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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

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ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
(ACRS)

ABWR SUBCOMMITTEE MEETING

OPEN SESSION

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THURSDAY

APRIL 21, 2011

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ROCKVILLE, MARYLAND

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The Advisory Committee met at the
Nuclear Regulatory Commission, Two White Flint
North, Room T2B3, 11545 Rockville Pike, at 8:30
a.m., Said Abdel-Khalik, Chairman, presiding.

1 COMMITTEE MEMBERS:

2 SAID ABDEL-KHALIK, Chairman
3 JOHN W. STETKAR, Member-at-Large
4 J. SAM ARMIJO, Member
5 SANJOY BANERJEE, Member
6 DENNIS C. BLEY, Member
7 CHARLES H. BROWN, Member
8 MICHAEL L. CORRADINI, Member
9 HAROLD B. RAY, Member
10 WILLIAM J. SHACK, Member

11 NRC STAFF PRESENT:

12 WILLIAM 'BUTCH' BURTON, NRO/DNRL/NRGA
13 DON DUBE, NRO/DSRA
14 MICHAEL EUDY, NRO/DNRL/NGE2
15 ROCKY FOSTER, NRO/DNRL/BWR
16 EDWARD FULLER, NRO/DSRA/SPRA
17 TODD HILSMIEIER, NRO/DSRA/SPRA
18 ALFRED ISSA, NRO/DCIP
19 STACY JOSEPH, NRO/DNRL/BWR
20 EARL LIBBY, NRO/DNRL/NRGA
21 GARRETT NEWMAN, NRO/DCIP/CQVB
22 RAM SUBBARATNAM, NRO/DNRL/NRGA
23 OMID TABATABAI, NRO/DCIP
24 MARK TONACCI, NRO/DNRL/BWR
25 GEORGE WUNDER, NRO/DNRL/BWR

1 MAITRI BANERJEE, Designated Federal Official

2 ALSO PRESENT:

3 COLEY CHAPPELL, NINA Licensing, STP 3&4

4 EVANS HEACOCK, NINA Design Engineering Lead,

5 STP 3&4

6 SCOTT HEAD, NINA Manager, Regulatory Affairs,

7 STP 3&4

8 GENE HUGHES, NINA PRA STP 3&4/ETRANCO

9 BILL MOOKHOEK, NINA Supervisor, Licensing, STP

10 3&4

11 FRED PULEO, NINA Licensing, STP 3&4

12 RICKY SUMMITT, RSC

13 TIM WALKER, NINA Manager, Quality, STP 3&4

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

8:28 a.m.

CHAIRMAN ABDEL-KHALIK: The meeting will now come to order.

This is a meeting of the ABWR Subcommittee of the Advisory Committee on Reactor Safeguards.

I am Said Abdel-Khalik, Chairman of the Subcommittee.

ACRS Members in attendance today are: Charlie Brown, Bill Shack, Mike Corradini, Sam Armijo, Dennis Bley, John Stetkar, Sanjoy Banerjee and Harold Ray.

Ms. Maitri Banerjee is the Designated Federal Official for this meeting.

In today's meeting we are scheduled to discuss Chapters 1, 17 and 19 of the staff's Safety Evaluation Report related to the SOL application submitted by NINA for two ABWR units at their STP site.

These chapters were presented to us last year when the SERs had open items. In today's meeting the staff will discuss how they have resolved these open items. The staff and the applicant may also discuss follow-up action items from previous ABWR

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1 Subcommittee meetings.

2 Earlier this week, the NRG the major U.S.
3 partner in NINA announced that it will no longer
4 invest in the project. To the extent possible, I would
5 like for the applicant and the staff to briefly
6 discuss the potential impact of that announcement on
7 progression of this review and whether the further
8 addition against issuance of a COL to a foreign-owned
9 entity would come into play.

10 The rules for participation in today's
11 meeting were announced in the *Federal Register* on
12 April 4, 2011 for an open/closed meeting. Parts of
13 this meeting may need to be closed to the public to
14 protect information proprietary to the applicant or
15 other parties. I'm asking the NRC staff an the
16 applicant to identify the need for closing the meeting
17 before we enter into such discussion and to verify
18 that only people with the required clearance and need
19 to know are present.

20 We have a telephone bridge line for the
21 public and stakeholders to hear the deliberations.
22 This line will not carry any signal from this end
23 during the closed portion of the meeting.

24 To minimize disturbance, the line will be
25 kept in listen-in only mode until the end of the

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1 meeting when 15 minutes are allocated for public
2 comments.

3 As the meeting is being transcribed, I
4 request that participants in this meeting use the
5 microphones located throughout the room when
6 addressing the Subcommittee. Participants should
7 first identify themselves and speak with sufficient
8 clarity and volume so that they can be readily heard.

9 We will now proceed with the meeting, and
10 I call on Mr. Mark Tonacci of NRO to begin the
11 presentation.

12 MR. TONACCI: Good morning, Mr. Chairman,
13 Members of the Committee. We are delighted to be here
14 and look forward to an engaging discussion today.

15 I did want to ask when would you like us
16 to address the recent press release? Do you want to
17 do that first off?

18 CHAIRMAN ABDEL-KHALIK: Yes.

19 MR. TONACCI: Okay. I would prefer to
20 make my comments after South Texas has a chance to
21 address it. Is that okay, Scott?

22 MR. HEAD: That's fine.

23 CHAIRMAN ABDEL-KHALIK: Mr. Head?

24 MR. HEAD: Yes, sir. I also appreciate
25 the opportunity to brief the ACRS again today on the

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1 topics. And, obviously, it's somewhat of a timely
2 briefing given the announcements of this week.

3 I hope most of what I say today has been
4 seen in print or been conveyed already. I will focus
5 on certain aspects of it regarding the continued
6 review.

7 Just for everyone's information, confirm
8 that the NRC did announce that they're going to
9 basically cease funding for the project and are, in
10 fact, are writing off the investment.

11 MR. TONACCI: You mean NRG. You said NRC.

12 MR. HEAD: Well, thank you for that.

13 That represents or it's caused by a number
14 of issues. One, obviously, some of the uncertainty
15 surrounding the results or the impact of Fukushima.
16 Fukushima did also, obviously, impacted one of our
17 potential investors, and that's a significant impact
18 of being able to continue the project.

19 And short of -- maybe not as obvious to
20 maybe the discussions that you've seen before, but
21 quite frankly natural gas prices has made it very
22 difficult to get long term contracts in the State of
23 Texas. And that altogether at this point in time has
24 put NRG in a position that they announced.

25 What's crucial, though, is that the

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1 corporate structure for NINA remains the same. At
2 this point in time, NINA's 88 percent owned by NRG and
3 12 percent owned by Toshiba. The crucial aspect of
4 the licensing review, though, is all of the funding
5 right now is provided by Toshiba. Toshiba has
6 providing the majority of the funding for the last
7 number of months, but now it'll be a 100 percent
8 Toshiba at this point in time.

9 Now what that will represent is that at
10 some point in time later in the year we will be
11 approaching the NRC regarding a change in the
12 corporate structure and the ownership structure of the
13 project. And we will at that point in time be dealing
14 with the foreign ownership, the ramifications that
15 come with significant foreign ownership of the
16 project. So, that's something that we will presenting
17 to the NRC in a new Part 1 later this year.

