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ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

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UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

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647TH MEETING

ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

(ACRS)

+ + + + +

OPEN SESSION

+ + + + +

THURSDAY

OCTOBER 5, 2017

+ + + + +

ROCKVILLE, MARYLAND

+ + + + +

The Advisory Committee met at the Nuclear
 Regulatory Commission, Two White Flint North, Room
 T2B1, 11545 Rockville Pike, at 8:30 a.m., Dennis Bley,
 Chairman, presiding.

1 COMMITTEE MEMBERS:

2 DENNIS BLEY, Chairman

3 MICHAEL CORRADINI, Vice Chairman

4 PETER RICCARDELLA, Member-at-Large

5 RONALD G. BALLINGER, Member

6 CHARLES H. BROWN, JR., Member

7 MARGARET CHU, Member

8 WALTER L. KIRCHNER, Member

9 JOSE MARCH-LEUBA, Member

10 DANA A. POWERS, Member

11 HAROLD B. RAY, Member

12 JOY REMPE, Member

13 GORDON R. SKILLMAN, Member

14 JOHN W. STETKAR, Member

15 MATTHEW W. SUNSERI, Member

16

17 DESIGNATED FEDERAL OFFICIAL:

18 ZEYNAB ABDULLAHI

19 CHRISTIANA LUI

20 MIKE SNODDERLY

21

22

23

24

25

1 ALSO PRESENT:
2 BRUCE BAVOL, NRO
3 MARY DROUIN, RES
4 ANDERS GILBERTSON, RES
5 JOSEPH GIITTER, NRR
6 RALPH GRUMMER, AREVA
7 DONNIE HARRISON, NMSS
8 KEVIN HELLER, NRR
9 SHANA HELTON, NRR
10 JOHN LEHNING, NRR
11 BOB LUKES, NRR
12 ALAN MEGINNIS, AREVA
13 STEVE POPE, NuScale
14 DOUG PRUITT, AREVA
15 JONATHAN ROWLEY, NRR
16 MARK THAGGARD, RES
17 CHRIS VAN WERT, NRO
18 ANDREA D. VEIL, Executive Director, ACRS
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C-O-N-T-E-N-T-S

Opening Statement

Items of Current Interest

Review of AREVA's Transient Code Suite

 AURORA-B 12

RG 1.174, Revision 3 21

Adjourn 77

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

(8:30 a.m.)

VICE CHAIRMAN CORRADINI: Okay, the meeting will come to order. This is the first day of 647th Meeting of the Advisory Committee on Reactor Safeguards. During today's meeting, the Committee will consider the following, review of AREVA's transient code suite, AURORA-B, NuScale topical report on the use of AREVA fuel methodology, Webguide 1.174 Revision 3, and preparation of ACRS reports.

The ACRS was established by statute and is governed by the Federal Advisory Committee Act, FACA. As such, this Committee is being conducted in accordance with the provisions of FACA. That means that the Committee can only speak through its published letter reports.

We hold meetings to gather information to support our deliberations, and interested parties who wish to provide comment can contact our offices requesting time after the federal register notice describing the meeting is published.

That said, we also set aside ten minutes for extemporaneous comments from members of the public attending or listening to our meetings. Written comments are also welcome.

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1 Ms. Zeynab Abdullahi is the Designated
2 Federal Official for the initial portion of the
3 meeting. Portions of the sessions on review of
4 AREVA's transient code suite AURORA-B and NuScale
5 topical report on the use of AREVA fuel methodology
6 may be closed in order to discuss and protect a
7 designated information as proprietary.

8 The ACRS section of the US NRC public
9 website provides our charter, bylaws, letter reports,
10 and full transcripts of all full and subcommittee
11 meetings, including all slides presented at the
12 meetings.

13 We have received no written comments or
14 requests to make oral statements from members of the
15 public regarding today's sessions. There will be a
16 phone bridge line. To preclude interruption of the
17 meeting, the phone will be placed in a listen in only
18 mode during the presentations and Committee
19 discussions.

20 A transcript of a portions of the meeting
21 is being kept, and is requested that speakers use one
22 of the microphones, identify themselves, and speak
23 with sufficient clarity and volume so that they can be
24 readily heard.

25 Just also to remind everybody that you

1 have various appliances, make sure they are turned off
2 or in silent mode so that it doesn't disturb the
3 meeting. So, I'll turn it over to Jose March-Leuba
4 who will lead us through the first section. Jose?

5 MEMBER MARCH-LEUBA: Thank you, Mike. We
6 are going to be seeing another presentation of AURORA-
7 B, which is a methodology for analysis of transient
8 safety margin.

9 And just as a background, when a reactor
10 operator designs a core for 18 or 24 months, that is
11 in according to steady state so that it satisfies all
12 the requirements in a steady state. In addition, for
13 the reload analysis, they must assume a series of
14 transients may happen in the core, and they are
15 supposed to survive them within a specified criteria,
16 that's called the SAFDLs.

17 AURORA-B is used to calculate this
18 transient safety margin. Okay. I am going to give
19 the floor to Shana Helton from NRR that she will give
20 some introductory remarks.

21 MS. HELTON: Thank you very much. And I
22 would like to say thank you to the ACRS for today's
23 meeting and also for the productive subcommittee
24 meeting that we previously held on this topic.

25 Today we are going to be discussing the

1 AURORA-B AOO topical report which as I'm sure we've
2 all explained is part of suite of AURORA-B
3 methodologies that the NRC currently has under review.

4 We are also looking at the control rod
5 drop accident methodology, and I understand we have
6 some upcoming discussions with the ACRS on that one.
7 And we are also looking at the LOCA methodology.

8 Today we are going to be focused on the
9 AOO, the analysis of transients and some accident
10 scenarios. And behind me I would like to introduce
11 Dr. Kevin Heller and Dr. John Lehning who will later
12 on be presenting on behalf of the Nuclear Regulatory
13 Commission.

14 The evaluation model that we're discussing
15 today, last time we discussed it with the subcommittee
16 we got some good comments, some insightful and
17 constructive issues that we have explored. And today
18 we would like to present to the full committee our
19 responses and some of the changes that we have made to
20 our safety evaluation to address those comments.

21 Specifically, the subcommittee gave us
22 input on clarifying and augmenting the uncertainty
23 process. The subcommittee also raised some additional
24 considerations for the applicability of the MICROBURN-
25 B2 in extended flow windows. And we have added a

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1 discussion on enhancing the qualifications for using
2 new fuel types.

3 And, I'll keep my remarks brief because I
4 know we've got a lot of material to cover. So thank
5 you very much, once again, for the opportunity to
6 present to you today. I look forward to a good
7 discussion.

8 MEMBER MARCH-LEUBA: So, your microphone.

9 MS. ABDULLAHI: You have to close the
10 number and then check the open number.

11 MEMBER MARCH-LEUBA: Okay, there is Mike

12 --

13 (Simultaneous speaking)

14 MEMBER MARCH-LEUBA: Mike, you are in
15 charge.

16 VICE CHAIRMAN CORRADINI: Do we have any
17 -- well, hold on a second. Do we have open remarks
18 from AREVA before we go into closed session?

19 (Off microphone comments)

20 VICE CHAIRMAN CORRADINI: Good, let's hear
21 it.

22 (Off microphone comments)

23 MEMBER MARCH-LEUBA: You need to turn your
24 microphone on.

25 VICE CHAIRMAN CORRADINI: Try your green

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1 light there.

2 MR. MEGINNIS: Ah, there we are. All
3 right.

4 MEMBER MARCH-LEUBA: And start again.

5 MR. MEGINNIS: I'm Alan Meginnis, I'm
6 licensing manager for AREVA. And I think Shana did a
7 very good job of summarizing what the ARORA-B suite of
8 methods is.

9 I just wanted to, in the interest of time
10 I'm not going to go back over that, but I would like
11 to point out that the ARORA-B methods allows us to
12 move forward from our older methodologies and address
13 a number of legacy issues such as thermal conductivity
14 degradation in an integrated manner in our
15 methodologies.

16 And we're anxious to move forward to these
17 modern code systems, and we actually have plans to
18 have license amendment requests in front of the NRC
19 within a year utilizing these new methodologies. So
20 we are very interested in getting them approved as
21 rapidly as possible.

22 I'll just go ahead and introduce our
23 speakers today. We have Doug Pruitt here. Doug has
24 over 30 years of experience in the nuclear industry,
25 in nuclear thermal hydraulics in stability and codes

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1 and methods development. And I've Ralph Grummer here
2 who also has over 30 years of experience in industry
3 in neutronics and codes and methods development.

4 And we thank the ACRS for allowing us to
5 be here today. We appreciate the opportunity to
6 provide you with information that you will need to
7 evaluate the AURORA-B AOO methodology.

8 VICE CHAIRMAN CORRADINI: Okay.

9 MEMBER MARCH-LEUBA: So this is the end of
10 the open session.

11 (Simultaneous speaking.)

12 VICE CHAIRMAN CORRADINI: Yes. I'm not
13 going to ask for public comments since there really
14 nothing to comment upon, nor from the Members. So why
15 don't we go into closed session. So can we close the
16 public line, and then you have subject matter experts
17 on a closed line, or is everybody here in the room?

18 PARTICIPANT: That is correct. We have
19 some subject matter experts, if they're needed to be
20 called upon. We don't anticipate needing to call
21 them.

22 VICE CHAIRMAN CORRADINI: Okay, so let's
23 verify first.

24 MR. BROWN: We're all ready to go.

25 MEMBER MARCH-LEUBA: Say again?

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1 VICE CHAIRMAN CORRADINI: Repeat please
2 Theron.

3 MR. BROWN: The public line is closed.

4 VICE CHAIRMAN CORRADINI: Okay. Everybody
5 in the room is bona fide? Good.

6 (Whereupon, the foregoing matter went off
7 the record at 11:16 a.m. and went back on the record
8 at 12:31 p.m.)

9 CHAIRMAN BLEY: We are back in session.
10 I will turn the meeting over to Professor Corradini.
11 And this meeting might go into closed session. Is
12 that right?

13 VICE CHAIRMAN CORRADINI: It might. We're
14 going to go to closed session if necessary in
15 approximately one hour or so.

16 CHAIRMAN BLEY: Okay.

17 VICE CHAIRMAN CORRADINI: If need be.

18 CHAIRMAN BLEY: If need be.

19 VICE CHAIRMAN CORRADINI: Okay. So just
20 to remind everyone as to where we are. So this is one
21 in a series of topical reports that have been
22 submitted to the staff in anticipation of the design
23 certification review which has begun for NuScale.

