

Official Transcript of Proceedings

NUCLEAR REGULATORY COMMISSION

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

Docket Number: (n/a)

Location: Rockville, Maryland

Date: Wednesday, June 26, 2019

Work Order No.: NRC-0392

Pages 1-97

NEAL R. GROSS AND CO., INC.
Court Reporters and Transcribers
1323 Rhode Island Avenue, N.W.
Washington, D.C. 20005
(202) 234-4433

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

+ + + + +
INTEGRATED ACTION PLAN TO MODERNIZE DIGITAL
INSTRUMENTATION & CONTROLS REGULATORY
INFRASTRUCTURE: MODERNIZATION PLAN (MP)

#1D, REVISION OF BTP 7-19

+ + + + +

THURSDAY,

JUNE 26, 2019

+ + + + +

ROCKVILLE, MARYLAND

+ + + + +

The public meeting convened in Conference
Room 1C05 at the Nuclear Regulatory Commission, Three
White Flint North, 11601 Landsdown Street, at 9:00
a.m., Tekia Govan, Facilitator, presiding.

PRESENT:

TEKIA GOVAN, NRR/DIRS/IRGB

ERIC BENNER, NRR/DE

ROSSNYEV ALVARADO, NRR/DE/EICB

STEVEN ARNDT, NRR/DE

ROBERT BEATON, NRR/DSS/SRXB

JOHN BUDZYNSKI, NRO/DESR/SRSB*

DAVID DESAULNIERS, NRR/DIRS

1 KAYLA GAMIN, OGC/GCHA/AGCOR
2 ISMAEL GARCIA, NRR/DE
3 RONALDO JENKINS, RES/DE/ICEEB
4 PAUL KALLAN, NRR
5 WENDELL MORTON, NRR/DE/EICA
6 DAVID RAHN, NRR/DE/EICB*
7 PAUL REBSTOCK, RES/DE/ICEEB
8 NANCY SALGADO, NRR/DE/EICA PHONE
9 MAXINE SEGARNICK, OGC/GCRPS/RMR
10 DEANNA ZHANG, NRR/DE/EICA
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25

1 ALSO PRESENT:
2 Neil ARCHAMBO, Duke Energy
3 GINA BERGMAN, Curtiss-Wright
4 ROB BURG*
5 MARK BURZYNSKI, Rolls-Royce
6 GORDON CLEFTON, Idaho National Lab*
7 STEVE GEIER, NEI
8 RAY HERB, Southern Nuclear
9 JOHN HERNANDEZ, Palo Verde*
10 GEORGE HUGHES, Framatome
11 RON JARRETT, TVA
12 JERRY MOCK, PLS*
13 DAVE NEFF, Exelon*
14 LARRY NICHOLSON, Certrec*
15 RYAN THOMAS, PSEG Nuclear*
16 STEVE VAUGHN, NEI
17
18
19
20
21
22
23
24
25

*Present via telephone

P R O C E E D I N G S

9:00 a.m.

MS. GOVAN: Okay, so good morning, everyone. It is 9:00 a.m., we're ready to get started. Those on the line can you please confirm that you can hear me?

MR. RAHN: We can hear you, Tekia.

MS. GOVAN: Oh, perfect, thanks, Dave. Okay, good morning, everyone, my name is Tekia Govan. I'm the Project Manager for activities related to the revision of BTP 7-19.

The meeting is being held to discuss comments that were submitted by the Nuclear Energy Institute in May on the current revision, for the current version of the BTP 7-19.

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 is done.

Just a few meeting logistics, this meeting is being held here at that Three White Flint building across from Headquarters and also by teleconference.

We're in a very fancy conference room, however, it is not mic'd so for those in the room you really need a microphone so that those on the phone

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701

(202) 234-4433

(202) 234-4433

1 can hear you properly.

2 I will put my flip flops on and come
3 around, run around, to each of you to make sure that
4 you have a mic so that those on the phone can hear
5 you.

6 For those on the line, we ask that when
7 not engaging the meeting, please put your phones on
8 mute. That way, we can have a productive meeting with
9 no background noise.

10 When addressing the meeting, please
11 identify yourself and your affiliation, speaking
12 clearly into a microphone that I will provide for you.
13 For guests in the room, we do have a 15-minute break.

14 If you need to, this area is an
15 uncontrolled area so feel free to make a left out
16 these doors, make another left, and you'll find the
17 men and women's restroom.

18 Should there be a fire alarm, please
19 follow an NRC Staff Member to our designated area and
20 check in with me as I'm responsible for tracking the
21 accountability of all visitors.

22 So, with that being said, we will start
23 with introductions in the room and then move to those
24 on the phone. Again, Tekia Govan, Project Manager.

25 MR. BENNER: Erik Benner, Director,

1 Division of Engineering, NRR.

2 MR. KALLAN: Paul Kallan, NRC.

3 MR. JARRETT: Ron Jarrett, Tennessee
4 Valley Authority.

5 MR. ARCHAMBO: Neil Archambo, Duke Energy.

6 MR. JENKINS: Ronaldo Jenkins, NRC.

7 MR. ARNDT: Steven Arndt, NRC.

8 MR. BEATON: Robert Beaton, NRC.

9 MR. DESAULNIERS: David Desaulniers, NRC.

10 MS. SEGARNICK: Maxine Segarnick, NRC.

11 MS. ALVARADO: Rossnyev Alvarado, NRC.

12 MS. ZHANG: Deanna Zhang, NRC.

13 MS. GAMIN: Kayla Gamin, NRC.

14 MR. MORTON: Wendell Morton, NRC.

15 MR. REBSTOCK: Paul Rebstock, NRC Office
16 of Research.

17 MR. VAUGHN: Steve Vaughn, NEI.

18 MR. HERB: Ray Herb, Southern Nuclear.

19 MR. BURZYNSKI: Mark Burzynski, Rolls-
20 Royce.

21 MR. GARCIA: Ismael Garcia, NRC.

22 MR. ODESS-GILLETT: Warren Odess-Gillett,
23 NEI.

24 MR. GEIER: Steve Geier, NEI.

25 MR. SCOTT: Clayton Scott, Framatome.

1 MS. BERGMAN: Gina Bergman, Curtiss-
2 Wright.

3 MR. HUGHES: George Hughes, Framatome.

4 MS. GOVAN: Okay, that's it for those in
5 the room. Can we start with those on the line? And
6 we're going to start with NRC Staff Members.

7 MS. SALGADO: Nancy Salgado, NRC.

8 MR. RAHN: David Rahn, NRC.

9 MR. BUDZYNSKI: John Budzynski, NRC.

10 MR. DITTMAN: Bernie Dittman, NRC.

11 MS. GOVAN: Okay, is that it for NRC Staff
12 Members? Any NEI Staff Members on the line? Entergy
13 Staff Members?

14 MR. SHRAGE: John Shrage.

15 MS. GOVAN: And what is your affiliation?

16 MR. SHRAGE: Entergy.

17 MS. GOVAN: Thank you. Any NextEra Staff
18 Members? Any licensees? Vendors?

19 MR. HERNANDEZ: John Hernandez, Palo
20 Verde.

21 MR. THOMAS: Ryan Thomas, PSEG Nuclear.

22 MR. MOCK: Jerry Mock, PLS representing
23 Dominion.

24 MR. NEFF: Dave Neff, Exelon.

25 MR. HUNTON: Paul Hunton, Idaho National

1 Lab.

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

4 MR. MOHEIM: Mike Moheim, Oak Ridge
5 National Lab.

6 MS. GOVAN: Okay, any members of the
7 public? Did we get all vendors first? Any additional
8 vendors on the line?

9 MR. BURG: Rob Burg.

10 MR. NICHOLSON: Larry Nicholson, Certrec.

11 MS. GOVAN: Any members of the public on
12 the line?

13 Okay, with that, I'm going to ask for
14 those on the line to please send me an email to let me
15 know you participated in this meeting. That can be
16 done by sending an email to tekia.govan@NRC.gov.

17 So with that, I will turn it over to Eric
18 Benner, Director for the Division of Engineering in
19 the Office of Nuclear Reactor Regulation, who will
20 provide us with some opening remarks.

21 One quick logistics thing before Eric
22 gives us opening remarks, we do have a court reporter
23 in the room who is transcribing the meeting so those
24 are the mics on the table.

25 They are very sensitive so please do not

1 touch them and just try not to disturb them. So, our
2 court reporter will be recording everything and we'll
3 have the transcription from this meeting posted with
4 the meeting summary in a 30-day time period.

5 So, Eric, thank you.

6 MR. BENNER: So, thank you all for being
7 here. As I started to say, I see a lot of faces from
8 yesterday.

9 I want to carry one aspect over of that
10 meeting from yesterday to today and that is it's clear
11 that even with the best of intentions, when people put
12 words on a piece of paper they can be interpreted
13 different ways.

14 So, yesterday, I feel that by really
15 talking through some examples we got a level of
16 alignment that should hopefully allow us to clarify
17 the words on the paper for our endorsement of NEI 96-
18 07 Appendix D to give the clarity that we want
19 everyone to have, the industry users of the document
20 and the NRC inspectors who would look at 50.59.

21 So, I want that spirit to carry over
22 because we had a meeting, a high-level discussion, of
23 where we were going with BTP 7-19 in April. So, we
24 gave a lot of thoughts, we heard verbal feedback in
25 that meeting, we've gotten written feedback subsequent

1 to that meeting.

2 We had a Commission meeting where this
3 document did have some discussion. I think there's a
4 lot of good that can come out of a good update to BTP
5 7-19 to provide additional clarity and better enable
6 major digital mods to be done.

7 So, with that, the words you're going to
8 see today were the Staff's attempt to take everything
9 they've been hearing and put it down on paper.

10 So, again, words can be misinterpreted so
11 I would ask that everyone during the dialog just try
12 to keep an open mind and bring it up to a higher level
13 of what is it we're trying to accomplish.

14 And if we can align on what it is we're
15 trying to accomplish, we can get the words right. So,
16 with that, I alluded to Rossnyev Alvarado.

17 I want to congratulate her, she is going
18 to be the Acting Branch Chief for one of the I&C
19 Branches while Mike Waters is on a rotation as a
20 Deputy Director.

21 Many of you know Rossnyev, those of you
22 who know her know the passion she brings to this
23 topic. She's a very thoughtful individual, I say that
24 with all sincerity because Rossnyev I think brings a
25 fresh perspective to some of these issues.

1 I found that she's not shy about sharing
2 her views but she's also very open-minded to hearing
3 alternative views. So, I think she's going to be a
4 valuable asset as we work on trying to finalize a
5 draft of this document.

6 So, with that I'll turn it over to...Who
7 on the industry side wants to make a comment?

8 MR. GEIER: Steve Geier from NEI.

9 And again, I appreciate the comments on
10 the meeting yesterday with Appendix D and I think just
11 the level of discussion, the interaction, the
12 candidness of the discussion really led to I think
13 reaching pretty good alignment on a path forward and
14 I look forward to having the same discussion here.

15 This is, of course, a different topic and
16 I'd say this is one of the big issues that we need to
17 tackle to get clarity on BTP 7-19 and provide some
18 alternative methods.

19 In the Commission brief, the industry team
20 talked a lot about this third path which is using
21 design attributes as a method for design of major
22 digital mods in addition to 100 percent testing or
23 hardware diversity.

24 I think that's really a key thing to help
25 plants make decisions on moving forward. I know from

1 an NEI perspective we are starting to get feedback
2 from stations for some of the larger fleets.

3 They're looking at going forward with
4 major mods and this is going to be a key, be able to
5 resolve this and provide additional clarity and
6 additional guidance in BTP 7-19 to help make and
7 facilitate those decisions.

8 So, I look forward to this and we've
9 provided the comments.

10 I did want to say the comments I think are
11 very specific in certain sections and we look forward
12 to getting the next draft of the BTP so that we can
13 continue to work to get alignment on making that the
14 best it can be.