18 Like I say, for the review, for the
19 licensing review and to support the COL effort that is
20 funded. Toshiba has designated that they would like
21 to move forward with the COL review and the efforts to
22 obtain a COL. And so that's why we're here and why
23 we're continuing to support the NRC review, and expect
24 us to do that.

25 There are significant decisions, though,

1 that we have to make later in the year. We look
2 forward to an understanding of the ramifications of,
3 you know assessments of Fukushima and what that would
4 or what expectations would come with that. So we
5 would look forward to an understanding of that and
6 what that would mean to the project.

7 And, obviously, we have the review that
8 will be associated with the corporate structure that
9 we present later in the year.

10 I think that summarizes pretty much where
11 we are with respect to the review. Is there any
12 questions for me at this point in time on the topic?

13 MEMBER ARMIJO: Well, I have a question.

14 MR. HEAD: Sure.

15 MEMBER ARMIJO: Just basically on what you
16 told me, it implies that there could be a
17 restructuring of NINA with Toshiba becoming the
18 majority --

19 MR. HEAD: Yes, sir.

20 MEMBER ARMIJO: Or is that announced
21 already, or have I missed that?

22 MR. HEAD: I think it's inherent that as
23 we move forward that Toshiba is going to be providing
24 all the funding that the ownership structure --

25 MEMBER ARMIJO: Will change, yes.

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1 MR. HEAD: -- will change.

2 MEMBER ARMIJO: Yes. That's why this
3 issue came up.

4 MR. HEAD: Actually, but that structure
5 hasn't changed yet because, you know there are
6 expectations regarding foreign-ownership and control
7 that would be in play if it has changed. But that has
8 not changed at this point in time.

9 MEMBER ARMIJO: No, I understand.

10 MR. HEAD: For it to change even as an
11 applicant we have to invoke certain foreign-ownership
12 and control features. We've already presented those
13 features to the NRC and they've been reviewed. So we
14 believe we have that in place and ready to invoke as
15 those changes are made.

16 CHAIRMAN ABDEL-KHALIK: Okay. Would the
17 staff care to add their comments on this topic at this
18 time?

19 MR. TONACCI: Yes. Thank you, Scott, for
20 setting the stage there.

21 The NRC has not stopped funding work on
22 this project. We are continuing forward and the
23 licensing work continues on at the same relative
24 priority, the same depth of reviews and the same
25 schedule. With respect to everything that we're doing

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1 today, it was what we were doing yesterday and last
2 week. And so we are continuing on as if there were no
3 change for the licensing work.

4 CHAIRMAN ABDEL-KHALIK: Okay.

5 MR. TONACCI: Thank you.

6 CHAIRMAN ABDEL-KHALIK: Thank you.

7 At this time we'll go to the applicant.

8 MR. HEAD: And we'll present Chapter 1.

9 Our standard agenda, myself and Coley will be involved
10 in the presentation on this. And I will turn it over
11 to him at this time.

12 MR. CHAPPELL: Good morning, Mr. Chairman
13 and other Members. I'm Coley Chappell of Licensing
14 for STP 3&4. And it's a pleasure to be here today.

15 Just want to recap Chapter 1. We provided
16 the initial presentation to ACRS Subcommittee on March
17 2, 2010. We have since provided an update on the
18 change in licensee between South Texas Project Nuclear
19 Operating Company and Nuclear Innovation North
20 America. This transition is so that NINA can focus on
21 design and construction of the units and South Texas
22 Project Nuclear Operating Company, which is primarily
23 an operating company, can then focus on operations.
24 And this transition would revert back after the ITAAC
25 are satisfied of the of the 103G finding.

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1 Our direct base in Chapter 1 include our
2 restructuring of the engineering procurement
3 construction group. We've incorporate Shaw as the
4 prime EPC contractor so that Toshiba America Nuclear
5 Energy, Toshiba and Shaw are acting in conjunction
6 with their subcontractors. Sargent & Lundy continues
7 to provide architect and engineering services, and
8 Westinghouse provides other services, including I&C
9 supports.

10 Items of interest since our last meeting,
11 We previously talked about all the Tier 1 departures
12 in Chapter just as an overview. We've added three new
13 Tier 1 departures in the course of the last 12 months
14 or so.

15 We discussed at our last meeting on
16 Chapter 10 a new Tier 1 departure that added the
17 condensate booster pumps on the Tier 1 figure. And
18 that was covered on April 6th.

19 We also revised the definition of "as-
20 built" in our Tier 1 section of definitions. So this
21 included more description about how physical
22 properties are determined and how that can be impacted
23 by testing at another location and then insulation on
24 site. This change was done to be consistent with the
25 definition that was agreed between staff and industry,

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1 and as shown in NEI 08-01.

2 The third Tier 1 departure to discuss was
3 presented with Chapter 6. The ABWR DCD certified
4 design was based on Regulatory Guide 1.82 Rev 0. It
5 provided a 50 percent blockage valve for suction
6 strainers for emergency core cooling system, the
7 residual heat removal system which provides a low
8 pressure core flood function, pressure core flood
9 and the reactor core isolation cooling net positive
10 suction heads were revised in the descriptions in Tier
11 2 as well as in the ITAAC to reflect the adoption of
12 Revision 3 of Regulatory Guide 1.72 which provides a
13 mechanistically determined head loss for the net
14 positive suction head calculations.

15 In summary for Chapter 1. We have
16 addressed all the COL information items. There are no
17 outstanding requests for additional information. And
18 there were no STP associated action items for Chapter
19 1 from ACRS.

20 CHAIRMAN ABDEL-KHALIK: Are there any
21 questions from the Committee. Okay.

22 At this time, perhaps the staff can
23 present Chapter 1?

24 MS. JOSEPH: Good morning.

25 My name is Stacy Joseph I'm the Chapter PM

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1 for Chapter 1.

2 I'm joined here today but I'm going to be
3 giving the presentation, but Earl Libby, who is our
4 resident expert on ISG-022 on construction and pacts
5 at multi-unit sites is here to answer any questions
6 and probably serve for moral support on any questions
7 on Part 39.47 new licenses.

8 This is a list of open items at the end of
9 the Phase 2 review. The items in bold are the items
10 we're going to be discussing in a little bit greater
11 detail today.

12 I do want to point out that I noticed in
13 preparing this presentation that the numbering of the
14 open items in Phase 2 SER as compared to the Phase 4
15 SER, they're not necessarily consistent. A couple of
16 the open items are numbered differently. That will be
17 reconciled in the final revision of the SER.

18 CHAIRMAN ABDEL-KHALIK: So you will not
19 discuss Part 30.47?

20 MS. JOSEPH: We're not going to be
21 discussing it. I can give you an update of where we
22 are at this point.

23 CHAIRMAN ABDEL-KHALIK: Please. Thank
24 you.

25 MS. JOSEPH: Okay. The first open item is

1 also an ACRS action item and it deals with plant aging
2 management. The Members noted that aging management
3 should be an issue that should be considered from the
4 first day forward and not just before license renewal.
5 And the staff agreed to go back and look at this item
6 and determine if any additional information is
7 required.