24 This particular topical report deals with
25 essentially applicability of AREVA fuel methodology to

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1 the NuScale fuel design. We had our --

2 CHAIRMAN BLEY: NuScale's not presenting,
3 but are they available?

4 VICE CHAIRMAN CORRADINI: I was just
5 getting to that.

6 CHAIRMAN BLEY: Oh okay. I just want to
7 be informed.

8 VICE CHAIRMAN CORRADINI: So, just for the
9 members, so we had our subcommittee meeting on
10 September 20th. We had a presentation by NuScale and
11 a presentation by the staff. In the discussion of the
12 subcommittee, we move forward here to have a full
13 committee discussion.

14 Most of you, I think only about two or
15 three of you, weren't a part of the subcommittee.
16 Based on that discussion, NuScale saw no need to have
17 a formal presentation, but there are NuScale
18 individuals in the room in case we have questions and
19 subject matter experts on the phone in case we have
20 questions.

21 And we are simply going to turn it over to
22 Bruce from the staff of NRO to lead us off and go then
23 gp right into the staff's presentation.

24 MR. BAVOL: That's correct.

25 VICE CHAIRMAN CORRADINI: So, Bruce?

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1 MEMBER RICCARDELLA: For the record, I'm
2 am conflicted on this topic.

3 MR. BAVOL: Well, good afternoon
4 everybody. My name is Bruce Bavol, project manager,
5 Office of New Reactors, project manager for the
6 NuScale Review. Design certification.

7 To my right is Chris Van Wert, which is
8 the senior reactor engineer of the Office of New
9 Reactors also.

10 Like what's stated, we had a presentation
11 on September 20th for the subcommittee, high level,
12 non-proprietary presentation. Chris is going to go
13 over those nuances again. Like was also stated, there
14 is a representative from NuScale here, and also on the
15 line there should be representatives from NuScale
16 and/or AREVA for this particular topic.

17 Also, I would like to make mention if
18 anything gets discussed that leads into proprietary
19 discussion, I would like to call upon the AREVA or
20 NuScale representatives to please give us a heads up
21 so that we can hold that topic for closed presentation
22 or, pardon me, a closed discussion, which we have
23 designated in the agenda.

24 This first slide is some logistics that I
25 put down to talk about the topical report. The

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1 revision zero, which came in March 30th, 2016, was
2 reviewed by staff. There were some comments as far as
3 the seismic methodology portion of that topical
4 report. NuScale withdrew it and on July 1st
5 resubmitted it as Revision 1 minus that seismic
6 portion. That's going to be another topical report.

7 There was only one request for additional
8 information, RAI-8727. That was submitted on February
9 10th, 2017. The response came in, staff reviewed and
10 accepted that response. Safety evaluation was
11 generated on July 20th of this year.

12 And future plans, we expect the final SER
13 late October, submit that to NuScale for final
14 disposition into the -A or approved version.

15 CHAIRMAN BLEY: Bruce?

16 MR. BAVOL: Yes.

17 CHAIRMAN BLEY: Are you reviewing the
18 seismic topical now or is that still due to you.

19 MR. BAVOL: It's still under review.

20 CHAIRMAN BLEY: But you do have it. Okay.

21 MR. BAVOL: Yes, yes we do. So with that,
22 I'll turn it over to Chris Van Wert.

23 MR. VAN WERT: All right, thank you. For
24 those who were here before, this is going to be the
25 same presentation, so I apologize for the repeat. For

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1 those who are new, hopefully this will be useful for
2 you.

3 So, the staff's review is limited to the
4 topics that were presented in the topical report, the
5 subject topical report, in that it references several,
6 approximately five AREVA codes and methods that had
7 been previously reviewed and approved by the staff.
8 And this topical report was just showing that those
9 cozimethods that were applicable to NuScale.

10 The general areas are cladding creep, M5,
11 COPERNIC, fuel rod bowing, and generic mechanical
12 design criteria.

13 It's also worth noting that the staff's
14 review does not cover a technical review of those
15 previously approved topicals, and it also does not go
16 into the technical analysis of the NuScale fuel design
17 using those methods. That analysis is presented in
18 technical report 081651127, which is part of the DCD
19 Rev, Chapter 4 review.

20 It's also worth noting, just to
21 familiarize everyone with the similarities between the
22 NuScale fuel design and AREVAs 17 by 17 centered fuel
23 assembly, they both use the identical high temperature
24 performance upper and mid-grids.

25 They use the high mechanical performance

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1 bottom grid, M5 fuel cladding, Zirc-4 MONOBLOC guide
2 tubes. The only differences in the fuel assembly
3 itself in terms of fuel mechanical performance reviews
4 are the reduced fuel assembly, assembly height and
5 active fuel stack height that reduce grid span height
6 and the reduced rod internal pressure.

7 The approach that we used in performing
8 this review was to review the conditions limitations
9 on any and all of the referenced AREVA topical reports
10 and see how they applied to the NuScale design.

11 We compared the NuScale system and
12 operational perimeters with those used to develop the
13 AREVA methods. And then we also reviewed the
14 NuScale's specific modifications to any AREVA
15 methodology. There was only one that actually had a
16 modification.

17 So we proceeded using that methodology to
18 review all five of the referenced topical reports and
19 to make sure that they were applicable to the NuScale
20 design. And, two of them involved a little bit of
21 additional review effort, and those I wanted to
22 discuss in a little bit more detail here.

23 The first one was the fuel cladding creep
24 collapse, there we go. And in this particular one,
25 the AREVA, the reference to AREVA methodology has a

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1 hard coated height at which the analysis is performed,
2 and that's based on some analysis that AREVA performed
3 to determine the limiting height. It just happens
4 that that height is taller than the NuScale fuel
5 assembly.

6 So using that methodology, NuScale went
7 ahead and calculated the appropriate height for
8 themselves. We reviewed that and the staff approved
9 it.

10 The second area was fuel rod bow. And in
11 general, the staff's review focused on some aspects of
12 the fuel, NuScale fuel design which would make it less
13 susceptible to fuel rod bowing in that the fuel design
14 has shorter grid spans which reduces the likelihood of
15 bowing.

16 Also, the CHF penalty which is used as
17 part of the methodology balanced the NuScale fuel
18 assembly design parameters. And then last, the
19 NuScale parameters that point to linear heat
20 generation rate are also bounded by the values used
21 and the reference to AREVA topical report.

22 And in conclusion, the staff concluded
23 that the topical report was acceptable and decided
24 AREVA system codes and methods were applicable to
25 NuScale fuel design analysis.

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1 We did have one limitation, and that was
2 simply that any applicant or licensee referenced in
3 this topical report who wishes to operate in modes
4 other than base load, we need to address such
5 operation in their application or license amendment
6 request. Any questions?

7 MEMBER REMPE: So, because of something
8 you said, I guess I would like us to go into a
9 proprietary session and make sure that it's clear
10 because it appeared in the draft letter I reviewed,
11 and I want to make sure that we're all clear on a
12 point.

13 MR. VAN WERT: Okay.

14 MEMBER REMPE: If you don't mind. Is that
15 okay, Mr. Whatever?

16 PARTICIPANT: Sure.

17 (Simultaneous speaking.)

18 VICE CHAIRMAN CORRADINI: Hold on, so Joy
19 has a question. Most likely it will go into a need
20 for a closed session. So are there other questions
21 for the staff while we are still in open session?

22 (No audible response)

23 VICE CHAIRMAN CORRADINI: Okay. So --

24 MR. SNODDERLY: We have to open up the
25 phone lines and see if there is any public comment

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1 before we go into closed. You have to shut --

2 VICE CHAIRMAN CORRADINI: That's what I
3 was going to do.

4 MR. SNODDERLY: Okay, sorry.

5 PARTICIPANT: You guys are way ahead of
6 me. Go ahead.

7 CHAIRMAN BLEY: Do they have more open
8 presentation to do?

9 MR. VAN WERT: No.

10 VICE CHAIRMAN CORRADINI: No. That was --

11 CHAIRMAN BLEY: Oh, that was it. Okay,
12 never mind.

13 VICE CHAIRMAN CORRADINI: Thank you.
14 Okay, so nobody that is see is in the room to make a
15 comment. So can anybody on the phone line, assuming
16 that it is open, want to make an oral statement? We
17 will wait a minute to make sure we hear the
18 appropriate crackling.

19 (Off record comments.)

20 MEMBER REMPE: I heard a crackle. That
21 could be your person.

22 VICE CHAIRMAN CORRADINI: Probably my
23 papers are too close to the microphone.

24 MEMBER REMPE: I thought about that.

25 CHAIRMAN BLEY: Now we have to close it if

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1 we are going to closed session, so we might as well
2 just cool our heels here.

3 PARTICIPANT: Excuse me, Mike. I don't
4 think Ron expected us to go into open session, I mean
5 to go to closed so quickly. So I've got to find --

6 VICE CHAIRMAN CORRADINI: Yes, find him
7 please, would you. I had a feeling he might have been
8 AWOL.

9 MEMBER REMPE: It may not be proprietary,
10 but I don't know. Sorry.

11 PARTICIPANT: We're still open because we
12 need to ask --

13 VICE CHAIRMAN CORRADINI: Okay. Is there
14 anybody that wants to make an oral statement on the
15 line?

16 (No audible response)

17 VICE CHAIRMAN CORRADINI: Okay, hearing
18 nothing, can we shut down the public line because
19 we're going to go into closed session?

20 (Whereupon, the foregoing matter went off
21 the record at 12:44 p.m. and went back on the record
22 at 2:15 p.m.)

23 CHAIRMAN BLEY: The meeting is back in
24 session. I'm going to turn it over to Mr. Chris
25 Stetkar for our discussion of Reg Guide 1.174, Rev 3.

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1 MR. STETKAR: Thank you, Mr. Chairman. As
2 you mentioned, today we'll hear from the staff on
3 Revision 3 to Regulatory Guide 1.174. For those of
4 you who have been following this, we've had, why
5 surprised, four subcommittee meetings on it dating
6 back to May 18th of last year.

7 That includes subcommittee meetings on the
8 major topic of the revision which is the guidance for
9 defense-in-depth, dealing with defense-in-depth. I
10 won't want to steal the staff's thunder because I'm
11 sure Mary will describe, much more professionally than
12 I'm doing here, the scope of the changes.