15 So, thank you.

16 MS. GOVAN: So, at this time we'll have
17 Wendell Morton, NRC NRR Staff who is the team lead for
18 BTP 7-19 to start off our presentation.

19 Wendell?

20 MR. MORTON: Thank you, Tekia. So, once
21 again, good morning. We're going to proceed right on
22 into it.

23 We'll talk a little bit about the agenda
24 and the initial focus areas for the BTP 7-19 revision
25 as of the April 4th public meeting where we started

1 off with -- we'll get into some key focus areas, not
2 necessarily our positions on them in terms of the
3 direction we are going forward and some refinements in
4 our own thinking based upon industry feedback received
5 since that meeting.

6 We'll talk about our enhanced approach to
7 addressing CCF and some of the things we thought
8 affected that. We'll also get specifically into the
9 feedback we receive.

10 So, we received ten specific comments
11 addressing a number of different areas within the BTP
12 and we really want to focus down on making sure we
13 understand, for those comments that weren't pretty
14 much straightforward and simple to address, there were
15 some that we needed some additional feedback to
16 understand what the specific concern was.

17 That'll give us a better idea of how to
18 address those particular comments in going forward.
19 And then we'll get into schedule update.

20 Next slide. So, the initial focus areas,
21 one of the biggest initiatives, maybe the biggest one,
22 is the applicability of the BTP, the changes under
23 50.59.

24 That's one of the things that we wanted to
25 specifically address going forward and we did that

1 with the April 4th public meeting in terms of -- and
2 we'll get to that in the next slide. We kind of
3 talked about it up here.

4 This will be the initial focus area,
5 defining a graded approach in terms of what technical
6 rigor will be necessary to address safety systems or
7 systems of varying safety significance or complexity
8 and what sort of methodology we use to apply to those
9 different systems.

10 And then clarification within Section 1.9
11 that NEI prefers to do earlier in terms of design
12 attributes to move to further consideration of common
13 cause failure and refinements we're looking at to that
14 section to make it more clear and useful as tools
15 going forward.

16 Excellent.

17 And post the April 2019 public meeting we
18 had a few additional areas we wanted to focus on.
19 There was a lot of energy about the spurious actuation
20 guidance in the BTP 7-19.

21 There's three different sections on that
22 particular topic and it has varying levels of
23 complexity and non-clarity.

24 We recognize that so since the April 4th
25 public meeting we took a very specific measured

1 approach of looking at that to provide much more
2 clarity in receiving some of the comments we got on
3 that topic since that public meeting as well.

4 We received a number of comments on
5 flexibility when it came to crediting of manual
6 actions outside of the main control room.

7 Clearly, there's some things specific to
8 the SRM in terms of where you would credit manual
9 action so we need some clarification on that. And
10 you'll see that later on in our presentation.

11 And then generally the structure and flow
12 of BTP 7-19, the Staff internally realized that like
13 I said, there's three different sections that talk
14 about spurious actuation and not remotely close to
15 each other.

16 Things like that we recognize and then she
17 gave us that comment and we saw that as a concern.

18 So, the eventual draft that you'll see
19 later on this year is going to be structurally
20 different than what you currently see issued right now
21 in order to make the flow of the guidance much more
22 cogent, much more understandable, and improve
23 readability too.

24 So, be prepared to see that later on this
25 year.

1 Next slide.

2 So, as I alluded to earlier, these are the
3 two main issues, the primary issues, that we received
4 in the past two years from industry in terms of BTP
5 itself and its usability within the licensing
6 framework for plants, in particular for operating
7 reactors.

8 What do we expect the BTP to be applied
9 to? So, that bullet essentially summarizes and it's
10 specific for License Amendment Requests, design
11 certifications, and COL applications, period.

12 The next bullet summarizes the next point
13 we're going to clarify within the BTP itself, that
14 it's guidance.

15 You can choose to use it outside of those
16 licensing frameworks if you so desire but you're
17 subject to the limitations of that licensing
18 framework, e.g. 50.59.

19 There are clearly limitations within that
20 framework for using certain portions of the BTP
21 guidance, like the D3 assessment.

22 But there may be other portions of the BTP
23 that you could use or leverage under 50.59, but we
24 leave that to the discretion of individual licensees
25 to make that determination.

1 MS. GOVAN: Slide Number 6.

2 MR. MORTON: And right now I'll pass it
3 along to another team member, Deanna Zhang, for the
4 rest.

5 MS. ZHANG: So, the next two slides look
6 very familiar to what we had presented during the
7 April 4th meeting with some slight differences to
8 address a few of the public comments.

9 So, we wanted to stay with the graded
10 approach framework we had presented during the April
11 4th meeting, which is based on safety significance and
12 the classification of the digital I&C system.

13 We will be discussing the gradation more
14 in the next few slides but we want to say that this
15 categorization scheme is deterministic and is
16 generally consistent with how the small modular
17 reactors, such as NuScale, are categorized in their
18 systems as described in their design-specific review
19 standards.

20 And this approach also facilitates the use
21 of defense-in-depth based on the consequence of
22 potential vulnerabilities to CCF.

23 And the Staff has continued to refine this
24 proposed framework based on internal discussions, and
25 as I had mentioned before, based on industry feedback.

1 Next slide, please, Slide 7. So, this
2 table was presented during the April 4th meeting. So,
3 this is our conceptual approach to how we want to do
4 the categorization.

5 And based on industry feedback, we have
6 removed the term defense-in-depth, as you can see,
7 from the B1, A2 categories for addressing CCF.

8 We understand that that term wasn't
9 defined and that it added some confusion as far as
10 does that mean a D3 assessment or is it something
11 else?

12 So, we're using the word qualitative
13 assessment and it is consistent the way we are using
14 it, and it will be described in the BTP revision that
15 it will be consistent with the RIS 2002-22 Supplement
16 1 language.

17 So, that's pretty much the main change we
18 have made to this categorization scheme and we welcome
19 additional feedback on that.

20 Next slide. So, this is, again, the
21 proposed deterministic approach and how we would plan
22 to define the various categories. The only thing that
23 really changed in this definition is the definition of
24 A1.

25 So, we did receive a comment from industry

1 that the definition of A1, in particular the second
2 part using the words supporting a safety function, it
3 wasn't very clear what that meant.

4 So, we agreed and we incorporated the
5 second part of the industry's proposed wording, which
6 is: whose failure could directly lead to accident
7 conditions which may cause unacceptable consequences
8 if not mitigated by other A1 systems.

9 We decided to keep the first portion
10 because we feel that the wording is more clear. I
11 know industry had proposed some words consistent with
12 the description in the IEC 2009 version of 61226 for
13 categorization.

14 But since it came from the description, it
15 didn't have the exact wording has provided in the
16 actual criteria for categorizing a Category A
17 function.

18 So, in that case, we felt that this would
19 provide more specificity than what was provided in the
20 comment or first part.

21 MR. VAUGHN: Deanna, I just had a question
22 on the graded approach.

23 Did you consider other risk-based
24 approaches or risk-informed approaches that have been
25 used over the years, like maintenance role in 50.69

1 where you could glean superior insights for risk
2 ranking systems in general?

3 Oh, Steve Vaughn, NEI.

4 MS. ZHANG: Thank you, Steve, this is
5 Deanna again. So, we have looked into that.

6 We felt that although risk insights can be
7 used to inform this approach, more research is needed
8 in terms of how the PRA models for the various
9 different plants, how that could be used to inform the
10 categorization.

11 We do recognize that there is a 50.69 rule
12 and the risk categories in there are somewhat
13 consistent with the A1, A2, B1, B2 approach.

14 But we chose not to use those words
15 because that really depends on a complete PRA model
16 using the complete 50.69 approach. So, given that, we
17 didn't use those wording in this definition.

18 MR. BENNER: This is Eric Benner to add.
19 Some of this came from the interactions we had
20 surrounding the Commission meeting. This is Eric
21 Benner.

22 This is one where we can work on the
23 words. We want this to be permissive of using risk
24 insights but not require risk information to be
25 available.

1 Because we got some signals around the
2 Commission meeting of don't make this contingent upon
3 someone having a PRA. There are thoughts here that
4 categorizations could be done in several ways.

5 So, if for some reason that doesn't come
6 across, we can work on language to let that come
7 across but the intent is for someone who has the right
8 level and quality of PRA, they certainly could
9 leverage risk insights to help with the
10 categorization.

11 MR. MORTON: Wendell Morton, NRC.

12 Just to echo Eric and Deanna's point, we
13 wanted to keep the initial proposal of the framework
14 fairly straightforward and simple.

15 And one of the challenges we had with
16 developing the framework is that not every system fits
17 cleanly within the A1, A2, B1, B2 framework.

18 So rather than going into a lot of
19 specificity about that, we wanted to keep the
20 framework fairly simple but fluid so the individual
21 licensees can make decisions on systems that may not
22 fit cleanly between A1, A2, B1, and B2, just to give
23 some further context to it.

24 MS. ZHANG: Thank you, Wendell. This is
25 Deanna again. So, any other questions?

1 MR. JARRETT: Ron Jarrett, TVA. On the A1
2 Item 2, is that specifically addressing spurious
3 actuation of safety systems?

4 MS. ZHANG: It can.

5 So, if you look at the definition provided
6 in IEC 61226, that second portion is related to those
7 functions that could either, if not perform, could
8 lead to unacceptable consequences of an A1 system if
9 not mitigated by another A1 system.

10 Or if it has a spurious actuation and if
11 not mitigated by another A1 system, it leads to
12 unacceptable consequences. So, that definition could
13 include that.

14 MR. JARRETT: Okay, thank you.

15 MS. ZHANG: Let's move on. So, I'm going
16 to pass it back to Wendell about the applicability of
17 this guidance to the various different licensing
18 bases.

19 MR. MORTON: All right, so I have a couple
20 slides we'll get to here.

21 And one of the things we talked about at
22 the April meeting is within refining the document,
23 trying to draw a better tie between operating plants
24 in new reactors or advanced reactors in terms of the
25 technical concern, in terms of the technical rigor you

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701

1 need to apply to unify.

2 Because right now, it's really a document
3 that's focused a lot on advanced reactor concerns,
4 although applicable to operating reactor concerns too.
5 It's not necessarily crisp when it comes to drawing
6 the tie between the two, having similar technical
7 concerns.

8 So, previously, we had considered having
9 specific differences in treatment between operating
10 plants and advanced reactors in terms of Part 52 maybe
11 and Part 50 here and there because of the differences
12 in the level integration between advanced reactors and
13 operating plants.

14 Since the four of us have worked on both
15 and there is a lot of differences between the level of
16 digital implemented between an advanced reactor versus
17 an operating plant that may have more intermediate
18 upgrades or even an RPS upgrade but many other
19 portions of the I&C apparatus have not been digitized.

20 So, the thinking was at the time, hey,
21 maybe we should call these specific differences and
22 treat them differently or draw some differences
23 between them.

24 But after further consideration, we
25 thought that it would be better to focus more on

1 integration, the interconnectivity between systems
2 rather than calling out specific differences.
3 Because I think Ray Herb actually made a good point
4 about this at the last meeting.

5 As plants go further and more digital
6 integration takes place within operating plants,
7 they'll start to resemble more what we see in advanced
8 reactors anyways long term.

9 So, from that standpoint, having specific
10 differences between plants of different vintages made
11 less sense than simply focusing on the real concern
12 that could lead to potential CCF with the level of
13 integration or connectivity between plants because of
14 digital connectivity of some type.

15 Next slide, please.

16 And so that's what this next slide, Slide
17 10, really gets down to, is focusing on the
18 integration, interconnectivity aspect to go along with
19 the graded approach to sort of meet with that.

20 So, for example, when we're talking about
21 the D3 assessment itself specific for A1 systems, and
22 I highlight some of the bullets there saying if you
23 have an A1 system that's just an A1 system or systems,
24 as in an RPS BSF upgrade, there's your D3 assessment
25 in terms of the BTP focus of the scope.

