modifications. And in our project approval
21 process, we basically inserted a milestone that
22 triggers the beginning of the process three years
23 prior to deployment. Okay. And that's for non-
24 safety-related systems.

25 Now, with safety-related systems, there's

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1 another layer that has to get stacked onto that. So
2 now the timeline is four years, five years. We're
3 just starting down that path. But we expect
4 additional work up front that's going to be layered on
5 top of the bodies of work that we already --

6 MR. MOTT: Okay. To try and --

7 MR. CARTE: So part of this analysis is,
8 the problem is the analysis. If you went to a more
9 standard spaced approach, so IEC has standards on
10 diverse actuation systems. Would adopting the IEC
11 standard on diverse actuation systems as opposed to
12 the BTP 7-19 approach of analysis based, could that be
13 beneficial or would that improve your schedule?

14 MR. BURZYNSKI: Well, one could make an
15 argument that that would solve part of the three
16 pieces of the project management. It would help you
17 get to a scope certainty quicker. But it might not
18 reduce the cost enough to get there.

19 So some of the suggestions we talked about
20 to simplify the analysis or to reach a point where
21 maybe you don't need a DAS or you can have a very
22 small one are addressing all of those facets in there
23 and the ability to get to that decision quicker.

24 So certainly a standard would help you
25 say, oh, I know what the solution is. I might not

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1 like the price tag of the solution. So --

2 MR. BENNER: This is the flexibility
3 versus certainty, right. You could have very high
4 certainty if you, you know, platinum plate it --

5 MR. BURZYNSKI: And if I was asking, yes,
6 I'm asking for a lot of things. But if I was asking,
7 I would like a flexible process to come in and propose
8 things that would help me get to certainty quicker.
9 So I'd like both of those pieces in there.

10 MR. BENNER: And some of that, if we work
11 this right stepping back to the previous discussion,
12 if there's better clarity on the BTP, you would have
13 better certainty as what would fly for a D3.

14 MR. BURZYNSKI: That's right.

15 MR. BENNER: So you could maybe invest
16 less resources and the dialogue with the staff would
17 be much shorter --

18 MR. BURZYNSKI: Exactly.

19 MR. BENNER: -- once you had something you
20 were --

21 MR. BURZYNSKI: Bingo. So that's the
22 reason why that's important.

23 MR. BENNER: Yeah.

24 MR. BURZYNSKI: And that's how it's
25 related to a barrier for deployment of stuff.

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1 MR. MOTT: So I can quantify it when I'm
2 taking it back -- I always use the, when I was doing
3 the safety evaluations, I'm like please make sure I'm
4 quantifying it right, because when I'm sitting back at
5 NRC and you all are not here, it's like, no, he said
6 this, they said this. So I want to be sure.

7 So right now what we're saying is, if I'm
8 including, if I have a digital I&C design, I'm
9 specifically coming to class Alpha 1, safety-related
10 system, there is this process called, it's a D3
11 process I have to go through, diversity, defense-in-
12 depth.

13 If I want to put a high level to what
14 you're saying, the clarity and what's necessary to
15 perform and adequately perform and have some certainty
16 that this is what the NRC, this is what staff wants,
17 is not there. And therefore, that's where I get this
18 issue with the timeframe that I'm spending, because I
19 heard time a lot. I heard it when, of course, project
20 manager is looking like, man, I don't know. So --

21 MR. BURZYNSKI: And the minute you tell
22 them you're not that certain on the answers, what do
23 they do, John? They put a multiplier on your budget.

24 (Simultaneous speaking.)

25 MR. BURZYNSKI: Oh, you think it's going

1 to cost a million. Well, I think it's going to be a
2 million three for planning purposes because of the
3 uncertainty.

4 MR. MOTT: Okay.

5 MR. BURZYNSKI: So --

6 MR. MOTT: Okay. Is the --

7 MR. DITTMAN: Can I ask this? Like I know
8 that we just had a big long day, and it's hard to do
9 with NRC, but where do you see what we might have to
10 do, you know, with the longer, broader view under
11 MP4B, if anything, versus what you guys may be
12 envisioning? If it's done under the 1D, like how far
13 do you think 1D might go or not go? And where would
14 you like 4B to carry up, you know, to fill that
15 whatever schedule shrinkage you might have already
16 gotten?

17 MR. BURZYNSKI: Well, I guess, if we come
18 out of something out of the 1 Bravo, or 1 Delta that
19 turns into a policy issue, then you inherit that. If
20 there was something we could, that was important --

21 (Simultaneous speaking.)

22 MR. BENNER: I would agree with that.

23 MR. BURZYNSKI: If there was something
24 that we all agreed maybe is a good thing to do but it
25 would take the policy change, then that's, that would

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1 be the longer --

2 MR. BENNER: Yeah, I think in general
3 we've been saying that 4D would capture policy issues
4 or something --

5 MR. BURZYNSKI: I don't know what that is.
6 But that would be the kind of thing that we all agreed
7 was worth doing, but it involves the policy.

8 MR. DITTMAN: So the one I heard was using
9 resources outside the control --

10 MR. BURZYNSKI: That could be one. That
11 could be one.

12 MR. HERB: This is Ray Herb, Southern
13 Nuclear. And credit in the actual capability in the
14 digital system we want to put in as preventative and
15 limiting measures for CCF that you can say, you know
16 what, my system is live enough that I don't
17 necessarily have to provide an active test. Maybe
18 it's just a manual bypass or leak-before-break so I
19 can have enough time to do my manual operator actions
20 --

21 MR. BENNER: And I think we can deal with
22 that without a policy issue. I mean, we'll have to --

23 MR. BURZYNSKI: Right.

24 MR. BENNER: -- run it through our system.
25 But I think with what you've described, I don't think

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1 that raises to a policy issue. The whole thing about
2 the outside the control room is new to me. So I
3 haven't had any discussions with the staff on that
4 issue.

5 MR. HERB: I think it does get a policy
6 issue. I hate to differ with you --

7 MR. BENNER: Okay.

8 MR. HERB: -- because I think that the
9 policy now assumes that you have a latent CCF and that
10 you cannot deal with it except for showing defense-in-
11 depth and diversity. It assumes, it makes that high
12 level assumption. It's almost a religious belief that
13 digital systems are not as safe as analog that they're
14 replacing.

15 MR. BENNER: Okay.

16 MR. HERB: And so I think that we have to
17 get past that and realize that digital systems are, in
18 fact, probably much safer than the old analog systems
19 they're replacing.

20 Now, there are some concerns in the way
21 you design those and how you put those together that
22 could make it worse. But as long as you address
23 those, you don't have to assume that you have to have
24 a DAS. And if you can get that quicker, and again,
25 it's that schedule --

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1 MR. REBSTOCK: That's really what we're
2 saying. And that's two different definitions of
3 policy, too. The stuff you're talking about is more
4 like an approach. And we can handle that.

5 MR. BENNER: Okay.

6 MR. REBSTOCK: But the policy is NRC --

7 MR. BENNER: Yeah, when I say policy, I'm
8 saying an issue we need the Commission to follow
9 through, because I go into I think the RIS in and of
10 itself blows a hole in the idea that you have to
11 assume a CCF, right.

12 So I think we, the staff, believes we have
13 a lot of latitude to manage that without any direction
14 from the Commission. So --

15 (Off microphone comments.)

16 MR. CARTE: Norbert Carte, NRC. So I kind
17 of disagree with that characterization about analog,
18 because diversity and defense-in-depth have always
19 been requirements. The only thing that's unclear is
20 how much diversity and defense-in-depth you need for
21 a digital-based architecture as opposed to an analog-
22 based architecture.

23 Diversity and defense-in-depth have always
24 been policy, practice, requirements. It's been there.
25 So it's not that you didn't have to think about CCF in

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1 analog space. You did. That's what diversity and
2 defense-in-depth are for.

3 The question is what is an adequate
4 position of diversity and defense-in-depth for a
5 digital architecture. And we're sort of dancing
6 around that issue. But that's the basic technical
7 question.

8 MR. VAUGHN: But it wasn't in the policy
9 for analog. CCF wasn't in any Commission policy for
10 analog, correct?

11 MR. CARTE: It's always been a
12 requirement. I mean, there's diversity and defense-
13 in-depth --

14 MR. VAUGHN: Yeah, but it wasn't in the
15 Commission policies.

16 MR. BURZYNSKI: No, the difference is that
17 the IEEE standards you endorse the hardware are very
18 explicit in 603 and 379 that you don't consider the
19 hardware common cause failure and for digital you do
20 now consider the software.

21 So it moves the diversity question in a
22 different way. And that's a difference. Now there
23 might be reasons for it. But, you know --

24 MR. MOTT: I do want to bring this back.
25 I definitely want to have time for many --

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1 (Simultaneous speaking.)

2 MR. MOTT: Was there anything else on
3 common cause failure?

4 MR. VAUGHN: Well, there are a couple
5 here. And I don't want to speak to them because I
6 wasn't the one that provided them.

7 (Off microphone comments.)

8 MR. VAUGHN: Well, everyone has this list
9 here, not the NRC. But, you know, if --

10 (Laughter.)

11 (Simultaneous speaking.)

12 MR. BURZYNSKI: Yeah, okay. So, you know,
13 I've been in the I guess fortunate position of having
14 to put together five topical reports now, so for
15 different vendors.

16 And there's two or three elements of this
17 software development issue that affect the work we do
18 in trying to satisfy customer and satisfy the
19 regulator. And now I'll speak to that.

20 So one is just the question of literal
21 compliance. You know, you've heard us talk about that
22 in the past. And you can read BTP 7-14. And you can
23 see up front that it kind of pushes a reviewer in that
24 direction.

25 And there's been instances where projects

1 have had to prepare a large number of compliance
2 matrices to demonstrate literal compliance. In other
3 cases, the staff took on that burden to do that. In
4 other cases, we didn't do it. So we've had, you know,
5 a couple of different cases.

6 But if you're going to make a proposal
7 from a vendor's point of view to a customer, what are
8 you going to budget, that you get the reviewer that
9 says I can do it or we don't need it, or the reviewer
10 that says you're rejected in acceptance review and
11 come back when you've prepared the compliance tables.

12 So you can do, and build that into your
13 cost estimates, which drives up, again, the cost of
14 the projects, which makes it harder for the customer,
15 then, to say I can bite off that chunk of money and do
16 that project.

17 So being consistent on that and overcoming
18 maybe some of the past, but being consistent on it and
19 speaking to what are the real expectations there would
20 be important.

21 MR. BENNER: Consistent and right size --

22 MR. BURZYNSKI: Yes.

23 MR. BENNER: -- of the information that
24 needs to be submitted as part of the --

25 MR. BURZYNSKI: And we can look at it.

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1 And your staff has the experience that you can go
2 through some of the standards and you can go, that
3 shall statement really doesn't contribute to safety in
4 any meaningful way.

5 But you can spend a lot of time
6 documenting that deviation if you have to go down a
7 compliance matrix. Or in cases I've had reviews where
8 there was no budging on that, and so we had to
9 incorporate steps into the process that added no
10 value, just the cost to the customer of doing some
11 paper that really wasn't important.

12 So that's how it becomes a barrier. You
13 know, when we say literal compliance and maybe the
14 onerous process is BTP 7-14, it translates into the
15 amount of work you have to do and the cost for a
16 project.

17 MR. MOTT: So let me ask. Is this a -- I
18 just want to say does this get the -- I thought it was
19 number -- are we on number two, and that's BTP 7-14?

20 MR. BURZYNSKI: Yeah.

21 MR. MOTT: Okay.

22 (Simultaneous speaking.)

23 MR. MOTT: So this is great. So what
24 we're saying, you're saying literal compliance, from
25 what I'm understanding is I guess when you're sitting

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1 as a vendor or you're talking to a designer, talking
2 to someone, you're looking at BTP 7-14 and/or -- is it
3 specific to BTP 7-14 your concern --

4 MR. BURZYNSKI: I would say on this case
5 it's specific to 7-14.

6 MR. MOTT: 7-14, you're looking at that.
7 The literal compliance is not clear or not sure.

8 MR. BURZYNSKI: No, you can read it to say
9 that you need to go through and do that. And then
10 when you build your cost estimates for a customer, you
11 include that work --

12 MR. BENNER: And this is literal
13 compliance with the BTP or literal compliance with the
14 standards --

15 MR. BURZYNSKI: The standards that are
16 mentioned in BTP --

17 MR. BENNER: Okay, okay.

18 MR. HERELL: Standards as enforced by the
19 reg guides.

20 MR. BENNER: By the reg guides and the --
21 so it's the whole, BTP is just the starting point.
22 But it's this entire -- again, going back to the level
23 of detail and documentation.

24 MR. BURZYNSKI: That's right. So then I
25 could also say that approach also pushes the reviews

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1 into a different focus.

2 And so maybe that's, maybe now an
3 efficiency question, because if I'm making a safety
4 case and telling a story of what we're doing and why
5 it's good, I'm going to tell you what I'm doing. But
6 then if I have to go down this other road, then I have
7 to have another story that says and this is what I'm
8 not doing and why I'm not doing it.

9 And the reviews on the ones that have been
10 more literal compliance have spent more time on that
11 second piece, wanting to get all those documented
12 deviations, and not as much time on the, well, what
13 are you doing that you think is important and right.

14 So it's kind of an inefficiency. And it
15 changes your focus and the discussion, because you're
16 arguing about requirements that are probably not that
17 safety important. But you're in an adversarial mode
18 rather than focused on what are you doing to ensure
19 quality and ensure that you're getting it right. So
20 --

21 MR. MOTT: So, to really quantify it, so
22 we're talking about BTP 7-14. You may use a procedure
23 or a process that's different from that. But when you
24 submit it here to the NRC to review as a concern,
25 well, why didn't do things --

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1 MR. BURZYNSKI: Different.

2 MR. MOTT: -- BTP 7-14?

3 MR. BURZYNSKI: Yeah.

4 MR. MOTT: Okay.

5 MR. BURZYNSKI: And a good example is on
6 one project the reviewer was insistent that we end up
7 doing the criticality analysis required by 1012 at
8 every stage.

9 MR. MOTT: I know that person.

10 MR. BURZYNSKI: And the answer is, well,
11 it was classified as safety-related in SIL 4, and
12 that's not changing. Why do I need to do that?
13 Because we don't want the deviation.

14 But then that means preparer, reviewer,
15 independent V&V review, records management,
16 deliverable to the customer. So the nuclear paper
17 then gets expensive.

18 But the argument was about that, not,
19 well, what are you doing for V&V or what are you
20 doing. We squandered time arguing about things that
21 were not so germane.

22 MR. MOTT: Okay.

23 MR. BURZYNSKI: So, and it's just kind of
24 like a funny red herring that jumps out there. It
25 attracts attention. But it can divert it.

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1 MR. BENNER: So just as a waypoint, you do
2 have a list. You didn't share it. That is perfectly
3 okay. Is there intention you're going to do some
4 scrubbing of these lists and provide the particulars
5 in a written form? And I'm not saying you have to.

6 But we're going to be transcribing or
7 taking notes. And that's fine. But it sounds like
8 you have some precision here that is, indeed, helpful.
9 So we can extract this from our notes in the
10 transcript. But if there's a way you could sanitize
11 some of this and provide it, I think that would be
12 helpful also.

13 MR. BURZYNSKI: You know, on our end, we
14 put specifics, plant name --

15 MR. BENNER: I realize that you may want
16 to redact some names.

17 (Simultaneous speaking.)

18 MR. GEIER: I think we can put this, it's
19 really in a form of raw data right now extracted from
20 emails and things like that, like you said.

21 MR. BURZYNSKI: Yeah, but there's some
22 main points. And so I guess the third piece --

23 MR. GEIER: We could certainly do that.

24 MR. WATERS: Mark?

25 MR. BURZYNSKI: Yeah.

1 MR. WATERS: You could provide it in the
2 context of topical approval process.

3 MR. BURZYNSKI: Well, I'm talking about --
4 no, because I've experienced this on LAR, too.

5 MR. WATERS: Okay.

6 MR. BURZYNSKI: So it's either been on
7 topical reports or LARs --

8 MR. HERELL: Sometimes the topical report
9 process you guys use is based on ISG 06 and has been
10 for several years. So anything that I have to do for
11 a LAR I have to do for a topical report except I have
12 to use guidance that really wasn't written for a
13 topical report.

14 MR. WATERS: Yeah, I struggle as a person
15 who works with this, you want to have topical report
16 guidance but as --

17 MR. BURZYNSKI: Yeah, this is --

18 MR. WATERS: But my point is this topical
19 is not going to deal with that, you've approved three
20 last year, you're going to approve two this year. We
21 should benchmark those recent examples and see where
22 can it be improved or --

23 MR. BURZYNSKI: I would say for the ones
24 I've been involved with more recently it's been more
25 reasonable. But I can't tell the customer that's

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1 because the spots on the leopard have changed.