13 I believe Mark Thaggard of research wanted
14 to make some introductory remarks. Mark?

15 MR. THAGGARD: Yes. Thank you. I
16 appreciate that. So to follow up on what Mr. Stetkar
17 indicated, so we've had a lot of interactions with the
18 ACRS subcommittee on this updating this guidance
19 document.

20 I did want, I wanted to set the framework
21 on how we went about undertaking the revision. The
22 commission, when they gave us the direction to update
23 this guidance document, they directed us to focus on
24 just the defense-in-depth aspect of the guidance.

25 So most of the revision pertains to that

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1 part of the document. We tried to limit the scope and
2 not go beyond that to the extent that we could. We
3 did expand it in a couple of area based upon some
4 feedback primarily from the public, but those are very
5 limited and the staff will go over that.

6 Any additional changes beyond those we
7 considered were just primarily clarification purposes.
8 One thing I do want to point out is, one change that
9 we made, we changed the terminology from PRA technical
10 adequacy to PRA acceptability based on a DPO that we
11 received in part of the resolution of that DPO, so you
12 would see that change in the document.

13 As Mr. Stetkar indicated, we've had a lot
14 of interactions, public interactions on this document.
15 We had several public meetings in addition to the
16 briefing the ACRS subcommittee. This also was sent
17 out for public comments.

18 We addressed the public comments for the
19 most part. The ones that, for the most part, the
20 comments that we didn't address they were beyond the
21 scope of what we were asked to focus on.

22 This document also was presented to the
23 Commission as part of the May 11th Commission meeting
24 on risk informed decision making. That was part of
25 the staff presentation during that Commission

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1 briefing.

2 The last ACR subcommittee briefing we
3 provided was back in August of, August 24th. We have
4 attempted to address the comments that we received
5 from the subcommittee in the version of the document
6 that you have before you. So those were the main
7 comments that I want to provide.

8 I do again want to express my appreciation
9 for giving us an opportunity to present. Anders
10 Gilbertson and Mary Drouin are going to be the primary
11 presenters, and I think you'll get us -- do you want
12 to say something?

13 MR. GIITTER: Just a very brief comment.
14 NRR of course, is one of the major customers of Rev
15 Guide 117 for Rev 3 effort. And I just wanted to
16 acknowledge that we support it. Our staffs and the
17 staffs from NRO and research have been working
18 together in a very collaborative manner to come up
19 with a Reg Guide.

20 We've had a division directory steering
21 committee that's been meeting with the working group
22 on regular basis. We think it's a very good document
23 and we believe that it will help us as we move forward
24 with a surge of risk performed licensing actions we
25 expect to get within the next few years. So, I just

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1 wanted to state our support of the effort.

2 MEMBER STETKAR: Thanks, Joe. Anders?

3 MR. GILBERTSON: Okay. Thank you very
4 much. Good afternoon, full committee members. My
5 name is Anders Gilbertson. I've been the project
6 manager for the effort to develop Revision 3 of
7 Regulatory Guide 1.174 which provides an approach for
8 using probabilistic risk assessment in risk informed
9 decisions on plant specific changes to the licensing
10 basis.

11 This afternoon I will just go and give you
12 a brief background on the history of this effort, talk
13 a little bit about the process, some of the recent
14 accomplishments which Mark and Joe have already eluded
15 to.

16 And then I will address the public
17 comments that were received on DG 1285 which is the
18 designation for the draft Regulatory Guide. That will
19 include comments that were received from 2012 as well
20 as 2017. And discuss some of the related changes that
21 we made, the staff made to the Reg Guide in response
22 to those public comments.

23 And then, as Mark had eluded to, we met
24 with the subcommittee and we received some feedback
25 from the subcommittee members. So I will also go over

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1 that at a high level and discuss some of the changes
2 that we made in advance of this full committee
3 meeting.

4 So, submitted some documents that included
5 the revised version of the draft Guide as well as the
6 2017 public comment resolution, and another document
7 that was attempted to document or record the staff's
8 basis for how we addressed the ACRS subcommittee
9 members' feedback. So those will all be part of the
10 context for this review, or this presentation.

11 So before I go any further, I just would
12 like to acknowledge, as Joe had said, Joe and Mark,
13 this was an interoffice effort and there were a number
14 of staff members involved in this that were
15 instrumental in its success.

16 Mary Drouin is sitting next to me here.
17 She was very important. Don Marksberry also from the
18 Office of Research, Division of Risk Analysis. From
19 the office of Nuclear Reactor Regulations, Division of
20 Risk Assessment, Mehdi Reisi and C.J. Fong. And also,
21 earlier on in the effort, Stephen Lauer, who has since
22 retired from the agency.

23 From NRO, DSRA, Martin Stutzke has
24 recently provided input. And before Marty it was
25 Donny Harrison who is now in NMSS, but he has a lot of

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1 the history of the previous effort. So, many thanks
2 to him for continuing his involvement.

3 We also have Sheldon Clark from the Office
4 of General Counsel. So he was made available to us to
5 help us ensure that we had a smooth transition as we
6 went into office concurrents, the Office of Concurrent
7 Process.

8 And then also Joseph Rivers from NSIR. He
9 was an observing member, and that was, we had included
10 also some, earlier on, some members from NMSS. And
11 that was in the effort to ensure that the guidance
12 that we were developing didn't have any unintended
13 consequences for activities outside of our immediate
14 purview.

15 So I just wanted to, again, acknowledge
16 those individuals and thank them for their continued
17 contributions to this effort.

18 Okay. So some of the background on this
19 effort. In 2011, the commission issued SRM-SECY-11-
20 0014 and directed the staff to revise the defense-in-
21 depth guidance in Reg Guide 1.174. And specifically,
22 this direction was to, "revise the guide using precise
23 language to assure that the defense-in-depth velocity
24 is interpreted and implemented consistently."

25 So at that time, working group was formed.

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1 The staff moved forward, and I believe we had
2 interfaced with the public on two occasions.
3 Published the first version of DG-1285 in 2012, May of
4 2012. And it was for, I believe, a 45 day public
5 comment period.

6 That work was actually delayed. The
7 timing of that 2011 SRM was weeks before the Fukushima
8 accident. And so other agency activities that related
9 to defense-in-depth overtook the development of
10 Revision 3 and those efforts to revise that guidance
11 on defense-in-depth.

12 And, so those were the activities
13 associated with the near term task force
14 recommendation one, and then subsequent to that, the
15 risk management regulatory framework effort. And so
16 that was approximately four years intervening time,
17 and after that SRM-SECY-15-0168 was issued in March
18 2016. And it directed the staff to expeditiously
19 complete the revision to Reg Guide 1.174.

20 And one other aspect of that SRM that I
21 wanted to point out was that also the commission
22 agreed with the staff's conclusions that a definition
23 of, a formal agency wide definition and criteria for
24 determining the adequacy of the defense-in-depth
25 should not be developed. And to that point, the staff

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1 believe that we have satisfied that objective with
2 this work.

3 Okay. So this is really already been
4 stated. We had an interoffice working group formed.
5 It was collaborative involving RES, NRR, NRO, OGC with
6 NMSS and NSIR observing. As Joe had mentioned, our
7 efforts were overseen by the division level
8 interoffice steering committee consisting of division
9 directors and deputy directors from RES/DRA, NRR/DRA,
10 and NRO/DSRA.

11 As you may know, we had many public
12 meetings. We had about eight public meetings in seven
13 months during the period that the staff were
14 developing the revised guidance. This included three
15 fairly substantial meetings.

16 They were half day, day long meetings
17 where they were actually serving more as workshops to
18 solicit the public for their feedback. And those were
19 well attended by several key state holders from the
20 industry. And as well it also included briefings to
21 the ACRS and the NRC and industry risk informed
22 steering committees.

23 The general approach for developing
24 Revision 3 was to enhance the discussion of the
25 defense-in-depth philosophy. Developed guidance that

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1 explains the meaning of each of the defense-in-depth
2 considerations, that is a new term, these were
3 formally known as factors and we are now calling them
4 considerations. Also we were sought to develop
5 guidance on how to evaluate each of the defense-in-
6 depth considerations and then develop guidance on
7 integrated evaluation of those considerations.

8 Revision 2 of Reg Guide 1.174 provides a
9 listing of these, what are now called defense-in-depth
10 considerations and provides a general discussion of
11 the defense-in-depth philosophy. So the work that we
12 had done expanded on that existing content.

13 So recent accomplishments, some of these
14 have already been mentioned. We did have a second
15 public review and comment period April of this year.
16 It was, a draft guide was issued for another 45 days.
17 As was mentioned, we briefed the commission on, during
18 the May 11th Commission meeting and on the status of
19 changes. In July 2017 this year, we completed the
20 revision incorporating the public comments, resolution
21 of those comments into the DG-1285.

22 We had a briefing the DEODs and the senior
23 management prior to the August 24th ACRS subcommittee
24 meeting. And one other point I forgot to mention here
25 or that wasn't in the slides. We did also brief the

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1 commissioners assistance on May 8th of this year.

2 And so the staff did seek to address some
3 of the ACRS member feedback from the August 24th
4 meeting. And, like I said, that has been represented
5 in the draft version that you saw.

6 So the public comments that we received
7 that I'm going to talk about now, this is really just
8 a summary of some of the more salient comments that we
9 received in total between 2012 and 2017. We received
10 on the order of about a hundred public comments, about
11 the same amount from both time periods. So I'll just
12 go through these at a high level and discuss further
13 as needed.

14 So one of the main points that the public
15 took issue with was that there was confusion over
16 proposed hierarchy that the staff had developed in DG-
17 1285 back in 2012 and that we were considering for
18 2017.

19 This was an effort to try and organize
20 these considerations in such a way that acknowledged
21 the interrelationships between the different
22 considerations. And I will talk about in a few slides
23 that the staff ultimately decided that it was a little
24 too complex to include in this revision and it was
25 probably easier to just maintain a list of individual

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1 considerations.

2 MEMBER STETKAR: Anders, so far we've
3 heard seven slides of processed stuff and you've
4 mentioned considerations and things like that. I look
5 forward in the slides, and your slides don't tell us
6 what those considerations are. Not all of our members
7 attended the subcommittee meeting. So could you just
8 give us a little benefit of at least summarizing and
9 explaining briefly what those seven considerations
10 are?