1 If there is digital connectivity or
2 integration between an AI system and a non-AI system,
3 then whatever that happens to be, whether it's an
4 existing interconnection of some type or one that was
5 added as a result of the digital modification, that
6 may need to be considered within the D3 assessment as
7 well to ensure the appropriate technical rigor for
8 potential CCF has been addressed for everything that's
9 connected to the AI system itself.

10 MS. ZHANG: I just want to provide a
11 clarification on that. As you see, that last bullet
12 there, those are connections and integrations that
13 could have an adverse impact. So, it's not just any
14 connection.

15 So, we really want it to focus on those
16 interconnections that could either trigger a common
17 cause failure, result in common cause failures across
18 different systems.

19 So, if there are other measures such as
20 independence implemented between the various systems,
21 then that obviously reduces that impact and so the D3
22 applicability would be reduced in that case.

23 MR. MORTON: Thank you for the
24 clarification. That's generally it in terms of this
25 particular concept. So, this will be integrated

1 within the draft, the actual full draft going forward.

2 So, we will not be having any sort of
3 bifurcation or separation of different treatments
4 between operating plants and advanced reactors.
5 Question?

6 MR. VAUGHN: Steve Vaughn, NEI. Quick
7 question, so in the current BTP that you have in the
8 front, you have regulatory requirements, regulatory
9 guidance, you lay that out.

10 Licensees know what their current
11 licensing basis is but I know for reviewers you sort
12 of say what it is. So, in a sense that could be
13 different for new reactors and old reactors.

14 Will you clarify for the reviewer, say
15 licensing basis might be different here?

16 MR. MORTON: Yes.

17 MR. VAUGHN: Okay, because one thing
18 that's kind of confusing was -- I'm going off the top
19 of my head here, but was it SRP 7-18 alpha? Is it
20 operator manual actions appendix or something?

21 That kind of confused us where it was
22 designed for new reactors I believe but it wasn't
23 clear that it could apply to everyone though, right?

24 And I was a little confused, at least me
25 initially.

1 MR. MORTON: Well, speaking specifically
2 for BTP 7-19, we recognize that. So, for example, we
3 talked about the fact that many operating plants and
4 licenses are IEEE 279, many advanced reactors are
5 licensed to IEEE 603.

6 There's a difference in those two
7 particular standards, which means there's a difference
8 in the application of digital potentially. But
9 ultimately, it'll be the same level of integration and
10 interconnectivity beyond what the licensing basis is.

11 And that's the unifying factor but we'll
12 be clarifying that part as well, we just didn't go
13 into that particular level of detail for this
14 presentation.

15 Next slide, please, and I'll turn it back
16 over to Deanna.

17 MS. ZHANG: Thank you, Wendell. Sorry for
18 the back and forth. Can you hear me? Okay, we're
19 good.

20 So, as Wendell had discussed earlier, we
21 got the feedback on the need to clarify the guidance
22 on spurious actuation in the BTP.

23 We looked at the guidance and we
24 recognized that there definitely could be improvements
25 made and based on the feedback from industry, we

1 wanted to clarify the following points.

2 And these points will be integrated into
3 the next revision of BTP 7-19. So, consistent with
4 the SRM to SECY-93-087, a CCF that leads to a spurious
5 actuation is considered a beyond-design-basis event.

6 So, we also want to clarify that spurious
7 actuations due to CCF, it should be considered as a
8 transient initiator without concerning a concurrent
9 DBE. I don't think that is clear in the BTP itself so
10 we will be making sure that is in the BTP.

11 The next thing is that spurious actuation,
12 we want to clarify that spurious actuation resulting
13 from single random failures within digital I&C or
14 component should continue to be addressed as it is in
15 the current licensing basis.

16 So, we did not consider single random
17 failures that lead to a spurious actuation of digital
18 I&C or spurious actuation of the functions to be a CCF
19 if it's due to single random failures.

20 And then we want to talk about the scope
21 of the spurious actuation consideration. We don't
22 want everything to be included in this evaluation.
23 We're only looking for those that have the greatest
24 adverse consequences to plant safety.

25 So, if you already are analyzing in your

1 Chapter 15 analysis that this particular event such
2 as, let's say, spurious ECCS initiation, if that's
3 already analyzed and your design doesn't change that,
4 then we don't need to see more detail than that.

5 So, that comes to the next point, we want
6 to make sure that previous spurious actuation
7 considerations in existing licensing basis should not
8 be invalidated by the digital modification.

9 So, whatever you considered in the
10 previous spurious actuation analysis that you've done
11 in your safety analysis in your SR, we don't want the
12 digital modification to make that evaluation invalid.

13 So, I'll pass it to Wendell now.

14 MR. MORTON: Wendell Morton, NRC.

15 And to tack onto Deanna's point there,
16 keep in mind in the integration interconnectivity
17 discussion we just had a few seconds ago.

18 And part of the consideration of
19 invalidating the previous assumptions if you have
20 experience actuations, if you've had things like your
21 integrating individual controls into grouped system-
22 level controls, which was different than the previous
23 control framework that you had in the original
24 licensing basis, those would be an example of where
25 the integration aspect added because of digital could

1 potentially put you in that first bullet, rather than
2 the second bullet, from your original assumption.

3 That's the kind of idea we're looking at
4 when it comes to tying the spurious actuation
5 consideration as a potential hazard to look at as a
6 result of integration or interconnectivity. And then
7 being within that framework.

8 So, that's just kind of an example that
9 we're thinking of internally in terms of the hazard
10 itself and how the hazard could be presented in a
11 different way from your original licensing basis.

12 MS. ZHANG: Thank you, Wendell, this is
13 Deanna again. So, just to clarify, we're really
14 looking at things that will make the conditions worse.

15 So, if you're putting two functions that
16 were previously segregated into one system and that
17 function is spuriously actuated, can it cause a
18 greater consequence to the plant?

19 We need to see more evaluation on how that
20 is either mitigated or how that potential could be
21 reduced such that the likelihood is sufficiently low,
22 such that the event doesn't have to be considered.

23 Now, we do want to clarify we are going to
24 describe methods to reduce the likelihood of these
25 postulated spurious actuations so that further

1 consideration is unnecessary.

2 So, this is where we're looking at the
3 segmentation analysis that's been previously done,
4 looking at potentially other design features to limit
5 the effects of the spurious actuation, things like
6 that.

7 So, we'll make that clear in the draft
8 revision to BTP 7-19.

9 MR. ODESS-GILLET: Warren Odess-Gillett
10 at NEI. So, if we look at the RPS SFAS in all
11 configurations today, pretty much they're segmented by
12 individual analog function protection sets and so on.

13 So, then if you put in a digital system to
14 kind of demonstrate segmentation, are you sort of
15 forcing the architecture to mimic that segmentation
16 that you had in the analogy system in your digital
17 system?

18 Otherwise, you have to postulate some
19 multiple function spurious actuation.

20 MS. ZHANG: So, one thing that I did not
21 add in this bulletized list which we did in our own
22 internal discussions is for a safety-related system,
23 due to the quality and the V&V that goes into it, we
24 will only consider, we think that you only need to
25 consider, one safety function at a time.

1 But this may not be true for non-
2 safety-related systems or, in particular, those that
3 aren't divisionalized, there's no voting, it's just a
4 single controller doing the particular function.

5 MR. MORTON: Yes, Wendell Morton, NRC.

6 To add to Deanna's point, the Staff isn't
7 presuming a specific direction in your design
8 solutions to address CCF, whether it's loss of
9 function or spurious actuation.

10 In the past, we've seen various applicants
11 and licensees address CCF, in particular for spurious
12 actuation.

13 They provided a segmentation analysis, it
14 was a systematic allocation of different functions
15 across different portions of the network along with
16 design features internal to that, watch timers, things
17 like that, self-testing features.

18 And the holistic view of all those design
19 attributes was credited towards addressing things like
20 spurious actuation. We didn't presume a specific
21 direction, that's at the discretion of the licensee to
22 determine the best solution internally.

23 If segmentation is an analysis chosen to
24 be used, it's at your discretion to determine which is
25 the best way to segment those functions in order to

1 provide mitigation or elimination to the potential
2 hazard for spurious.

3 MR. REBSTOCK: I'd like to add to that.
4 This is Paul Rebstock, I'm also on this Working Group.
5 And you bring up a point that I think is not always
6 appreciated.

7 That is that there's an interaction
8 between the design of the system and the effort
9 required to get the system licensed.

10 And you can do things in the design that
11 will simplify the licensing or you can do things in
12 the design that will make the licensing more
13 complicated. So, like you said, if we duplicate the
14 analog system, then the licensing is easier.

15 But you may not want to do that because
16 you may want to take advantage of things that the
17 analog system couldn't do.

18 But you have a tradeoff and you have the
19 option of selecting that tradeoff very carefully, and
20 I think people need to be aware of that.

21 MR. ODESS-GILLET: Warren Odess-Gillett
22 at NEI. I mean, industry wants a design that's both
23 effective and efficient and safe.

24 But they don't want to design it in a way
25 that one of the design attributes is, well, you could

1 say license ability but you don't want to add
2 complexity because you know that licensing will be
3 easier.

4 So, what we're trying to do in this
5 interchange is to understand what the box is so that
6 we can then -- especially in this area of spurious
7 actuation.

8 Because I think spurious actuation is the
9 most unclear aspect right now in what does the
10 licensee or applicant have to present to demonstrate
11 license ability of your digital reactor protection in
12 SFAS system?

13 So, that tradeoff is adding complexity in
14 order to -- or more difficult maintainability to
15 having something that's licensable.

16 MR. REBSTOCK: I agree. This is Paul
17 Rebstock again. I'm not advocating something, I'm
18 just saying that there's an option there and it's a
19 design feature to think about, that's all.

20 I'm not saying that's what you need to do,
21 it's just it's available.

22 MR. BENNER: This is Eric Benner, NRC, and
23 I'm glad Ray came back because I distinctly remember
24 in the public meeting Ray was raising the same issue
25 you raised, Warren.

1 Okay, this is an area where there isn't
2 clarity, we don't want it to be bring me a rock and
3 endless paralysis by analysis. And we agree with that
4 so, again, these are words that we thought provided
5 some clarity.

6 This may not be enough or this may be
7 enough but this I think could clearly be an area,
8 given what happened yesterday, that there could be an
9 opportunity for a focused discussion with a
10 hypothetical design where we could talk through what
11 would meet the mark?

12 Because I think Paul raised a caution but
13 I think we don't want complexity just for
14 licensability, right? Because with complexity adds
15 different failure modes and all of the sudden that
16 begets a different set of problems.

17 So, I think we do want to work with
18 industry to kind of talk about given a certain design
19 or design functions you want to achieve, how could we
20 talk through what kind of analysis or design features
21 would help alleviate the concerns about spurious
22 actuation?

23 MR. MORTON: Wendell Morton, NRC.

24 To Eric's point in terms of the
25 complexity, the Staff has seen a number of -- and I'll

1 just stick to the segmentation example -- that were
2 fairly complex.

3 But they were only complex insofar as
4 individual licensees or applicants chose to integrate
5 all the balanced plant functions onto a single
6 distributed control system.

7 And all those previous systems had been
8 separate, physically independent from each other. So,
9 the level of detail that demonstrates that spurious
10 has been accounted for will be different if you have
11 not done that level of integration.

12 But conversely, it may be different for
13 safety-related systems. You're still going to be
14 required to maintain independent separation, diversity
15 is credited for example.

16 So, that's a different consideration of
17 spurious actuation than it would be if you have a
18 full-blown distributed control system and all your
19 balanced plant functions integrated into a set number
20 of black boxes.

21 And the design solutions may be different
22 too but it depends on what the design you're trying to
23 license is. And we'll try to clarify that guidance in
24 terms of that distinction too.

25 MS. ZHANG: This is Deanna Zhang.

1 Just to follow up, we have actually
2 discussed this in a lot of detail as far as what level
3 to provide that guidance at. We didn't want to be
4 overly prescriptive, however, we also wanted to make
5 the guidance clear.