8 We went back, and after reviewing the FSAR
9 and conferring with license renewal counterparts in
10 NRR, the staff determined that the applicant has
11 satisfied the COL license information item and that no
12 additional information is required.

13 The applicant's FSAR described that in
14 designing the plant to operate for 60 years the
15 applicant will be taking steps in the design process,
16 in component material selection, condition monitoring
17 and maintenance programs to ensure that the plant will
18 be operational for its initial license and any
19 anticipated renewals.

20 When the time comes to apply for a license
21 renewal, the applicant will need to show that they
22 meet the requirements of Part 54 which includes being
23 able to manage the effects of aging for an extended
24 period of operation.

25 MEMBER STETKAR: Stacy, that's a very

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1 carefully worded statement. And the statement in the
2 SER is also carefully worded. It implies that they
3 really -- although in the current version of the SER
4 the applicant states that provisions described in
5 NUREG-1801 Generic Aging Lessons Learned/GALL Report
6 will be initiated to support license renewal
7 submittal. And in the SER your closure of that open
8 item says that you "find the response acceptable. If
9 the applicant chooses to apply for license renewal the
10 requirements of 10 CFR 54 will apply."

11 MS. JOSEPH: Correct.

12 MEMBER STETKAR: That to me says that
13 they're not committing to implement any aging
14 management programs today, on day one, and you agree
15 with that? Is that true?

16 MS. JOSEPH: That is true. License
17 renewal, staff wants to make sure that license renewal
18 is handled appropriately in that license renewal.

19 MEMBER STETKAR: I understand --

20 MS. JOSEPH: And that we're not making any
21 specific commitments at this point.

22 MEMBER STETKAR: -- the attorney
23 interpretation. I just wanted to make sure I
24 understood what they were committing to and what the
25 staff was accepting.

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1 MR. CORRADINI: What sorts of things do
2 you worry about, John, that would occur at this stages
3 in the final --

4 MEMBER STETKAR: Corrosion management. I
5 mean, everything that we review on the license renewal
6 process that we look at. For example, we pay
7 attention to operational experience. In some cases
8 during the 40 year operation of the plant they have
9 operating experience that implies that had they
10 implemented the aging management programs during the
11 initial 40 year license period, they might not have
12 had those operational issues with, well there's buried
13 pipes or cables or, you know whatever issues come up.

14 MR. CORRADINI: But their maintenance
15 procedures wouldn't necessarily look through that?
16 That's what I guess --

17 MEMBER STETKAR: In principle they would
18 in the same way as any other operating plant in
19 principle would.

20 CHAIRMAN ABDEL-KHALIK: Does that answer
21 your question?

22 MEMBER STETKAR: It certainly answers my
23 question.

24 MS. JOSEPH: Okay. The next open item
25 dealt with closing out the final issue for the

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1 alternate vendor qualification. At the time of the AVG
2 inspection in Japan, Toshiba had not yet completed
3 their derivative documents for the hydrodynamic loads,
4 so the staff went back and performed an audit earlier
5 last year.

6 After auditing the Toshiba documentation
7 last year, the staff determined that Toshiba did have
8 access to the proprietary information required to
9 reconstitute the forcing functions. And in addition,
10 the staff also determined that Toshiba had access to
11 the correlation data and drawings required to supply
12 the X-quencher in the certified design.

13 Closure of this open item, the staff was
14 able to determine that Toshiba is qualified to supply
15 the certified design.

16 CHAIRMAN ABDEL-KHALIK: You're hitting the
17 microphone.

18 MS. JOSEPH: You're right, I am.

19 CHAIRMAN ABDEL-KHALIK: Just move it out
20 of the way.

21 MS. JOSEPH: All right. Moving on.

22 In Revision 4 of the STP FSAR the
23 applicant incorporated by reference the STPNOC
24 aircraft impact application to amend the ABWR
25 certified design. In the staff's SER October 14th of

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1 las year the staff found the STP application to amend
2 the certified design acceptable and is currently
3 undergoing rulemaking.

4 To complete their review of the COL the
5 staff needed to determine if there were impacts of
6 implementing the AIA on the COL and vice versa. So the
7 staff asked the applicant to identify if there would
8 be any changes to the COL needed to implement the AIA,
9 to which the applicant responded "No, they would
10 simply incorporate by reference the application with
11 no other changes."

12 And next the staff asked the applicant to
13 identify if any of the COL departures had an effect on
14 the key design features credited in the aircraft
15 impact assessment. The applicant responded "No, that
16 the COL departures did not impact any of the key
17 design features." The staff followed up just by
18 asking the applicant to describe how they came to that
19 conclusion. We asked them to provide a list of
20 departures that they considered that could possibly
21 have an impact on the assessment and also to describe
22 the evaluation process that they took in looking at
23 those departures.

24 Finally, the staff requested the applicant
25 to document their conclusion in the COL application.

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1 Through their responses the staff determined that the
2 applicant did evaluate the impact of their departures
3 on their assessment and that the COL application meets
4 the requirements of 10 CFR 51.50.

5 Okay. Next open item has to do with the
6 impact of construction activities on Units 1 and 2.
7 At the time of the SER with open items the staff was
8 working on staff guidance for the impact of
9 construction of new plants on operating units at
10 multi-unit sites. Since then the staff has issued the
11 Draft Interim Guidance for public comment.

12 The SPT FSAR had already provided the
13 evaluation of potential hazards to SSCs important to
14 safety at Units 1 and 2 and the FSAR had also provided
15 a description of the managerial and administrative
16 controls.

17 To address the additional guidance in ISG-
18 022, the applicant provided a copy of their procedure,
19 interface evaluations of Units 3 and 4 on Units 1 and
20 2. This procedure contains guidance regarding the
21 evaluation of construction impacts on the operating
22 units which is consistent with the guidance the staff
23 put out in ISG-022.

24 The staff reviewed both the FSAR and the
25 procedure and determined that the requirements of 10

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1 CFR 52.79(a) (31) have been met.

2 Okay. The next three open items have been
3 removed from the Chapter 1 SER at this time and will
4 be included as appendices at a later date.

5 The Tier 1 exemptions evaluations will be
6 completed once all the FSAR sections -- Chapters are
7 done.

8 The financial qualifications review, as
9 you can understand, is still ongoing at this point.

10 And for the Parts 30, 40 and 70 licenses,
11 at this time the applicant has withdrawn their
12 application for a license under Parts 30 and 40. The
13 Part 70 license application review is still ongoing.
14 As of this point the applicant submitted a cross
15 reference table to the staff identifying where the
16 information required for the Part 70 license is
17 throughout the application. And as of this point the
18 staff has not yet completed their review.

19 CHAIRMAN ABDEL-KHALIK: But what is the
20 impact of the withdrawal of the application for Parts
21 30 and 40?

22 MR. FOSTER: They're not seeking a 30/40
23 license at this time. They're evaluating possible
24 alternatives and when the timing of that would be more
25 appropriate for their needs. So, as far as the

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1 operating license --

2 CHAIRMAN ABDEL-KHALIK: Any comments from
3 the applicant in that regard?

4 MR. HEAD: Yes, sir. Depending on our
5 schedule, we would submit the license application for
6 that at a later date.

7 CHAIRMAN ABDEL-KHALIK: Okay. Thank you.

8 MS. JOSEPH: Okay. These last three open
9 items in Chapter 1 dealt with nontechnical issues and
10 were closed in this Chapter or in the case of Open
11 Item 1-8, this item was resolved in Chapter 7.