2 MR. BENNER: Yeah, no, no, we want to lock
3 this down. If we have a right sizing --

4 MR. BURZYNSKI: Right.

5 MR. BENNER: -- and a clarification we've
6 been locked down in guidance --

7 MR. BURZYNSKI: But when you've heard --

8 MR. BENNER: So you have the
9 predictability --

10 MR. BURZYNSKI: But when you've heard that
11 discussion, I wanted to tell you how does it become a
12 barrier to doing the work.

13 MR. BENNER: No, this is good information.

14 MR. BURZYNSKI: And then the third one is
15 we've talked at times about having the flexibility to
16 use some of the international standards in lieu of the
17 IEEE standards so that you can have kind of a Chinese
18 menu.

19 But the experience I've had with that is
20 with vendor products that are prepared one way you
21 spend a lot of time mapping. And again, instead of
22 looking at is there a nice process that you followed
23 and what is it, you spend a lot of time looking at the
24 mapping and trying to compare X to Y to Z.

25 And again, it's not that efficient. But

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1 it's also extra work from the vendor side that
2 translates to the customer, because we're not just
3 showing what we did with our process. We're showing
4 and how did that process compare to this other set of
5 standards that weren't used in the development of it.

6 And so that's another case where it's,
7 again, like a misdirection of focus and an inefficient
8 use of resources. But that turns into time and money
9 for the project.

10 MR. WATERS: Any solutions coming to mind?

11 MR. MOTT: We'll get there. Hang on. I
12 want to get this --

13 MR. WATERS: Yeah, okay.

14 MR. BURZYNSKI: Okay. And so that's --
15 and I could contrast that with making the safety cases
16 to the international standards to various
17 international regulators. They focus on what did you
18 do and how well did you do it, not how did that
19 compare to something else.

20 And so they're more laser focused on what
21 are you doing, making a judgment, you're doing the
22 right things, and how well are you implementing it.

23 MR. MOTT: Well, right now one of the, an
24 example to this, so what you're saying, just to
25 quantify, is taking our design stuff, the IEC standard

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1 some place else. And they were acceptable. Okay.
2 And even when I look as far as conforming to NRC
3 regulations, of course, I feel they are compliant.

4 However, since we don't, I guess we don't
5 endorse an IEC or trying to map or make changes into
6 IEEEs, it's an additional cost, additional expensive
7 and additional time you may not want to --

8 MR. BURZYNSKI: Well, it just makes the
9 project more expensive, and it becomes a cost barrier
10 to deployment.

11 MR. WATERS: Can I make a point? It's not
12 just for topical. For the LAR process, what's the
13 issue? You know, you just issued revised ISG 06, a
14 new way of looking at the software liability. What's
15 the issue --

16 MR. BURZYNSKI: Oh, to be direct on that,
17 if I was living in my dream world and I committed to
18 IEC 60880 and you accepted that, that covers software
19 that I developed from scratch like the operating
20 system. It covers software I developed from scratch
21 for like the application layer, which is different.
22 And it covers software that I built from function
23 blocks that were part of the standard library, and all
24 I'm doing is configuring them. And it defines those
25 three processes right in with the standard.

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1 What you find here in the U.S. is you get
2 a copy of the report, and then you end up with a
3 software program manual to then address the
4 application layer. So there's a separate topical to
5 define that, where all of that is embodied in IEC
6 60880.

7 MR. MOTT: And I just want to say, this
8 will bring the folks back in the room, I just want to
9 definitely let them speak. We're going to have a
10 discussion of possible solutions. So we can
11 definitely come back to that. But I just don't want
12 to hold them up from coming and speaking.

13 And the second thing is, of course, even
14 giving us information, some of it, like I said, we're
15 going to get it and say, well, this will be resolved
16 once we endorse IEC standards. So we don't have to
17 come to a conclusion here in the room, but when we get
18 the information.

19 MR. BURZYNSKI: So that would be kind of
20 a how does it play out is that way.

21 MR. MOTT: Anybody else have anything on
22 barrier number three, IEC system architectures, and
23 anything else on architecture?

24 MR. VAUGHN: We were on software just now,
25 right?

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1 (Simultaneous speaking.)

2 MR. BURZYNSKI: I can send it back to you
3 or anybody else on software.

4 MR. VAUGHN: Yeah, any other comments on
5 software? I mean, there are some detailed examples
6 here with systems. But --

7 MR. ODESS-GILLETT: I'll probably have
8 something to say about solutions --

9 MR. VAUGHN: So we'll move on to barrier
10 three, IEC system architecture development. And I'll
11 open the floor to folks that brought these examples.
12 I know, Mark, you had a couple.

13 MR. BURZYNSKI: Yeah, I had a couple. I
14 come at it from two ends. One is I think it would be
15 beneficial to have a standard that describes
16 technically what we need to produce to back up the
17 safety case for the architecture.

18 In ISG 06 we kind of tell you what
19 information we should present to you, but it's at this
20 level. An IEC standard would give you a more how to
21 develop those pieces to put that argument together.

22 And I think that just would help promote
23 consistency, because nowhere else do you define that
24 in your regulatory process. You don't do it in the
25 standard review plans. It's not in any endorsed

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1 standards you have. But it's very important to all of
2 these things that we're talking about.

3 After you get past D3, it's system
4 architecture that's the next question and all the
5 interfaces and how to present that safety case. And
6 so --

7 MR. WATERS: From an industry standpoint,
8 how would this line up with the design engineering
9 guide that industry's working on, with what you use?
10 What's the, is there an interface? Is there something
11 different than that? I'm trying to -- because I know
12 with the design engineering guide --

13 MR. BURZYNSKI: Well, the design
14 engineering guide is like an implementing procedure
15 piece. I'm looking at something that's an agreement
16 between the regulator and the industry on the
17 technical attributes.

18 MR. WATERS: But that guidance has no
19 architecture or that type of --

20 MR. BURZYNSKI: It has it in there. But
21 it's at a, it's a lower, it's at a more detailed
22 level. So --

23 MR. DITTMAN: So I guess that's what he's
24 asking. How would it line up? I mean, if we did
25 something at a higher level, it still has to line up

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1 with a lower level.

2 MR. BURZYNSKI: It would be consistent
3 with that for sure, yeah.

4 MR. MOTT: Right now I just want to
5 quantify this. So your system architect development,
6 because this is very, very prescriptive from what
7 you're saying, very prescriptive, is, hey Kenny, there
8 needs to be a, hey NRC, there needs to be a standard
9 that specifically describes what we need to submit in
10 our detail and our design application that will back
11 up our safety case.

12 MR. BURZYNSKI: No, I think, yeah, well,
13 I think I would say it a little bit different. I
14 think ISG 06 says what we need to submit, the safety
15 cases we need to make.

16 MR. MOTT: Okay.

17 MR. BURZYNSKI: It doesn't have
18 necessarily the arguments and the evidence defined
19 that would support the claims you need to make.

20 MR. MOTT: ISG 06 does not have the, does
21 not tell you what evidence and support you need.

22 MR. BURZYNSKI: Right, right. That would
23 be my way of taking it.

24 And my first place to go, for me I would
25 go look at IEC 61513 that lays out from a nuclear

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1 perspective what are the critical things you need to
2 do to support the claims on interfaces, non-
3 interfering interfaces, function allocation, and those
4 sorts of things.

5 And I think it would be helpful to us to
6 have that as an agreement between the regulator and
7 the industry so we know we're aiming at those targets
8 for the next ten years.

9 So that was -- so I see that as kind of an
10 efficiency and predictability for the thing that has
11 been the most difficult in the LARs you've done,
12 because that target isn't well defined. And so you --

13 MR. MOTT: We would definitely, we're
14 definitely going to talk about this in solutions. I
15 can hear it in the room.

16 MR. BURZYNSKI: Yeah.

17 MR. MOTT: Okay. So I just want to --

18 MR. DITTMAN: Can I have some
19 clarification?

20 MR. MOTT: Yeah, go on.

21 MR. DITTMAN: Bernie Dettman, NRC. When
22 the bullet was first listed, people started asking,
23 you know, after the meeting on January 31st, did I&C
24 system architecture mean the architecture of a
25 specific I&C system or did it mean the architecture of

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1 the overall I&C system --

2 MR. BURZYNSKI: If you look at 61513, it
3 has two levels. It's got the big interconnected, if
4 you were doing multiple systems, or it has the system
5 architecture.

6 MR. DITTMAN: So your answer would be
7 both.

8 MR. BURZYNSKI: Both.

9 MR. DITTMAN: That --

10 MR. BURZYNSKI: For --

11 MR. DITTMAN: Well for -- the one that
12 actually talked to this on January 31st. Did he mean
13 both too or did he --

14 MR. ODESS-GILLETT: Well, 615 -- Mark is
15 correct. 61513 addresses the overall plant I&C
16 architecture as I think Section 5. And then Section
17 6 is specific I&C system design criteria for the
18 various classes and systems.

19 MR. DITTMAN: So you meant both too then.

20 MR. ODESS-GILLETT: Well, yeah, I mention
21 it I think because that's what IEC 61513 is.

22 MR. BURZYNSKI: One would be more
23 applicable for your new plants. And the other one
24 definitely is applicable for retrofit.

25 MR. WATERS: So an operating plant could

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1 adopt some of these IEC approaches.

2 MR. BURZYNSKI: I think if you endorse
3 Section 6 out of the standards, that would be the
4 guidance we'd need to know how to produce the stuff.
5 And it would line up with the digital engineering
6 design guide that's another layer down. And it would
7 fill in a blank that you don't have right now of what
8 do you need for describing the architecture.

9 So it covers security interfaces. It
10 covers safety to non-safety interfaces. It covers
11 interchannel or interdivisional.

12 MR. WATERS: So I don't know if you wanted
13 to move on.

14 MR. MOTT: No, I want to continue this
15 because this is important.

16 MR. BURZYNSKI: Okay.

17 MR. WATERS: For the first two, we know
18 what we're talking about, you know, we have that
19 team's --

20 MR. BURZYNSKI: Yeah.

21 MR. WATERS: -- and we understand exactly
22 the software. It's just a question of what, we're
23 trying to understand in past applications, whereas
24 this in itself has been a --

25 MR. BURZYNSKI: On --

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1 MR. WATERS: -- or just to improve
2 predictability and efficiency --

3 MR. BURZYNSKI: Well, no, no. On the
4 Oconee project --

5 (Laughter.)

6 (Simultaneous speaking.)

7 MR. BURZYNSKI: No, that was one where all
8 of the real issues in the first incantation were all
9 centered around the architecture concerns. But the
10 entry point with your guidance was the software
11 development process. It was not describe the
12 architecture and the interfaces.

13 So out of it came ISG 04 and that sort of
14 thing. But that wasn't covered.

15 And then on Diablo, there was elements.
16 So now you have a two-fold system. And the issues, if
17 you'd had the standard, you'd have gone, oh, I need to
18 go through the function allocation process. And I
19 would have lined up requirements with ALS or Tricon or
20 both in the system requirement and then clear on that
21 and not having discovered that in audits much later
22 with that.

23 And it also would have been clear to look
24 at how are you going to do the functional, the system
25 validation of a system that has two parts, because now

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1 it doesn't belong to any one vendor.

2 It's -- but the standard would have
3 stepped you through all of that thinking up front, not
4 discovering that during the LAR. So you could have
5 avoided that.

6 MR. DITTMAN: But -- I don't want to be
7 argumentative. But as far as with the NRC, could
8 industry have already known to do that? I mean,
9 that's not the NRC's job to have the industry --

10 MR. BURZYNSKI: Well --

11 MR. DITTMAN: -- do a functional
12 allocation.

13 MR. BURZYNSKI: Well, I don't --
14 obviously, you could make that claim. But it didn't
15 happen. And if you looked at the standards that are
16 available that we work with --

17 MR. DITTMAN: You don't think 1012 has
18 functional allocation in it?

19 MR. BURZYNSKI: Not for the system design
20 requirements, no.

21 MR. HERELL: Not at the, Bernie, Dave
22 Herell, not at the system level. The IEEE standards
23 have been getting into systems of systems and systems
24 of interest based on their --

25 MR. BURZYNSKI: Newer version --

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1 MR. HERELL: -- joint versions with IEC.

2 MR. BURZYNSKI: The newer version would,
3 but the one that you endorsed --

4 MR. DITTMAN: It's an industry
5 participant.

6 MR. BURZYNSKI: Well, I'm just trying to
7 be candid and just tell you that --

8 MR. DITTMAN: I understand what you're --

9 MR. BURZYNSKI: Okay.

10 MR. BENNER: But I'm going to interject
11 here a little bit. It's not -- to build off something
12 Bernie says, we definitely want to fix these problems
13 but there is an aspect of this of the regulator can
14 only do so much. So certainly, yes, if we are coming
15 -- if people are coming in with what is a rational
16 approach and we are saying no, I clearly get that is
17 a regulatory barrier.

18 If in designing a system because of the
19 absence of guidance a poor job was done, the regulator
20 can work on clarifying guidance but I don't want to
21 have the regulator take on too much of the
22 responsibility for it.

23 MR. BURZYNSKI: No, no, no. And I will
24 concede that but I would also say you felt compelled
25 to address this topic in the DSRS for NuScale but you

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1 put it in an appendix because you didn't have any
2 governing requirements because you -- so you were
3 limited to how you could structure your own guidance
4 that you were trying to do to be helpful.

5 So you acknowledge that that is there and
6 I'm not trying to point a finger. I'm just saying
7 this is an area of lessons learned, where the industry
8 has learned. The IEC didn't exist when Olkiluoto 3
9 started. It came about because of the problems at
10 Olkiluoto 3 on this very same -- well, the bigger
11 question of multiple-system architecture. So it was
12 a solution that came out of that and I thought we
13 could learn from it and help ourselves.

14 MR. BENNER: And I agree with that
15 completely but I think there are -- hopefully, we all
16 learn from things that go badly and we do better the
17 next time.

18 MR. BURZYNSKI: Sure.

19 MR. BENNER: I don't want to necessarily
20 equate that if we didn't know what we didn't no.

21 MR. BURZYNSKI: No, no, no, no.

22 MR. BENNER: We are all learning as we do
23 more of this.

24 MR. BURZYNSKI: Right. But this is an
25 area where it would help all of us be more predictable

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1 on that, which then where is the barrier because this
2 was an element of reviews and more timely -- less
3 timely reviews it might have been, as we went through
4 discovery.

5 MR. MOTT: I'm going to break my own rule
6 here. There was at the January 31st public meeting,
7 Norbert, he actually was saying does industry have a
8 set of I&Cs that they would suggest or submit saying
9 this is a full set for either I&C architecture, either
10 for software development because we keep saying we can
11 do it to this standard and that standard. As Eric was
12 saying, we didn't want it to be on us to say this is
13 the standard that you all could use. And so there was
14 an action item saying -- that says can you all submit
15 to us the set of I&C standards that you would suggest.

16 MR. VAUGHN: Steve Vaughn. I will address
17 that.

18 So we did try to respond to that. We did
19 develop a list, tried to prioritize it. We were at
20 the point where we weren't sure if just having this
21 project listed, you know one through five I&C
22 standards if they were to be endorsed, what would that
23 really do?

24 And you talk to some stakeholders and like
25 well it really wouldn't do that much. It is a lot

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1 more high level, the devil is in the details. And
2 some of the stakeholders were like well, I think that
3 would help provide strategic certainty on. Maybe we
4 can wait for some IEEE standards.

5 So we had mixed reviews from different
6 stakeholders. So we weren't in a spot to say that
7 here is a list. And we're still thinking about it and
8 we would like to see where Steve Arndt's team that is
9 leading this, we want to see -- we're really not sure
10 where they are at. Steve wanted to do sort of a
11 parallel industry side work and then I'm sure he will
12 have a discussion in the future.

13 But there is an overlap probably with your
14 project, even though it is not an MP.

15 MR. MOTT: It's not really -- like I said,
16 it's not an overlap if we take it and it belongs to
17 Steve's group, we take it from here and when we
18 document it, this concern really belongs to Steve's
19 group because that is a related concern.

20 But that would be -- that's one thing,
21 like I say, that the NRC says hey, these are the ones
22 we are going to accept and endorse and that's it
23 versus you all saying this is what we think would
24 definitely provide regulatory assurance of safety.