6 So, this is where we need industry's
7 feedback as far as where should we draw the line of
8 how prescriptive this guidance gets?

9 MR. ODESS-GILLET: Warren Odess-Gillett.

10 Agreed, it's a balancing act between being
11 prescriptive but being clear on scope and being non-
12 prescriptive but being unclear in scope.

13 So, yes, there is that balancing act
14 that's understood.

15 MS. ZHANG: So, with that I will --

16 MR. VAUGHN: Steve Vaughn, NEI.

17 Just one question, maybe this is a way to
18 attack the scope problem here. So, the first bullet,
19 the second sub-bullet, I think that's pretty clear,
20 single random failures.

21 The IEEE standard reg guide says how to do
22 that. The third bullet I agree with, you understand
23 your licensing basis. If you do something to
24 invalidate that, well, you need to take care of it.

25 The one that gets me is the first sub-

1 bullet under the first bullet, postulated CCF means
2 it's considered a beyond-design-basis event.

3 Okay, so there are beyond-design-basis
4 events that are part of someone's current licensing
5 basis, ATWS, station blackout, B.5.b, FLEX. Beyond
6 design basis but it's your current licensing basis.

7 The one that gets me is the first sub-
8 bullet, beyond design basis wording is from Commission
9 policy. So, I guess my question is, is the Commission
10 policy the current licensing basis for the plants?

11 MR. MORTON: Wendell Morton, NRC.

12 I'll try to answer that. So, when it
13 comes to the consideration of CCF, the Commission's
14 policy in the SRM SECY-93-087, that doesn't
15 specifically call out spurious actuation.

16 It specifically calls out loss of the
17 safety function or loss of function.

18 But with that being said, we're all
19 technical people, we know that spurious actuation is
20 a potential result of a CCF or multiple spurious
21 actuations is a potential hazard as a result of CCF as
22 much as loss of function is.

23 And that's been called out within the BTP
24 currently and in previous revisions.

25 The effort to, and we'll stick with the

1 balancing act theme, is balancing the need to address
2 the potential hazard of spurious actuation within the
3 scope of the Commission's policy, even if the policy
4 itself doesn't call it out specifically, it is a
5 hazard that is called out within the BTP.

6 But we wanted to provide flexibility in
7 addressing the hazard so maintaining that consistency
8 with considering a beyond-design-basis event,
9 consistent with a loss of function, which is
10 specifically called out in the SRM.

11 That's why that bullet is written the way
12 it is, to be consistent with the policy itself.

13 MS. ZHANG: However, unlike the policy
14 where it went into you would have to postulate the
15 CCF, which disables the safety function concurrent
16 with the DBE, we felt that a spurious actuation is
17 more of an event itself, the initiator.

18 So, that's why we said you don't have to
19 consider it with a separate DBE.

20 MR. BENNER: Yes, this is Eric Benner
21 again.

22 This is an area where we think we have for
23 the area of spurious actuations because it's not
24 explicitly mentioned in the policy statement.
25 Latitude to give more flexibility.

1 That being said, an individual plant
2 licensing basis is an individual plant's licensing
3 basis so if something's locked down in an individual
4 plant licensing basis for how it needs to be
5 considered, this doesn't trump that.

6 It gives you the opportunity to leverage
7 this if you want.

8 MS. ALVARADO: This is Rossnyev.

9 So, the one thing is in previous meetings
10 one of the comments that industry provided was what to
11 do about spurious actuation concurrent with a station
12 blackout and stuff like that.

13 So, we had a lot of internal discussion
14 about it and these are sort of the ideas that we were
15 proposing on how to address that particular request.

16 But like Wendall and Deanna said, please
17 provide any suggestions or recommendations that you
18 have for these because Warren is correct, the guidance
19 in BTP 7-19 for spurious actuation is super confusing.

20 MS. ZHANG: Thank you, Ross.

21 MR. JARRETT: Ron Jarrett, TVA. First
22 sub-bullet, the word transient initiators, can you
23 explain what you're driving at there? What does
24 transient mean? What's the reasoning of putting the
25 word transient there?

1 MS. ZHANG: So, we put transient
2 initiator, we see it as essentially something, the
3 spurious actuation causing something to, either a
4 valve opening or closing, that action causes a change
5 to the plant so that you affect reactivity.

6 That change is what we're looking at.

7 MR. JARRETT: I guess when I read that I
8 kind of focus on the mechanism, failure mechanism. Is
9 it a transient failure condition like a glitch versus
10 a card failure that goes to permanent state? The word
11 transient wasn't real clear.

12 MR. BENNER: So maybe we just need an
13 event initiator.

14 MR. MORTON: It's really a plant
15 initiator.

16 MR. BENNER: Initiating a plant transient,
17 not that the condition is...You could even just say
18 initiator

19 MS. ZHANG: Yes, we can say plant
20 initiator.

21 MR. MORTON: We'll take that as feedback.

22

23 MS. ZHANG: I believe the IEC term is
24 postulated initiating event.

25 MR. BENNER: Yes, Eric Benner again.

1 I think because of some of the dialog
2 we've had, what we're trying to say here, and we can
3 get feedback on the words -- because there was
4 discussion of, well, what if I already have an event
5 going on? Do I need to assume a spurious actuation on
6 top of that?

7 What we're trying to say is no. Right?
8 You have one or the other.

9 Either you have spurious actuation and
10 whatever happens happens and we have to look at it, or
11 you have an analyzed event occurring and you have to
12 do what you have to do for that, assume a single
13 failure or whatever.

14 But you don't have to lump both of those
15 together.

16 MR. HERB: This is Ray Herb, Southern
17 Nuclear. I'd like a quick clarification too. What's
18 the population of the source of these spurious
19 actuations?

20 Is it a protection system we're talking
21 about or is it the plant control system?

22 MS. ZHANG: It includes whatever could
23 generate that spurious actuation.

24 So, if you're doing a digital modification
25 of your protection system and it could produce a

1 spurious actuation of a particular safety function
2 that wasn't bounded by your existing licensing basis,
3 then that should be considered.

4 Concurrently, if you were to modify your
5 plant -- the plant systems integrate a lot of
6 separate, previously separate, control functions into
7 a single controller, then we would expect that would
8 be looked at to see if you're still bounded by your
9 existing licensing basis.

10 MS. GOVAN: That was Ray Herb with that
11 comment and we have one more.

12 MR. BURZYNSKI: Mark Burzynski, Rolls-
13 Royce. I just wanted to follow up on one more point
14 taking off of Ron's clarification of the word
15 transient.

16 I would add that you should also think
17 about the people that view transients and accidents
18 and safety analysis space, transients and accidents
19 have different acceptance criteria and different rules
20 for the evaluation.

21 So, you want to avoid any unintended
22 consequences of inferring something there that you
23 don't intend to do.

24 MR. ODESS-GILLET: And I just wanted to
25 -- this is Warren Odess-Gillett, NEI -- say that I

1 think the understanding here is BTP 7-19 is applicable
2 to the, quote, unquote, A1 systems that you've
3 defined, which I think the elephant in the room is
4 the Reactor Protection and SFAS systems.

5 So, I think anything outside of that, any
6 systems outside of A1, really is not germane to what
7 the discussion here is on BTP 7-19. Is that a correct
8 understanding?

9 MS. ZHANG: So, just to clarify, we had
10 intended to provide guidance for all systems to
11 address CCF in BTP 7-19. But the difference is the
12 technical rigor that's required.

13 So, the D3 is only applicable to a
14 protection system. Similarly, we will use that
15 particular approach for addressing spurious actuations
16 too.

17 Now, you can say that for most balance of
18 plant type of replacements, you will never trigger the
19 use of this BTP. In the risks there are also parts of
20 the qualitative assessment, it does call for
21 addressing unintended operations.

22 So, if it's not captured, if you need to
23 come in for a LAR for some reason for that BOP system
24 or another lower safety significance system, we want
25 that guidance to be consistent.

1 So, the way we treated it in the risks is
2 how we will be treating it for those particular
3 systems in the BTP.

4 MR. HERB: Ray Herb, Southern Nuclear.

5 So, quick clarification, if I come in with
6 a LAR for a protection system, do I have to
7 demonstrate that the system or my licensing -- my
8 system is capable of handling spurious actuation of my
9 non-safety control systems?

10 Or some population of those spurious
11 actuations. Or can I just say that can never happen
12 because I've done analysis in accordance with the
13 risk?

14 MR. MORTON: Wendell Morton, NRC. Just to
15 clarify your question, Ray, you're talking about just
16 at RPS SFAS ESF upgrade only?

17 MR. HERB: Yes, but I have digital systems
18 in my plant and I think I heard highly integrated
19 systems that are connected, that they're separate.

20 They follow the guidance, they're separate
21 from my protection system but they're not subject to
22 a single failure criteria.

23 But does this spurious actuation guidance
24 require me to assume spurious actuations of the
25 turbine trips? We already do those currently.

1 That's one of our accidents we have but
2 now we're talking about random things like turbine
3 trips and feedwater isolations and all that stuff all
4 at one time?

5 Or are we talking about a single specific
6 system actuation like we've had before?

7 MR. MORTON: I would say that I would
8 focus on that second bullet, the second sub-bullet,
9 which is the first obligation to look at is ensuring
10 that your initial assumptions, unless they have not
11 been invalidated by the digital modification first and
12 foremost, before you start thinking about anything
13 else.

14 So, in particular for your protection
15 system modification, if you're maintaining whatever
16 you are licensed to attempt a single failure
17 separation as, all that good stuff.

18 You more than likely are covered in terms
19 of your spurious actuation considerations. Look to
20 the other side in the B1, B2, and even A2 system. Or
21 A2 I might put in another category.

22 Could you still maintain some level of
23 independence, separate single failure requirements?
24 Likely good if you've maintained that in terms of your
25 licensing basis.

1 Put that aside for B1, B2 systems. The
2 response would be it depends. Are you doing single
3 system modifications, just a feedwater digital upgrade
4 here, turbine control upgrade over there? They're not
5 integrated or talking to each other?

6 Or are you doing a full-blown balance of
7 plant distributing control system where they're all
8 integrated to the same platform? If you are, then
9 your consideration --

10 MR. HERB: I think we all are.

11 MR. MORTON: Okay, if you are doing a
12 full-blown DCS across the board, I would ask the
13 question to industry then.

14 If that's the case, then if you've got a
15 number of different design functions integrated onto
16 the same platform, do you believe that your initial
17 hazard assumptions in terms of spurious would still be
18 valid?

19 MR. HERB: Yes. I mean, because there
20 will be some functional segmentation. The systems
21 will be designed so they don't all fail at the same
22 time.

23 MR. MORTON: And that's what we're saying.

24 MR. HERB: That's a reliability concern
25 rather than anything else. And so I just want to make

1 sure that we're not having some added --

2 (Simultaneous Speaking.)

3 MR. MORTON: I'm going to interject. The
4 LAR is the LAR, right?

5 If you've done things outside of the LAR
6 and you've used the right tools and you've determined
7 that you're still within your licensing basis, coming
8 in with a LAR on, say, a protection system upgrade
9 doesn't give us free reign to go start delving into
10 all that.

11 Those are separate things. I would say if
12 you come in for a LAR and that LAR includes -- because
13 we don't exactly know where industry eventually wants
14 to go.

15 All the sudden there's a single platform
16 that's going to do a bunch of stuff, then we need to
17 talk about a little bit of, okay, what could be
18 potential spurious actuations? What could be the
19 impacts of potential CCFs?

20 But if you're doing particularly non-
21 safety-related mods out there under 50.59 and you've
22 done them effectively, coming in with a LAR doesn't,
23 we think, cause you to go and all of the sudden assume
24 a bunch of new stuff as inputs to the LAR.

25 MR. HERB: All right, thank you.

1 MS. ALVARADO: This is Rossnyev.

2 I just wanted to add, also, we're not
3 trying to impose new requirements and systems or
4 anything like that but we are also trying to think
5 ahead because we can see that it's going to be more
6 interconnections between systems.