12 And that concludes my presentation.

13 CHAIRMAN ABDEL-KHALIK: Thank you.

14 Are there any questions for the staff on
15 Chapter 1?

16 Okay. Thank you.

17 MS. JOSEPH: Thank you.

18 CHAIRMAN ABDEL-KHALIK: We're just trying
19 to find out if we had a follow-up questions on the
20 hydrodynamics loads issue.

21 MS. JOSEPH: Oh.

22 CHAIRMAN ABDEL-KHALIK: So we'll revisit
23 it when we talk about long-term cooling.

24 MS. JOSEPH: Yes. As far as I understand
25 that's separate from the alternate vendor review.

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1 CHAIRMAN ABDEL-KHALIK: Okay.

2 MS. JOSEPH: And that's part of long-term
3 cooling.

4 CHAIRMAN ABDEL-KHALIK: Right.

5 MS. JOSEPH: And we're working with the
6 applicant to determine on when they can address that
7 specific portion. We're hoping at the next meeting.

8 CHAIRMAN ABDEL-KHALIK: Okay. All right.
9 Thank you.

10 Okay.

11 MR. HEAD: Okay. We're going to continue
12 with the presentation on Chapter 19. We'll go through
13 introductions.

14 Joining us today is Gene Hughes assisting
15 us in the presentation and, in fact, has been involved
16 with a number of topics on the project.

17 A number of other individuals are here
18 today also to help with the discussion. And Evan has
19 joined us in case questions come up from the PRA
20 standpoint that he could help us with.

21 I'll turn it over to Coley.

22 MR. CHAPPELL: Items of interest for
23 Chapter 19 include a couple of items that have been
24 addressed since our last meeting in June of 2010
25 dealing specifically with hurricanes and inadvertent

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1 flooding in the lower drywell.

2 The South Texas Project site is still
3 located close to the Gulf of Mexico. A quantitative
4 assessment of hurricanes was performed to demonstrate
5 the risk from hurricanes --

6 MEMBER STETKAR: Is inland versus --

7 MR. CHAPPELL: And it affects the shutdown
8 risk are the external events analysis described in the
9 DCD.

10 MEMBER BROWN: How close is it to the
11 Gulf? I don't remember the answer to that as I
12 recall.

13 MR. HEAD: Fourteen is the --

14 MEMBER BROWN: Fourteen miles?

15 MR. HEAD: Yes.

16 MEMBER BROWN: Yes.

17 MEMBER ARMIJO: Long as they got you,
18 what's the elevation of the site? Is it ten feet
19 above sea level or --

20 MR. HEAD: The project grade is 34 feet.
21 I think most of what you walk around out is around 28
22 feet, like that.

23 MEMBER ARMIJO: Well, 14 miles is good.

24 MR. HEAD: Yes. There's other waterways in
25 between the actual Gulf, but you know that's the --

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1 MEMBER ARMIJO: Yes, I hear you.

2 MEMBER BANERJEE: Are there any
3 significant storm surges in that area?

4 MR. CORRADINI: The cow's out of the barn,
5 down the hill over the river and through the woods.

6 MR. HEAD: Yes, sir there have been. But,
7 I mean --

8 MEMBER BANERJEE: Not 14 miles inland?

9 MR. HEAD: Well, you know Bolivar was
10 basically wiped off during Ike, I believe was the
11 storm. But it's a barrier island and so you would
12 expect even a relatively small storm surge could have
13 gotten hit. But that was a relatively large one and
14 they were on the wrong side on the hurricane, which
15 obviously is a big --

16 MEMBER BANERJEE: Right.

17 MR. HEAD: -- part of a storm surge.

18 I think Matagorda back in the '40s or
19 somewhere in the '30s had a significant storm surge.
20 And that's one of the reasons they built their dike
21 around the city of Matagorda, which was part of our
22 presentation on the storm surge discussion that we
23 had.

24 So, obviously it's something that --

25 MEMBER BANERJEE: What was the maximum

1 storm surge in those events?

2 MR. HEAD: For those events? I don't
3 recall. But the maximum that we came up with the
4 answer evaluation that we did, did not get onto the
5 site. Because that program modeled the featured very
6 well and including the MCR embankment and the
7 Matagorda dike. You know, just an enhanced model with
8 respect to the topography and so it doesn't really
9 approach Units 3 and 4.

10 For a storm that is significantly larger
11 then we really would expect, you know a design basis
12 type --

13 MEMBER BANERJEE: Is that for a Category
14 5 that storm or --

15 MR. HEAD: We called it a Category 7 in
16 our vernacular.

17 MEMBER BANERJEE: Okay.

18 MR. HEAD: There's no such thing,
19 obviously, but it's a very significant storm.

20 MEMBER BANERJEE: So it's got peripheral
21 velocities much higher than 5? So what, 200 miles per
22 hour, something?

23 MR. HEAD: I don't know the details. But
24 it is a very significant storm. The pressures are --
25 you know, I say our discussions on it it's more like

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1 the pressures you'd find maybe in a big Pacific storm
2 that has a lot more area than the Gulf. You know,
3 that's just our discussion level. And it, obviously,
4 hits on the wrong side. You know, it's got to hit so
5 that we get the bad side of the storm to even generate
6 the storm surge that we saw in the analysis.

7 And, obviously, you know that's a crucial
8 -- you know for our location hurricanes are a
9 significant event for us. And in fact, here in a
10 slide here we'll discuss more about how 1 and 2 and 3
11 and 4 would react to --

12 MEMBER BANERJEE: What was the storm surge
13 model you used?

14 MR. HEAD: ADCIRC was the one we picked.

15 MR. CORRADINI: Since he started this,
16 that's a commonly used technique for estimating
17 effects?

18 MR. HEAD: Well, it's a latest -- I'm
19 going to say more state-of-the-art than the one that
20 we had originally used. And it's becoming more
21 common, I believe.

22 MR. CORRADINI: Is it calibrated based on
23 historical events to essentially match them as you
24 then predict and extrapolate?

25 MR. HEAD: Yes. My understanding is that

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1 all takes place as you go through. I think after
2 every hurricane that people take their models and see
3 how they did. And that's --

4 MR. CORRADINI: Sure. The name again, I'm
5 sorry.

6 MR. HEAD: ADCIRC, A-D-C-I-R-C. And it's
7 in our presentation.

8 MR. CORRADINI: That's fine. That's fine.
9 We'll find it.

10 MR. HEAD: Lots of real interesting --

11 MEMBER BANERJEE: The problem with these
12 is the shear stress on the ocean stress, that's not
13 properly understood because there is this region where
14 there's very high storms you get, you know a very
15 strong droplet field. So it's very hard to know
16 exactly what the stress is that drives the water.