25 MR. VAUGHN: And I go back -- one of the

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1 criteria for when the IEC answers, we always do
2 process improvement. So there is a time when we just
3 fall back to something much more routine.

4 So I don't want people to get the
5 impression that this is the last bite at the apple.
6 This is again trying to say, given that we created
7 this new machine to focus on modernization of the
8 digital I&C infrastructure, you know what are the big
9 hurdles. And realizing I think in IEC space you know
10 I think there is merit to trying to prioritize which
11 of the IEC standards would offer the most bang for the
12 buck, realizing that particularly if we endorsed those
13 and get some success, you know we may keep marching
14 along. Okay, what are the other standards that could
15 provide benefit?

16 So again, it is a continuum, as we have
17 talked about.

18 MR. BENNER: Sure. Any more for the Item
19 3 barrier?

20 MR. JARRETT: Yes, this is Ron Jarrett
21 from TVA.

22 MR. BENNER: How are you doing, Ron?

23 MR. JARRETT: I would just like to talk
24 about this one and uncertainty that is in general.
25 What is the barrier cost --

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1 MR. BENNER: Hey, Ron, I am hearing a lot
2 of crackling on the phone. If someone else is
3 talking, could you please put your phone on mute?

4 MR. JARRETT: Yes, that's not me.

5 MR. BENNER: Yes, please put your mike on
6 mute. We are hearing a lot of crackling. Sorry about
7 that, Ron.

8 MR. JARRETT: Okay. To give you an
9 example of uncertainty, we need certainty in projects.
10 We need certainty in schedule, funding, costs, and
11 delays are very detrimental to our projects and our
12 project owners. And so that is where -- that is a
13 significant barrier for licensees.

14 And an example, we went through a couple
15 of years convincing our management to not refurbish
16 30-year-old analog equipment at Bellefonte when we
17 were looking at Bellefonte.

18 Okay, if somebody gets a license, you
19 approve it. This is the design. So we said okay,
20 that is a success path for Bellefonte on RPS. And so
21 we talked to our management. Yes, we can go with the
22 Ocone design. And somewhere down the road, and I
23 wasn't in the meeting, some of you may have been in
24 the meeting, there was a meeting between the staff and
25 our plant management. And when they came out, they

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1 changed the architecture, the division -- in our
2 divisional communications.

3 That was a change in architecture. There
4 was an SER on Oconee. So why wasn't it good enough
5 for Bellefonte?

6 And so our plant management, the project
7 risk and something that was said in that meeting said
8 okay, there is an easier route here. And I actually
9 had an INPO conference. And there are two different
10 groups, new reactors and operating reactors. I heard
11 one person say Oconee's design was acceptable and the
12 other representative from new reactors said it wasn't.

13 So that's the kind of thing that causes
14 us, I guess, it's just -- it's a project killer.

15 MR. MOTT: So what I am hearing is, one,
16 definitely, like I said, I'm just trying to quantify
17 it -- thank so you for much for that, Ron -- is
18 consistency within the agency. I guess that is one of
19 the items taken at. The other one is schedule. Can
20 you -- certainty in schedule in costs, can you be more
21 specific about those two?

22 MR. BURZYNSKI: Ron, do you want me to
23 help you out with this one, since I was down there at
24 Bellefonte for that?

25 MR. MOTT: Ron, are you on the line?

1 Okay, let me ask do we still have a
2 connection. Could someone say yes? Can you hear me?

3 OPERATOR: You are still live.

4 MR. MOTT: Okay, thank you.

5 Ron, are you there? Hey, Ron, are you
6 there?

7 MR. VAUGHN: You might be on mute, Ron.

8 MR. MOTT: Okay. Ron, you might be on
9 mute.

10 MR. JARRETT: I just -- I hung up
11 accidentally when I was trying to hit mute. I'm
12 sorry. I apologize.

13 MR. ODESS-GILLETT: Ron, did you want Mark
14 to help you with the explanation?

15 MR. MOTT: Yes, one of the questions I
16 asked, Ron, and like I said, I'm just trying to get
17 specific, because you said a lot of things. I heard
18 schedule. I heard cost. And also I heard consistency
19 within the agency.

20 And I want you to be specific about
21 schedules and cost. Can you give me a real world
22 example where I guess the schedule was an issue? And
23 I'm looking to see what can we do here because, as
24 Bernie was saying earlier, not to be argumentative or
25 anything like that, one of the things that hits me as

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1 a reviewer is the application, not having the amount
2 of details necessary to come to a conclusion which, of
3 course, turns into RAIs and the going back and forth.

4 And I can say for me, the RAI process or
5 the application not having the details in there does
6 -- will extend the schedule and also the return.
7 Sometimes we have an agreement of a 30-month
8 turnaround -- I'm sorry, 30-day turnaround and a 30-
9 month one is a barrier definitely -- but yes, 30-day
10 and we don't get it. It just sits back and the staff
11 is just sitting there. So on both sides we do have
12 some issues of that.

13 So I definitely want to capture your
14 issue, when you are sitting here as a licensee, when
15 you are talking about these items.

16 MR. JARRETT: Well, we have milestones we
17 have to meet. Our funding is approved and that
18 funding normally cannot be shifted and extended out.
19 And it is usually outage-based for big projects. And
20 if we slide that, it impacts other projects within our
21 fleet, and it's a chain reaction. So we have to hit
22 those milestones.

23 So up-front planning is of the utmost
24 importance for a successful project.

25 I can give you an example. I think we did

1 a tech spec change for simple set points on a project
2 associated with a digital EHC upgrade, controls, non-
3 safety upgrade and you had a tech spec change. One
4 set point. It is a no, go, go set point and I believe
5 the review estimate up front was 11 months for a set
6 point review.

7 Our project, from beginning to end, was 18
8 months.

9 So in perspective, we did a complex
10 digital EHC upgrade in 18 months and a simple setpoint
11 change associated with that took 11 months from a
12 comparison standpoint.

13 And that is one example. I have more
14 examples.

15 MR. MOTT: Just with that, hone in and
16 double down on that one. So where was the barrier
17 that the NRC held on that one?

18 MR. ODESS-GILLETT: The 11-month schedule
19 to review the set point caliber.

20 MR. MOTT: Okay.

21 MR. JARRETT: Now, if you get into a
22 complex one, like an RPS upgrade, you know we've got
23 a 30-year-old RPS system at Watts Bar in Sequoia. And
24 yes, I've been challenged by my upper management, okay
25 do we need an upgrade. Do we need to replace that?

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1 And so when I get into doing a business
2 case, it is very difficult for me to justify or get
3 numbers on what is your review going to cost this
4 project, in time -- will you be timely? Will you meet
5 schedules? I know you are regulators so that is
6 really not you know, you are there for ensuring safety
7 and making sure -- you are a regulator. But with the
8 uncertainty, we can't sleep a whole site. That
9 monopolizes resources with the vendor, with our EOCs,
10 with our maintenance and construction, mods guys,
11 everything. And that money -- well, I can give you an
12 example of dollar amounts.

13 A non-safety significant system; we
14 stopped work on that because we didn't like what was
15 going on. And we started in six months. That six
16 months of that system increased the project cost of a
17 half a million dollars, just that six months for a
18 none-safety, non-safety significant system.

19 So when you delay or have delay, you
20 really need -- we need the NRC meeting. We need to
21 get together and integrate schedules and meet
22 schedules. And I know that is not you all's business.
23 That is our business but it is that uncertainty that
24 drives up cost. You know we've seen it in finishing
25 the Watts Bar 2, all the delays -- yes, I am not

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1 talking the NRC on that but the delays amount to
2 money. You know we went from two and a half billion
3 to five or six billion on Watts Bar 2.

4 So time is money and hitting milestones
5 and getting rid of uncertainty are very key to us
6 being successful in doing these upgrades.

7 MR. MOTT: Okay. Ron, right now the
8 schedule have us taking a break from 3:00 to 3:10.
9 We're just going to keep on going. If you would like
10 to take a break and keep going, go ahead on.

11 Ron, let me just ask real quick. I want
12 to focus on an 11-month schedule, which you were
13 saying was long for a set point calc. What do you
14 attribute -- what are problems that made it 11 months?
15 Let me ask that question. I need to double down on
16 that.

17 MR. JARRETT: Okay, I can't speak to that.
18 That is the schedule. You gave that to us and you
19 know I don't know what schedule -- I don't know if you
20 were timely on that or not but it met our project
21 needs.

22 But a calc that took two weeks to do,
23 should not take 11 months to be reviewed. And I know
24 there is the tech spec change involved so --

25 MR. GEIER: Again -- Ron, hold on.

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1 Norbert has got a response.

2 MR. CARTE: Yes, Norbert Carte. Just a
3 quick question. Many -- I am not familiar with this
4 particular one but many applications include a request
5 for schedule. And so they say please review this by
6 such and such a date.

7 Was a schedule requested and did we slip
8 or did we meet any schedule request?

9 MR. JARRETT: I don't know if you met the
10 schedule or not. It was less than 19 months, so it
11 met our needs. But why does it take 11 months to
12 review a calc or a change to be 40 to 80 hours?

13 MR. BENNER: This is Eric Benner, I will
14 interject. It likely doesn't. I will say I am going
15 do a little more thing here. NRR processes 700
16 licensing actions a year. For those, while there is
17 the one-year overall metric, we also for any shorter
18 schedule requested by a licensee, we try to propose a
19 schedule that meets that request date but realize,
20 with that volume, any individual reviewer is juggling
21 a bunch of reviews at once.

22 So you know I certainly don't want
23 industry to all of a sudden request that every
24 application be done in two months because we wouldn't
25 be able to achieve that -- yes, two weeks, as Steve

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1 says. But I will say for things that are of simpler
2 nature and if there is a desired shorter time frame,
3 that should be reflected in the requested schedule
4 when it comes into us because I think we do generally
5 try to meet that.

6 MR. JARRETT: And I'm not poking at that.
7 I'm just the importance of certainty and meeting
8 schedules is really, I know on our side when I make a
9 mod and you're not involved --

10 MR. BENNER: Yes, we agree.

11 MR. JARRETT: -- we have to meet schedules
12 and then bring in--

13 MR. BENNER: Yes, and we have a new
14 performance metric that we implemented because
15 completely separate from the one-year congressional
16 metric, we have a metric that says hey, you know
17 because during our acceptance review we finalized a
18 proposed schedule with the applicant and we are
19 separately measuring how well we do in meeting that
20 schedule.

21 So you know at the highest level of yes,
22 once the applicant and the NRC agree on a schedule, we
23 agree it is important to meet that schedule.

24 MR. MOTT: Hey, Ron, thank you so much.
25 I really appreciate your input there.

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1 And I do have a takeaway of maybe a better
2 job and integrate a barrier, maybe integrate the
3 schedules. I really appreciate that.

4 Is there is anything else on I&C
5 architecture third barrier?

6 Okay, we can move on to the fourth one,
7 which is limited functionality I&C devices.

8 MR. VAUGHN: This one will be pretty short
9 because we didn't get a lot of examples, which is an
10 indication to me that if it is a barrier, it might not
11 be a large barrier. I think both Dave and Mark both
12 had a comment on it. I think, Dave, yours was that
13 the risk sort of solved this issue.

14 MR. HERRELL: It is really about two items
15 in particular.

16 My company is one of the few remaining
17 U.S. suppliers of the magnetics-based automatic
18 voltage regulator for emergency diesel generators.
19 One of the things that you guys have resolved in the
20 RIS is there is a small digital component in the
21 standard regulator that is, effectively, a digital
22 resistance converter, a voltage set point. The RIS
23 eliminates that as a common cause failure point, I
24 think.

25 However, as a digital person, I am not

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1 really fond of something that is the size of an SUV
2 and weighs as much full of magnetics because, quite
3 frankly, finding a good magnetics engineer is becoming
4 a very difficult thing anymore. Saturable
5 transformers are not a common item.

6 I would love to see the whatever utility
7 barrier there is or utility fear about digital voltage
8 regulators eliminated. And it kind of fits in the
9 limited functionality device -- kind of. It only has
10 a few inputs. It only has one or two outputs. It is
11 really controlling the field on the generator.

12 I have had a customer in the recent months
13 who has come back and said yes, I know you are trying
14 to push a digital voltage regulator on me. I'm afraid
15 of what the Commission will say. I am going to go
16 back and keep it magnetic.

17 MR. MOTT: And so the fear is what?

18 MR. HERRELL: That they are going to end
19 up with stuff in the next 30 years that is
20 unmaintainable. Because we have one horse --

21 MR. MOTT: No, I understand what you are
22 saying.

23 MR. HERRELL: -- one engineer who do
24 magnetics.

25 MR. MOTT: I mean the digital part of it,

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1 for the digital I&C part, the limited functionality,
2 you are saying if you have an application that you
3 want to use or utilize, the RIS will cover it. But if
4 the RIS are not there or you are saying the fear.

5 MR. HERRELL: I'm not completely convinced
6 the RIS -- well, the RIS does cover. I believe it
7 covers it now. It didn't cover it -- until the RIS,
8 it didn't cover it.

9 A lot of the limited functionality
10 equipment really has to be covered by the RIS saying
11 the only thing that I need to worry about CCF is the
12 logic of the -- and obviously, however many diesel
13 generators, I am going to have twice that number of
14 digital voltage regulators.

15 MR. MOTT: So it is removal of the common
16 cause failure.

17 MR. HERRELL: It is removal of common
18 cause failure.

19 MR. MOTT: Fair enough. All right.

20 Anybody have anything else?

21 MR. BURZYNSKI: Yes, I wanted to put a
22 thought, not so much as it is a barrier today but I am
23 thinking about a vision for the future.

24 And so let me string a couple of thoughts
25 together. We've heard in a number of conferences the

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1 importance of and the benefit of big data. And
2 everybody has computer systems that can process a lot
3 of data. But the challenge will be collecting the
4 inputs that you want to be able to do things.

5 There are now a big market for sensors
6 that are limited functionality devices that have
7 built-in heart transmitters that you collect the data.
8 The market is there not for the nuclear industry but
9 for other critical industries that want to accomplish
10 the same thing, fossil power plants, chemical plants,
11 other people.

12 You can now get these devices that are
13 certified which means when you get that certification,
14 there are developed well, the communications is non-
15 interfering, they are cyber-secure, those kind of
16 attributes. So there is a market for these things --
17 availability. We are working in MP3 to credit
18 certification as a way to help you address the
19 dependability characteristics in the commercial grade
20 dedication.

21 You guys have endorsed NEI guidance that
22 deals with limited functionality critical digital
23 assets that makes it simpler to handle the
24 cybersecurity aspects.

25 When I asked the IEC people why did you

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1 issue the IEC standard out there 62671 they said
2 that's because it completes the picture. That gives
3 us a set of generic technical attributes to pick
4 limited functionality devices, get them from a
5 certified supplier and put them in our plant so we can
6 accomplish big data.

7 So I see that as a piece for the future
8 that if we don't act on it in advance, it will be a
9 barrier in the future.

10 MR. MOTT: Okay.

11 MR. BURZYNSKI: And it kind of completes
12 the picture of what we've got going on, the risks will
13 tell you how to answer the 50.59 questions. The
14 endorsed guidance on critical digital assets for
15 limited functionality tells you how to address the
16 cyber. When MP3 is done, how can I credit a certified
17 product to help me in commercial grade dedication?
18 And this standard would help me define what is limited
19 functionality. What are they actually -- the
20 characteristics of limited functionality that are then
21 critical attributes I could verify to say oh, it fits
22 in this bucket. It is certified. I know how to
23 handle cybersecurity-wise. I know how to handle the
24 certification. And I can now put those kind of
25 devices in to help me with big data.

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1 So I see it as an opportunity to avoid a
2 barrier that is coming.

3 MR. MOTT: Okay and what was the IEC
4 again?

5 MR. BURZYNSKI: 62671.

6 MR. MOTT: Thank you.

7 MR. BURZYNSKI: That's why I have been
8 pushing that one is as I am looking at what is going
9 on in Europe and saying why are you guys developing
10 these kinds of standards and just bringing that
11 thinking here because they are ahead of us in
12 deployment on that and they are ahead of us in taking
13 advantage of the strong market that is out there for
14 certified products.

15 MR. MOTT: Thank you so much. I am going
16 to keep going through. If you want to take a break,
17 go ahead on and take a break for five minutes.

18 But I would like to keep pressing through
19 because we are going to now discuss -- have all the
20 questions for the real world examples that we are
21 providing.

22 So I am going to go back to number one.

23 Yes, okay, we can take a break. Take
24 five.

25 (Whereupon, the above-entitled matter went

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1 off the record at 3:21 p.m. and resumed at 3:28 p.m.)