7 The new reactors' design, they're highly
8 integrated. Obviously for operating plants we don't
9 see that level but I'd like to think that we're going
10 that way with the digital upgrade.

11 So, that's something that if you have to
12 come for a LAR, that's something that we might need to
13 consider if that level of interconnection exists.

14 MR. JARRETT: This is Ron Jarrett, TVA.
15 The area I'm kind of concerned with, I guess Warren
16 asked is it isolated to the RPS SFAS box?

17 I guess Criterion 2 where it can bring up
18 an A2 system into an A1 system, which might be a
19 breaker. It might be aux feedwater control. It's
20 outside the box.

21 So, for some of those the RPS would have
22 protective actions, automatic protective actions, for
23 some they may not. So, I think that's an area we need
24 to have dialog on.

25 MS. ZHANG: Yes, like Erica had mentioned

1 before, maybe running through a few examples would
2 help in this clarification. And again, we don't want
3 to be inconsistent with the guidance we've already put
4 out in the risks for those types of systems.

5 So, the guidance we want to apply for BOP
6 or A2 systems is going to be the same in this BTP as
7 it is in the risks if you have to come in for whatever
8 reason, for a LAR for those systems.

9 We don't foresee it, we see this mainly as
10 protection systems for the applicability of BTP 7-19
11 but in order to have full coverage and to apply
12 consistent guidance, we wanted to make sure that we
13 cover those systems in this BTP too.

14 MR. BENNER: This is Eric Benner again.
15 I just want to be clear, you're here if you've already
16 on your own determined you need a LAR.

17 Nothing in here should be interpreted as
18 -- there's a tool out there for determining whether
19 you need a LAR and that tool is 50.59, and there's
20 guidance, both non-digital-specific and specific to do
21 that.

22 So, I'm not sure if that's where some of
23 the confusion is coming but just make sure that you're
24 only here reading any of this if you on your own have
25 determined you need to come to the NRC for a LAR.

1 MR. MORTON: Wendell Morton, NRC.

2 To add to Deanna and Eric's point, and
3 Ross's point, RIS 2002-22 Supplement 1 specifically
4 calls out non-safety-related upgrades as something
5 that Staff has accepted using documentation design
6 features, design process, quality and operating
7 experience implemented under 50.59.

8 That includes your full-blown DCS upgrades
9 we've just been talking about previously. As Eric was
10 saying, we concluded the non-A1 systems in the
11 potentiality that you cannot pass 50.59 with that
12 guidance in place.

13 And the technical rigor we're simply
14 saying would be consistent.

15 So, specific to spurious actuation like
16 CCF in general, for those non-A1 systems consistent
17 with the risk, the same methodology would apply, which
18 is the qualitative assessment of design features,
19 whatever those happen to be, including segmentation,
20 the design process and quality, operating experience.

21 And that would be sufficient for the BTP.
22 In a similar fashion it is for the risk under 50.59 as
23 well. Just wanted to clarify that.

24 MS. ZHANG: Any more questions before we
25 move on? Great.

1 Now I will pass it to Paul who will be
2 leading the discussion on the particular industry
3 comments that we've received in May.

4 MR. REBSTOCK: Okay, if I mount the mic
5 like that, can people -- it sounds like it's picking
6 up. We've got a set of questions that came in in May,
7 questions, comments that came in in May.

8 We want to make it clear, those are not
9 considered part of a formal comment period or anything
10 like that. We're not planning on making a formal
11 response to those. We see them as items for
12 discussion and we're having the discussion.

13 There are some things that we've already
14 talked about. There are a few points that we need
15 some clarification on, we're not exactly sure what you
16 were getting at. So, I need to make a caveat that
17 says whatever we say in response to these is not a
18 formal response, it's not a commitment.

19 The comments that came in were unnumbered,
20 it was a bullet list so we've taken that and
21 reproduced it as a table that was attached to the
22 meeting notes that lists your comment and your
23 recommendation for dealing with it, and applies
24 numbers.

25 And the numbers are just sequential the

1 way the comments were.

2 MS. ALVARADO: Paul, sorry for
3 interrupting, this is Rossnyev. In addition, we have
4 this handout that is just a summary of the comments
5 that --

6 MR. REBSTOCK: Yes, that's the table I was
7 talking about.

8 MS. ALVARADO: Okay.

9 MR. REBSTOCK: Okay, Comment 1 has to do
10 with actions from outside of the control room.

11 And we made reference -- we're on Slide
12 13, I need the next slide -- there for Points 3 and 4
13 of the SRM. And just to summarize, Points 1 and 2 of
14 the SRM, the SECY-93-087, those have to do with D3
15 analysis to combat potential CCF.

16 Point 3 has to do with the need for
17 diverse means for performing function or a substitute
18 function. And Point 4 refers to the need for system-
19 level actuation and specifically says in the control
20 room.

21 That's written into the point, there's not
22 anything we can do about that without going back to
23 the Commission. So, we see flexibility.

24 If the interest is in saying that you want
25 diverse means outside the control room to meet Point

1 3, we see some opportunity for flexibility to go
2 there.

3 But we caution that Point 4 still requires
4 that there be facilities inside the control room for
5 system-level actuation. So, there's not much we can
6 do about that outside the Commission.

7 MS. ZHANG: So, just to clarify, Point 4
8 talks about a set of displays and controls to perform
9 a certain set of safety functions. They call it
10 plant-critical safety functions.

11 Those are actually defined in the BTP 7-19
12 currently. They're also in the original SECY as well
13 as a number of other guidance documents. We see that
14 as separate from Point 3.

15 Now, you could use the same controls in
16 Point 4 as the diverse means to address Point 3, but
17 those are separate issues from considering Point 3 and
18 Point 4 with respect to using equipment outside the
19 control room.

20 So, based on the comment, we weren't clear
21 whether you're looking for flexibility with Point 3 or
22 flexibility with Point 4.

23 As we said, flexibility with Point 3, we
24 can discuss it and we can accommodate for that in the
25 BTP without further engagement with the Commission.

1 If you mean to address the Point 4 system-
2 level actuation within the main control room, that
3 aspect, we're not saying no but we would need to
4 engage the Commission and evaluate it in a lot more
5 detail.

6 MR. MORTON: Wendell Morton, NRC.

7 With regards to Deanna's last point, if
8 the industry's preferred direction is to be able to
9 flexibility to address Point 4 outside the main
10 control room, we're not saying no.

11 But that will clearly be an impact
12 potentially on schedule if that was something that was
13 critical to industry's concerns about a particular
14 challenge you're facing when implementing a D3
15 assessment.

16 MR. ODESS-GILLETT: So, Warren Odess-
17 Gillett, NEI.

18 So, I think Point 4 is probably more
19 applicable to new build than to operating plants.
20 Whatever the licensing basis is for the operating
21 fleet for addressing Point 4, it is what it is.

22 So, really, the industry wants to make
23 sure that we can credit operating actions regarding
24 Point 3 to cope with a postulated CCF.

25 MR. REBSTOCK: Okay, thank you.

1 MR. VAUGHN: Steve Vaughn, NEI.

2 The background behind this comment, we
3 frankly weren't looking at the policy, we were looking
4 at IEEE standard 603, which is a requirement, or 279.

5 (Simultaneous speaking.)

6 MR. VAUGHN: Yes, but those are regulatory
7 requirement. My focus is really just on what's the
8 licensing basis. So, it was to focus on that in
9 Clauses 6.2 and 7.2 from IEEE 603.

10 When we looked at it, some of the wording
11 here mentions control room and when we looked at those
12 clauses, it didn't limit to the control room. So,
13 again, I wasn't thinking, me personally I wasn't
14 thinking, Point 3 and Point 4, I was just looking at
15 what the requirement was.

16 So, again, this question about what's the
17 current licensing basis and what are you required to
18 do?

19 MR. REBSTOCK: Okay, but the key I think
20 that I hear is that the focus is not so much on the
21 system-level actuation, it's on the device-level or
22 function-level actuation for dealing with CCF effects.

23 MS. ZHANG: So going back --

24 MR. ODESS-GILLET: Paul's last statement
25 confused me. So, part of the D3 analysis is to

1 postulate a CCF failure to perform a safety function
2 concurrent with a DBE, right?

3 So, you have to look beyond your
4 protection system regardless of if you're looking at
5 it component-based or whatever.

6 You're basically saying your protection
7 system's disabled, what do you have available in your
8 plant that's non-safety, that can be non-safety,
9 right, to cope? Including timely manual actuations.

10 And so what our position is is we would
11 not like -- I think currently the way the BTP 7-19 is
12 written is that those coping manual actuations have to
13 be within the control room and that's the part we want
14 to change.

15 MS. ZHANG: So, we understand that. We
16 looked into the BTP and we actually recognized some
17 places we could make it more clear.

18 The distinction between addressing Point
19 3 and Point 4, sometimes we grouped it together where
20 that wasn't the intent of the SRM. In addition to
21 that, I just want to go back to the requirements in
22 603, 279 for manual system level actuation.

23 If you look at the actual requirements,
24 279 is for protection systems and 603 is for safety
25 systems.

1 So, those manual system-level actuations
2 would be either -- it would be safety-related, it
3 would be -- if you have systems outside the main
4 control room, that's safety-related to perform those
5 manual system-level actuations as described in those
6 requirements.

7 And you don't change that, we're not going
8 to look at it.

9 Now, if you do change it -- so, one of the
10 things we have seen in new reactor designs is those
11 manual system-level actuations was in the main control
12 room. They are routed through the safety-system logic
13 processors.

14 So, in that case, those controls would not
15 meet Point 4 of the SRM. That's why for most new
16 reactors there are either separate hardware switches
17 or it's integrated as part of the diverse actuation
18 system.

19 MR. MORTON: Wendell Morton, NRC. I think
20 the clarification you gave us is fine, that if you're
21 looking for flexibility in Point 3 we can --

22 MR. ODESS-GILLET: We can go there?

23 MR. MORTON: Yes.

24 MR. REBSTOCK: Okay, Comment 2, and this
25 will happen a number of times in these comments, there

1 is some stuff that we're currently working on and
2 we're not ready to discuss them right now because they
3 involve a lot of stuff. And we will address those in
4 a public meeting at a later date.

5 I think we're planning, Wendell, I think
6 the idea is another meeting in August or so and we'll
7 get into that stuff at that time.

8 Regarding testability, we agree in concept
9 with the idea of having flexibility but the proposed
10 wording is giving us a little bit of a problem. So,
11 work is still ongoing on that.

12 One of the main things is the reference to
13 defensive measures, which we have heard numerous times
14 from NEI, about the use of defensive measures.

15 But I don't see anything in here that says
16 what measures you're talking about, how they would be
17 applied, how they would be assessed.

18 I think before we can say, yes, defensive
19 measures -- I mean, in principle, yes, defensive
20 measures maybe is a good idea. But we can't license
21 just because it's a good idea.

22 I need to know what it is that you're
23 thinking, what measures to accomplish what goals. So,
24 until we have that better understood, I think we have
25 to keep that one on hold.

1 MR. MORTON: Wendell Morton, NRC.

2 And just to add onto Paul's point, we
3 recognize this would appear to be the third way that
4 NEI has been talking about different interactions with
5 the Staff.

6 And as the bullet says, we're open to some
7 placeholder language to be put into the BTP as maybe
8 trying to establish sort of a generic framework so
9 that something can be done.

10 But that would be done with the
11 expectation that imagery would provide us those next
12 to sub-bullets on the second bullet, which is how
13 would you specifically apply defensive measures?

14 And by that we mean specific design
15 attributes that are not sufficient diversity or the
16 comprehensive testing. How would you apply that? And
17 what would be the acceptance criteria for those design
18 attributes?

19 Now, we talk a lot about segmentation,
20 control function segmentation earlier. There's all
21 sorts of different design attributes out there that
22 are beyond this comprehensive testing and the
23 diversity aspect, would be the framework.

24 So, we're open to providing a paragraph or
25 something to the extent within there for the door to

1 open for that particular concept.