17 MR. HEAD: It was not in common use
18 because of the size and complexity of it. But as--

19 MEMBER BANERJEE: There's probably not
20 much data in that range, that's the problem.

21 MR. HEAD: Well, I believe you could find
22 a number of paper on it.

23 MEMBER BANERJEE: That's fine.

24 MR. HEAD: But we obviously assessed
25 before we embarked upon it.

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1 MR. CORRADINI: That's fine. I just
2 wanted to know the name. Thank you.

3 MR. HEAD: All right. Go ahead.

4 MR. CHAPPELL: The focus of this
5 particular discussion on hurricanes emerged from a RAI
6 19.01-31 that asked questions about the dual unit
7 departure. STP 3 & 4 has a dual unit departure. The
8 ABWR DCD design is for a single unit.

9 One of the systems that was a single
10 system that supplies both Units 3 and 4 is the AC-
11 independent water addition function, which is the fire
12 water system, fire water addition system. The fire
13 protection pump house and the fire protection system is
14 shared between the units.

15 So we wanted to look at the impacts of
16 hurricanes and high winds on the AC-independent water
17 addition function. It's significant to risk for the
18 ABWR. It produces the offsite and other core damage
19 frequency events because it has AC-independent
20 functions.

21 Skipping ahead to the last bullet it gives
22 you an outline it give you an outline of what it is.
23 It uses the installed fire water system. So rather
24 then have just procedures to connect hoses or
25 different -- it has installed piping, installed valves

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1 and it uses a portion of the RHR system to be able to
2 connect the diesel driven fire pump that's located in
3 the fire pump house where we have the ability to
4 connect up a portable pump, described as a fire truck
5 or pumper truck in the DCD. And we also have a
6 portable skid-mounted diesel driven fire pump that we
7 describe in this RAI. So that provides an installed
8 AC-independent pump and then two portable pumps.

9 MEMBER BROWN: The rating of the diesel
10 driven pump, at least according to some of the
11 documents; I can't remember if it was the SER or
12 whether it was -- I guess it was you alls paperwork
13 said that that thing was roughly about 600 gpm and
14 could pump into the RHR system with certain back
15 pressures. But part of the question is the rating of
16 the pump itself in terms of its collates and the
17 portable diesel skid-mount are they the same? I
18 couldn't find any of these statements.

19 MR. CHAPPELL: The requirement for the AC-
20 independent water addition function to provide a
21 specified flow, a minimum of approximately 600--

22 MEMBER BROWN: Yes, .04 cubic meters per
23 second to a .06.

24 MR. CHAPPELL: A .06. And that roughly is
25 about 600 to 1,000 gallons per minute.

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1 MEMBER BROWN: Yes. Yes.

2 MR. CHAPPELL: So it has to be within that
3 range to satisfy the requirement for a portable pump.

4 MEMBER BROWN: Okay. So they will all
5 meet that particular flow rate if it's not explicitly
6 stated for the pumper truck or the portable diesel
7 skid-mount as it is for the diesel driven pump that's
8 co-located in the fire pump firehouse, whatever you
9 call it, pumper house?

10 MR. CHAPPELL: In order to be credited for
11 the AC-independent water addition function it has to
12 be that flow rate.

13 MEMBER BROWN: Is there someplace where it
14 says that?

15 MR. CHAPPELL: We can find the reference.
16 There's an item in the DCD. I believe there's --

17 MEMBER BROWN: I look back on the Rev. 4
18 of the DCD and I have to admit, I struggled trying to
19 find it. So --

20 MR. CHAPPELL: Right.

21 MEMBER BROWN: -- I was just curious.

22 I'll wait for my other question. You're
23 going to be done with this, you're going to talk about
24 high winds and that, so I'll just wait for my next
25 question.

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1 MR. CHAPPELL: Okay.

2 MEMBER STETKAR: Coley, before you leave
3 this let me ask: We had quite a bit of discussion
4 about hurricanes in the Chapter 2 review. Return
5 periods and three second peak wind gusts.

6 As I understand it, the design basis three
7 second peak wind gusts, I'm not talking about tornados
8 right now because it's a little different loading, is
9 a 100 year return period of a peak wind speed three
10 second gusts of 139 miles an hour. I'll call it 140
11 to round it off. That's roughly in the middle of a
12 Category 2 hurricane, it's not a Category 7.

13 Category 7, as you characterize it, would
14 be sustained wind speeds but you're really designed
15 for three second wind gust loading.

16 So the question, you know from the PRA
17 perspective if we get out of design basis licensing
18 is did -- and I haven't seen the response to the RAI
19 so I don't know what was submitted, unfortunately.

20 In the PRA did you look at the actual
21 frequency with uncertainty of peaking wind speeds and
22 the fragility of offsite power, you know structures
23 and such, to develop a likelihood of structural
24 failures and offsite power failure? Did you do that
25 kind of a formal analysis in that response?

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1 MR. CHAPPELL: The response went through
2 quite a number of revisions and it looked specifically
3 at the structure that houses the AC-independent water
4 addition function --

5 MEMBER STETKAR: Okay. But that's --

6 MR. CHAPPELL: -- is a nonsafety
7 structure.

8 MEMBER STETKAR: Okay. That's the AC
9 water. I'm talking about the entire plant to have a
10 sense of --

11 MR. CHAPPELL: Okay.

12 MEMBER STETKAR: -- what the risk impact
13 from hurricanes are.

14 MR. CHAPPELL: I know external events were
15 looked at. I don't have that information right now.

16 MR. HUGHES: Yes. Excuse me. I'm Gene
17 Hughes. I'm supporting NINA and have worked on this
18 project for quite a while.

19 The response to the question includes a
20 case in which the structures onsite that were
21 nonsafety-related, the non-key structure were assumed
22 to be lost. And the 200 year recurrence interval
23 hurricane was taken as a case. And the core damage
24 frequency was estimated to be in the three minus eight
25 kind of range.

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1 There was not an uncertainty analysis, but
2 there was a series of different sets of assumptions
3 and values within an order of magnitude or so of that
4 value where it possibility created from different
5 assumptions. And the conclusion of that was that the
6 basic assumption that this did screen was still
7 upheld.

8 So, it wasn't a detail rigorous analysis
9 of all of the different spectrums of the hazard, but
10 this particular case was chosen, looked at and
11 submitted.

12 MR. HEAD: I might just add, and part of
13 the reason that the numbers ended up the way it did is
14 that the portable diesel driven pump will be in a
15 Category 1 structure when the hurricane arrives.

16 MEMBER BROWN: That's the firehouse?

17 MR. HEAD: Yes, sir. WE assume the
18 firehouse is, you know basically destroyed.

19 MEMBER BROWN: So the diesel driven pump
20 will be someplace else?

21 MR. HEAD: Yes, sir.

22 MEMBER BROWN: Well, I got the flavor from
23 reading the DCD and the other paperwork that it was
24 co-located within the pump house.

25 MR. HEAD: Well it can be in many

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1 different places. But when the hurricane is coming--

2 MEMBER BROWN: Not the portable one. I'm
3 talking about the one diesel driven AC -- the first
4 one up there.

5 MR. HEAD: Yes, sir. Yes.

6 MEMBER BROWN: That's the one? Okay.

7 MR. HEAD: That is in --

8 MEMBER BROWN: That's in the firehouse?

9 MR. HEAD: That's in the firehouse.

10 MEMBER BROWN: Okay.

11 MR. HEAD: And our calculations assume
12 that a certain wind loading it disappears. The
13 portable, the last pump described there, will be
14 located in a Category 1 structure, which is the same
15 thing that Unit 1 and 2 does with their portable pump
16 to ensure its availability following a hurricane.