11 MR. GILBERTSON: Yes.

12 MEMBER STETKAR: Either you or Mary.

13 MR. GILBERTSON: Yes, absolutely. And
14 yes, Mary, feel free to jump in as I'm going along.

15 MEMBER STETKAR: Just to give, you know,
16 the folks who weren't at the subcommittee meetings an
17 idea of what we're talking about here.

18 MR. GILBERTSON: Yes. Absolutely. So
19 these considerations are really, they are a set of
20 items that are, that licensees should use to assess
21 the impact of defense-in-depth by their licensing
22 basis change.

23 You know, these are things that, for
24 example, the first consideration deals with preserving
25 reasonable balance among layers of defense, and we

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1 define what those layers are or we talk about what
2 those layers on in the guidance.

3 Preserving adequate capability of design
4 features without over reliance on programmatic
5 activities as compensatory measures. Another one is
6 preserving system redundancy, independence and
7 diversity, commensurate with the --

8 MEMBER BROWN: By programmatic, you mean
9 administrative or people involvement?

10 MR. GILBERTSON: Generally, yes. Yes.

11 MEMBER BROWN: Let me go back to the first
12 bullet. You talk about maintaining a reasonable
13 balance between layers. Did that have a, I didn't
14 attend so my ignorance shows. But that pretty, fairly
15 vague. A reasonable balance can be interpreted in a
16 number of different ways.

17 MR. GILBERTSON: Absolutely, yes. And to
18 that point, there are a number of those types of
19 relative terms, reasonables, adequate that are in this
20 guidance that we sought to further explain.

21 MEMBER BROWN: Did you provide examples of
22 what you meant by a reasonable balance.

23 MR. GILBERTSON: We did not provide
24 examples. That was actually a point, an issue that we
25 had considered earlier on in the 2012 version. The

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1 staff did develop examples that sought to explain the
2 meaning of these considerations, but they were not
3 well received by the public.

4 We revisited the issue of having examples
5 that helped to do that. And again, ultimately it was
6 decided that the guidance that we had developed was
7 sufficient to, at this point until it was exercised
8 and implemented, to move forward and explain them.

9 MEMBER BROWN: So you would make, I guess
10 my point is you would make -- it's open to judgment
11 then. Somebody does something and now they come
12 propose it and you can say well that's not reasonable.
13 In other words the guidance is sparse relative to
14 that.

15 MR. GILBERTSON: Yes.

16 MEMBER BROWN: Is that, that's the
17 takeaway I get from the discussion that you had with
18 the public.

19 MR. GILBERTSON: Yes.

20 MEMBER BROWN: And the conclusions you
21 came to, we're not going to change anything.

22 MS. DROUIN: I would, when you talk about
23 examples, there's two type of examples. And I have a
24 feeling we're not using that word the same way. What
25 we originally had were examples of an actual licensing

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1 base change to illustrate the consideration.

2 And those, we thought were, you know, good
3 examples. Industry wanted something much more
4 prescriptive which, you know, has a checklist, and we
5 were never going to go there. So we have examples in
6 terms of a different way of explaining what we mean by
7 those words.

8 So there won't be an example to tie it to
9 an exact, you know, proposed licensing change. But
10 through the way we did the discussion, we tried to
11 give ideas and not keep it vague, but to give ideas of
12 what we meant by reasonable. And if you do these
13 things, then that is what we're looking for when we
14 mean reasonable.

15 MEMBER BROWN: Let me put some context on
16 why I asked the question. When we reviewed the new
17 cyber security rule, the draft guidance coupled with
18 the rule, the draft guidance had, I think it was six
19 appendices of which four of them addressed how you
20 would assess every digital asset in the entire plant
21 with some considering, I don't know, 2 or 300 controls
22 that you had to then evaluate against each of those,
23 very detailed.

24 And you said you had to go address each
25 one of those. You had one, not you, the draft

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1 guidance also had one section, Section 6.3 I believe,
2 or 6.3.1 which said hey, you could've reduced that
3 maybe if you can group things and put boundaries
4 around things. That's all it said.

5 So one of our comments in our letter back
6 to the Staff was gee you had all this nice
7 prescriptive detail on how you do it on a cell phone
8 by cell phone or, you know, computer by computer or
9 whatever it is on how to handle that with lots and
10 lots of cyber controls and evaluations.

11 But yet there were no examples of how,
12 what are some of the thought processes on grouping of
13 stuff and how would that reduce the burden from
14 dealing with, what I would call, outside attacks and
15 limiting yourself only to internal sources of
16 malicious, or non, or control of access. So that's
17 the context I'm coming from in terms of the thought
18 process.

19 And so we asked for some expansion of
20 that. What I'm hearing is that you tried to do a
21 little bit of that and the public didn't like it, that
22 they were confused by it. And I'm just trying to put
23 that in because now we said to go out and discuss this
24 with the public so that they hadn't gone out for
25 public comment yet.

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1 And they will be doing that once, I guess,
2 they get the commission to agree to go publish the
3 thing like we recommended going ahead with it. But
4 it'll discuss that grouping concept with the public
5 and licensees obviously and try to put some context
6 examples of how they could do that would be acceptable
7 to the NRC.

8 So that's why I asked the question when I
9 heard the discussions on the defense-in-depth and
10 balance. What does that mean? So I --

11 MS. DROUIN: You know, my only response to
12 what you said is that --

13 MEMBER BROWN: I'm just giving you a
14 reason for why I asked the question and --

15 MS. DROUIN: And I understand. I think
16 trying to go to another level of detail would have
17 been pushing the envelope in terms of what we were
18 requested to do by the commission. And I don't think
19 we would have answered the public concern or I don't
20 know if concern is the right word.

21 They really wanted a check list that if
22 they did these exact things, then their licensing
23 amendment would be approved. We just weren't going to
24 go down that route. You can't go down that route
25 because every case has its own merit that have to be

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1 taken into account.

2 But when all of that is said and done and
3 the guidance that we have included I will say that we
4 have received, the tone of the public comments changed
5 drastically from 2012, the comments we got, versus
6 2017. In 2012 they were very unhappy. In 2017 I
7 would say they were very happy with what they saw.

8 MEMBER BROWN: Even though they didn't
9 like the examples?

10 MS. DROUIN: That's another whole story
11 that if you want us to go into we can go down that
12 route. There's a whole history there, I don't know if
13 you want to talk about the history on the examples.

14 MEMBER KIRCHNER: Do you have a slide with
15 the considerations? I haven't committed them to
16 memory. Do you --

17 MR. GILBERTSON: You know what. I
18 apologize, I don't.

19 MEMBER STETKAR: Hence, my request.

20 MR. GILBERTSON: Yes. I apologize. Yes.
21 We do not have a slide.

22 MEMBER BROWN: But that's the substance of
23 what you were directed to do. You're giving us a
24 process presentation without any substance. Just my
25 one opinion.

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1 MR. GILBERTSON: Okay. I'm happy to
2 continue to go through and talk about the
3 considerations as they exist in the document that we
4 sent over. I do apologize again for not putting them
5 directly in the slides.

6 MR. THAGGARD: Can you walk through the
7 considerations to tell them what they are and maybe --

8 MS. DROUIN: I just did.

9 MR. THAGGARD: -- and then maybe, we can
10 maybe --

11 MR. GILBERTSON: We talked about number
12 one, now we are going to talk about number two, unless
13 there's more discussion on number one.

14 PARTICIPANT: I'm kind of disappointed by
15 the way, I'll but that on the public record that you
16 didn't at least have a slide with seven bullets on it.

17 MEMBER BROWN: I want to make just one
18 other comment. We talked about being prescriptive and
19 non-prescriptive and I can't speak to the defense-in-
20 depth points, the considerations that you made, but on
21 the new cyber rule the staff was very prescriptive
22 about what the licensees had to do to evaluate digital
23 assets, very prescriptive.

24 Two hundred, three hundred controls you
25 had to walk through and document whether they met

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1 these or didn't meet these. Very, very cumbersome and
2 burdensome.

3 Yet, they didn't want to be prescriptive
4 on trying to provide, and the example they gave using
5 their method was a very simplified system which had
6 all kinds of documentation associated which once you
7 applied that to the whole you could see it would pile
8 up. But yet no desire to be prescriptive relative to
9 how do you put boundary conditions in to reduce the
10 burden.

11 So there's a little, I'm being a little
12 bit tongue and cheek sort of in that, they, we don't
13 mind being prescriptive in some ways, but then we say
14 we reject prescriptiveness in some other ways in terms
15 of just defining the balance or the reasonableness or
16 how do we put a bubble around this so you don't have
17 to deal with this type thing.

18 So that's all. It's just a thought
19 process. I'm not, I understand were you, how you got
20 --

21 MS. DROUIN: No, we certainly could have
22 been a lot more prescriptive, but I think, you know,
23 we were caught in the situation where we would have,
24 that was not be the direction we were given from the
25 Commission.

1 MEMBER BROWN: Did they specifically say
2 don't be descriptive or did they use all the fuzz
3 words? Well, I could guess at what they said.

4 MR. GILBERTSON: It maybe wasn't
5 necessarily what was provided in the direction of the
6 SRM but what came out through interactions
7 subsequently and through the process of developing and
8 feedback that we received.

9 MEMBER BROWN: From the Commissioners?

10 MR. GILBERTSON: Well, yes.

11 MEMBER BROWN: Or from staff management or
12 what?

13 MR. GILBERTSON: Staff management, the
14 Commission assistance meeting we had some, there were
15 some indications that we needed to be careful about
16 being too prescriptive. And that was back in May.

17 MR. GIITTER: This is Joe Giitter and I
18 can speak to that. That's what Anders and Mary was
19 saying is very true. We were, I don't want to use the
20 word criticized but, we were called into question the
21 level of detail and prescription that went into
22 expanding the section on defense-in-depth. And I
23 don't remember the number of pages but it went from
24 half a dozen pages --

25 MR. GILBERTSON: Or it went from two pages

1 to --

2 MR. GIITTER: Two pages?

3 MR. GILBERTSON: -- to twelve pages. Not
4 that that number of pages matters, but we did receive
5 some feedback on that regard. And I think that going
6 back to the examples, we did attempt to develop some
7 examples.

8 We were trying to work with industry on
9 those examples and quite frankly, industry wasn't able
10 to give us examples in a reasonable timeframe so we
11 made the decision to go on and really focus on a
12 content of the attributes, which I would like Anders
13 to talk a little bit more about because that's really
14 the important, the nugget, the meat is the attributes
15 in defense-in-depth, not so much the examples.