2 MR. MOTT: This is Ken Mott. We are back
3 from the five-minute break now and the mute is now
4 off.

5 All right, at this time in the meeting, we
6 are going to start this section with discussion of
7 industry's real world examples. And I did have
8 scheduled, because we are fast approaching 4:00 p.m.,
9 discussion of possible solutions to industry barriers.

10 So right now, we will just have a
11 discussion and it may turn into the possible solutions
12 as well.

13 I will start off with the first one was
14 the common cause failure policy. And a lot was stated
15 about the certainty, additional time with the D3
16 analysis. And what was brought up -- does anybody
17 first want to have any discussion about what was
18 stated by industry when they were discussing their
19 common cause failure barriers?

20 Okay and so I just want to double down.
21 Like I said I'm sorry, I don't take notes. I can't
22 read some of my own writing right now but one of the
23 solutions was status buy-in with the D3 analysis and
24 I've got the standard or something that will bring
25 certainty quicker. So is that a standard different

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1 from or outside of the --

2 MR. BURZYNSKI: That was Norbert's
3 suggestion. If there is an IEC standard that defines
4 a DAS, how would that help? And it would be well,
5 we'll take the scope question -- the scope uncertainty
6 out of the issues. It might not solve the cost
7 concerns that people have.

8 MR. MOTT: Okay and the cost is centered
9 around -- is that the additional time to design a DAS
10 or the additional time it takes to determine whether
11 you need one or not?

12 MR. BURZYNSKI: And the cost of a DAS.

13 MR. MOTT: And the cost of a DAS.

14 MR. BURZYNSKI: Yes, it is all of those
15 elements added up.

16 MR. MOTT: Okay. So let me ask, then --

17 MR. WATERS: Ken, can I ask a question?

18 MR. MOTT: Yes, go ahead.

19 MR. WATERS: One question. So we look
20 back at past D3 assessments. You mentioned the D3
21 topical report and is that something initially was
22 planning on going forward and the next -- I'm trying
23 to understand. You mentioned that and that has been
24 done in the past but we didn't talk about that in an
25 ideal situation. What is the thinking on that?

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1 MR. BURZYNSKI: No, no. What I meant by
2 that was Oconee submitted a D3 report about a year
3 before the LAR went in. Diablo submitted one. And
4 they call them topical reports in order to get in your
5 review process because they are not an LAR. So they
6 have to be something in order for you to review them.
7 So they are called topical reports.

8 Mitsubishi submitted one as part of their
9 DCA. Kepco submitted one as part of DCA. Areva
10 submitted one as part of their DCA.

11 MR. WATERS: I have heard at the RIC, just
12 in-between the meetings, I heard people talk about
13 this same type of idea. You mentioned this. Just a
14 theme going on.

15 MR. BURZYNSKI: Yes.

16 MR. ODESS-GILLETT: This is Warren Odess-
17 Gillett, NEI.

18 It is sort of a way for industry to
19 mitigate licensing risk.

20 MR. WATERS: Well we want to get the big
21 questions out of the way first, the architecture and
22 the --

23 MR. BURZYNSKI: And with more finality
24 than it sounds good in a pre-application meeting
25 summary. So you submit something that is for review

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1 in a pool. That is the tactic that industry has been
2 using to try to close the regulatory uncertainty.

3 MR. ODESS-GILLETT: And I think industry
4 sees it as a stop-gap measure because of the lack of
5 clarity in BTP 7-19.

6 MR. WATERS: So my commentary, just to be
7 honest with you, we just went to our ISG-06 evolution,
8 which seems a little -- we seem more approval. But I
9 always assumed during that process that you get it all
10 at once up front. So are you guys doing something
11 different than that?

12 MR. ODESS-GILLETT: Well clearly, when we
13 developed ISG-06, we did not try to address the CCF
14 question. It was really to address an efficient LAR
15 review and not try to address BTP 7-14 or BTP 7-19.

16 MR. WATERS: No, I'm talking a process
17 question for you, talking about a single submittal all
18 at one time.

19 MR. BURZYNSKI: Well, I think it
20 envisioned that there would still be this pre-D3
21 report ahead of the LAR but --

22 MR. ODESS-GILLETT: I mean that is the
23 licensee's choice. It's an option.

24 I think when we wrote the ISG-06 together,
25 and the NRC finalized it, and approved it, it really

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1 was a single submittal thought process but it doesn't
2 preclude submitting it ahead of time.

3 MR. BURZYNSKI: Yes, it is just how much
4 risk you perceive.

5 MR. VAUGHN: I would say just if the BTP
6 7-19 goes on kind of a success path, there would
7 probably be no need to send a D3 before you submit
8 your LAR. Right?

9 MR. BURZYNSKI: Yes, I think that would go
10 a long way to address it. Of course, the devil is in
11 the details.

12 MR. MOTT: Is there any other discussion
13 on things that were brought up earlier for the common
14 cause failure barrier part?

15 Warren, you want to speak?

16 MR. ODESS-GILLET: Yes, so from the point
17 of view of software development standards, or you
18 might think of it as software quality assurance
19 standards, I think some of the standards that the NRC
20 has endorsed, the IEEE standards, especially in BTP 7-
21 14, I think fall under the bin of software quality
22 assurance. Let's say IEEE 1074 for life cycle, 1028
23 for reviews, 829 for testing, these -- so we have --
24 so the NRC has endorsed all of these IEEE standards
25 that were developed by a computer group within IEEE

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1 with probably no nuclear representation. I think 1012
2 would be the exception to that and maybe 1012 wouldn't
3 be considered a software quality assurance standard,
4 necessarily.

5 However, most of the -- in the U.S., most
6 of the vendors and the licensees are Appendix B-
7 qualified and the NRC has endorsed NQA-1 as an
8 appropriate software quality assurance standard. NQA-
9 1 has matured over the years to incorporate more
10 software quality assurance criteria.

11 And so if, indeed, the NRC has endorsed
12 NQA-1 as an appropriate standard for developing
13 computer software and testing, why is it then that I&C
14 has to comply with the IEEE software quality assurance
15 standards?

16 MR. CARTE: Norbert Carte. So let me ask
17 this. So the basic underlying criteria is that you
18 have an adequate software development process. That
19 is the intent.

20 So there is different camps and different
21 ways people think about it. So some people think
22 about it, certainly QA don't think about it, I&C
23 shouldn't do that. We endorsed those standards and we
24 continue to endorse them because that decision was
25 made in 1997. It's hard to withdraw endorsement.

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1 But the underlying criteria is what is an
2 acceptable process. The difficulty we have is we
3 don't have an alternate form to propose. And NQA-1
4 doesn't tell you an acceptable process. It has sort
5 of process requirements but what is an acceptable way
6 of doing testing is not described in NQA-1. Yes, the
7 test is a requirement probably. I'm not familiar with
8 NQA-1.

9 MR. ODESS-GILLETT: Yes, they have
10 requirements for a test plan and test procedure.

11 MR. CARTE: Right. But in essence, it's
12 not supposed to be a process compliance evaluation.
13 It is supposed to be a process adequacy evaluation.
14 You are relying on the software development process to
15 assure certain system characteristics that cannot be
16 objectively verified any other way.

17 So the fundamental criteria is what is
18 adequate, not are you following an accepted process.

19 MR. ODESS-GILLETT: So then, Norbert, why
20 is it that safety analysis software, which is safety-
21 related, can be shown to be acceptable for -- as a
22 development process, based on an NQA-1 inspection or
23 audit but I&C software development cannot?

24 MR. CARTE: Well, in part, you could
25 justify that condition because we can do independent

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1 analysis to confirm the analysis. So you have one set
2 of analysis being done by the applicant in accordance
3 with states-related code and you can have the NRC do
4 a separate independent analysis. And as long as they
5 are not using the same code, you have an alternate way
6 of checking it and they are both done to some quality
7 criteria but you don't always have comparable ways of
8 confirming in software development.

9 In certain cases, there are certain
10 applications where two sets of software code were
11 developed and you used one code to confirm a second
12 code. And that might give you some relaxation but the
13 bottom -- the model is that you don't have any
14 independent confirmation and that is why you are
15 relying on a high-quality development process.

16 It is not just that this is a process that
17 is defined and, therefore, you have to follow it. It
18 is just is the process you are following adequate?

19 MR. ODESS-GILLET: But is not NQA-1
20 addressing the Appendix B criteria for quality of your
21 basic components?

22 MR. CARTE: Appendix B is programmatic.
23 Appendix B doesn't necessarily -- yes, everything is
24 done in accordance with Appendix B of the design also,
25 but we have reviewed the design.

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1 MR. ODESS-GILLETT: I'm not separating the
2 design.

3 MR. CARTE: No, no, but the point is that
4 Appendix B covers everything, in a sense, how you do
5 the design and that the design meets regulatory
6 requirements but we still evaluate the design for
7 meeting the regulatory requirements.

8 MR. BURZYNSKI: Let me ask --

9 MR. CARTE: Just because you have a
10 program doesn't mean you don't have to worry about the
11 details.

12 MR. BURZYNSKI: No, but I think your
13 argument, if you said 1012 provides specific tasks and
14 objectives that NQA-1 doesn't, then maybe you could
15 win that argument. But if you say the configuration
16 management requirements in --

17 MR. ODESS-GILLETT: In 8.28.

18 MR. BURZYNSKI: -- 8.28 give you a better
19 story than the configuration and program requirements
20 in NQA-1, I'm not sure you could win that argument too
21 well.

22 MR. CARTE: Okay so but has anybody really
23 done a full tabulation of the requirements in NQA-1
24 against IEEE standards and then --

25 MR. ODESS-GILLETT: So it seems to me,

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1 Norbert, that you are creating reasons not to look at
2 this as an alternative.

3 MR. CARTE: No, no, the point is that it
4 is not a simple assessment of are you following an
5 acceptable process. Because as the generic says, the
6 acceptable process doesn't cover the technical details
7 of what you are doing.

8 MR. ODESS-GILLETT: Okay, so Norbert, you
9 have a reg guide that endorses 8.28, which is
10 configuration management. What is the underlying
11 regulation in that reg guide? I suspect it is 10 CFR
12 50, Appendix B.

13 MR. CARTE: Well, they are listed in the
14 reg guide.

15 MR. ODESS-GILLETT: Right.

16 MR. CARTE: And there's three of them,
17 279221 Appendix 603.

18 MR. ODESS-GILLETT: Right.

19 MR. MOTT: So let me ask this. Are we
20 saying that we would like a look at NQA-1, we would
21 like to look at that as an alternative standard for
22 software development versus IEEE standards?

23 MR. BURZYNSKI: Maybe think of it another
24 way in your barrier -- thank you, Ken. Since you
25 already endorse it in Reg Guide 1.2A, the applicant --

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1 MR. MOTT: Subpart 2.7. I know where we
2 are.

3 MR. BURZYNSKI: -- an applicant is
4 required to evaluate compliance with both of them.

5 So when you ask is anybody going to
6 compare I say yes, because when I claim compliance to
7 Reg Guide 1.28 and NQA-1, I have to look at that and
8 then I have to turn around and pick up those IEEE
9 standards and look at that again. And they sometimes
10 agree. Sometimes they don't agree.

11 MR. MOTT: So we're saying -- I'm just,
12 like I said, I'm looking at it just from a barrier
13 standpoint.

14 Industry is stating that I cannot use NQA-
15 1 as the sole source of a demonstration of a software
16 development process to meet Appendix B. Is that what
17 I'm hearing? And we would like to use that as an
18 alternative.

19 MR. BURZYNSKI: Yes, okay. I understand.
20 Yes, I'm just trying to say we think it gets at the
21 right level of detail. It covers all the same topics.
22 It is not as specific about the V&V task is 1012 but
23 I would make the claim that with modern software
24 development tools that the vendors have or the FPGAs,
25 1012 doesn't have the right set of tasks anymore

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1 anyways.

2 MR. STATTEL: This is Rich Stattel. I
3 would like to point something out.

4 The IEC standards, really they are no
5 different. They provide guidance above and beyond
6 what is required by NQA-1 within those standards. And
7 so really they are applying it the same way that we
8 are doing in IEEE standard.

9 MR. ODESS-GILLETT: Yes, Rick -- Rich. My
10 point is is that when you are endorsing IEEE standard
11 for development of -- for configuration management or
12 you are endorsing an IEEE standard for test plans and
13 test procedures, why for I&C we need to demonstrate
14 compliance to those computer society standards versus
15 showing that for Appendix B we meet the criteria of
16 the underlying regulation of Appendix B for this --

17 MR. STATTEL: Well, I don't have an answer
18 to that question but what we are looking at right now
19 is we are studying the IEC standards and what we are
20 seeing is if we were to provide an endorsement of IEC
21 61513, for example, we would also be endorsing
22 those processes, including multiple planning
23 documents, including configuration management. They
24 covered a lot of different areas. So it doesn't get
25 around that.

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1 If we switch our paradigm to look at IEC
2 standards, we are faced with the same issue.

3 MR. VAUGHN: This is Steve Vaughn, NEI.

4 And we did discuss this a little bit
5 earlier, Rich. I'm not sure if you were on the line
6 but IEC standards and endorsing a prioritized list
7 isn't a silver bullet here. That's why we weren't
8 able to provide a list. They do one, two, three, four
9 five, thumbs up, that's not the case. And that may be
10 a good example.

11 I'm not saying there is not any value in
12 them but we are not.

13 MR. BURZYNSKI: No but I would like to
14 say, Rich, this is Mark. I think you shifted the
15 argument that Warren and I were making.

16 We were making the argument that NQA-1,
17 subpart 2.7 is the right level of detail instead of
18 the six IEEE standards you endorsed for software
19 development.

20 MR. MOTT: So you are making a case that
21 they are equivalent.

22 MR. ODESS-GILLETT: They meet the
23 underlying regulations.

24 MR. MOTT: I'm just talking through this.
25 I'm not saying --

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1 MR. ODESS-GILLETT: Not equivalent,
2 necessarily.

3 MR. MOTT: There is no decisions being
4 made or anything but not equivalent but you should be
5 able to use NQA-1, submit that in your application and
6 the staff should review it under that reg guide and
7 not have to review it under the IEC, the endorsed IEC
8 -- IEEE, sorry.

9 MR. BURZYNSKI: And the reason --

10 MR. MOTT: Let me just get that. Is that
11 -- is that a yes? Okay.

12 MR. VAUGHN: So let me just --

13 MR. FETTER: My main point is -- and I'm
14 not arguing for or against that. That may be the
15 outcome of this.

16 But my point is if we were to shift gears
17 today and provide endorsement of the IEC suite of
18 standards, what we end up is IEC standards actually
19 have more shallow statements in them than the IEEE
20 standards do. I know that for a fact. And they
21 require the same types of documents that we require in
22 BTP-14 for configuration management. I mean it
23 actually includes other topical areas, including human
24 factors and things that are even outside the I&C
25 realm.

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1 So if people are thinking that shifting
2 paradigms to the IEC paradigm will solve this
3 particular problem, they are incorrect. They need to
4 read the IEC standards because there is specific
5 requirements within these IEC standards for performing
6 in these processes, just like the IEEE standards did.
7 They are no different.

8 MR. BURZYNSKI: No. Rich --

9 MR. FETTER: I mean they are different but
10 they are still there. If we provide an endorsement of
11 the IEC suite of standards, if anything, there will be
12 more process requirements than what we have today in
13 IEEE -- in our IEEE endorsements.

14 MR. BURZYNSKI: Well, let's get back to --
15 again, you've shifted the argument that Warren and I
16 were trying to make, which is to solve the question of
17 level of detail between literal compliance with the
18 IEEE standards that we talked about as a barrier, if
19 you endorsed -- just stuck with the endorsement of
20 NQA-1 you have, you would solve that problem. Okay?

21 That's separate from an efficiency
22 argument that one could make to say if I've already
23 developed something to IEC, would you accept that as
24 an alternative.

25 MR. ODESS-GILLETT: Yes, these things

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1 aren't mutually exclusive.

2 MR. MOTT: I'm going to let it go a couple
3 of more conversations. We do have to move on but I
4 just want to say -- I am going to let a couple of
5 conversations go after this but I just want to state
6 this is an MP 4B meeting with broad assessment. If
7 there is something we can look at for more
8 flexibility, so not only do you have the option of
9 using IEEEs, and not only would you have the options
10 of using IECs, but you would also have the option of
11 using NQA-1. MP 4B is going to explore that. We are
12 going to look at that. And that's one way we can
13 demonstrate we are open industry. We are providing
14 flexibility, if that is a concern.