17 MEMBER BROWN: If the firehouse pump
18 losing where your connections are to the RHR system
19 itself, can you still get to it?

20 MR. HEAD: No, sir. Yes, the connections
21 are located in a different place and they're robust
22 and, you know basically piping. So we're --

23 MEMBER BROWN: Okay. So that's a Category
24 1 type structure as opposed to the firehouse, which is
25 not?

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1 MR. HEAD: Yes, sir.

2 MR. CORRADINI: And the logic is to bring
3 the portable pump to that connection point?

4 MR. HEAD: Yes, sir.

5 MR. CORRADINI: Okay.

6 MR. HEAD: And the fire truck protection
7 logic we haven't developed yet. And we expect in
8 today's world that it will be, you know also
9 protected. We've had times on Unit 1 and 2 where we
10 protected the fire truck, but it's not normally in a
11 Category 1 structure. But clearly that thinking will
12 evolve so that we ensure its availability also.

13 MEMBER STETKAR: And you said you took the
14 200 year return period hurricane wind speed and
15 assumed that the nonsafety-related buildings were
16 destroyed. Got any idea what that wind speed is, or
17 did you just assume that a 5 either to the minus three
18 per year or --

19 MR. HEAD: It's not identified in the RAI
20 response, I don't believe. And I don't recall.

21 MR. HEACOCK: It's 135.

22 MEMBER STETKAR: Well, I think the message
23 here is that that they have done the integrating.

24 MR. HEAD: I think it's 134.

25 MR. HEACOCK: Yes, a 134 is our basis

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1 based on the International Building Code for a
2 nonsafety structure.

3 MEMBER STETKAR: So you just assumed that
4 occurred once in 200 years?

5 MR. HEACOCK: PRA. Yes, I can't tell you
6 the return times on that, but --

7 MEMBER STETKAR: But I mean the question
8 is did you actually base the wind speed as a function
9 of return period on the historical weather records for
10 the coastal region on Matagorda By area, for example?

11 MR. HUGHES: I think it was more
12 simplistic than that. I believe it was --

13 MEMBER STETKAR: That's the sense that I
14 got.

15 MR. HUGHES: -- from a sense of once in
16 200 years there would be this type of potential loss.
17 And that value was used to calculate what the overall
18 core damage would look at as a sensitivity.

19 MEMBER STETKAR: But you didn't look at
20 the probability that that damage might occur once in
21 50 years or once in a 100 years, or once in 500 years.

22 MR. HUGHES: I would have to check the
23 file to see if that was actually looked at in
24 generating the evaluation. I don't know.

25 CHAIRMAN ABDEL-KHALIK: So will you

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1 follow-up on this item and provide an answer?

2 MEMBER STETKAR: We're going to discuss
3 later the evolution of the PRA and where it's going.
4 And this is part of that story. So I don't necessarily
5 want to dwell on any individual items in the risk
6 assessment space right at the moment until we have a
7 better understanding for the record where the PRA is
8 and how it's progressing. Because it has been a
9 somewhat convoluted path and I believe it's getting
10 less convoluted, but not completely done yet.

11 CHAIRMAN ABDEL-KHALIK: But for the time
12 being since you asked a specific question and he
13 didn't recall the answer, we'll just keep track of it.
14 And if they can provide an answer, that would be
15 appreciated. Thank you.

16 Yes, Charlie?

17 MEMBER BROWN: While we're on high winds,
18 we're probably ahead of the slide right now, but you
19 all had statement in the RAI and it was repeated
20 someplace else, affordable diesel fire driven pump
21 would be staged in that Category 1 structure. And it
22 would be, I don't know, at a time greater than two
23 hours before the expected onset of the winds greater
24 than 73 miles per hour or something like that.

25 And then you made another statement that

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1 the tornado analysis was bounded by the hurricane
2 analysis.

3 Hurricane you can kind of predict. I've
4 lived in a tornado area in the Ohio Valley and the
5 tornados come up very spontaneously. They just --
6 considers tornados maybe, but all of a sudden they
7 appear and they don't appear necessarily where
8 somebody thought they were going to appear.

9 So the two hour warning before onset of
10 high tornado warnings is problematic, or at least from
11 the one experience I had back in Louisville, Kentucky.
12 But these are worst maybe up there. We don't see them
13 as often. All I know is it popped it and it went 20
14 miles and wiped everything in its path, and it did it
15 and nobody knew it was coming.

16 So, anyway, that just seemed to be an
17 unbounded part of the calculation here in terms of how
18 you would deal with even though the high winds are
19 bounded by the hurricane analysis, the timing of
20 getting this portable pump staged seems to be more
21 problematic. So that was kind of an open question in
22 my mind when I was reading the thing.

23 MR. HEAD: Well, you know a lot of this
24 has evolved over time. There's a high likelihood that
25 pump will already be in a Category 1 structure due to

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1 other expectations on the project.

2 I would note also that it is a very large
3 site and the Unit 1 and 2 have the same capabilities.
4 And so there are a number of pumps that will be
5 available to us as a result of the tornado.

6 You know, you're right. It's not the same
7 planning phase as you have with a hurricane, but there
8 is some warning. I'm not presuming that we would move
9 equipment as a result of a tornado warning, but we
10 have actions at the station before when you see
11 tornado-like fronts coming through. Because we do see
12 them coming. So, I can't put it in the same planning
13 category as a hurricane, but then the probabilities
14 associated with that still encounter the fact that we
15 have three diesel generators, CTG, potential cross-
16 connect capabilities that I think still would allow us
17 to withstand the effects of tornado or a well targeted
18 tornado.

19 I would note also that the tornados, while
20 people might argue about the size of a tornado,
21 because of our location in the Gulf while we may be
22 able to create a Category 5 hurricane, it's hard to
23 create the big tornados in our portion of Texas.

24 MEMBER STETKAR: Okay.

25 MR. HEAD: And probably not a Wisconsin

1 tornado or something like that, I would say.

2 So that's all the reality of our location.
3 I don't know if I'm answering your question or not,
4 but obviously weather phenomena is something I
5 experience in 1 AND 2, we take very seriously. And
6 for example, even including seeing a front coming we
7 would delay diesel work, okay? That's the sort of
8 thinking you would do as part of a risk management
9 assessment is if you saw a front coming that was
10 likely to have tornados, that you would delay for what
11 in many cases is only a couple of hours, but that is
12 a loss of onsite power opportunity and so you would
13 make that kind of judgment knowing that you could have
14 a potential for that to occur.

15 So, that would be an operating perspective
16 on what you're talking about, I believe.

17 MEMBER BROWN: In my limited perspective
18 based on recent events, there were a number of
19 statements in your alls response about extremely
20 unlikely, extremely unlikely, extremely unlikely,
21 extremely unlikely. And these three devices are
22 actually the only none-electrically powered device to
23 provide cooling if they're so needed. So it just
24 struck me based on --

25 MR. HEAD: Well, that is a good point.

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1 And that's why our decisions regarding things like the
2 power truck, we might not want it on site. We might
3 want it back located in Bay City and then funded by us
4 as a fire truck capability being used by the Bay City
5 Fire Department to designated to assist us if
6 necessary. So that's not having it in the target zone
7 is definitely part of our thinking.