16 MEMBER BROWN: Okay, thank you.

17 MEMBER STETKAR: I'll also, I'll give you
18 my spin on it. Remember Reg Guide 1.174 is intended
19 to provide guidance for the use of risk information in
20 an integrated decision making process.

21 So prescribing precise criteria for
22 defense-in-depth, and only that, would be trying to
23 prescribe precise criteria, for example, a six
24 significant figure acceptable or unacceptable core
25 damage frequency. The entire process has always been

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1 intended to not be prescriptive on any one of the
2 elements of an integrated decision.

3 It's intended to account for uncertainly.
4 It's intended to account for the fact that there are
5 not bring line values, numerical values if you're
6 doing a quantitative risk. And now by analogy it's
7 not intended to be extremely prescriptive that if you
8 meet a certain set of check boxes you pass, and if
9 you miss one of those check boxes you fail.

10 So you have to kind of, in my opinion, you
11 have to kind of look at defense-in-depth and the way
12 it's characterized now in the context of the guidance,
13 all of the other elements in the guidance. And now
14 perhaps we can go to attribute, consideration number
15 two. Okay.

16 MR. GILBERTSON: So the second
17 consideration is preserving adequate capability of
18 design features without an over reliance on
19 programmatic activities as compensatory measures. So
20 like I had related, this is, yes, relating to
21 administrative program type programs. And --

22 MEMBER RICCARDELLA: You're referring to
23 programmatic, you're referring to human activities, is
24 that what --

25 MR. GILBERTSON: Yes. That's correct.

1 MEMBER BROWN: And they mean reliance on
2 somebody to make sure that something doesn't happen.
3 That's the way -- I'm not saying I'm against that, I'm
4 just saying that's what you're talking about.

5 MR. GILBERTSON: Yes, yes. And I think,
6 I mean, that is including, you know, we're talking
7 program. So it's not just I have one operator --

8 (Simultaneous speaking)

9 MEMBER BROWN: I understand that.

10 MR. GILBERTSON: -- framework or
11 organizational structure. One other thing that I
12 would also point out is that in the revised guidance,
13 you know, we build this structure in here where we
14 first talk about what the licensee, what the change
15 should not do and then what it should do.

16 And then we go on to provide a narrative
17 to help explain what's meant by those two statements.
18 So, whereas we didn't go down to the level of detail
19 that you're talking about with the cyber security rule
20 and the related guidance, we did, we were trying to
21 walk the line of being, providing a more descriptive
22 framework without being too prescriptive.

23 And you know, as part of the narrative we
24 talk about things that the way the NRC maybe is
25 thinking about certain aspects of that consideration

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1 just to help give an understanding of what the NRC is
2 looking for in their evaluation of the consideration.

3 Okay, I can move on to the next
4 consideration. Consideration three is preserving
5 system redundancy, independence, and diversity
6 commensurate with the expected frequency and
7 consequences of challenges to the system including the
8 consideration of uncertainty.

9 So, this was in particular one of the
10 considerations that actually we do talk about that
11 risk incites can be used and pulled into the
12 evaluation of this consideration to help look at do I
13 have enough redundancy, diversity.

14 Independence may be a little more
15 difficult to assess with the PRA necessarily, but may
16 not physically know exactly, you know, the PRA is not
17 going to physically tell you where two pieces of
18 equipment are necessarily. But it's something that
19 can be used as an aid to help that evaluation. Any
20 questions on that?

21 Okay, the fourth consideration then is
22 preserving adequate defense against potential common
23 cause failures. And so this is really dealing with
24 not, the licensee shouldn't be reducing their defenses
25 against common cost failures that are affecting

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1 redundancy, independence, diversity.

2 There were, we actually had some expanded
3 language in the section that described the meaning of
4 that consideration in the Section C-2112. We had
5 moved that out based on some of the subcommittee
6 members' feedback.

7 But we do provide some references to
8 guidance documents relating to common cause failure.
9 So just to point the licensee to where they might want
10 to look to address this and how to evaluate that.

11 The fifth consideration is maintaining
12 multiple fission product barriers. This is, so
13 obviously we're talking about making sure that they're
14 not significantly reducing the effectiveness of any
15 one of the barriers or the multiple fission product
16 barriers together and just assessing the
17 interrelationship between some of those barriers
18 potentially as they might exist.

19 MEMBER KIRCHNER: Did you in your working
20 groups, I can take examples out of CCF but let me pick
21 examples from fission product barriers. Does the NRO
22 people, were they involved in this?

23 MR. GILBERTSON: Yes. Yes.

24 MEMBER KIRCHNER: Okay. So there are
25 concepts, albeit paper, that would take away one of

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1 the traditional fission product barriers by having a
2 liquid fuel. How does that fit in with this?

3 MR. GILBERTSON: Well, I guess the scope
4 of this guidance is for the operating reactors. I
5 don't know that we are necessarily considering the
6 non, well I'm sorry. We're not considering the non-
7 light water reactors. So we didn't expand the scope
8 of the guidance to include that.

9 MR. HARRISON: This is Donny Harrison from
10 NMSS, but I was the culprit from NRO before. The
11 other thing you have to keep in mind, this is a reg
12 guide related to licensing basis changes. So what
13 you're talking about is the new design concept that's
14 going to be coming in. It's not a change to a
15 licensing guide. It's kind of --

16 (Simultaneous speaking.)

17 MEMBER KIRCHNER: I thought it was risk
18 informed decision making.

19 (Simultaneous speaking.)

20 MR. HARRISON: No. It's technically risk
21 and for licensing changes basis changes.

22 MEMBER KIRCHNER: Okay.

23 MR. HARRISON: So the issue you're
24 bringing up about the liquid sodium design, they're
25 going to have to address that in their base design and

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1 get that approved first. And then if they make change
2 subsequently, you would be asking did the change in
3 licensing basis affect that.

4 MEMBER KIRCHNER: Okay. All right. You
5 are correct. It's, I didn't read the whole title
6 before I made my comment. But I know, and Mary in
7 particular briefed us on the history of defense-in-
8 depth.

9 To me it's a little bit like philosophy or
10 religion in the sense that this is an approach that
11 has served the agency well in its regulatory mission.
12 And it would seem to me that when you put out this,
13 and you've taken the examples out, understandably
14 there was push back on that.

15 But you're trying to keep these at a
16 qualitative level that has brought applicability and
17 you've invested with you team a lot of effort. And
18 I'm just curious how we changed the defense-in-depth
19 principles that you've got imbedded in this when we go
20 to other concepts or applications within the agency.
21 So you don't have to respond to that but it just
22 strikes me philosophically as an issue.

23 MEMBER STETKAR: Let me try something.
24 The presumption is that the license plant has already
25 established, as far as the staff is concerned, the

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1 fact that they have adequate defense-in-depth, however
2 they establish that.

3 This is guidance for risk informed changes
4 to the licensing basis for that already established
5 plant. So it says what criteria, bad word, what
6 considerations must you take, must is a bad word, what
7 considerations should be considered when you evaluate
8 the elements of your already adequate defense-in-depth
9 and how does the change effect each of those elements.

10 So that's not, that doesn't address
11 licensing a new plant whether that new plant had
12 adequate defense-in-depth.

13 PARTICIPANT: Right, because that's a
14 different, different issue.

15 MEMBER KIRCHNER: But to your point, much
16 of 1174 includes, if you use the philosophy, the idea
17 is you had to apply however you do anything that's
18 risk informed.

19 The specifics in 1174 show you how to look
20 for changes and how to weigh changes against each
21 other and how to do this in an integrated way. But
22 yes, if you were writing a new one on how to make risk
23 related decisions, most of the concepts in here would
24 be there, in my opinion.

25 MEMBER STETKAR: By the way, let me get a

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1 process for the record. We were handed out a hard
2 copy that now lists the seven considerations so the
3 members can kind of see them together. Make sure that
4 we get an electronic version of this because it shall
5 be included with the transcript for today's meeting.

6 MEMBER KIRCHNER: By the way these are
7 good, I think this is my opinion again, these are
8 good. And even if it didn't say licensing basis
9 change, these are good principles. And I rest my
10 point and I'll hang it in my office.

11 (Laughter.)

12 MEMBER POWERS: One of the items that a
13 little bit has always kind of confused me, just so if
14 you look though the seven principles, most of them
15 begin with preserve, preserve. There's one on fission
16 product barriers that says maintain multiple fission
17 product barriers, I guess I got it right here, yes
18 multiple fission product barriers.

19 That distinction preserve, preserve,
20 preserve and then maintain, it struck me and I said do
21 they mean I have to have exactly the same number of
22 barriers or do they mean, do you really mean preserve
23 adequate barriers to fission product release? It's
24 just striking that you change the language there and
25 I'm trying to understand what you meant.

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1 MR. GILBERTSON: Well, so I guess to the
2 first part of that, the maintain is, that's an
3 artifact of the list, the language that used in
4 Revision 2, so, excuse me. So in most cases the
5 staff, we didn't want to change, we tried to minimize
6 the number of changes to that language so that we
7 weren't inferring a different meaning than was
8 already, that had already been understood between the
9 staff and by licensees.

10 VICE CHAIRMAN CORRADINI: So what does
11 this mean?

12 MR. GILBERTSON: So maintaining, it well
13 it means that the --

14 VICE CHAIRMAN CORRADINI: More than one?
15 (Simultaneous speaking.)

16 MEMBER POWERS: Well mean to come down,
17 what I was concerned of is that it meant have as many
18 as I had in the light water reactor. And that of
19 course is the death knell for molten salt reactor
20 because automatically they give up the cladding as a
21 barrier.

22 MS. DROUIN: So again, you know, this
23 would not be applied to the design of unit mount LWRs.

24 MEMBER POWERS: Right, I understand. But
25 I'm just trying to understand why there's a sudden

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1 difference between, was there any significance to the
2 fact that you had maintain instead of preserve?

3 MS. DROUIN: I give you, the honest answer
4 is we don't know. These are the words that were
5 written back in 1995. I cannot tell you whether the
6 original authors had something different in mind or it
7 was just lazy technical writing.