15 There's nothing wrong with looking at
16 that. There is no -- we don't have to come to a
17 decision here on what is right, or what's wrong, or
18 cross-reference. That's all in the future but we may
19 want to make a recommendation, offer flexibility.

20 Industry is clear they will likely use
21 NQA-1 as a sole source to demonstrate software
22 development compliance. There is nothing wrong with
23 that. Nothing wrong with take that away and leave.
24 That's actually something new that is new that is
25 going to be added.

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1 So I know I am going to let the
2 conversation go a couple of times but trying to prove
3 whether that is good or bad, that is just not this
4 meeting here. That is not this meeting.

5 Okay, so Norbert, you can go ahead. And
6 if anybody else wants more conversation after Norbert.

7 MR. CARTE: Norbert Carte, NRC.

8 Just to paraphrase, so you want the I&C
9 Tech Review Branch to use NQA-1 as guidance when
10 assessing the adequacy of the software development
11 process. Is that correct?

12 MR. ODESS-GILLETT: Yes.

13 MR. CARTE: Okay.

14 MR. WATERS: Do other industries use the
15 computer society standards, too? Other industries, do
16 they use computer society attributes for this?

17 MR. ODESS-GILLETT: I imagine so because
18 --

19 MR. WATERS: Well part of the premise is
20 they aren't really applicable to nuclear I&C industry.
21 I'm just trying to understand why --

22 MR. ODESS-GILLETT: Yes, but the point --
23 my point is is that we already need to meet NQA-1.

24 MR. WATERS: I'm just trying to understand
25 from a barrier standpoint, is it these standards are

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1 providing more constraints than are necessary,
2 overlap, or navigation? Because when you really look
3 at --

4 MR. ODESS-GILLETT: It's compliance --
5 demonstrating compliance.

6 MR. WATERS: In what way? You can't do
7 it?

8 MR. ODESS-GILLETT: Let me give you an
9 example. You have recently endorsed 829, which
10 completely rewrote the way you -- the testing process.
11 Okay? And as a result, you know those of us who have
12 been following the previous version of 821, are no
13 longer compliant with the version that was revised and
14 ultimately endorsed by the NRC.

15 However, the same vendor has always been
16 compliant with NQA-1 in their procedures that follow
17 NQA-1.

18 MR. WATERS: So, that's good enough. I
19 just I wonder is that an endorsement issue, not
20 getting flexibility, or is it a more fundamental
21 following by IEEE standards --

22 (Simultaneous speaking.)

23 MR. HERRELL: I'm going to interject
24 something. My company also does work in medical.
25 Medical does not follow the IEEE standards. They have

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1 their own set of standards. The aviation industry has
2 their own FAA and EAA set of standards that they
3 follow to do software.

4 MR. WATERS: Similar to NQA-1?

5 MR. HERRELL: Sort of a mix of NQA-1 and
6 the IEEE -- something that looks like the IEEE
7 standards or the IEC standards. They are prescriptive
8 about thou shalt do this, this needs to be done, these
9 documents need to be produced, V&V needs to be done,
10 testing needs to be done to this to their structure
11 and requirements.

12 MR. WATERS: Here is my other question.
13 It is a nexus question. You just finished ISG-06.
14 This was a big topic of debate in the first issue.
15 NQA-1 is referenced in there. And I am trying to
16 understand the nexus with going through a review
17 process, providing plans, specifications, a commitment
18 to follow vendor oversight, plan would be inspectable.

19 How is this IEEE standard similar to that
20 approach there, as far as something that needs to be
21 so improved?

22 MR. ODESS-GILLETT: So first of all, ISG-
23 06 is interim. And there was no way we were going to
24 address changes to what has already been endorsed as
25 an acceptable method for developing software when ISG-

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1 06 was developed. So we accepted the playing field as
2 it was for ISG-06.

3 But now we are in the fundamental
4 revolutionary regulatory infrastructure change. It
5 might impact what the basis for D4 and ISG-06 is but
6 we have to take one step at a time.

7 MR. WATERS: So this is longer.

8 MR. ODESS-GILLETT: This is the MP 4B.

9 MR. MOTT: All right, we are going to move
10 just to some other things. We are losing a lot of
11 time here.

12 MR. JARRETT: Well, this is Ron Jarrett.
13 I would like to say one thing that IEEE 7432 back in
14 the '90s had NQA-1 in that document and it was
15 endorsed by the NRC. Just some history there.

16 MR. MOTT: Thank you so much, I appreciate
17 that.

18 So looking still sitting here in software
19 development, I just want to go back to our earlier
20 comment about the literal compliance with BTP-714.
21 It's not like some of the things there were not
22 necessary but you had to address it, the literal
23 compliance.

24 Does anyone have any comments on that at
25 all?

1 MR. HERRELL: Well maybe to ask, and I
2 will come around again for some of the other ones but
3 any thoughts on -- the DEG endorses, I guess endorses
4 is the right word for the DEG, but it utilizes some of
5 these new systems in software engineering, the ISO
6 standard, the IEC, IEEE ones. And the human factors
7 folks are looking at 15026 as well. It's maybe more
8 number 3 but there is also a draft one of those on
9 system architecture, which I don't know myself. I
10 just know that it is coming out.

11 So any thoughts on those in principle, you
12 will be starting to use at least the ones in the DEG.
13 But you know a lot of those are coming right now.

14 MR. ODESS-GILLETT: Yes and if you look at
15 the EPRI, though, the EPRI will say that the DEG
16 synthesizes the implementation of those IEC standards.

17 So if you follow the DEG, then you are
18 following those IEC standards that they mentioned in
19 the DEG.

20 I don't know about these other items.

21 MR. VAUGHN: There are three of them. I
22 can't name them off the top of my head.

23 MR. HERRELL: Right, right. Yes, the
24 multi-level ones.

25 So any thoughts on having us look at

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1 those? I don't know if they are getting picked on the
2 ONR or EDF side.

3 MR. MOTT: Anything else on this topic of
4 the common cause failure?

5 MR. HERRELL: Let me say something
6 briefly. I am a member of the Standards Association.
7 I have been going over those. They, in my mind, have
8 the same problem that the endorsed software standards
9 do. They attempt to be all things to all people.

10 So there are shells that are in there that
11 don't have a nexus to nuclear safety, just as there
12 are in the existing IEEE standards. The only
13 advantage I see to the IEC 6880 over the standards
14 that are currently endorsed, actually I see two. One
15 is it is a complete standard. The existing endorsed
16 standards are not complete. There are several
17 activities that are not covered in those standards.

18 And the other thing is it is targeted to
19 nuclear. So the things that are important to nuclear
20 safety are the things that it says you shall do. And
21 a lot of the other things, like you report needs to
22 have this table of contents are not listed in it.

23 MR. MOTT: So let me ask this, like I
24 said, this is MP 4B, just broad assessment. It sounds
25 like we want an alternative or something different to

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1 BTP-714, without stating a complete rewrite, or
2 cutting, or butchering it up, there is a lot that is
3 coming out about BTP-714.

4 MR. ODESS-GILLETT: Well I think BTP-714
5 is not a readable document.

6 MR. MOTT: Okay.

7 MR. ODESS-GILLETT: And it is now based on
8 the IEEE standards that we were talking about. So I
9 am not necessarily saying that -- or I think we are
10 not saying necessarily to throw out BTP-714 because
11 that is your review guidance for software quality
12 assurance, I believe.

13 But it could incorporate other
14 alternatives to the IEEE standards.

15 MR. MOTT: Okay.

16 MR. ODESS-GILLETT: We are also saying
17 something alternative like I was stating, too.

18 MR. WATERS: If I missed it, I apologize.
19 What were you thinking as far as the graded approach?
20 What was that and what is the thinking now? I missed
21 that.

22 MR. ODESS-GILLETT: So I had mentioned,
23 and that sort of -- that is in regards to the fact
24 that you have different levels of safety-significant
25 systems. So you have your reactor protection system

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1 and then you have your chiller system. And to what
2 degree do you need to show literal compliance? Do you
3 apply BTP-714 the same way? Oh, no. Clearly, you
4 wouldn't be even looking at BTP-714 now that we have
5 the RIS.

6 So in some ways because the RIS is now,
7 these kinds of lesser safety-significant systems are
8 falling under 50.59. So BTP-714 almost doesn't even
9 come into play anymore for these lesser safety-
10 significant systems.

11 So in some ways, I think the RIS took away
12 that aspect of it.

13 MR. BURZYNSKI: But for something like the
14 chiller, you wouldn't necessarily produce the 15 plans
15 that are defined in BTP-714. You might define in
16 overall project planning, in overall project quality
17 plan.

18 MR. WATERS: That's the question because
19 in the previous conversation --

20 MR. MOTT: I know. I remember.

21 MR. WATERS: -- when we were talking about
22 A-1 and A-2, it could be a small --

23 (Simultaneous speaking.)

24 MR. BURZYNSKI: Right now, you are -- so
25 if you were looking from a new plant's perspective, so

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1 I will take up Deanna's torch, and you apply BTP-714
2 for one of these A-2 systems, it is a big sledgehammer
3 and maybe you don't need a big sledgehammer for that.

4 MR. MOTT: Well, like some of you were
5 saying, so you know you have a new design. Are we
6 saying that for the safety system, of course, we
7 follow the full weight of BTP-719 but even in a new
8 design for the chiller system, even though it is part
9 of the safety system, I say this has a greater -- I've
10 done that before, where I can break them up at that
11 point.

12 MR. BURZYNSKI: And you know they
13 sidestepped this on NuScale because they didn't
14 reference BTP-714 in the DSRS. They put in the A-1/A-
15 2, B-1/B-2 matrix and they kind of left it
16 freewheeling for the details. But I know NuScale came
17 in and proposed a simpler process for something that
18 would be category A-2 systems.

19 MR. WATERS: I have one more question.

20 I understand the point about the NQA-1
21 versus IEEE standards. So I understand that point.

22 Outside of that, is there any value in an
23 interim step in consolidating the reg guide together
24 for navigation or streamline BTP-714 for navigation,
25 which can include so much risk for me?

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1 MR. BURZYNSKI: I think some areas you
2 could look at there would be yes, streamlining or
3 combining them. Because you've got these individual
4 reg guides with all of the augmentations and
5 everything and it is hard to navigate those. And
6 those six cover a subset of what is in like let's say
7 60880.

8 MR. WATERS: What about NQA-1 is good
9 enough? It seems like a lot more work and research
10 for us to look at versus streamlining --

11 MR. BURZYNSKI: And it is one-stop
12 shopping.

13 MR. WATERS: -- more clear what is
14 optional and may not be needed, clarify the shallows
15 versus the may not be needed. I am just throwing out
16 an interim optional --

17 MR. BURZYNSKI: And the other thing you
18 could think of to be looking at may be to update BTP-
19 714 in the interim.

20 As Rich mentioned, IEC 61513 has a set of
21 plans for system development. It is a different set
22 than what is in BTP-714 and I would suggest it is more
23 relevant for the kind of work we do today with the
24 kind of software and systems that we are delivering.
25 And so it might be a better set of planning documents.

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1 MR. MOTT: Mike, can you say that again?
2 I was just trying to write what you had stated, what
3 your understanding was of this.

4 MR. ODESS-GILLETT: Oh, consolidating the
5 reg guides, so is that something that industry would
6 like to see?

7 MR. VAUGHN: It sounds like if NQA-1 is
8 good enough for software QA, there's no reason to --

9 MR. ODESS-GILLETT: I mean, that's already
10 in Reg Guide 1.2A, right?

11 MR. VAUGHN: Yeah, there would be no
12 reason to consolidate those six reg guides.

13 MR. WATERS: That's what I'm asking
14 because there's other comments. People look at my
15 diagram and think there's 10 reg guides and they're
16 hard to navigate.

17 MR. VAUGHN: Right, right.

18 MR. WATERS: I'm just trying to understand
19 exactly what's here. That's why I'm asking the
20 questions.

21 MR. BURZYNSKI: Right now, when you get a
22 spec from a customer, what I see is comply with Reg
23 Guide 1.2A. Here is the list of reg guides, the BTP
24 7.14, yadda, yadda, yadda.

25 MR. BURZYNSKI: The navigation issue, and

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1 clarity reigns with me, that NQA-1 equivalency is
2 something that --

3 MR. BIRLA: Let me ask the question that
4 Mike Waters asked in a different way. Since you used
5 the expression safety case earlier to prove that the
6 system is safe basically, right, and you want the
7 guidance to support with the right kind of evidence,
8 organized in the right manner.

9 The existing reg guides, one guide, one
10 standard, aren't organized in a way that supports you
11 in organizing the evidence, so that's the navigation
12 issue. And this is a decision that was jointly made
13 between industry and the NRC ages ago.

14 MR. BURZYNSKI: Well, yeah, but it's also
15 a decision as Norbert points out that has been there
16 since 1997.

17 And I challenge you to pick up actually
18 10.12 or one of those other documents and figure out
19 how to map that to a FPGA process developed with
20 standard tools that produce standard reports.

21 You end up making all kind of deviations
22 to that and then separately having to make a safety
23 case that what I am doing is okay in spite of all of
24 these deviations from something that's not really
25 applicable anymore.

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1 MR. BIRLA: Yeah, so rather than follow
2 the traditional one reg guide IEEE standard, suppose
3 we separate the coupling and focus on the guidance,
4 organizing the guidance in the manner that helps you
5 support and make that safety conclusion, and then how
6 you bring that evidence in, you provide the reasoning
7 and logic, wherever you go to get it.

8 MR. BURZYNSKI: That's what you do today
9 to make your affirmative case, and it would eliminate
10 the step of going through the justification for all of
11 the deviations for the things that don't really
12 matter.

13 MR. BIRLA: Exactly, so the current
14 paradigm is compliance oriented. Just shift away from
15 the compliance oriented paradigm.

16 MR. BURZYNSKI: I would think that that
17 would be helpful.

18 MR. BIRLA: So --

19 MR. MOTT: Again, one more comment because
20 I've still got a couple of major things to do, so just
21 one more comment from --

22 (Simultaneous speaking.)

23 MR. MOTT: -- then I've got to move on,
24 Sushil and then you because we've got one more major
25 thing to do and then 4:30 is the public comments, so

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1 we've got to go.

2 MR. BURZYNSKI: And I've got to be
3 leaving.

4 MR. MOTT: You've got to be leaving.
5 Well, let's start this. We'll come back.

6 MR. WATERS: He has a comment and he
7 hasn't spoken.

8 MR. MOTT: Okay, go ahead. I'm sorry.
9 Can you go to the next slide?

10 MR. HUGHES: Are you suggesting or you
11 think NQA-1 in lieu of 10.12?

12 MR. BIRLA: Me?

13 MR. HUGHES: I mean, is that the premise
14 of saying endorse NQA-1 and not the IEEE standards?

15 MR. ODESS-GILLETT: We've got to identify
16 what is considered a software quality assurance
17 standard and how is that duplicated from the software
18 quality assurance requirements of NQA-1, and if that
19 includes or excludes 10.12, that needs to be
20 evaluated.

21 MR. HUGHES: Right, NQA-1 does not address
22 the independence requirements of VNV 6.80.

23 MR. ODESS-GILLETT: But NQA-1 does address
24 independence of your independent reviewer and it also
25 defines independence for QA.

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1 MR. HUGHES: Right, within the same
2 organization. You're part of the development team.

3 MR. ODESS-GILLETT: Right, but the point
4 is that Appendix B -- you know, Reg Guide 1.16A makes
5 the equivalence of independence of your VNV team to
6 what Appendix B defines for your QA department, so it
7 still ties it to Appendix B for independence.

8 MR. HUGHES: In the testing section and
9 the review section for members of NQA-1, it just says
10 it has to be somebody that wasn't involved in the
11 development.

12 MR. ODESS-GILLETT: Right, and maybe
13 that's sufficient for verification of validation. I
14 think it's saying something that needs to be --

15 (Simultaneous speaking.)

16 MR. HUGHES: So to address that, there is
17 a manual that has been written to address FPGA, but
18 again, to go back to what he said, 6.80 is written for
19 specific organizations, and it has a statement in
20 there that says that they deem the organizations
21 independent, and all communication between the one
22 organization and the VNV organization have to be
23 detailed on the level that can develop. So there are
24 specific independence requirements that I don't think
25 you're going to need, but I don't know.

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1 MR. BURZYNSKI: I don't disagree with you,
2 but I would make this case that that's for the NRC to
3 reconcile because right now, they endorse two
4 standards that have two different requirements on VNV.

5 That goes back to my point in Norbert
6 where they're not the same and you get left with well,
7 which one then is controlling, the most recently
8 endorsed one or the more conservative one?