2 But that's really dependent upon on what
3 industry could propose to us as a framework to support
4 that going forward.

5 MS. ALVARADO: This is Rossnyev. I just
6 want to add, also, one of the concerns we have because
7 of all the issues that we have had with Section 1.9 is
8 that we don't want to be super specific.

9 Meaning you do segmentation and then we
10 will be having meetings about what do you mean by
11 segmentation and what level of segmentation.

12 So, we have to be careful, provide
13 flexibility, but not be establishing new requirements
14 and later on we're going to find out it's a burden.
15 Because then it's going to be read as oh, my gosh, I
16 have to segmentation.

17 So, that's where we are. I know in the
18 previous meeting NEI identified specific wording for
19 this section and actually, we don't want to go there.
20 It would be too prescriptive.

21 MR. HERB: Ray Herb, Southern Nuclear.

22 I agree with that and I think we're happy
23 with that. As long as we have an option to allow a
24 submittal to stand on its merits and then you could
25 evaluate it at that time to see.

1 What we wanted to get away from is it had
2 to be 100 percent test or it had to have complete
3 diversity. We would bring a system to you and have
4 that communication and then demonstrate those
5 defensive measures, and then you could evaluate them
6 at that time.

7 As long as we have an option to be able to
8 go that third path I think that would be sufficient
9 for us. We'd be happy with that.

10 MR. BENNER: This is Eric Benner.

11 Part of this is, yes, we're not sure what
12 form the third way is going to take. We've heard
13 that, okay, it's going to be NEI XXXX and so we're
14 trying to work around a little bit of a mystery here.

15 So, we're trying to interpret what we
16 think you want and we think this is the right place
17 where we could, like Wendell says, put up
18 placeholders.

19 And then if there's an industry proposal
20 we could do whatever we need to do to review and
21 endorse that and it could be like, okay, yes, if you
22 want to go down the road of 1.9 in the BTP, here's a
23 more expansive way to do that.

24 So, again, we're open to clarifying that.

25 A second thing is, and it's just for sort

1 of clarification, we need to be clear in the BTP that
2 these are all just tools people can use.

3 And we're starting to put together some
4 information that shows that most licensees do
5 combinations of parts of the system that are testable,
6 part of it is consequences are acceptable, part of it
7 is this, part of it is that.

8 And you put together a D3 that shows that.
9 So, we're trying to collect some of the past reviews,
10 not to say we're bound by that but at least make it
11 clear that these are complex systems.

12 So, in all likelihood you're not going to
13 take that system and somehow believe, well, that whole
14 system, my safety case is going to be that it's
15 testable.

16 Or my safety case is going to be that I
17 have a DAS for everything, or my safety case is going
18 to be I have defensive measures for everything.

19 It's going to be something that is a mix
20 of all those things, diversity and defensive measures
21 and some amount of testability and some amount of
22 consequences are just acceptable, and some amount of
23 manual operator actions to mitigate.

24 And it's like how do we right-size that
25 story to make a safety case?

1 MR. GEIER: This is Steve Geier from NEI.

2 Without diving too much into recent
3 history, as you know, NEI 16-16 was the initial
4 proposal or we attempted to characterize what this
5 third path would be with the defensive measures.

6 And it was really built on the EPRI
7 document, the, quote, unquote, CCF guide which NRC has
8 a copy. That was really pulled back because it really
9 was.

10 It talked about what was too prescriptive,
11 the intent was to have really too much detail, really
12 pull that back. Because I think that's what we need,
13 we need the flexibility to use concepts, particularly
14 those that are being developed in some of the industry
15 guidance that's out there.

16 And I think the trick is going to be how
17 do we best leverage that without becoming too
18 prescriptive as far as these are the things that you
19 can consider?

20 But instead, take advantage of
21 state-of-the-art guidance documents and other
22 international standards, things like that, that can
23 inform what defensive measures are appropriate for a
24 particular design.

25 So, I hear you. We haven't formally

1 submitted something but to say that we don't know what
2 you want, I think we've been pretty clear what we
3 want.

4 MR. REBSTOCK: Well, we know in general
5 what you want. I didn't mean to say that. I meant
6 that you're talking about these specific measures and
7 we don't know what those are. We know what you put in
8 16-16.

9 MR. GEIER: We submitted those in NEI 16-
10 16.

11 MR. REBSTOCK: WE know that.

12 MR. GEIER: And that only got so far. So
13 really, we've pulled back from that. But that's still
14 going to be the framework that we're going to be
15 looking for.

16 So, the big question now, which I think
17 we're all wrestling with as an industry, is, okay,
18 what does that look like?

19 What can we put out there that we can all
20 align around such that when a licensee submits a
21 license amendment and they use the tools that are in
22 maybe some of the EPRI guidance, what's the framework
23 that'll lead to successful approval of that license
24 amendment?

25 MS. ZHANG: This is Deanna Zhang. We

1 understand that and given the timing of this BDP's
2 development, that's why we're not waiting for that
3 guidance to be developed to receive the NEI document
4 submittal and evaluation of that before we proceed
5 with this.

6 So, this is why we needed this placeholder
7 in order to provide that flexibility but still
8 recognize that there's more work to be done in this
9 area.

10 So, just for those of us who need to write
11 this, this third way is intended, this defensive
12 measure is intended, for A1 systems, right? Because
13 we already provide that flexibility for B1 and A2
14 systems.

15 So, I want to go on to talk about the
16 other portion of this particular comment, which is on
17 the 100 percent testing, if that's okay?

18 MR. GEIER: Just, again, I agree kind of
19 with the placeholders to figure this out.

20 But I think the whole idea will be how do
21 we put the flexibility in there so that the licensee,
22 again, a licensee or a vendor, can best leverage that
23 industry body of work that's out there, currently out
24 there, and is really coming into fruition in the next
25 several months.

1 MS. ALVARADO: Steve, this is Rossnyev.
2 So, I would propose taking advantage of our pre-
3 application meetings and make it something that we can
4 start discussing early on.

5 If you're coming for an amendment, that's
6 a way to get the staff engaged and try to see.
7 Because I think it would be a learning process for
8 both of us, right? Because it depends on what you're
9 using as a defensive measure.

10 So, as long as you propose something and
11 show us how you plan to -- how these defensive
12 measures, whatever it is, addresses CCF or makes you
13 determine the low likelihood or that you don't need to
14 consider CCF. Let's just talk about it.

15 But I think at this point we don't want go
16 and say no to defensive measures or we don't want wait
17 until industry guidance is available.

18 I think there is a lot of room to use this
19 but I would propose engaging early with us during that
20 pre-application meeting to talk about what is it that
21 you are proposing so we align and understand the
22 process.

23 Because obviously, it's difficult to say,
24 here, all the acceptance criteria is the following
25 when we don't even know exactly how the shape of these

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701

1 defensive measures is going to look.

2 MR. GEIER: Steve Geier again.

3 I agree with that. I think just for the
4 BTP for this revision, we just need to consider how to
5 build that flexibility in here so that a licensee
6 knows that if they propose something it will be at
7 least considered as an alternative to the 100 percent
8 testing and hardware diversity.

9 And if that is acknowledged in the
10 document to say here's some process steps you can use,
11 it includes some of the things you just said in that
12 the NRC will consider these alternatives and use the
13 defensive measures as that alternative, I think that
14 would be, at least for this one, a great -- just
15 really the great path that would open that up to be
16 able to consider it.

17 MR. MORTON: Wendell Morton, NRC. Just
18 one more thing before we go onto the next --

19 MR. ODESS-GILLETT: I actually have a
20 comment too.

21 MR. MORTON: Oh, I'm sorry.

22 Something Eric said earlier, and I think
23 this would be very helpful for the Staff constructing
24 this guidance and it'd be consistent with what we did
25 with the risks and for Appendix D yesterday, is if

1 industry has an example that you could present to us
2 maybe at our August meeting of how you would leverage
3 defensive measures in terms of an AI digital upgrade?

4 And what specific features you could give
5 us an example of, whether it's segmentation, if you're
6 leveraging some of the NUREG-6303 diversity aspects
7 beyond just sufficient internal -- something to that
8 effect.

9 An example would help go a long way to
10 understanding how you would actually envision a
11 framework for it without providing specific acceptance
12 criteria.

13 At least give us a better idea of how to
14 craft our placeholder language so it gives you that
15 flexibility.

16 Because what we don't want to do is show
17 up again in August and we have a paragraph and then
18 you're not happy with the level of detail in the
19 paragraph, giving you the flexibility you're looking
20 for.

21 So, an example for the next meeting, I
22 guess if you have a couple of examples you could show
23 us of how you could leverage defensive measures as
24 part of an argument for CCF, it would be really good.

25 MR. ODESS-GILLETT: So, this is Warren

1 Odess-Gillett, NEI.

2 So, I think we're going to be content with
3 the acknowledgment in BTP 7-19 of this third way of
4 defensive measures and the wording could be such that
5 it would allow NEI to maybe submit a document that
6 would have NRC approval.

7 These are acceptable principles to address
8 this placeholder language in BTP 7-19 to assist the
9 licensee in its submittal.

10 So, I'm sort of envisioning that the BTP
11 7-19 wording would then provide that ability for an
12 NEI document to be reviewed and approved by the NRC as
13 an acceptable approach.

14 MS. ZHANG: Yes, we agree. So, thank you
15 for that clarification. This is Deanna.

16 And so with that I want to proceed to the
17 next part of the comment, which is on the 100 percent
18 testing. Sorry, I keep on not looking on this side.

19 MR. JARRETT: Ron Jarrett, TVA. I just
20 want to -- from a different perspective here, from the
21 NRC perspective.

22 I'm a technical reviewer for my company
23 and procedural compliance to methods are very
24 important to me.

25 And going outside those bounds sometimes

1 are prohibited in the way those procedures and
2 guidance are -- right now we have two methods for the
3 reviewer to succeed and stay within the bounds of 7-
4 19.

5 So, I guess from a reviewer's standpoint,
6 we're kind of looking for that flexibility to be on
7 the two measures that exist now. So, that's for the
8 reviewer.

9 MS. ZHANG: Thank you, and we definitely
10 understand that.

11 As you recognize, this is review guidance
12 for the Staff but in addition, if an applicant were to
13 propose a different method we want the reviewer to
14 have consistent guidance to apply to that review.

15 MR. BENNER: This is Eric Benner. I want
16 to thank Ron for being in enemy territory.

17 I didn't know that Ismael and Ron were the
18 only ones -- Ismael from NRC and Ron from industry
19 kind of sat amongst -- the people on the phone don't
20 understand us but the geography of the room is --
21 that's why I said Ismael and Ron were the ones who
22 went into enemy territory so I applaud them.

23 I was going to make an industry --

24 MS. ZHANG: Eric, we're being transcribed.

25 MR. BENNER: I know, I know, but I think

1 that helps with the dialog. With that, some of this
2 is good dialog we're having on the process. This is
3 one of the reasons that we are working internally.

4 Because we do believe that some of this is
5 a perception issue that, oh, there are just these two
6 paths.

7 And we're trying to collect some of the
8 information from previous reviews that show that even
9 with the current BTP we've never believed that, and we
10 believe we have licensing approvals that demonstrate
11 that.

12 And part of the revision to the BTP is
13 going to make it much clearer that there are multiple
14 ways to address the CCF concern on digital upgrades.

15 So, I think this is a good dialog to help
16 us clarify that expectation for any applicant who's
17 going to be looking at the BTP to help give them
18 clarity for when they're preparing an application.

19 MS. ZHANG: Okay, looking around in the
20 room, I don't see anyone -- oh. So, this is Deanna
21 again, we're going to go proceed to the 100 percent
22 testing portion of the comment.

23 I recognize that a lot of the
24 recommendations here come from IEEE standard 7432,
25 2016 version. We looked into that version and we had

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701

1 some questions with respect to some of the language in
2 there and it would help if you could clarify that for
3 us, either at this meeting or at the next meeting.

4 So, in particular, one of the points says
5 testing every possible combination of inputs. What
6 exactly does that mean? In addition, it says testing
7 every possible executable logic path.