8 But we just decided that we would keep the
9 language that was in the revision and try and put an
10 explanation of what those words meant. You know, we
11 thought about changing it, but then we thought you
12 know you just get this ripple effect so we're going to
13 --

14 MEMBER POWERS: I understand, I
15 understand. I mean --

16 MS. DROUIN: -- so that's the route we
17 went.

18 MEMBER POWERS: -- mine is a very innocent
19 question. I'm not going got you.

20 MS. DROUIN: I mean, I think it's a fair
21 question though.

22 MR. HARRISON: This is Donny Harrison from
23 the staff again. I will say there was considerable
24 debate within the working group over the last few
25 months if we should change it to preserve adequate,

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1 but we ended up settling on leaving it the way it was.

2 So to your point, Dana, this was actually
3 a question that was raised up within the working group
4 and this is where we ended up settling.

5 MEMBER RICCARDELLA: Could I ask you just
6 a general question about the use of these
7 considerations? As I understand it, the thrust of
8 1.174 is you're going to do use of PRA and you've got
9 these criteria for CDF and Delta Cs, you know these
10 nice figures CDF, Delta CDF, LERF, delta LERF and
11 what's it, you plot something on those curves and
12 you're acceptable or you're not acceptable. Is these
13 considerations for defense-in-depth, are they
14 something you have to do in addition to meeting those
15 criteria?

16 MR. GILBERTSON: Yes.

17 MS. DROUIN: Yes.

18 MR. GILBERTSON: Yes, the consideration of
19 defense-in-depth is one of the five principles of the
20 risk informed decision making process. And so
21 insuring that changes in risk are small that's another
22 principle. Compensatory measures, performance
23 monitoring, not compensatory measures, performance
24 monitoring is another principle.

25 MEMBER STETKAR: But for the sake, because

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1 this is a public meeting just for the, I'll read them.
2 "The change meets current regulations unless it's
3 specifically related to requested exemptions." So you
4 have to follow the rules.

5 "The change is consistent with defense-in-
6 depth philosophy," which is what we are talking about
7 now. "Maintains sufficient safety margins," that's
8 third. It's a more deterministic type consideration.

9 "Proposed changes in risk are small and
10 are consistent with the Commission's safety goal
11 policy statement," that's what you were talking about.
12 And number five is, "uses performance measurement
13 strategies to monitor the change," so that you have
14 some monitoring and feedback.

15 (Simultaneous speaking.)

16 MEMBER STETKAR: And all five of those
17 principles are in this regulatory guidance. So the
18 numbers are only part of it.

19 CHAIRMAN BLEY: And they've always been
20 within the context of what they call an integrated
21 decision process that looks at everything but matter
22 here. What the staff has done lately is add some meat
23 on the bones of what it meant to do the defense-in-
24 depth.

25 MEMBER STETKAR: Historically the defense-

1 in-depth was, was it as long as two pages?

2 MR. GILBERTSON: I think it's a bit
3 shorter.

4 MEMBER STETKAR: It was pretty short and
5 there was a lot of confusion both in the industry and
6 among the staff in terms of --

7 PARTICIPANT: What it meant.

8 MEMBER STETKAR: -- what do you need to do
9 to address that, that principle number two.

10 VICE CHAIRMAN CORRADINI: But if I might,
11 even if you didn't put it in terms 1.174, these seven
12 considerations ought to be there in spite of it,
13 regardless of it. Yes?

14 If I have a design that's, I'm using, I'm
15 not using 1.174, I'm right here, can I not be heard?
16 These seven considerations, I'm kind of with Walt,
17 these are appropriate pretty much regardless of
18 whether these were in the context of 1.174 or not.

19 MEMBER STETKAR: That may be true, but the
20 subject of today's meeting is 1.174 and are they
21 elaborated adequately for the purpose of this
22 guidance. Were they applied to other, other elements
23 of what you said --

24 (Simultaneous speaking.)

25 VICE CHAIRMAN CORRADINI: -- they comprise

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1 beyond. The here and beyond. That's what I thought
2 Walt was getting at.

3 MEMBER KIRCHNER: One would draw that
4 conclusion that the agency working on this would make
5 technology neutral kind of train work for doing
6 integrated decision making and that five spoke,
7 whatever it's called, wheel I think would work inside
8 1.174 or 76 or outside of it.

9 MEMBER STETKAR: I think you'd find Mary
10 be in favor of that.

11 PARTICIPANT: Why is Mary smiling?

12 (Simultaneous speaking.)

13 MS. DROUIN: I think there's a difference
14 when you have an operating plant where, you know, it's
15 been licensed and you have the presumption that it has
16 adequate defense-in-depth and you want to make a
17 change and you want to make sure that you have not
18 degraded that defense-in-depth.

19 That's different than you have a blank
20 piece of paper and now you want to, you know, put
21 defense-in-depth into the design and operation. I
22 think you look at, I think there are similarities
23 between the two. But I think it's a different mindset
24 of how you approach defense-in-depth when you're
25 looking to see if you degraded versus integrating it

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1 in from the beginning.

2 MEMBER KIRCHNER: I don't, but we are
3 allowed to differ. And as the point that Member
4 Powers raised, if number five says preserve adequate
5 fission product barriers, maintain multiple to me
6 means the traditional, and this was in the context of
7 LWR fleet, the traditional fuel, primary cooling
8 system, containment.

9 Whereas preserve adequate, that's in the,
10 that leaves somewhat more flexibility in taking a
11 broader interpretation of this. I just I commend your
12 work and you put a lot of effort into this and I see
13 I'm quibbling over maybe one bullet there, but this
14 has broad applicability with this list. I'll put it
15 in my office on the wall. Thank you.

16 MEMBER STETKAR: We're still kind of doing
17 okay on time. We have two more to get through.

18 MR. GILBERTSON: Okay.

19 MEMBER STETKAR: Number 6.

20 MR. GILBERTSON: All right. Number 6.
21 Number 6 is preserve sufficient defense against human
22 errors. So it's looking at potential for creating new
23 human errors, evaluating how it effects existing human
24 errors that are already accounted for in the licensing
25 basis.

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1 And then the last consideration is
2 continuing to meet the intent of the plant's design
3 criteria. And so this is something that is used to,
4 maybe at a higher level, to assess the plants, or the
5 licensing basis change impact. And it's a fact that
6 actually been a factor. It's a consideration that has
7 actually been used to approve license applications as
8 well as its basis for RAIs.

9 MEMBER SKILLMAN: Anders, let me ask this
10 question. What consideration does consideration seven
11 give to a pre GDC plant?

12 MR. GILBERTSON: Well it's, so I guess the
13 licensing basis as we describe in consideration seven,
14 it consists of a number of different documents. So
15 it's, I might need to reach out for some help here
16 from my --

17 MR. GIITTER: I can answer that question.
18 So there are a number of --

19 CHAIRMAN BLEY: Joe, Joe --

20 (Simultaneous speaking.)

21 MR. GIITTER: So I think what this talks
22 about is maintaining the licensing basis or the design
23 basis for the plan. There is a lot of plans who don't
24 have general design criteria, for example, they were
25 licensed before that.

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1 But they have preliminary design criteria.
2 And those preliminary design criteria are part of the
3 licensing basis for the plant. So when it talks about
4 the plant's design criteria, it was whatever the
5 design criteria was that was used at the time of the
6 licensing of the plant.

7 MEMBER SKILLMAN: Fair enough. That's
8 what I was really at. I was think of an Oconee, or,
9 like, a Ginna I mean really a moldy oldie. And they
10 found their way through the licensing process back in
11 the mid to late '60s and the GDC wasn't until 1970.

12 Nevertheless, they're robust, they're
13 tight, they're strong, they function well. But I was
14 just wondering if this was kind of this, kind of a
15 nudge to be updating or just to maintain status quo
16 and to preserve that status quo. Understand. Thank
17 you.

18 MR. GILBERTSON: Thank you Joe.

19 MEMBER STETKAR: Thank you. Now you can go
20 to the second bullet on this one.

21 MR. GILBERTSON: Okay. We're, okay. So
22 back to slide seven in the presentation. So as I
23 mentioned before, we've talked about the examples that
24 were developed and they were not well received by the
25 public. They, and I think Joe has spoken to that to

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1 some degree. So I'll move on to the next point.

2 MS. DROUIN: I just want to add that we
3 would have come back and tried to add examples, but
4 industry wanted to do the examples. So it wasn't a
5 lack on our part, I just want to make that, you know,
6 you understand distinction.

7 Industry wanted to do the examples and
8 they were to go back and develop examples for our
9 review to include, but that didn't happen. They did
10 not come forth with examples.

11 MEMBER STETKAR: And again, from my
12 personal perspective, there are no examples in that
13 sense in this guidance that tell you how you ought to
14 do an analysis that addresses the quantitative risk
15 part of the decision making.

16 MS. DROUIN: That's true.

17 MEMBER STETKAR: So this, you know, why
18 have descriptive examples, if you will, for only one
19 of the five things that this guidance pertains to? It
20 doesn't, I mean it's certainly not consistent with the
21 whole philosophy of the guidance because you know
22 doggone well the examples won't be comprehensive
23 enough and people will only use those examples to
24 check off boxes.

25 MR. GILBERTSON: Okay. So the next bullet

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1 talking about the guidance, there was interest in
2 having guidance on different types of licensing basis
3 changes. So as specifically relating to temporary and
4 permanent changes. So we had worked in some language
5 that was related to that.

6 There are relative terms, I've spoken of
7 this a little bit already, through the staff's
8 expansion of the different considerations. We sought
9 to explain what was meant by things like, terms like
10 reasonable, adequate, or significant.

11 And then also there was, they had asked
12 about inclusion of language from relevant guidance
13 documents on defense-in-depth. And so the staff did
14 look through and take some of the public suggestions
15 about including language from the SRP. And there were
16 numerous clarifications and editorial changes. Okay?

17 So those were changes that result, or I'm
18 sorry, public comments that resulted in changes to the
19 guidance in DG-1285. So now I just wanted to go
20 through some of the comments that did not result in
21 changes.

22 As Mark had mentioned in his opening
23 comments, we had made changes related to the
24 terminology of the PRX acceptability terminology, and
25 that was based on the resolution of the DPO. So

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1 industry was not necessarily, they weren't very happy
2 with that or they thought it was confusing. But we
3 moved forward with senior management's decision on
4 that.

5 MEMBER BROWN: I read this as you did
6 nothing with the DPO comments. Isn't that --

7 MR. GILBERTSON: Oh no, I'm sorry. So what
8 we did was, no we had, we adopted the terminology pure
9 acceptability rather than terms like PRA, technical,
10 adequacy.