9 MR. HUGHES: And which two are you talking
10 about?

11 MR. BURZYNSKI: NQA-1 and 10.12. And
12 10.12 doesn't really specify the level of
13 independence. It's Reg Guide 1.168 that then says
14 this is how we want to apply that.

15 MR. HUGHES: Actually 10.12 does address
16 independence.

17 MR. BURZYNSKI: Modified by the reg guide.

18 MR. ODESS-GILLETT: It's an appendix.
19 It's an informative appendix to 10.12, right, of the
20 various levels of independence that's allowed.

21 MR. HERELL: And when the NRC retiree who
22 set that standard was questioned, he had no technical
23 basis for setting it other than it seemed like a good
24 idea and it was the highest thing available. So
25 technically, I see no rationale behind the totally

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1 independent cell four requirement.

2 MR. MOTT: Let me ask, sir --

3 MR. HUGHES: There's not that much
4 difference from 683.

5 MR. MOTT: Let me ask you, sir. I don't
6 know your name.

7 MR. HUGHES: George Hughes.

8 MR. MOTT: Say it again. I'm sorry.

9 MR. HUGHES: George Hughes, Framatome.

10 MR. MOTT: George Hughes? Thank you. I
11 just wanted everybody's attention on what's on the
12 board here. Staff, in their research, have come up
13 with some other -- we have identified some other
14 potential digital I&C barriers, so we'd definitely
15 like to discuss them with staff and with industry.

16 The CFDs are things that are really
17 sitting here. Again, there is no real issue. Some of
18 them are going to match up with things that we've
19 discussed already. Some of them are going to match up
20 with things that are being done in another
21 modernization plan, and some may fall off. So these
22 are just things in our research we brought up.

23 So the first one here that's up on the
24 board now is efficiency of guidance for HDR
25 programmable devices and similar hardware, firmware.

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1 We just wondered is there some issue here where
2 industry thinks this is something we need to look at?
3 Is this something that industry -- this is nothing to
4 even really worry about.

5 MR. HERELL: From my perspective, trying
6 to fit an FPGA-based development environment using
7 VHDL into the applicable software standards is an
8 exercise in taking exceptions, and justifying the
9 exceptions, and justifying why what I am doing in the
10 process is sufficient.

11 So, yes, that would be something that, at
12 least for those of us doing FPGA-based systems, would
13 be worthwhile.

14 MR. MOTT: So what would be a resolution or
15 resolve? If you say trying to fit the design of an
16 FPGA into IEEE is somewhat burdensome, what would be
17 more efficient or allow you more flexibility?

18 MR. HERELL: There is an IC standard on
19 how to do HDL in SECY, in the SECY environment. I
20 don't remember the number. I never can do --

21 MR. MOTT: 62.5.66, does that sound --

22 MR. HERELL: Yeah, that's right. That
23 sounds right.

24 MR. MOTT: Let's move to the second one
25 here, efficient guidance for informing digital I&C

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1 review. We do have several reg guides, as well as the
2 regulatory position on this forming.

3 Is this something that -- and I know, like
4 I say, these are things that have been discussed to
5 the limit, but right here, for as far as NP4P and this
6 broad assessment, I still want to get it and capture
7 it here where I can say and document I spoke to
8 industry and this is the issue with risk informing.
9 So is this an issue with you all and what is the
10 issue?

11 MR. WATERS: Well, I think we use the
12 guidance we have right now.

13 MR. ODESS-GILLET: Well, you say there's
14 existing guidance?

15 MR. MOTT: That's correct. I don't know
16 what --

17 MR. HERELL: Yeah, there's a standard
18 that's not endorsed and there's some of the
19 explanatory stuff that's sort of shaded with 50.69.

20 MR. MOTT: Maybe I can pull them up right
21 quick.

22 MR. WATERS: So there's two things. One
23 is, you know, we did have of course the Reg Guide
24 1.11.74 process where you ask how you get things for
25 the application, not clear. You have 50.69. We just

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1 talked all morning about risk informing BT719 and use
2 and the same thing for BT719.

3 So in my mind, there's a little more
4 clarity of where we can go, but we want to springboard
5 it upon the process we have in house already. We're
6 risk informing I&C tech specs. It's not digital, but
7 it's the same concept.

8 So we're looking internally where we can
9 be risk informed further in this area. And I don't
10 know if it's what we talked about in BT719 and 714
11 right now, but that's what we're looking at.

12 MR. VAUGHN: So I think we want to do
13 that. It's just a question of, you know, we'll have
14 to take it back whether Reg Guide 1.174 is the right
15 path to do it now, and for digital I&C, it may not be
16 the right one.

17 MR. WATERS: The verbal thing is what do
18 we mean by risk informed? I don't want to get on a
19 soapbox, but everyone has a different definition. I
20 mean, are you talking about using PRA insights to
21 justify what type of software reliability rigor you
22 need? Is that what we're talking about or something
23 more qualitative, something more esoterical? I don't
24 know. That's the other thing we're looking at.

25 And PRA insights, that's where you really

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1 want to consider where can we use that in informing --
2 what rigor do we look at as the NRC when we read
3 something and what remedies have you demonstrated in
4 the reliability area?

5 MR. VAUGHN: We're going to take that
6 back. We already have, but we'll look back and see
7 what that really means. We had the same thing in
8 January. Risk informing means different things to
9 different people, so there's a great approach, so.

10 MR. MOTT: Is there a standard or an
11 existing process where someone is making, using the
12 safety critical systems coming into a regulatory
13 approval strictly by risk informing that you all would
14 prefer or suggest to say, hey, something such as that?

15 MR. VAUGHN: We'll have to take that back.
16 I mean, for the PRA, there is an ANS standard and
17 that's, you know, we probably don't want to go there.

18 MR. WATERS: In a qualitative deterministic
19 sense, I think we're going to use 19 to risk inform,
20 you know, knowing what the consequences will likely be
21 and how much time there is to mitigate different
22 things, but this is, to me, this is PRA or not, but
23 people have different definitions of risk informed.

24 MR. VAUGHN: Okay, so we need to look at
25 what we have and find out what meets the needs for

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1 digital I&C, but we agree with efficiency and guidance
2 in risk informing digital I&C. We just need to figure
3 out -- we'll take that action to suggest what we think
4 that is.

5 MR. MOTT: All right, moving onto number
6 three, of course I think this is a yes. Everybody is
7 talking about that, efficiency of a simple method for
8 navigating the regulatory infrastructure, and that can
9 be an umbrella for the software development, quality
10 assurance, and different places, but I guess that is
11 definitely -- I've heard that three or four times
12 today about navigating through the --

13 Moving to number four, efficiency of
14 guidance and flexibility in the use of D3 assessments.
15 So sometimes when you're doing a D3 assessment at the
16 plant, a licensee is only using it for that case.

17 Maybe it would be beneficial if you did
18 the D3 assessment, that we might be able to utilize
19 that assessment in other places which would now make
20 it more fruitful to perform a D3 assessment. Instead
21 of the fight to do it, just definitely do it. So is
22 there anything here that says flexibility in the use
23 of D3 assessments?

24 MR. ODESS-GILLETT: I think we covered
25 that in our discussion of BTP 7-19 and I can't think

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1 of anything outside of that discussion.

2 MR. MOTT: Okay, just in short, just what
3 was the surface topic of the use of a D3 assessment?

4 MR. ODESS-GILLETT: Well, certainly from
5 the flexibility point of view, when you would -- you
6 know, when Dell presented the four categories of
7 safety significance, and when you would use the D3
8 assessment would be for the highest safety, that A1,
9 so that was sort of on the flexibility.

10 We were discussing from an industry point
11 of view certain credits that we used to be able to
12 take for some of these accident coping scenarios that
13 were --

14 MR. MOTT: So that was a Rev 4 and then --

15 MR. ODESS-GILLETT: Yeah.

16 MR. MOTT: Okay. Okay, and moving onto
17 number -- is there anything else with that one, number
18 four? Okay, I'm moving to number five. This one
19 might be just more flexibility. That's why I didn't
20 harp on the NQA-1.

21 Digital I&C system developed for use
22 outside of the United States may not conform to U.S.
23 regulatory criteria, but nonetheless, may be of
24 adequate quality and dependability, so that would fall
25 under --

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1 Someone develops it on completely I&C
2 standards, but in moving to take that system that
3 meets and conforms to I&C standards here, we have
4 burdens in trying to fit it into the IEEE structure.

5 MR. HERELL: Yes, yes, and the Rolls Royce
6 spin line three is an excellent example. There's a
7 huge 100-page compliance matrix that Mark and I both
8 worked on that shows how IEC 68.80 maps to reg guides
9 1.1.68 through 1.7.381.172 and a few others as well.

10 MR. MOTT: Okay.

11 MR. CARTE: A question just related to
12 that. I'm not familiar with the foreign applicants.
13 Do they meet NQA-1 generally? Do they try to comply
14 with NQA-1?

15 MR. ODESS-GILLETT: I don't think so, not
16 unless they're an Appendix B vendor.

17 MR. HERELL: In many cases, the foreign
18 vendors have established an Appendix B program.

19 MR. CARTE: No, no, because if we're
20 contemplating different approaches, you know, one is
21 looking at doing both, nursing IEEE, IEC, and NQA-1.
22 You can review a software development process to any
23 of them or you might do a subset of that.

24 And say we take Mark Burzynski's ideal
25 world and we only review to NQA-1, would that still

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1 have this -- you'd still have the same problem with
2 foreign vendors if they didn't do NQA-1.

3 MR. HERELL: Well, the foreign vendors,
4 the four that I've looked at have all established an
5 NQA-1 program, but their platform preexists their NQA-
6 1 program, so their IEC 68.80 program and their ISO
7 9000 and 9001 programs cover the development of the
8 platform. NQA-1 would cover the development of the
9 application for the U.S.

10 MR. CARTE: So even if we went with NQA-1,
11 we would still have to do IEC to address the foreign
12 vendors. That's for clarification.

13 MR. HERELL: And quite frankly, the
14 foreign vendor would be far more comfortable working
15 under the quality program they were familiar with
16 rather than the quality program that we helped them
17 establish as a parallel path.

18 MR. MOTT: Okay, and moving onto item
19 number six, and like I said, we know there are other
20 groups covering this. We're the broad assessment. We
21 will take away anything, if you want might to say
22 anything else that hasn't been said, and we would
23 definitely, you know, in documentation move that onto
24 another group.

25 So this one is concerning commercial grade

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1 dedication. In our research, it was stated that it
2 was not clear how commercial grade dedication applies
3 to complex digital I&C systems or the software. That
4 was something we brought up during our research. I'm
5 just wondering --

6 MR. HERELL: Okay, so if you look at the
7 topical reports that have been submitted from
8 companies not in the U.S. and look at -- actually, if
9 you look at all of the topical reports, except
10 possibly Safety Star, you're going to see a commercial
11 product dedicated into an NQA-1 program.

12 You're going to see an APB common queue.
13 You're going to see a Tricon. You're going to see a
14 Spin Line 3. You're going to see whatever. They're
15 all dedicated into the program. So the complex
16 digital I&C is dedicated, and once it's dedicated,
17 it's considered part of their NQA-1 program.

18 MR. MOTT: Okay.

19 MR. HERELL: That was part of their topical
20 report typically.

21 MR. MOTT: Okay, okay.

22 MR. CARTE: So is there or is there not a
23 problem with commercial grade dedication?

24 MR. ODESS-GILLET: Well, we have 106.439,
25 right, as acceptable guidance for commercial grade

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1 dedication of digital.

2 MR. HERELL: The only place that I can see
3 the potential for efficiency is in the devices of
4 limited configurability.

5 MR. ODESS-GILLETT: But MP3 would be
6 addressing the --

7 MR. HERELL: Which MP3 --

8 MR. MOTT: You know, we're just taking it
9 like I said. We just want to make sure there's
10 nothing sitting out there. This is a broad
11 assessment. We've looked at everything. Everything
12 is covered.

13 MR. ODESS-GILLETT: Industry has not
14 brought up 106.439 being a barrier.

15 MR. MOTT: Okay.

16 MR. WATERS: It could stand being
17 refreshed, but it's not a barrier.

18 PARTICIPANT: Didn't they just get
19 refreshed two years ago?

20 MR. ODESS-GILLETT: Oh, really?

21 PARTICIPANT: Am I thinking of the other
22 one?

23 PARTICIPANT: If it did, it wasn't --

24 MR. ODESS-GILLETT: I'm not -- okay.

25 PARTICIPANT: Or did we?

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1 MR. ODESS-GILLETT: Did EPRI do a new
2 document number?

3 MR. HERELL: EPRI keeps doing new
4 documents and not submitting them for endorsement.

5 MR. MOTT: So what I've got now, we've got
6 about nine minutes to 4:30 as we open for public
7 comment. We've got nine minutes if anybody else wants
8 to ask, speak, talk. Let's go for nine minutes and
9 then we'll open it up for public comment.

10 MR. WATERS: I have a clean up question,
11 but nothing on the slides, and not to put you on the
12 spot as there's this constellation of things going on.
13 I think the last January meeting, you mentioned the
14 idea of NEI's guidance document and referring back to
15 that as a possibility.

16 Just to sort of clean up the word, has
17 that been in the constellation of things we've talked
18 about all day here as far as -- and of course 66 is
19 still on the books too. I understand. I just want to
20 pull back, I guess, maybe a little bit. I'm just
21 trying to understand where that piece fits into
22 everything.

23 MR. VAUGHN: Yeah, so we almost touched on
24 it probably during the BTP 7-19 discussion. The
25 current plan right now is to develop a new NEI

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1 document to fill the gap of what NEI 1616 was going to
2 do, but bring it up a level, not as much detail,
3 leverage air and space objective first principle type
4 of criteria based on EPRI's research, which is the
5 DEG, ASGADS, and DRAM, but not to that level of detail
6 because there is a lot of detail in those.

7 Again, those EPRI documents emphasize how
8 to several IEC standards, joint standards, right? So
9 it's about finding that balance that Eric and I
10 mentioned. You can't have too much detail because
11 then it's so descriptive. You can't be too high level
12 or you're too flexible.

13 We have to find that happy medium spot and
14 that's what we're going to try and find with this NEI
15 document.

16 MR. ODESS-GILLETT: And I think it was
17 addressed in NP1D.

18 MR. MOTT: Okay.

19 MR. VAUGHN: Yes, so it's really in NP1D
20 because NEI 1616 was NP1 whatever.

21 MR. WATERS: So this is maybe something
22 that we could possibly endorse as an acceptable
23 approach to address whatever --

24 (Simultaneous speaking.)

25 MR. ODESS-GILLETT: Some aspect of CCF.

1 MR. WATERS: Okay, from a -- I'm a
2 projects guy, so what's coming down the road is
3 understanding each of the 19 interactions, highest
4 priority.

5 MR. ODESS-GILLETT: Right.

6 MR. WATERS: Where would this fit in the
7 priority scheme of other potential things we could
8 work on?

9 MR. ODESS-GILLETT: Well, the way I
10 envisioned it is that there's that section 1.9 in BTP
11 7-19 that talked about different "tools" to
12 demonstrate, you know --

13 MR. WATERS: Yeah, but do they go on in
14 parallel, or after, or --

15 MR. ODESS-GILLETT: Well, I think it would
16 be parallel and that we would have some level of
17 concept in that section of BTP 7-19 that would support
18 this effort, and then this would probably be put by
19 more of those principles to support the higher level
20 concept in BTP 7-19.

21 MR. WATERS: So it's not going to be a
22 thought process. We seem to understand it for
23 scheduling and sequencing wise.

24 MR. ODESS-GILLETT: Yeah, right.

25 MR. WATERS: That it falls into --

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1 MR. ODESS-GILLETT: Right, so we thought
2 BTP 7-19 was sort of the tactical.

3 MR. WATERS: Right.

4 MR. ODESS-GILLETT: And then this would be
5 more of a strategic.

6 MR. VAUGHN: But on a shorter schedule
7 though. I mean, we already have a general outline and
8 the goal here is this summer to add some more detail
9 to it, and I think in keeping with where we're at. So
10 when we are at a spot where we're ready to share and
11 have a discussion, we'll provide it as an FYI.

12 MR. WATERS: Yeah, I'm just asking from a
13 priority standard about what's the priority going to
14 be.

15 MR. VAUGHN: It's a pretty high priority
16 for us. BTP 7-19 and this one, I would say they're on
17 parallel paths right now.

18 MR. ODESS-GILLETT: Yeah, the utilities
19 are very much assigning this as a high priority, this
20 document he's referring to.