8 This includes non-sequential logic path.
9 What is the definition of an executable logic path in
10 the way that the IEEE standard is using it?

11 And lastly, for the testing every
12 functional state transition, although functional state
13 is defined in the standard, the functional state
14 transition is not. And if you look at the definition
15 of functional state, it is very broad.

16 It doesn't just include the state of the
17 device, but also different operational modes. And if
18 you're looking at operational modes, it didn't
19 describe whether that's for plant operational modes,
20 device operational modes.

21 So, that lack of clarity made it very
22 difficult for us to complete our evaluation.

23 MR. REBSTOCK: Yes, and I'd like to add to
24 that too. Paul Rebstock again.

25 The issue of states I think may be a

1 little bit confusing. We've used the term states in
2 the context of saying the 100 percent testing includes
3 every possible sequence of states.

4 And what we mean there is if a device has
5 memory, then the way it responds to a set of inputs
6 right now might be different from the way it responded
7 to that same set of inputs yesterday because something
8 else happened that altered the memory. And that's
9 what we're trying to get at.

10 So, it's not the way it transitions from
11 one state to another, it's the impact of those states
12 on the system.

13 What that does is -- when we wrote the
14 100 percent testing criteria, we're thinking about a
15 simple logic system that's got ten inputs and a few
16 outputs. It's got 1024 possible combinations of
17 inputs.

18 You test all 1024 of them, they all work,
19 you're done. You put 60 inputs and you put in 30
20 memories, number of possible combinations goes up to
21 10 to the 100th power. It takes you 1000 years to run
22 all of the tests. That's not going to work.

23 So, the 100 percent testing is obviously
24 not going to be available for a system like that. The
25 intention was for simple systems.

1 But what we need to do is to -- what we're
2 striving to find here is a way to demonstrate that the
3 system that is being proposed is adequately reliable,
4 that the likelihood of a failure or a common cause
5 failure that would take out all of the channels is no
6 worse than it would have been for the analog system
7 that it replaces.

8 That's what we're struggling with.

9 MR. MORTON: Wendall Morton, NRC.

10 In terms of the testability criteria for
11 there, one of the goals for this particular section,
12 since we identified this ourselves upfront, is to make
13 that criterion more practically usable for licensees
14 and applicants and everyone else in between.

15 And we welcome the industry's proposal so,
16 to Deanna's point and to Paul's point, we're trying to
17 clarify some of the things inside the recommended
18 framework of the 7432 2016.

19 That framework doesn't include, and
20 correct me if I'm wrong, team, but that doesn't
21 include the concept of simplicity within that
22 recommended proposal, which is what -- the Staff's
23 preferred path is to make sure that the device is
24 sufficiently simple such that comprehensive testing is
25 more technically defensible.

1 But the more complex the device, the
2 harder the case it will be to make if you've had an
3 adequate level of testing to demonstrate you no longer
4 need to further consider a CCF.

5 So, one of the things in our internal
6 discussions is the proposal doesn't retain the
7 simplicity concept.

8 That's not necessarily the end of the
9 world but there are a number of clarifications we need
10 to make, and Deanna pointed out the most important key
11 ones in terms of initial proposal for enhancing the
12 testing guidance.

13 But retaining the simplicity aspect is
14 something that is part of the Staff's goal. So, just
15 to kind of give you some insights on our own internal
16 deliberations on that point.

17 But it's not that we're shutting down an
18 initial proposal but some of the questions kind of go
19 towards that point.

20 MR. REBSTOCK: Paul Rebstock again.

21 Just to add onto that, when we wrote the
22 100 percent testing criterion an eon ago, like 2006,
23 the original font was to say simplicity.

24 But then we said but simplicity is not
25 defined, nobody knows what it means or everybody has

1 a different understanding of what it means. And so
2 we're trying to figure out how to define that and what
3 really matters in terms of simplicity.

4 And the 100 percent testing was one of the
5 things -- it's the way that we saw in order to enforce
6 that. If you're able to test the whole thing out,
7 it's sufficiently simple to be able to do that.

8 And it's the testing and the demonstration
9 that it works that really matters anyway, not so much
10 the simplicity.

11 But as Wendell is pointing out, maybe we
12 shouldn't have abandoned the concept of simplicity or
13 at least maybe we should keep it in the back of our
14 mind.

15 That's really what drives everything else
16 and the more complicated a system is, the more
17 difficult it is to demonstrate that it's going to do
18 what it's supposed to do. The simpler it is, the
19 easier that is.

20 MR. ODESS-GILLET: We hear what you're
21 saying and we'll definitely take your feedback. This
22 is Warren Odess-Gillett from NEI.

23 But by the same token, I think industry
24 felt that the criteria in BTP 7-19 was never
25 achievable no matter how simple you got. So, what we

1 were attempting to do was what could we do that would
2 allow a level of testing that would define simplicity?

3 And if you're thinking what we're
4 describing here as functional state transition and
5 non-sequential paths as something that would
6 invalidate the simplicity aspect and not be something
7 allowed, that would be of some concern.

8 So, I think we need to get back to you to
9 help you define what those things are and maybe
10 simplify the language. But what we're trying to do is
11 establish what industry thinks is achievable for 100
12 percent testing.

13 MR. REBSTOCK: Thank you.

14 MR. BENNER: Eric Benner. And this is,
15 again, saying that these are all different arrows in
16 the quiver. It may be that we're trying to make one
17 arrow do two things and the answer there could just be
18 two arrows.

19 Because that's what we're learning as we
20 try to look at what's been done in the past. There
21 were things that didn't always neatly fit into one
22 category.

23 And again, there's a tradeoff there of
24 does the BTP all of the sudden have 30 different
25 paths? And that introduces a level of complexity.

1 But there may be areas where we say, you
2 know what, there's an objective for this path that is
3 a valid objective and if indeed what you're hoping to
4 accomplish doesn't fit there, instead of the third way
5 you can introduce the fourth way or whatever.

6 But we're not opposed to that as long as
7 we rationalize it in a way that it doesn't just create
8 more complexity. Our reviewer trying to develop a
9 design all of the sudden gets lost and is like, well,
10 what is all this?

11 MR. ODESS-GILLETT: This is Warren Odess-
12 Gillett from NEI.

13 Maybe we could think about it as instead
14 of replacing one set of very detailed criteria for 100
15 percent testing with another detailed set of criteria
16 for 100 percent testing, maybe we can just develop
17 some principles of 100 percent testing, leaving it up
18 to the applicant to define that it's 100 percent
19 tested.

20 I don't know.

21 MR. MORTON: Wendall Morton, NRC.

22 To your point, Warren, in terms of our
23 internal deliberations, and we're not fully fleshed
24 out with all the details, leveraging the work that
25 we've already done from a licensing standpoint --

1 because we really have been saying the term 100
2 percent testing.

3 We've kind of been going towards more
4 comprehensive testing rather than 100 percent testing,
5 testing the logic that you're actually utilizing
6 within the design function.

7 And I think that was one of the criteria
8 within your suggestion. We actually agree with that.
9 But I need the right wording to make sure that's
10 acceptable because we've done that with other licenses
11 previously.

12 So, trying to look at the scope of testing
13 that actually should be done and then after you
14 establish the scope of what actually needs to be
15 tested for the device or system, then look at, okay,
16 what kind of testing is sufficient?

17 And rather than blindly saying 100 percent
18 testing, maybe change the concept to more of a
19 comprehensive testing to provide that reasonable
20 assurance.

21 MR. JARRETT: Hi, Ron Jarrett, TVA.

22 From a different perspective, as an
23 implementer of digital mods, there's just not one test
24 and it's not 100 percent ever.

25 It's different phases of testing and one

1 of the things in the supplement you all brought in,
2 which I was very pleased to see, was operational
3 experience. Operational experience is a giant test
4 bed in some cases.

5 If some of the vendors in the room have
6 thousands to millions of products out there and we
7 find out things use those different applications that
8 from a CCF standpoint are important, that's another
9 test bed.

10 So, I think a holistic view of this in
11 testing should be considered.

12 MS. ZHANG: Thank you, Ron. And we did
13 discuss this internally as far as how operational
14 experience can play into providing another set of
15 evidence to show that this device is free of design
16 and implementation errors.

17 One of the challenges we did see, and this
18 was pointed out during the EPRI presentation at the
19 Commission meeting, is a lot of the errors are not
20 happening at the platform level, but at the specific
21 application and the integration level.

22 And so when you collect that data, that
23 operational data, if it's used for various different
24 applications, it may not paint a true picture for how
25 it would apply to your own application of that

1 platform.

2 So, this is one of the areas where we're
3 challenged and we're thinking about maybe a very
4 simple -- like a device with limited functionality
5 that's kind of used in the IEC world, that type of
6 device, where there is virtually almost no
7 configuration.

8 So, no ability for the application aspects
9 to affect the operational data that's being collected.
10 That could be used as one of the evidence to support
11 that it's free of those errors.

12 Now, there are some challenges in that, we
13 don't want to get overly prescriptive. And again, if
14 that was a defensive measure, that would be something
15 that we would need to look at in more detail.

16 So, that's why we decided that we are open
17 to the placeholder but we need more discussions in
18 that area. And for the purposes of this BTP, given
19 the schedule we don't want to limit ourselves and wait
20 for that discussion. And we recognize that will
21 happen sometime in the future.

22 MS. GOVAN: Okay, I think now would be an
23 opportune time for us to take a break. It is 10:46
24 a.m., let's come back at 10:55 a.m. So, 10:55 a.m.
25 we'll be back.

1 (Whereupon, the above-entitled matter went
2 off the record at 10:46 a.m. and resumed at 10:56
3 a.m.)

4 MS. GOVAN: Prior to doing so, it's been
5 pretty quiet on the line so I did want to open the
6 line to anyone from the nuclear industry that may have
7 a question or comment on the material that's been
8 presented thus far.

9 Okay, with that, we will continue the
10 presentation and move on to Slide 15.

11 MR. REBSTOCK: Okay, Paul Rebstock, I'm
12 picking up again on the discussion of the industry
13 comments and our responses to them.

14 I pointed out before a lot of this has
15 been covered already in other discussions so I don't
16 want to belabor points here. Some of the comments are
17 interrelated and so we'll refer back for Comments 4
18 and 5 to the response to 1 and 2.

19 Comment 6 relates to Comment 1 but we want
20 to dig a little bit deeper in there. You're talking
21 about using FLEX in order to mitigate potential for
22 CCF or in order to mitigate CCF that occurred.

23 But it's not real clear what exactly you
24 have in mind there so we'd like you to clarify the
25 strategy for FLEX-related equipment procedures for the

1 mitigation of CCF.

2 MR. VAUGHN: Steve Vaughn, NEI.

3 So, I think we weren't clear on this.
4 We're making the connection to operator actions,
5 beyond-design-basis events like FLEX.

6 So, it reads similar to FLEX strategies
7 for beyond-design-basis events, comma. It's just an
8 example, we weren't suggesting that we were going to
9 use portable FLEX equipment to mitigate CCF.

10 Is that the way you understood it?

11 MR. MORTON: Wendell Morton, NRC.

12 So, that was the example that you gave us.

13 That's kind of the framework for which we
14 were basing our comment on because we weren't sure if
15 you were intending -- I think we kind of covered this
16 question to a limited degree in April in terms of if
17 you're looking for similar beyond-design-basis
18 strategies, are we talking about having a separate
19 room apart from the main control room where you
20 actually have specific displays and controls available
21 for a limited set of safety functions for an operator
22 to go to?

23 Or are we talking about operators kind of
24 running around the plant doing something in
25 particular? We weren't quite sure.

1 Because we need to tailor the guidance to
2 address the comment but because we didn't understand
3 the scope and range of the comment, we weren't quite
4 sure what you were looking for.

5 And that's the reason we have the second
6 bullet there, which is availability and reliability
7 and response time and requirements for the equipment
8 and the people who would actually be --

9 (Simultaneous speaking.)