11 MEMBER BROWN: Okay, I read your result of
12 the no changes --

13 (Simultaneous speaking.)

14 MEMBER RICCARDELLA: But it started out as
15 PRA quality, right? And then when you changed it to
16 intermediate thing, and then it came back ultimately
17 to this PRA acceptability, right?

18 MR. GILBERTSON: Yes. Yes. That's correct.

19 MEMBER RICCARDELLA: And what was the
20 rational for dropping PRA quality?

21 MS. DROUIN: I'll speak to that. Way back
22 a long time ago when we wrote the plan for the phase
23 to purge to PRA quality, we brought up in that paper
24 that there was people were using different terms in
25 time, it wasn't just PRA quality. So we brought up,

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1 at that point in time, this issue of the problem with
2 terminology.

3 Soon after that paper was written there
4 were a series of public meetings. And the feedback
5 that we got from the public is that they did not like
6 the term PRA quality because they felt it meant we
7 were imposing an Appendix B type of process.

8 So after a lot of dialogue, we settled on
9 the term PRA technical adequacy. But what we decided
10 is that we would change documents as they came up. We
11 weren't going to just go out and find every document,
12 we would change things over time. But unfortunately,
13 that did not happen. So we got a DPR and we are where
14 we are now.

15 MEMBER RICCARDELLA: Thank you.

16 MR. GILBERTSON: Okay. So another comment
17 that did not result in any changes was a request to
18 remove the seventh consideration relating to
19 maintaining the intent of the plant's design criteria.
20 As I said, one of our basis for retaining that
21 consideration is really that that consideration had
22 been used both to approve license amendments as well
23 as a basis for RAI. So the staff were using that as
24 part of their evaluation.

25 MEMBER RICCARDELLA: And you read a

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1 comment that said they wanted you eliminate that?

2 MR. GILBERTSON: Yes, they wanted us to
3 eliminate it outright.

4 MEMBER RICCARDELLA: I mean, the word
5 intent in there, it makes it kind of soft, doesn't it?

6 MR. GILBERTSON: It does give, I guess it
7 continues to give latitude, yes, to the staff. But I
8 guess, you know, one of the things I go back to is
9 just the approach that we took in developing this
10 guidance.

11 We didn't, we weren't seeking to develop
12 anything new here with this revised guidance. We were
13 very intent on making sure that we were consistent
14 with what had already been done and what staff
15 expectations were. And so that was consistent with
16 those two points. Okay?

17 So there was another comment relating to
18 some little past changes. This was simply a comment
19 that was outside of the scope that the working group
20 was considering, so I included that on the slide of an
21 example of that.

22 But it was something, an example of
23 something that was documented as a potential parking
24 lot issue for future consideration and a subsequent
25 revision. And along the same lines, describing the

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1 relationships between the different risk informed
2 decision making principles that were previously
3 discussed here.

4 That was also an issue that was determined
5 to be outside of the scope of our effort and has also
6 been documented as an issue for future consideration.

7 And then the last one that I note here is
8 that there, it was expressed that there should be some
9 limitations on when defense-in-depth should and should
10 not be addressed. And so this is an example of a
11 comment that the staff simply disagreed with. We did
12 not feel that there should be limitations. We did
13 have some proposed language from external
14 stakeholders, and we did not incorporate that.

15 The changes that we made based in the
16 public comments, I will, because I've already been
17 talking about this a little bit I'll go through these
18 a little faster. We did not include a hierarchy, so
19 we retained just the discussion of seven individual
20 considerations. However, within those descriptions we
21 do talk about different relationships between some of
22 the other considerations.

23 Like I said, we removed the defense-in-
24 depth examples from the 2012 version and did not
25 include them in the 2017 version. We provided

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1 guidance on addressing each of the defense-in-depth
2 considerations as I mentioned at the beginning.

3 And then also another comment that we
4 received that I didn't mention two slides ago, but we
5 included guidance on risk aggregation that is really
6 pulled from NUREG-1855 which is discussing the
7 treatment of uncertainties associated with PRAs in
8 risk informed decision making.

9 And so that was something the public had
10 requested, and staff agreed with that and we went
11 ahead and incorporated their proposed language and
12 also some other language from 1855.

13 We emphasize that the acceptance guideline
14 boundaries are gradual transitions. And the way we
15 did that was Figures 4 and 5 in Section C.2.4, in
16 retrospect it would have been useful to include the
17 figure itself.

18 But this figure has, in revision two of
19 Reg Guide 1.174 there is a gradient, a shaded gradient
20 that when you transition in the horizontal direction
21 of the plot going from regions two and three into
22 region one. So regions two and three are the
23 acceptable regions. Region one is the unacceptable
24 region. That's a very general characterization.

25 There was a sharp step transition going in

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1 the vertical direction in that figure. And so to be
2 consistent with the way that that guidance has
3 actually been implemented by the staff and used by
4 licensees, it was determined that we needed to also
5 make a fuzzy boundary, a gradient in that wide
6 direction. And so here again this is something that
7 was not intended. It was intended to be consistent
8 with how this guidance has been used in the past.

9 MEMBER KIRCHNER: Could I make an
10 observation? I don't know if the shading in the draft
11 is meant to back up what you just said. But I still,
12 looking at the draft, don't get that impression. It
13 looks a step change function. Somehow I don't know how
14 you make for a fuzzy line and such but it sure looks
15 like a step threshold, well to me.

16 (Simultaneous speaking.)

17 MEMBER RICCARDELLA: And to the casual
18 reader I think --

19 PARTICIPANT: Maybe your graphic artist
20 could do a little bit --

21 (Simultaneous speaking.)

22 PARTICIPANT: It almost reinforces that
23 it's a step change.

24 MEMBER STETKAR: I need to be cognizant of
25 time because I want to preserve, I've got an area of

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1 discussion that the staff doesn't have on their slides
2 so that I need to preserve about ten minutes at the
3 end here for. So I really want them to get through
4 those points.

5 MR. GILBERTSON: Okay. All right. So the
6 last point, I've already discussed this we'll move
7 onto the next one. So the points on this slide, these
8 are actually, these are not changes that were based on
9 public comments. That title is not entirely accurate.

10 These are changes that were directed by
11 previous SRMs and were essentially waiting in the
12 wings for the next staff effort to revise Reg Guide
13 1.174. So we did take these and include them in the
14 scope of our effort.

15 And so one of the points, we have some
16 ACRS subcommittee member feedback, the second one
17 developing language on containment performance
18 expectations that I'll talk about in the subsequent
19 slide.

20 Again, this is, these points here are just
21 discussing the changes that were made based on the
22 resolution of the DPO that which, again, was not a
23 public comment. But we had, the DPO raised issues
24 about inconsistent language usage. The RES office
25 director had directed the staff to adopt the term pure

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1 acceptability as opposed to purer quality or technical
2 adequacy.

3 And probably the most important point here
4 is that the staff, as part of that resolution, the
5 staff were also directed to communicate to the public
6 and offer an opportunity for comment on the how the
7 staff was implementing this. And so, we are in the
8 process of developing a regulatory information
9 summary, or RIS to that end.

10 Okay. So this second to last slide here
11 is detailing the ACRS subcommittee members' feedback.
12 There were approximately nine points of feedback that
13 we received that the staff had noted from the August
14 24th meeting. So these have been consolidated down to
15 the core expressions, their concerns.

16 So the applicability, I'll just go through
17 these at a high level. The applicability of the
18 guidance to the containment performance for new
19 reactors. ACRS Subcommittee members had expressed
20 concern that this would prevent the use of Reg Guide
21 1.174 or risk information for new reactors.

22 However, the staff had looked back at the
23 documents that informed that work and the guidance
24 that we implemented there. And we believe that it was
25 consistent, that what we included in there was

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1 consistent with the SRM SECY-12-0081 as well as a
2 related ACRS letter from April 26 of 2012.

3 There were a few inconsistencies that the
4 ACRS subcommittee members had pointed out in
5 difference parts of the guidance. One related to, as
6 I mentioned before, the level of detail in
7 Consideration 4 in Section C-2112 was much greater
8 than that of the other considerations. And so the
9 staff had made that consistent with the narratives in
10 the other considerations and moved some of them to
11 C.2.113.

12 The guidance on the integrated evaluation
13 of the considerations. There was some guidance, there
14 was inconsistent guidance between sections 2113 and
15 2114. So the staff agreed with that and we had
16 addressed that directly and moved some of the guidance
17 between those two sections.

18 And there was the phrasing inconsistency
19 in consideration six of C.2113. And again, the staff
20 made revisions to address those, that inconsistency.

21 The subcommittee members had pointed out
22 that, expressed that it wasn't really appropriate to
23 include ties or speculative statements to activities
24 that are yet to occur.

25 So the staff had gone and made those

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1 statements that they pointed out, and we looked for
2 other areas as well and made sure that they were time
3 independent. So they were converted into more general
4 discussions.

5 Use of terminology related to uncertainty.
6 This related to a discussion of uncertainties that was
7 provided in C.2.3. And it was, we had eliminated the
8 use of the terms aleatory and epistemic in there, and
9 also revised some of the other language that the
10 members took issue with.

11 Submittal documentation does not include
12 uncertainty distributions. This was a point that was
13 raised, the subcommittee members had expressed that
14 this information should be included with the submittal
15 documentation.

16 The staff, we had looked at this issue and
17 we're also looking at maintaining consistency with the
18 way that Reg Guide 1.174 had been implemented for the
19 past several decades.

20 And while we did include some language
21 that provided pointers to the inclusion to the more
22 detailed uncertainty information or consideration of
23 uncertainty information, we didn't include language
24 that explicitly called out including distributions
25 associated with the mean values in the submittal

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1 documentation.

2 And regarding the last bullet, we heard
3 from the subcommittee members, individual members,
4 that the scope and level of detail of the changes were
5 generally appropriate and consistent with treating
6 defense-in-depth as one aspect of the integrated risk
7 informed decision making process.

8 And I think for the staff, that helped to
9 reinforce our understanding or this notion that we had
10 achieved the objective from the SRM that was issued by
11 the Commission in March of 2016.

12 And so, finally, here for the path
13 forward, the staff is going to resolve any potential
14 ACRS full Committee feedback that we receive in the
15 letter. After that is completed, we will start our
16 final administrative procedures for publishing our
17 final version of Revision 3 of Reg Guide 1.174 and
18 which is, we anticipate concluding in March of 2018.