8 MR. CHAPPELL: But we also have other
9 systems that weren't specifically addressed here. We
10 didn't take credit for RCIC and here we didn't take
11 credit for the combustion turbine generator, both of
12 which are capable of providing coolant cooling of loss
13 of offsite.

14 MEMBER BROWN: Yes. Recent events showed
15 you didn't have electricity for quite a while.

16 MR. HEAD: I'm sorry?

17 MEMBER BROWN: Recent events showed you
18 didn't have electricity for quite a while, that's all.
19 Like a week.

20 MR. HEAD: Sir, we're obviously doing a
21 lot of thinking along those lines, too. But I would
22 think our most challenging event is still -- and has
23 proven to be in Texas the most challenging event would
24 be something like a hurricane. And as we show here
25 and as we can demonstrate based on a previous

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1 experience if you know the action that is coming and
2 you've got five days to plan for it, you can put
3 yourself in a good position with respect to not only
4 preparing for it, you got the location of staff to be
5 out of harm's way. The location of staff in the
6 station to be in the safe, the Category 1 structure.

7 So I think a comparison of a basically an
8 instantaneous event that you can't see coming versus
9 what we do in planning for a hurricane that we do see
10 coming, that there's a significant difference there
11 that, as I say, is reflected in the way we operate
12 Unit 1 and 2 and how we're operating 3 and 4.

13 MEMBER BROWN: Okay. I'm done.

14 MEMBER ARMIJO: Do you take credit for
15 batteries in these analyses, and how much battery
16 capacity do you have to run your pumps and for how
17 longer?

18 MR. HUGHES: Yes, the PRA does credit
19 battery. Do you want to --

20 MR. HEACOCK: Yes. Well, for the
21 batteries, the battery backup capability for the
22 visual and which power the RCIC is an eight hour
23 battery system.

24 MEMBER ARMIJO: Eight hours?

25 MR. HUGHES: Yes.

1 MEMBER ARMIJO: Okay.

2 MR. HUGHES: And that is credited in the
3 PRA.

4 MEMBER ARMIJO: Okay.

5 MEMBER BROWN: You also commented there
6 was about 12 hours worth of fuel oil for the portable,
7 I think it was one of the portable; any of them. I
8 don't know if they come with their own little tanks or
9 in the pumper truck. They didn't say where you got
10 the fuel for that. I presume it's got its own little
11 tank and the pumper truck. Would you have to carry
12 the tank along with it?

13 And it said 12 hours is what you had
14 available for a fuel oil.

15 MR. HEAD: Yes.

16 MEMBER BROWN: So --

17 MR. HEAD: I say, again, when we get into
18 hurricane planning, that stuff that we start thinking
19 about; where is the fuel, you know how much fuel do we
20 want to have and where do we want to have it. And,
21 like I say, it's part of our planning that we go
22 through because, you know obviously we want to know
23 where we reach out and touch for more than 12 hours
24 worth of fuel.

25 Fred, if you want to add a perspective on

1 all this?

2 MR. PULEO: Sure.

3 MR. HEAD: You're on.

4 MR. PULEO: Fred Puleo, South Texas
5 Project Nina Licensing.

6 The 12 hour fuel is the installed capacity
7 of the tank on the portable pump itself. So, I mean
8 as far as refueling of it, I think we identified that
9 we had refueling capability. So the 12 hour is the
10 stored day tank buy-in for the portable skid itself.

11 MEMBER BROWN: Okay. Yes, I got that out
12 of the reading.

13 MR. PULEO: I didn't know if you
14 understood that part or not.

15 MEMBER BROWN: Yes. No, thank you.

16 MR. HEAD: Okay. Coley, go ahead.

17 MR. CHAPPELL: Just to run through some of
18 the talking points we've already hit. Unit 3 and 4
19 plan to address a large scale event like a hurricane
20 and the fire planning is modeled after the experiences
21 of STP 1&2. So that prior to sustained winds on site
22 the units will be shutdown and we'll be starting one
23 emergency diesel generator loading it onto its safety
24 bus. And if the grid continues to become unstable,
25 additional diesel generators will be started and

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1 loaded onto their buses.

2 The portable diesel driven power pump will
3 be or it will be verified, as has already been stated,
4 in a Category 1 structure. And then RCIC
5 availability will also be made available. If, for
6 example, the units in operation at mode 3 or lower,
7 then RCIC wouldn't be available in that condition.

8 If containment is inerted, it will remain
9 inerted.

10 CHAIRMAN ABDEL-KHALIK: But the operators
11 can take manual control of RCIC, is that correct?

12 MR. CHAPPELL: The operators can initiate
13 RCIC, yes. Yes.

14 MEMBER STETKAR: That's not what he asked.
15 He said "manual control."

16 CHAIRMAN ABDEL-KHALIK: Manual control of
17 RCIC, and would that have an impact on the time that
18 the batteries would be available? Would that extend
19 the life of the batteries or the eight hours assumed
20 that --

21 MR. HEACOCK: Not typically. For example,
22 from the standpoint of -- I'm watching my cues over
23 here a little bit.

24 But the manual operation would be purely
25 that, and actually we have put in thoughts early on on

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1 the project of running RCIC manually without
2 electrical power per se. We can do it locally. We
3 can also power the instrumentation locally to make
4 sure we're seeing volume.

5 So a lot of the MOV action manual
6 operated, we could do those manually. We could open
7 up valves manually and run RCIC manually locally at
8 it.

9 So extending. Probably not actually.
10 What we would probably end up doing is that at the end
11 of the eight hours if we continued, we would man RCIC
12 locally at that point in time, but it would not
13 necessarily extend battery life.

14 CHAIRMAN ABDEL-KHALIK: So you don't think
15 the procedures would require the operators to take
16 manual control --

17 MR. HEACOCK: Well, the procedures would
18 be in place to do that.

19 CHAIRMAN ABDEL-KHALIK: It would wait
20 eight hours?

21 MR. HEACOCK: Well, no, it would be -- and
22 without having all of this in front of me and be able
23 to say what our procedures would be, we would have
24 that state, figured out from a time standpoint of
25 knowing what our battery life would be, operations

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1 looking at what the depletion rate of the batteries
2 would be. And they would take actions ahead of time
3 from a standpoint of a severe accident type standpoint
4 to go forward and start manually taking control of
5 RCIC at the point of time when they see the battery
6 coming to its end of charge.

7 CHAIRMAN ABDEL-KHALIK: I guess I'm still
8 not getting quite the right answer or I don't quite
9 understand what you're saying.

10 So the operators would still wait for
11 indications that the battery is depleting or is nearly
12 depleted before they take manual control of RCIC?

13 MR. HEACOCK: Again, without having --
14 gone through and developed all of our procedures in
15 this particular case for extended more than eight
16 hours, I can't tell you exactly when we would do that.
17 But our operations based on what I've seen on
18 emergency operation procedures from what we do with 1
19 and 2, the operations would be monitoring battery
20 health and battery life and start taking actions to
21 make sure they would take control manually of the RCIC
22 system at a point prior to ending.