21 MR. WATERS: So I'll assign staff to work
22 on software when I know what else is coming down.

23 MR. VAUGHN: Yeah, yeah, yeah, understood.

24 MR. ODESS-GILLETT: So I didn't know.
25 There was a lot of talk about IC standards and S

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1 solutions, and I know there's a separate team, and I
2 get that, and dedicating staff. I'm not sure we want
3 to spend too much energy on reviewing a bunch of IC
4 standards when we're not ready to endorse them. I
5 don't know if that's really the right spot.

6 I know we had those discussions. There's
7 value in it, but is it the most valuable thing we
8 should be spending our time on? I don't know.

9 MR. ODESS-GILLET: Yes, so maybe we
10 should take the action to establish that priority.

11 MR. WATERS: Jennifer had mentioned
12 providing that priority to us, but I wasn't -- that's
13 what I heard. If I misheard, let me know, but was
14 that in the form of a written communication of --

15 MR. VAUGHN: I didn't hear it, but I'll
16 check with her. I don't think she would have said
17 that, but I'll double check.

18 MR. WATERS: I wasn't sure what she was
19 getting at.

20 MR. VAUGHN: With that said, and this will
21 be my final comment about the MP4B team. So I want to
22 have a parallel path on the industry side. I think
23 Warren's going to be sort of the technical lead for
24 it. I just want to make sure there's a communication
25 rhythm, you know, when the next meeting is.

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1 So what you're working on, what we're on,
2 we're all marching down the same path because the 4B
3 hasn't been at a high level. We're at the point where
4 we need to start adding some granularity to it, right,
5 so what you're doing is a great example. So I want to
6 make sure we're in lockstep, the same thing with Steve
7 and Mark's team.

8 I'm not really sure what's going on there
9 with the IC standards. We've talked about it
10 informally, but it is in the informal team. We want
11 to make sure we, again, have that dialogue and we know
12 what you're working on.

13 MR. WATERS: So part of it is
14 communication, communication, communication.

15 MR. VAUGHN: Yes, you're right, Mike.

16 MR. WATERS: We started this with a strong
17 vibe to the NRC that we need alternative standards,
18 and IEC might be one way to do that, and that's why we
19 started it as a high priority. That's the feedback
20 we've had and just kind of different voices. That's
21 not a bad thing, but this is a challenge of
22 prioritization.

23 It's the feedback that we felt we have
24 heard to go pursue this. If this is now in your minds
25 a lower priority, which is fine, I don't know. You

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1 need to communicate that. I go back to 2016, that
2 IEPE. I sent a really good detailed letter. Here is
3 all of the plausible things. Here is our priority and
4 the remaining white papers.

5 I'm not saying do that, but what I'm
6 trying to question is we need some sort of
7 communication link versus these meetings here because
8 I hear what each of you are saying and I don't
9 disagree with it, but if someone else hears something
10 else, that's why we're going to go down a different
11 path.

12 MR. ODESS-GILLETT: I hear you.

13 MR. VAUGHN: And I agree. There have been
14 just two meetings that I have been a part of, and in
15 five months, that's probably not enough. So we'll
16 take that back and we'll provide more, sort of our
17 common position on it from a priority standpoint.

18 MR. WATERS: It honestly made me question
19 the meet up at the commission meeting in May.

20 MR. MOTT: We just got a couple of
21 minutes. What we're going to do is wait until the
22 4:30 public comments, and after that, I'm just going
23 to go over the list hopefully, the list of these
24 remaining regulatory barriers that we just discussed
25 and make sure we have some --

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1 I heard the list. The list is okay and
2 I'm going to try to put down some of the real world
3 examples and just go back and re-discuss what people
4 stated, and then we'll go over the action item list,
5 and then last remarks, and that's it then.

6 MR. HALVERSON: So I'm just wondering for
7 those who operate across the pond, what your thoughts
8 are on how like the ONR, EDF, but, you know, use
9 61.508, how MP3 might fold in. So they have their own
10 set of requirements around all of, and I'm especially
11 interested in ISGL devices and the functionality. We
12 can use sort of --

13 MR. ODESS-GILLETT: So ONR sort of goes
14 their own way. They're a CNIF CNI nuclear information
15 forum, which is both the ONR and industry coming
16 together. They have their own tool called emphasis --

17 MR. HALVERSON: Right.

18 MR. ODESS-GILLETT: -- that they use to
19 evaluate the adequacy of, like, smart sensors and such
20 like that, and it is based on 61508, but it's
21 synthesized to be something that would be used for a
22 simple device and ONR bought off on it.

23 MR. CARTE: Quick question. If we did
24 exactly that, would you find it acceptable?

25 MR. WATERS: Silence.

1 MR. CARTE: Just as a question.

2 MR. ODESS-GILLETT: The thing is, I'd
3 rather wait until what happens with MP3 because MP3 is
4 directly addressing these CIL certified devices
5 because ONR doesn't necessarily credit out of hand the
6 CIL 3 certification devices.

7 MR. CARTE: Right, yeah.

8 MR. ODESS-GILLETT: They still make you go
9 through that emphasis process whether it's CIL 3
10 certified or not, or CIL 2 certified or not, so.

11 MR. CARTE: So if MP3 crashes and burns,
12 this is your fall back?

13 MR. ODESS-GILLETT: It's not going to
14 crash and burn.

15 MR. CARTE: Why wait and see?

16 MR. WATERS: That's not a regulatory term,
17 by the way.

18 (Laughter.)

19 MR. CARTE: Well, you said wait and see
20 what happens on MP3, right? So, you know, if MP3
21 doesn't come up acceptably in your mind, then we would
22 --

23 MR. ODESS-GILLETT: With the EPRI report,
24 we don't anticipate that being a problem.

25 MR. CARTE: Okay, so there's no reason to

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1 pursue the VR&R approach in your --

2 MR. ODESS-GILLET: No.

3 MR. MOTT: All right, on the phone, it's
4 now 4:30. We're going to open it up for any public
5 comments. So on the phone or here in the room, if you
6 have any public comments, this is the time now.
7 Remember when you're making public comments, just
8 state your name and entity or organization and just
9 please make your comment. I'll give it about a couple
10 of minutes, a couple more minutes.

11 MR. CLEFTON: This is Gordon Clefton from
12 Idaho National Laboratory.

13 MR. MOTT: How are you doing, Gordon?

14 MR. CLEFTON: I'm doing fine. Thank you.
15 I think your meeting went very well and the interface
16 that you had for the industry and the correct
17 demographics in the room from the NRC showed a value.
18 I'd encourage you to continue such meetings perhaps on
19 a regular schedule. There's topics and details that
20 you can probably learn from the experts in the
21 industry with more than just one meeting.

22 And so my comment would be to please
23 continue with the interface between you and the
24 industry so we can have these sessions that will bring
25 issues to the table and then I think we can find a

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1 resolution for them.

2 MR. MOTT: Hey, Gordon, thank you so much.
3 I really appreciate it. Are there any comments on the
4 phone or in the room? Any more? Okay, if you can,
5 we'll go back, and if they come in, we'll just stop.
6 Let's go back to slide five if we can.

7 So slide five, we definitely are locking
8 in on those four remaining regulatory listed barriers.
9 I do have real world examples for those, and let's go
10 back to -- does anybody have any objections or
11 anything about that at all?

12 MR. ODESS-GILLETT: Well if you're going
13 to prioritize them, maybe four could be either removed
14 or very low priority because I think the risk pretty
15 much took care of that --

16 MR. MOTT: Okay.

17 MR. ODESS-GILLETT: -- the risk and MP3.

18 MR. VAUGHN: Mark had some comments about
19 long term. I think the analytics might be -- but
20 you're right. It's not a showstopper right now. The
21 risk did really address it, so.

22 MR. MOTT: Okay, so item number four, the
23 risk may have covered this and this can be low
24 priority or it can possible be removed from the
25 agenda.

1 MR. VAUGHN: I mean, so just take it off.
2 Three is good. You know, three is a good number.
3 We'll just have three. If that one is off, we're not
4 going to completely forget about it, but I don't think
5 it needs to be on the list.

6 MR. MOTT: So right now, and the numbers
7 you have as well, I've got one, common cause failure.
8 I've got two, software development. I've got three,
9 I&C system architect development, and these are the
10 priorities.

11 If there's one you're going to work one,
12 can you start with common cause failure? Once that
13 either is passed off to somebody else or you're
14 finished, move into number two and jump on that one.

15 MR. VAUGHN: And so the core part of this
16 is really the public policy. And I think Eric had
17 mentioned in January and maybe mentioned it today too,
18 and I'm sort of paraphrasing him, but the BTP 7-19 is
19 a tactical effort, right? The long term should be the
20 policy.

21 MR. MOTT: What's your vision for the long
22 term, the policy?

23 MR. VAUGHN: The policy shouldn't be from
24 1993 and it shouldn't be for advanced and evolutionary
25 reactors. It should be -- if you want to have it

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1 advanced and operating, okay, add it, but say that.
2 It shouldn't be -- the title says advanced
3 evolutionary reactors.

4 MR. MOTT: So you're saying just change
5 the title?

6 MR. VAUGHN: No, I mean --

7 MR. ODESS-GILLETT: The thing is that
8 document is not just digital I&C CCF.

9 MR. VAUGHN: It's so much stuff.

10 MR. ODESS-GILLETT: It's like --

11 MR. VAUGHN: It's an oh, by the way for
12 many things for advanced evolutionary reactors. In
13 '93, those plans were, I'm sure, just designs on
14 paper.

15 MR. ODESS-GILLETT: And Danesh, I had
16 talked to Danesh about it and he had said, "Well,
17 instead of another policy, you could, you know, have
18 a reg guide or something like that."

19 MR. VAUGHN: I'm just suggesting that it
20 might be a benefit for all parties to have a very
21 clear policy, or maybe operating and advanced if
22 that's the case, or separate them, but we didn't see
23 the need strategically that in 25 years -- we're 25
24 years strong there, right? So 25 years from now, I
25 don't think we want to point to that as the policy for

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1 digital I&C. That's what I'm saying.

2 MR. MOTT: All right. Does anybody else
3 have anything to say?

4 MR. HERELL: If you're going to at least go
5 back through it, look at the current state of the art
6 rather than the state of the art in the early 1990s
7 because things have changed and the policy needs to be
8 at least thought about some more before -- it's not
9 just pick it up out of --

10 MR. WATERS: Vogtle Unit 3 --

11 (Simultaneous speaking.)

12 MR. VAUGHN: Yeah, and you usually don't
13 see a lot of official policies at that level talking
14 about common cause failure in, you know, D3. You
15 don't see that a lot.

16 MR. WATERS: I think there's agreement
17 that most staff want that long term approach.

18 MR. VAUGHN: Yes.

19 MR. WATERS: And you try to balance long
20 term needs versus short term. You've got to make
21 these upgrades now. That was part of the --

22 MR. VAUGHN: Yes, yes.

23 MR. WATERS: So that's the challenge here.

24 MR. VAUGHN: That's why I said this is an
25 effort. This is years. Years are the units here, not

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1 months.

2 MR. ODESS-GILLET: But, you know, we see
3 the BTP 7-10 being the NP1B rather than B4B.

4 MR. VAUGHN: Yeah, yeah, yeah.

5 MR. MOTT: And let's go to slide number
6 six. So here, number one, definitely we're keeping
7 that, and maybe one of the solutions for that may be
8 to look at endorsement standards such as an IAC
9 62.5.66.

10 Looking at number two, that is a VS, but
11 this one here, I thought we had an action item coming
12 from you all?

13 MR. VAUGHN: Yeah, we're going to look
14 into exactly what it means to risk inform digital I&C,
15 and BTP 7-19 had some concepts. Our presentation had
16 some of those concepts in there.

17 We threw out that idea of Reg Guide
18 1.1.74, but we need to back and look to see if that's
19 where we want to go or not. So we're going to take an
20 action to clarify what that looks like.

21 MR. WATERS: And your risk, is what you're
22 looking at specific to just BTP and common cause
23 failure or is it specific to digital I&C?

24 MR. VAUGHN: I'd say digital I&C in
25 general, yeah, because in BTP 7-14, we had discussions

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1 that really were risk informed, right? It was
2 compliance based, I&C specific, well, to risk inform
3 it is to not spend a lot of effort on it, right? So
4 I wouldn't just limit it to CCO.

5 MR. WATERS: And that could be broken --
6 my own personal ask is when you look at that, there is
7 risk informing qualitatively, likely the consequences,
8 and there's actually use of plant period insights, so.

9 MR. VAUGHN: Yeah, we'll do that.

10 MR. WATERS: You can distinguish between
11 the two when we talk about these concepts. It would
12 be beneficial to us.

13 MR. VAUGHN: Yeah, for sure.

14 MR. MOTT: And I want to bring up, you
15 know, I mentioned we do have reg guides for risk
16 informing, and you're like, you know, a lot of people
17 say you do.

18 There's another issue that maybe we're not
19 doing a good job or maybe we need to set up classes or
20 something that explains if you do want to do it, these
21 are the reg guides that do it and this is how because
22 when you bring that up that we do have reg guides on
23 risk informing, a lot of times people look at me at me
24 like, "Yeah, right," and I'm like, "But we actually
25 do." Is that something -- I'm sorry.

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1 MR. CARTE: Right, I would agree. I'm
2 going to say it in a different way. So what's wrong
3 with the reg guides 1.74, 1.77, or 50.69? Those are
4 two different processes for risk informing. What's
5 wrong with those that we want to do differently or is
6 it just that we want to implement those better?

7 MR. MOTT: And so in speaking with you
8 about that, sir, you had no familiarity with it?

9 MR. VAUGHN: No, I do. I have a lot. I
10 do all of my work in that area as opposed to digital
11 I&C. Digital I&C is my one off. So I have a lot of
12 experience in those.

13 That's why I'm not even sure we want
14 digital I&C to go into a Reg Guide 1.1.74 type of
15 paradigm. We may or may not. It was mentioned here
16 sort of for the first time. I'm going to take it back
17 to the group, and the same with the risk informed tech
18 specs 50.69.

19 I mean, you hold 50.69 concepts to that
20 diagram, and right when we saw it, it was kind of
21 clear to us. So we'll go over those. We'll take it
22 back and see what we can pull from those and be very
23 clear in what we mean by risk informing.

24 MR. MOTT: Okay, and efficiency of a simple
25 method for navigating regulatory infrastructure,

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1 that's definitely going to go up on there. Just out
2 of curiosity, for you to say the NRC's regulatory
3 infrastructure is very easy to navigate, what does
4 that look like? Is that one document telling you step
5 A, B, C, and D?

6 MR. ODESS-GILLETT: Well, I think what
7 Sushil mentioned was that, you know, you have all of
8 these discrete reg guides one on one with IEEE
9 standards for process.

10 What if you had a reg guide that basically
11 provided, you know, a safety demonstration for what
12 you're trying to achieve by all of those discrete reg
13 guides that you've put out?

14 MR. REBSTOCK: I've heard it said that one
15 of the big problems is there's too many reg guides,
16 and what we ought to do is combine a bunch of them so
17 that there's a smaller number. My personal feeling is
18 that the number of reg guides is not important. In
19 fact, there should be maybe more of them.

20 Maybe they should be more finely broken
21 down, but there should be an overall thing that tells
22 you how to use which one and which one to use under
23 what circumstances so that you can navigate through
24 them, and it's the navigation that's really the
25 problem, not the quantity, and I just wonder what do

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1 you guys think?

2 MR. ODESS-GILLETT: Well, I think it
3 relates back to the proposal I made on the NQA-1. You
4 know, you have a lot of these reg guides covering
5 software quality assurance and, whereas you also have
6 a reg guide 1.2 endorsing NQA-1 to meet NXB. The reg
7 guide actually says it covers computer and testing,
8 computer software and testing.

9 MR. REBSTOCK: So that's a conflict?

10 MR. ODESS-GILLETT: Yeah, so you have --
11 right, right, so that's something to look at.

12 MR. MOTT: Just one here, efficiency. The
13 next one is efficiency of guidance of flexibility and
14 use of D3 assessments. And I know Wendell brought up
15 a chart with flexibility, I guess, flexibility and the
16 utilization of a D3 assessment. Is that --

17 MR. ODESS-GILLETT: Yeah, I think we
18 covered that.

19 MR. HALVERSON: Well covered.

20 MR. MOTT: Okay, so this may be something
21 here. There's a question mark here.

22 MR. HALVERSON: Well, I think there's a
23 difference that the MP1D versus MP4B is sort of our
24 chance to be more expansive.