19 MEMBER STETKAR: Okay, thanks. Anders, I
20 want to bring you back to the preceding slide, number
21 12 in that sixth bullet about the uncertainty
22 distributions.

23 We had some discussion about that in the
24 subcommittee meeting. And the notes that I wrote to
25 myself and things that I've seen since then say that

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1 you feel that guidance that points to the need to
2 submit the entire uncertainty distribution is beyond
3 the current scope of Revision 3, and that to implement
4 that guidance you feel that's, I think you said that
5 it requires some decisions on policy and more
6 comprehensive guidance on integrated decision making.

7 Could you expand on that and what are the
8 staff's plans to do that going forward? Is there
9 going to be a Rev 4 that expands on integrated
10 decision making and how you consider uncertainty in
11 that?

12 MR. GILBERTSON: Okay. So you know,
13 generally speaking but associated with that to this
14 effort, there has been a number of parking lot issues,
15 issues that we've identified for a subsequent revision
16 of the Reg Guide, this being one of them that was
17 identified by the subcommittee members.

18 And there are, you know, other efforts
19 under way currently for enhancing how risk is
20 integrated into the decision making procedures and
21 processes and increasing the staff's understanding of
22 risk and risk tools as which is going to come out of
23 other staff efforts related to the May 11th Commission
24 meeting.

25 So I think that at this point, it's

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1 probably more appropriate for management to speak to
2 that point. I think that, I mean I can, you know, I
3 can offer my personal points, but I think it's better
4 if management steps in on this.

5 MEMBER STETKAR: Okay.

6 MR. GIITTER: This is Joe Giitter from NRR.
7 Yes, it's something, I understand why the comment was
8 made and it's something that I think we will take
9 under consideration for Rev 4 for Reg Guide 1.174.

10 But, so it's something we need to
11 consider. But right now, you know, our interest is
12 getting Rev 3 out the door. And we felt that trying
13 to go back and address that is, and as Anders said,
14 put additional detail in there would probably hold it
15 up beyond our March 2018 date. But, it's something we
16 need to talk about internally.

17 CHAIRMAN BLEY: One management question.
18 That implies Rev 4 is in your thoughts. Is it in your
19 plan?

20 MR. GIITTER: We're always looking forward
21 to the next, forward isn't probably the right word.

22 CHAIRMAN BLEY: Ten years, fifteen, what
23 you think about?

24 MR. GIITTER: With any Regulatory guidance
25 we need to think about --

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1 CHAIRMAN BLEY: Yes, but some of it sits
2 for twenty years or more.

3 MR. GILBERTSON: Right, so with everything
4 going on in the area of risk informed decision making
5 and the fact that we've been moving as an agency more
6 in that direction, I don't think it's going to be
7 another ten years before Rev 4 of Reg Guide 1.174. I
8 could be wrong, but I don't see that.

9 MEMBER STETKAR: Okay. In the interest of
10 time I just think that we've received comments from
11 let's say various parts of the agency about, well you
12 always talk about this uncertainty, what do we do with
13 this uncertainty? What does it mean?

14 And I always give people the example that
15 back in 2006, if my financial advisor had told me
16 there was a three percent probability that I would
17 loose 50 percent of net worth, I might have made
18 different investment decisions compared to my
19 financial advisor saying, well we think there might be
20 a slight downturn.

21 We think there might be a slight downturn
22 might have been his best estimate, mean value. But if
23 I look at decision making and margins, sometimes
24 understanding that uncertainty distribution gives me
25 information as a decision maker about what is the

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1 chance that I might exceed my level of comfort. It
2 might be different from another decision maker's level
3 of comfort. But that's a decision making process.

4 Or conversely, is there a very high
5 likelihood that I'm well below that so that I don't
6 need to worry precisely about what that mean value is
7 because, considering all sources of uncertainty, my
8 margins are well below my criteria which again might
9 be different from another person's criteria. But at
10 least it presents the information in a way that the
11 decision makers, if it's a group of decision makers,
12 all have the same information.

13 MEMBER KIRCHNER: May I observe that one
14 answer from the staff might be a reasonable balance of
15 layers of defense.

16 MS. DROUIN: I don't think that we
17 disagree with you, John. I think that you raised some
18 very valid points. The challenge is that if we
19 incorporated that right now into Rev Guide and told
20 them to include the uncertainty distributions, there's
21 a ripple effect because now what do we, the staff, do
22 with that information.

23 So we would really have to develop the
24 guidance to the staff to develop that. And I think
25 Joe appropriately said, you know, we want to get this

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1 out the door.

2 MEMBER STETKAR: And I understand that to
3 be responsive to, I think the words expeditiously was
4 used in some points in an SRM --

5 MS. DROUIN: SRM.

6 MEMBER STETKAR: -- to address the concerns
7 about defense-in-depth. I understand your concerns
8 there. Yes.

9 Are there, any other members have any
10 questions for the staff? If not, are there any
11 members of the public in the room who would like to
12 make a comment?

13 (No audible response)

14 MEMBER STETKAR: I'm not seeing a stampede.
15 Are there any members of the public on the bridge line
16 who would like to make a comment? If so, just please
17 speak up. Identify yourself and make your comments.

18 (No audible response)

19 MEMBER STETKAR: Hearing none, I give you
20 five minutes margin. It's back to you Dr. Bley.

21 CHAIRMAN BLEY: Well done, Mr. Stetkar.
22 Thank you. At this point we will be off the record
23 for the rest of the week.

24 (Whereupon, the meeting in the above-
25 entitled matter was concluded at 3:40 p.m.)

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Regulatory Guide 1.174, Revision 3

Briefing for the Advisory Committee on Reactor Safeguards Full Committee

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October 5, 2017

Overview

- Background
- Process
- Recent accomplishments
- Public comments on DG–1285
- Related changes to Regulatory Guide (RG)
- ACRS Subcommittee Members' feedback
- Path forward

RG 1.174 Working Group

- RES/DRA
 - Anders Gilbertson
 - Mary Drouin
 - Don Marksberry
- NRR/DRA
 - Mehdi Reisi Fard
 - CJ Fong
- NRO/DSRA
 - Martin Stutzke
 - Donnie Harrison
(Formerly NRO/DSRA,
now NMSS/FCSE)
- OGC – Sheldon Clark
- NSIR – Joseph Rivers

Background

- SRM–SECY–11–0014 (2011): Revise defense-in-depth (DID) guidance in RG 1.174
- Proposed draft of RG 1.174, Revision 3, was published in 2012 as DG–1285 for public review and comment
 - RG 1.174, Revision 3, was delayed due to ongoing work on DID
 - Public comments were received but not dispositioned
- SRM–SECY–15–0168 (2016): Expeditiously complete the revision to RG 1.174

Process

- Inter-Office Working Group formed (RES, NRR, NRO, and OGC; NMSS, NSIR observing)
- Effort overseen by Inter-Office Division-Level Steering Committee (RES/DRA, NRR/DRA, and NRO/DSRA)
- Frequent public meetings, including briefings for the ACRS and both the NRC and industry Risk-Informed Steering Committees

Recent Accomplishments

- April 7, 2017: Revised DG–1285 issued for public comment
- May 11, 2017: Briefed the Commission on status of changes to RG 1.174
- July 2017: Completed revision of DG–1285 that addresses all public comments
- August 14, 2017: Briefed DEODs and Senior Management
- August 24, 2017: Briefed ACRS Subcommittee

Public Comments on DG–1285 (2017 and 2012) Resulting in Changes

- Confusion over the proposed hierarchy of the DID considerations (previously called factors)
- DID examples not well received
- Guidance needed on types of licensing basis changes (e.g., temporary versus permanent)
- Relative terms need clarification
- Inclusion of relevant language from other NRC guidance documents
- Numerous clarifications and editorial changes

Public Comments on DG–1285 (2017 and 2012) Resulting in No Changes

- Reverse terminology changes related to “PRA acceptability”
- Remove the DID consideration (formerly known called a factor) on maintaining the intent of the plant’s design criteria
- Related to submittal of past plant changes
- Relationships between risk-informed decisionmaking principles
- Limitations on when DID should be addressed

Changes Based on Public Comments

- Described each of the seven DID considerations and reverted to original structure of DID guidance
- Removed DID examples
- Provided guidance on how to address each DID consideration
- Included guidance on risk aggregation with a stronger tie to NUREG–1855, “Guidance on the Treatment of Uncertainties Associated with PRAs in Risk-Informed Decisionmaking”
- Emphasized that the acceptance guidelines’ boundaries are gradual transitions
- Adopted relevant and useful language from other NRC guidance documents (e.g., the Standard Review Plan)

Changes Based on Public Comments (cont')

- Developed language on transitioning from large release frequency and conditional containment failure probability to large early release frequency for new reactors (SRM–SECY–10–0121; SRM–SECY–12–0081 Option 2C)
- Developed language on containment performance expectations for new reactors (SRM–SECY–12–0081 Option 2C)

Changes Based on Public Comments (cont')

- Changed language related to the terms PRA acceptability, technical adequacy, quality etc.
 - DPO–2016–001 raised issues on inconsistent language usage
 - EDO supported RES OD decision that the staff should adopt the term “PRA acceptability” rather than “PRA quality” or “technical adequacy”
 - RIS under development to communicate staff’s plan to implement EDO resolution across the agency’s guidance to licensees

ACRS Subcommittee Members' Feedback from 8/24/17 Meeting

- Applicability of guidance to containment performance for new reactors
- Inconsistencies between different parts of the DID guidance
- Speculative statements should be avoided
- Different treatment of acceptance guidelines
- Use of terminology related to uncertainty
- Submittal documentation does not include uncertainty distributions
- The scope and level of detail of DID changes are appropriate and consistent with treating DID as one aspect of integrated risk-informed decisionmaking

Path Forward

- Staff resolves any potential ACRS Full Committee feedback
- Final Office reviews and concurrence
- March 2018: Final publication

Considerations for Evaluating the Impact of the Proposed Licensing Basis Change on Defense-in-Depth

1. Preserve a reasonable balance among the layers of defense.
2. Preserve adequate capability of design features without an overreliance on programmatic activities as compensatory measures.
3. Preserve system redundancy, independence, and diversity commensurate with the expected frequency and consequences of challenges to the system, including consideration of uncertainty.
4. Preserve adequate defense against potential common-cause failures.
5. Maintain multiple fission product barriers.
6. Preserve sufficient defense against human errors.
7. Continue to meet the intent of the plant's design criteria.