10 MR. ODESS-GILLETT: Actually, Wendell --
11 this is Warren Odess-Gillett, NEI -- that is good
12 wording to put into BTP 7-14.

13 Whatever coping mechanism that you are
14 crediting, internal, outside the control room, it
15 doesn't matter, using FLEX equipment, not using FLEX
16 equipment, the applicant needs to demonstrate those
17 things.

18 That's probably all you need to say.

19 MR. BURZYNSKI: This is Mark Burzynski
20 with Rolls-Royce.

21 When I read the NEI comment, the thought
22 that I had was, okay, so for something involving the
23 diesel common cause failure where you wanted to say I
24 already have a station blackout coping strategy but it
25 involves going on in the field and doing some load

1 shedding and opening some doors, I could use that same
2 strategy even though it involved actions outside of
3 the main control room.

4 But it was well established, well
5 documented, and on point.

6 MS. ZHANG: So, one of the challenges with
7 that is you point out the station blackout.

8 The station blackout event was analyzed
9 assuming there's no DBE, no concurrent DBE, which is
10 different than the FLEX analysis and different from
11 what the SRM calls for.

12 So, when you reference these other
13 strategies, we're really trying to see what exactly
14 from those strategies are you trying to apply.

15 And given the context of how you apply it,
16 is it really still within the framework of the SRM as
17 clarified by the Info SECY, SECY-18-0090?

18 MR. BURZYNSKI: Okay, this is Mark again.

19 The thoughts I had there would be for
20 accidents with common cause failure, you typically
21 don't also postulate a concurrent loss of offsite
22 power in a best estimate world. So, that seems to be
23 understood.

24 If I look at the initiating event as the
25 loss of offsite power and the response was the diesel,

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701

1 now I'm not in an accident case, I'm in a station
2 blackout case. I've already got an approved plan.

3 Now, if the common cause failure is not
4 the fuel oil gunking up or the things we were worried
5 about when the station blackout rule was there but
6 some digital equipment I've put on the diesels, I seem
7 to get to the same point and already have a strategy
8 but it's outside of the control room actions that we
9 would think you could credit for those kinds of
10 things.

11 MR. MORTON: Wendall Morton, NRC.

12 So, when we first received the comment,
13 part of the questioning is we spoke to the Staff
14 internally including OGC and then the composition of
15 Info SECY-18-0090 I believe.

16 So, we do have flexibility to provide this
17 guidance so don't take the questions as we don't think
18 we have -- we do think we have flexibility to do it.

19 But in crafting the guidance to at least
20 be within the bounds of the Commission's direction, we
21 just wanted to make sure we understood what you were
22 looking for with this guidance.

23 So, what I'm hearing is what we appear to
24 have on this slide and the conversation we've had so
25 far is sufficient, at least from an industry

1 standpoint, in terms of that flexibility with regards
2 to the mitigating strategies.

3 MR. ODESS-GILLETT: Yes, I just wanted to
4 say -- this is Warren Odess-Gillett, NEI -- we weren't
5 thinking of somehow crediting the bases for the FLEX
6 equipment, no.

7 But it's there so why not use it as part
8 of your coping strategy?

9 MR. JARRETT: This is Ron Jarrett, TVA.

10 Our operators are trained to do a lot of
11 things beyond design basis. We have procedures that
12 address that. They go outside the control room to do
13 those functions.

14 So, we would like those to be part of the
15 solution set.

16 MR. MORTON: I think we agree with that in
17 principle, yes.

18 MR. REBSTOCK: Still ongoing stuff.
19 Comment 9 gives potential rewording for A1 and on this
20 slide we say we agree with portions of the industry-
21 proposed definition.

22 And what I would point out is that we
23 already addressed that on Slides 7 and 8 so that's, to
24 clarify, what it is that we're saying. And the
25 references on defense-in-depth have been removed.

1 And then the Comment 10, restructuring,
2 yes, Wendell has already pointed out and already
3 acknowledged that the document clearly needs some work
4 as far as structure and organization is concerned.
5 And we will work on that.

6 That's a little bit different from the
7 technical content and the effort on that. You
8 probably won't see that for a little while as to what
9 the restructuring would be, but I don't expect the
10 restructuring to affect the technical content.

11 The whole point is just to make it more
12 comprehensible. So, we'll work on that but it will be
13 a little bit more down the road.

14 MS. ZHANG: I want to circle back on
15 Comment 8 a little bit.

16 So, Comment 8 is on the loss of large-
17 break LOCA and main steam line break type of events,
18 where whether leak before breaks and other things can
19 be used to mitigate the event prior to even getting to
20 that event.

21 So, this is an area where there has been
22 a lot of discussion on crediting leak before break.
23 And the Commission has set forth some positions on
24 this.

25 So, if we were to address this within the

1 BTP, we want to make sure we're still consistent with
2 the Commission's direction in those areas. So, that's
3 why it's taking us a lot longer to address this
4 particular comment.

5 MR. ODESS-GILLET: Would you be able to
6 cite those Commission papers?

7 MS. ZHANG: I'm looking for a friend for
8 help. Steven?

9 MR. ARNDT: I don't have those handy off
10 the top of my head but as some of the people with more
11 grey hair than less probably recall, there's been a
12 number of different permutations on the leak before
13 break concern over the years.

14 And we just need to work our way through
15 that.

16 MR. BURZYNSKI: This is Mark Burzynski.

17 One of the areas I remember, having the
18 grey hair, was that if you've got an exemption to
19 eliminate pipe width restraints because of leak before
20 break, the Commission was very clear you still have to
21 assume the large-break LOCA for 50.46 compliance.

22 So, it was in that context that they put
23 some constraints on it but I think you would have
24 flexibility for treating beyond-design-basis events
25 and using them.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701

1 MR. BENNER: This is Eric Benner again.

2 There are much smarter people than me on
3 this but I think particularly with the idea that our
4 objective here is not that you would no longer assume
5 it, but would it give you time to credit manual
6 operator actions?

7 I thought that was the objective and it
8 seems like that's a rational thing. We can try to
9 continue to work with our internal stakeholders to say
10 that's the objective of this.

11 MR. REBSTOCK: Okay, and I think I'm done.

12 MR. MORTON: Wendell Morton, NRC.

13 So, to essentially conclude this part of
14 the presentation we'll talk about the scheduled
15 milestones. So, this is pretty similar to what was
16 presented in April.

17 The only difference is the schedule has
18 been moved out to be I believe two months to take into
19 account scheduling for ACRS Subcommittee and full
20 Committee briefings.

21 That's required per the process for the
22 BTP update and those are the most available times, I
23 think November of this year and April 2020.

24 MS. GOVAN: Actually, the two-month
25 addition to the schedule accommodates for the

1 additional public meeting that was requested by NEI
2 and that should be happening all day.

3 MR. MORTON: Thank you for the correction,
4 I appreciate that. Other than that, the schedule is
5 pretty similar. We do plan on having another
6 interaction with the public some time mid to late
7 August.

8 And at that point we should be prepared to
9 provide an actual draft of the document out for review
10 going into public comment period which is after that.
11 So, that'll be the next interaction we're looking to
12 have.

13 MS. GOVAN: One quick question that I
14 have. One Comment 3, the Staff did ask for additional
15 clarification. I think it was on 1B and under B it
16 was Items 3 and 4.

17 I guess I wanted an understanding of when
18 the Staff could expect that clarification.

19 And the only reason why I ask is because
20 when we come to the August meeting, we wanted to come
21 with something that -- if we had a comment that would
22 be incorporated in the document, it would already be
23 a part of the draft or at least be ready to discuss at
24 the August meeting.

25 So, if NEI or anyone from industry can

1 give us any indication on when we could possibly
2 receive those clarifications, that would be great.

3 MR. MORTON: There's actually examples and
4 for all types of clarification. Thank you.

5 MR. VAUGHN: Steve Vaughn, NEI. In
6 advance of the next public meeting, 10 days before
7 that specific date, just a timeframe to make sure that
8 we have the proper information available to have a
9 successful meeting in August. Thank you.

10 MR. VAUGHN: Thank you.

11 MR. BENNER: And this is Eric Benner.

12 Just a public service announcement, we
13 have the schedule for the BTP, we know there are some
14 entities considering developing applications so that
15 -- realize in many ways from the Staff's perspective
16 this update to the BTP is capturing some flexibilities
17 that we felt have always been there.

18 So, no one thinking of putting together an
19 application should feel like they have to wait until
20 the BTP is finalized to weave some of these
21 flexibilities we've talked about here into an
22 application.

23 Now, obviously, like Rossnyev said, to the
24 extent we have pre-application interactions to help
25 make sure we're on the same page in advance of there

1 being an approved guidance document, I think that's a
2 good idea.

3 But there's no reason why, if licensees
4 are thinking of preparing an application, that they
5 can't leverage all of the discussions we're having in
6 these meetings today in their application preparation.

7 MR. MORTON: Wendell Morton, NRC.

8 Just to add on to Tekia's point, and the
9 request from industry previous to that, I just also
10 want to tack on consistent with our previous two
11 meetings we've had, not just the examples and
12 clarifications but if industry still has further
13 comments than what you submitted previously, we're
14 welcome to discuss those at the August meeting as
15 well.

16 I just wanted to clarify that. This is
17 not the last time you can provide us additional
18 feedback beyond what you've already provided us so
19 far.

20 MS. GOVAN: Okay, with that, I think this
21 concludes the business portion of the meeting.

22 I wanted to open up the lines to members
23 of the public. If you had any questions or comments
24 for Members of the NRC Staff, now is the time to do
25 so.

1 Okay, with that we will have our closing
2 remarks. I will turn it over to Eric to begin and
3 then NEI can provide closing remarks as well.

4 MR. BENNER: Eric Benner, NRC again.

5 I'll end similarly to the way I started
6 that the objective today was to show sort of how the
7 Staff started to put pen to paper to accommodate and
8 address the comments we've heard.

9 I think from our standpoint, that
10 objective was met. I think we achieved some good
11 clarity that'll help us start really refining and
12 developing a draft revision to the BTP.

13 So, I thank everyone for their advanced
14 preparation for this meeting and the constructive
15 dialog in the meeting.

16 MR. GEIER: Steve Geier, NEI.

17 And I appreciate the candid discussion and
18 the review of our comments. I still go back to kind
19 of our earlier discussion just to reiterate the main
20 reason we're really into pushing this BTP is to
21 address the CCF issue and to define this third path
22 through whatever language we can do that.

23 And with the Staff and considering that,
24 again I point back towards the draft NEI 16-16 and the
25 EPRI guidance document that you have on the, quote,

1 unquote, CCF guide from 2016.

2 There's other documents out there but that
3 does characterize the process and the types of
4 attributes that we're looking for going forward.

5 And I understand we couldn't rally around
6 the exact wording and the documents or the specifics
7 in there, but I think somehow we need to come up with
8 -- I wouldn't look at this as a success unless we come
9 up with some kind of placeholder words that would
10 facilitate a licensee to include those types of
11 attributes in application for consideration by the
12 Staff.

13 The Staff, they would need to feel
14 comfortable that the Staff would be receptive and at
15 least would consider those attributes going forward.

16 I think we owe you some additional support
17 on that, some input, but I would just kind of re-
18 emphasize that I think you don't necessarily need to
19 meet our specific words.

20 You know what we're looking for or at
21 least have an idea what we're looking for going
22 forward. And I think that's really going to be the
23 meat of whether this BTP revision will be looked upon
24 by the industry as successful, if we can get that
25 addressed.

1 So, I look forward to continuing to work
2 on that and also for the schedule, that's really
3 important so we know what the milestones and the
4 timeline will be to get through that.

5 So, once again, thanks and I look forward
6 to continuing work on this.

7 MS. GOVAN: All right, we will conclude
8 the meeting. Thank you all for a very productive
9 meeting and have a great day.

10 (Whereupon, the above-entitled matter went
11 off the record at 11:16 a.m.)

12

13

14

15

16

17

18

19

20

21

22

23

24

25