25 MR. VAUGHN: I'll offer something. So the

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1 D3 assessment, my understanding is it's D Reg 63.03,
2 is that that is how you do the D3 reg. Is that --

3 MR. REBSTOCK: That is the instructions
4 for how to do a D3.

5 MR. VAUGHN: And so you can't go anywhere
6 else to find out how to do a D3 reg. You have to go
7 there?

8 MR. REBSTOCK: Yes.

9 MR. VAUGHN: So there may be a way. There
10 may be another body of work that kind of does the same
11 thing or offers that, and so that will be a 4B type of
12 effort, right? Maybe there's something else besides
13 the NUREG that does the same thing in a different way.
14 It gets you to the same end, but with slightly
15 different means.

16 MR. REBSTOCK: So that's an alternative to
17 63.03.

18 MR. VAUGHN: And we talked about that over
19 lunch. And if we find an alternative that we think
20 meets that process, we'll share it.

21 MR. MOTT: Okay, and I've got this one
22 here I think is definitely one of them, systems
23 developed for outside use of the United States. Thank
24 you so much for the real world example of the Rolls
25 Royce 3 comparison IEEE, but that's one here. I

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1 believe we developed another.

2 Obviously if we endorse this, the I&C
3 guides, that would kind of solve that whole, or some
4 other group of guides that they use outside the
5 country, that would solve that one.

6 This one here, number six, did anybody on
7 the team or anybody here have another concern that's
8 somewhere outside of the scope of what's being
9 considered right now? Because I know we brought up
10 106-439 and that would be --

11 MR. ODESS-GILLETT: Where did you get that
12 item from?

13 MR. MOTT: So this list here, in our work,
14 we solicited emails from internal staff. We looked at
15 existing work that was here and went back and looked
16 at public comments that had been stated in other
17 assessment meetings, and from discussions with you all
18 on January 31, and things were common --

19 Of course in this industry, there are some
20 things that are common. Risk-informed keeps showing
21 up, common cause failures are always here. So these
22 were things that they just stood out, so we wanted to
23 ensure that this is an issue that industry wants us to
24 go forward with, or like the limited I&C.

25 I know you've fleshed it out and thank you

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1 so much for the research, but this is not something to
2 really put your resources to, but this one here, we
3 just want to be sure.

4 One of the things we saw in our research
5 was maybe for complex different I&C systems or for
6 complex software, maybe it might not be as flexible to
7 perform a commercial grade dedication, and there may
8 be some documents or something else out here that are
9 necessary, and this is something we've sort of fleshed
10 out that it may be resolved or solved with something
11 else.

12 Now, like I said, I didn't get anything
13 definite from industry today, so it may be something
14 that might be dropping off.

15 MR. VAUGHN: Can we go back to number five
16 about I&C standards and maybe there was
17 miscommunication about the priority of that? Warren,
18 correct me if I'm wrong, or anyone, call me out if I'm
19 wrong, but maybe the I&C standards look is more of a
20 4B type of effort? Maybe it's more of a strategic
21 thing as opposed to right now.

22 MR. ODESS-GILLETT: But this is all 4B
23 right now.

24 MR. VAUGHN: That's what I'm saying, but
25 the NRC has this I&C standards group outside of the

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1 IAP and it's looking at it, I think, right now.

2 MR. ODESS-GILLET: Is that part of 4B?

3 MR. VAUGHN: No, no, no.

4 (Simultaneous speaking.)

5 MR. VAUGHN: What I'm getting at, it's
6 not, but I don't know if it's a quick turnaround type
7 of thing or if it's something that's more strategic.

8 MR. WATERS: I think we're in an
9 assessment stage of what could be done or should be
10 done. I mean, of course we're putting some lines down
11 about what kind of software standards, and is it 4B or
12 not? I don't know that it really matters. It's the
13 same team here.

14 MR. VAUGHN: Yeah.

15 MR. WATERS: We've talked about the action
16 plan, but it is a high priority assessment look. As
17 we talked about last January of what is the need, the
18 feedback about what would be good, well, what would
19 you propose kind of thing. You know, and that's what
20 we're trying because in our thing, we can't go too far
21 down the path and spend time on something that's not
22 going to be used.

23 MR. VAUGHN: Yeah.

24 MR. WATERS: But on the other hand, if we
25 do keep hearing it's something we need, then it's

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1 something we need to talk about and what exactly we're
2 trying to do.

3 MR. VAUGHN: That's the action I'll take.
4 We should go back and discuss it, and I think there is
5 strategic value in it. Again, it's not immediately
6 like BTP 7-19. That gives you sort of more immediate
7 value.

8 MR. WATERS: I think the use of I&C for
9 software quality was one thing we focused on, but
10 there's issues there, and it's the same thing with
11 people.

12 MR. VAUGHN: Okay.

13 MR. MOTT:: And one thing -- go ahead on
14 the phone.

15 MS. ZHANG: This is Deanna. Can I just
16 chime in on the I&C subject?

17 MR. MOTT: Yes.

18 MS. ZHANG: So Steven Arndt is going to be
19 giving a presentation this coming week at IUC. So
20 since I know that not everyone will be able to
21 participate in that IUC meeting, I just want to relay
22 the information that he's going to be presenting
23 particularly on the scope of what we're currently
24 looking at for the immediate potential endorsement via
25 reg guide, and that is 68.880, IUC 68.880, IUC 62566,

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1 which is on the HDL program, and IUC 62671, which is
2 on the digital devices of limited functionality. So
3 those are the three that we're going to focus on right
4 now.

5 MR. CARTE: Deanna, this is Norbert. If
6 Steve is doing a presentation, does he have slides,
7 and is that publicly available?

8 MS. ZHANG: He has slides, but I don't
9 know whether he's posted them, but I can -- when he
10 gets back, or I can email him and see if we can get it
11 publicly posted.

12 MR. CARTE: It's basically the same
13 presentation we gave to IEEE and those are public.

14 MS. ZHANG: With some changes --
15 (Simultaneous speaking.)

16 MR. ODESS-GILLETT: Yeah, I don't think
17 you went --

18 MS. ZHANG: -- with some recent
19 discussions, you know, of where we're going to focus
20 our efforts.

21 MR. CARTE: There's actually another
22 standard, 61.513.

23 MS. ZHANG: So for --

24 MR. WATERS: We should be able to provide
25 something. I don't know what the timing would be,

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1 maybe after the conference, but we'll be able to
2 provide something.

3 MS. ZHANG: Yes, for 61.513, we had
4 originally discussed endorsing that as an alternative
5 to 50.55AZ. When we looked at it, there were some
6 challenges to, you know, if we were to endorse it, due
7 to the broad scope that was in that standard. So for
8 the near term, we decided not to look at 61.513 for
9 endorsement. That may be later, but we're focusing on
10 the software process, SPG development and guidance, as
11 well as the industrial digital devices with limited
12 functionality.

13 MR. CARTE: Recognizing of course that
14 61.513 is the motherhood upper level standard that
15 covers everything you're talking about endorsing.

16 MS. ZHANG: Yes, we do recognize that, and
17 so that may be one of the challenges is that there are
18 cross references.

19 MR. HERRELL: There are a lot of cross
20 references.

21 MR. MOTT: So at this part, we've got
22 about 10 minutes left. I don't know if Mike or
23 industry want to give any -- do we want to go over
24 action items?

25 MR. PAIGE: Yes, let's go over the action

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1 items. So I have three action items. We talked about
2 one regarding risk informing, the guidance for risk
3 informing, digital I&C, and what meets the needs for
4 digital I&C and for industry.

5 I also have an action item and I will look
6 into providing the list of ideas that you have
7 presented. And then the last action item I have is
8 look into the priorities for the activities this year
9 and how you plan on communicating those priorities to
10 us, to the NRC.

11 MR. VAUGHN: And those were general
12 priorities?

13 MR. PAIGE: Just general priorities for
14 activities, yeah.

15 (Simultaneous speaking.)

16 MR. VAUGHN: Okay.

17 MR. MOTT: Another one is still from
18 January 31 about it would be great if the industry
19 would submit their list or set of IECs that they would
20 state would be suitable for digital I&C demonstration
21 of safety versus us saying this is a set.

22 MR. HALVERSON: Although we're starting to
23 say that now, it sounds like, so maybe you could --
24 that might help focus your discussion.

25 MR. MOTT: It's not a discussion, but I

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1 could submit the list, yeah. That was January 31.

2 MR. ODESS-GILLETT: I'm sorry. Could you
3 repeat that again?

4 MR. HALVERSON: Oh, well, you just heard
5 the ones -- someone said --

6 (Simultaneous speaking.)

7 MR. ODESS-GILLETT: Oh, the -- that Deanna
8 said.

9 MR. HALVERSON: Yeah, so she's -- you can
10 hear what they're thinking, so sometimes it's --

11 MR. ODESS-GILLETT: Yeah, right, yeah.
12 Thank you.

13 MR. HALVERSON: Sometimes it's harder to
14 narrow down --

15 MR. ODESS-GILLETT: Thank you.

16 MR. HALVERSON: -- and get a list of
17 everything.

18 MR. ODESS-GILLETT: So maybe we could look
19 at do we concur with that list of three that Deanna
20 mentioned, the 68.88, 62.566, and --

21 MR. HALVERSON: 2671.

22 MR. ODESS-GILLETT: Thank you.

23 PARTICIPANT: I'd like to ask a question.
24 So we're studying these IEC standards and what occurs
25 to me for the discussions today, if we were to simply

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1 treat the I&C standards the way we treat IEEE
2 standards today, when an applicant comes in, we might
3 have different RAIs, and we might ask different
4 questions, and we might have different review
5 activities, but we're going to have a lot of them,
6 right, because we're going to be wanting to confirm
7 compliance with the IEC standards just the way we do
8 with IEEE.

9 So is industry asking us to treat the
10 standards differently than we treat the IEEE
11 standards, or somehow accept some statement of
12 compliance without confirmation, or, I mean, what
13 exactly is going to be different? Because I see it
14 being different if we adopt IEC standards, but I don't
15 see it as any less onerous or difficult to --

16 MR. ODESS-GILLETT: I think Mark mentioned
17 and I think in discussion with Sushil that maybe we
18 need to get more oriented toward a safety case
19 demonstration of something that's good on us versus a
20 compliance mode of showing acceptance. So I think
21 that covers everything, both the IEEE and those IDC
22 standards. Because without addressing that concept,
23 yes, you're right. It's a one for one process.

24 PARTICIPANT: Well, it's not one for one.
25 It's actually -- there are more requirements in the

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1 IEC standards. So to verify conformance or to perform
2 some kind of confirmatory review, it would actually be
3 more work for the NRC to do that if it were using the
4 IEC paradigm if we apply the same principles we use
5 for IEEE standards. I pretty much guarantee you
6 because I've been studying these IEC standards.

7 MR. ODESS-GILLETT: Right.

8 PARTICIPANT: And, you know, we look at
9 where the should statements are and where the shall
10 statements are, and they're different in IEEE, but
11 they cover a lot more areas and --

12 MR. ODESS-GILLETT: I would say in
13 general, probably the IEC standards are more rigorous
14 than the IEEE standards.

15 PARTICIPANT: I agree.

16 MR. ODESS-GILLETT: So that's the -- you
17 know, and I think these will more apply to the vendors
18 than to the licensees.

19 PARTICIPANT: Which makes it hard for me
20 to understand where the efficiencies are.

21 MR. ODESS-GILLETT: Well, from a vendor's
22 point of view, if they've already -- if they have to
23 develop a platform to meet European regulatory
24 criteria, they're going to choose the IEC standards
25 and it's done. And then when they go submit it to the

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1 NRC, then if you accept those same standards, they're
2 still done.

3 PARTICIPANT: Well, it's a better fit. I
4 understand.

5 MR. ODESS-GILLETT: I think that's --

6 PARTICIPANT: But it's not done until we
7 approve it, right?

8 MR. ODESS-GILLETT: Right, right, but if
9 they've done that work for one regulatory body --

10 PARTICIPANT: It would be easier for them
11 to show compliance with the standard that we've
12 endorsed. I agree with that, but we would still have
13 to do the confirmatory --

14 MR. WATERS: There's a broader, longer
15 term possibility is do we recognize the approval of
16 different competent authority, which we've done in
17 other arenas?

18 PARTICIPANT: Well, that too. We don't
19 know where this is headed.

20 MR. WATERS: Right.

21 PARTICIPANT: But that would be a
22 different --

23 MR. WATERS: That's 4B plus.

24 (Laughter.)

25 MR. WATERS: Yeah, but we're talking about

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1 limited things, not --

2 MR. CARTE: Norbert Carte, NRC. I had
3 heard something about assurance cases. It occurs to
4 me that there are two ways to apply an assurance case,
5 and one is an overarching way.

6 So if I'm going to construct my assurance
7 case, I need to demonstrate I'm safe. Therefore, I'm
8 going to use these standards to demonstrate that I'm
9 safe, so that's as an overarching paradigm.

10 On the other hand, you could also do it in
11 a microscopic paradigm, a microparadigm in the sense
12 that I have to show that I'm independent and I can do
13 an assurance case to show that I'm independent. What
14 are the threats to independence?

15 How do I mitigate those threats to
16 independence? So you could apply it both at a high
17 level and at a low level, and so in an assurance case
18 approach, how do you see an application of that?

19 MR. ODESS-GILLET: Well, I think, you
20 know, I think there are two sets of types of
21 standards. You know, your independence standards are
22 technical type of standards, right? Whereas we're
23 talking about, you know, software quality assurance
24 process standards.

25 So there should be some level of -- I'm

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1 not sure what the word is -- graded approach to
2 compliance to a process standard versus a technical
3 criteria to meet --

4 PARTICIPANT: Well, let me make an
5 observation. So in studying the IEC standards,
6 they're written with a very different language. They
7 really are. IEEE standards, it's very easy to apply
8 a compliance approach to it because it basically --

9 It's written in a way where thou shalt do
10 this, right? And we would simply ask the question did
11 you do that, and if you did, then you complied and
12 move onto the next requirement.

13 The IEC standards are not written in that
14 way. The requirements, they use shall statements
15 pretty extensively throughout the standard, but
16 they're not black and white. Let me put it that way.

17 I wish I had brought some with me, but
18 it's like you shall provide assurance that some method
19 was followed, you know, and they're very more
20 subjective, very much more subjective, and very hard
21 to verify, and they require more of a subjective
22 determination of compliance, and I see that across the
23 board.

24 They're written in a very different way,
25 so it's going to be difficult for us to apply the

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1 compliance approach to the IEC standard. That's my
2 observation, so I'm not exactly sure how to address
3 that.

4 I've talked with Europeans and they don't
5 do that. They don't apply -- they don't look at the
6 shall statements and ask the question, you know, to
7 make the determination of whether that was --

8 MR. ODESS-GILLETT: Did you talk to ONR
9 because --

10 PARTICIPANT: Yeah, yeah.

11 MR. ODESS-GILLETT: -- because ONR, we had
12 to provide compliance --

13 PARTICIPANT: A compliance matrix?

14 MR. ODESS-GILLETT: A compliance matrix
15 for every shall statement, and then they said, "Well,
16 why didn't you do it for the should statements?
17 That's considered a LARP," in other words, a LARP
18 being to the extent that's reasonably practicable,
19 right? And so they said you should demonstrate that
20 you meet the shoulds to the point that it's reasonably
21 practicable, so.

22 PARTICIPANT: You know what? I can
23 understand why they would ask that question because
24 the shalls and the shoulds are really intermingled in
25 the IEC language because -- and it basically says you

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1 shall do this, and in the process of doing it, you
2 should do this, this, this, and this. So does the
3 should get subsumed by the shall? So there's a lot of
4 that within those standards. They've got a very
5 different writing style.

6 MR. MOTT: Yeah, we're definitely outside
7 of the scope with this IEC conversation, but I just
8 want to say thank you so much for everything. Thank
9 you so much for being prepared on short notice as
10 well. Like I said, we met at the RIC and had those
11 discussions as well, but the feedback is really,
12 really good for us to hunker down on things going
13 forward.

14 What I intend to do, we're going to come
15 up with a list hopefully sometime in April and submit
16 it to the steering committee and go from there and
17 further our efforts with the MP4B right now. Again,
18 thank you. Does anybody else have anything else to
19 say?

20 MR. PAIGE: Yeah, I would just say that I
21 connect to those remarks, just thanking industry for
22 supporting the meeting. We will issue a meeting
23 summary summarizing today's discussion within 30 days,
24 so you will receive that. Anything else?

25 MR. WATERS: Thanks to those who stuck it

NEAL R. GROSS

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1 out for the whole day for being warriors.

2 MR. PAIGE: That concludes the meeting for
3 those participating on the phone.

4 (Whereupon, the above-entitled matter went
5 off the record at 5:00 p.m.)

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