23 MEMBER BLEY: Let me try to rephrase the
24 question and see if I've got it right.

25 CHAIRMAN ABDEL-KHALIK: Right.

1 MEMBER BLEY: I think what you're being
2 asked is if it appears you're going to have an
3 extended loss of offsite power, would you expect to
4 get procedures in place to conserve the battery? Like
5 take manual control of the things you can take manual
6 control of, unload the things you can unload to try to
7 extend that?

8 MR. HEACOCK: Yes, yes. We have
9 procedures already. WE have procedures to already --
10 I mean I'm talking 1 and 2 now.

11 MEMBER BLEY: Yes.

12 MR. HEACOCK: But we've developed the same
13 sort of procedures on 3 and 4 to basically de-energize
14 the equipment.

15 MEMBER STETKAR: The DC load shedding.

16 MR. HEACOCK: Yes. You go through and do
17 as much as much DC load shedding as you can.

18 MEMBER BLEY: Thanks.

19 MR. HEACOCK: That's what I was saying,
20 depending on where you're at and what you think you're
21 going to be at, and what you foresee the scenario
22 being if you have a loss of offsite power where you've
23 lost your switchyard, more than likely Operations
24 would go through and start saying "There's a good
25 chance we're not going to recovery." So, yes, they

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1 probably would take actions ahead of time to help
2 extend battery life. But like, again, we would still
3 have to develop the exact spots in the procedure to do
4 that. But they would be monitoring --

5 MEMBER RAY: You're not talking about loss
6 of offsite here, right? We're talking about station
7 blackout.

8 MR. HEACOCK: Station blackout, which is
9 a factor of.

10 MEMBER RAY: Well, no, they're two
11 different things. He said "loss of offsite power,"
12 but I think he meant station blackout.

13 MEMBER BLEY: Well, it begins there.

14 MR. HEACOCK: There.

15 MR. HUGHES: Under station blackout
16 conditions if you're operating with RCIC, you will
17 take control of RCIC manually early on. RCIC if it
18 gets too high, trips. If it gets too low, turns back
19 on. And you don't want to go through the
20 unreliability of having it trip and bang if you can
21 help it. So the operator takes control fairly early
22 and tries to control level between the level of trip
23 off and start back on. And I do believe it's standard
24 practice to have load shedding in the industry if you
25 have a DC that you're relying upon. But the specific

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1 procedures for this project I think have been
2 developed yet for how to do that.

3 MEMBER RAY: Gene, do the RCIC pumps
4 require seal cooling?

5 MR. HUGHES: I do not believe so. I'm
6 pretty certain not.

7 Ricky, are you aware of --

8 MR. SUMMITT: It doesn't require seal
9 cooling.

10 MEMBER RAY: Yes.

11 MR. HUGHES: No.

12 MR. HEACOCK: It's a self-cooled system.
13 It's a little different then our terry turbines.

14 MR. HEAD: It's a self-contained --

15 MR. HEACOCK: Yes.

16 MR. HEAD: It's a single casing.

17 MEMBER RAY: It's a canned rotor?

18 MR. HEACOCK: Well, it's not a canned
19 rotor. It's a turbine --

20 MR. SUMMITT: With a direct connection
21 from the turbine to the --

22 MEMBER RAY: Okay. But you don't need to
23 cool the seals to avoid a loss of cooling?

24 MR. HEACOCK: No.

25 MEMBER STETKAR: Externally. It's cooled

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1 from the suction line?

2 MR. HEACOCK: Yes, right.

3 MEMBER STETKAR: Not the seals, but the
4 bearing cooling comes from the suction line of the
5 pump?

6 MR. HEACOCK: Yes.

7 MEMBER RAY: It's a different issue.

8 MR. HEAD: Mr. Chairman we've sort of, I
9 think, circled around the answer. I think the answer,
10 though, will be depending if we're in a station
11 blackout and the maintenance crew says "We're two
12 hours away from getting this diesel back," we might
13 say "Let's leave it on the batteries."

14 If we called ERCOT and ERCOT says we'll
15 have you power in two hours, we might go "Okay, we're
16 going to leave it on the batteries."

17 If ERCOT says "We have no idea," and the
18 maintenance management says "We've got no idea on the
19 diesels and there are other issues going on with our
20 other equipment," well then I think the staff and the
21 team will make decisions much like we're talking
22 about: Now what should we do about it? RCIC is all
23 we've got. What should we be assessing.

24 And in a hurricane context, I'll note that
25 in a hurricane context that management staff will

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1 already be there and be prepared to make those
2 decisions.

3 And so, I don't believe we can give you an
4 absolute answer as to what we would do, but we would
5 have the team there that would have all those things
6 that you're thinking and talking about right now we
7 be, I think, paramount.

8 CHAIRMAN ABDEL-KHALIK: But that thought
9 process will eventually be proceduralized, is that
10 correct?

11 MR. HEAD: Yes, sir. Yes, sir.

12 CHAIRMAN ABDEL-KHALIK: Okay.

13 MR. HEAD: But there will be some steps in
14 it to consult ERCOT and assess the diesels and stuff
15 that allows the shift supervisor to make the
16 appropriate decision based on input from the TSC.

17 CHAIRMAN ABDEL-KHALIK: Okay. Thank you.

18 MEMBER STETKAR: And one last question.

19 I guess we're drilling on this a bit.

20 I grew up with the old terry turbine
21 auxiliary feedwater pumps and that kind of thing.

22 Do you have any idea how easy it is to
23 locally mechanically operate this particular turbine
24 drive pump? In other words, how sensitive is it to
25 overspeed trips and things like -- the old terry

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1 turbines were: (a) very sensitive, and; (b) very hard
2 to reset.

3 MR. HEACOCK: Yes.

4 MEMBER STETKAR: So that, you know the
5 ability of a local operator to kind of smoothly
6 control flow with them was --

7 MR. HEACOCK: Difficult.

8 MEMBER STETKAR: Difficult at best. Yes,
9 okay.

10 MR. HEACOCK: And I'm not the pronounced
11 expert on this by any means. But my understanding of
12 the terry turbine that we're going with is -- not
13 terry turbine. Excuse me. The RCIC --

14 MEMBER STETKAR: The other turbine.

15 MR. HEACOCK: -- design is a lot more
16 robust. It's a lot less sensitive to surges from like
17 water surge into it which caused overspeed trips in
18 the past.

19 It also has a self-regulating feedback for
20 overspeed controls.

21 MEMBER STETKAR: But that's if you got DC
22 power. I'm talking --

23 MR. HEACOCK: No, it's actually, it's a
24 direct --

25 MEMBER STETKAR: Oh, it's a mechanical?

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1 MR. HEACOCK: Mechanical.

2 MEMBER STETKAR: Is it?

3 MR. HEACOCK: Yes.

4 MEMBER STETKAR: Oh, okay.

5 MR. CHAPPELL: We answered some follow-on
6 questions from the Chapter 5 presentation and
7 presented how that flow control --

8 MEMBER STETKAR: I didn't remember that.

9 MR. CHAPPELL: --was designed.

10 MEMBER STETKAR: I didn't remember that.

11 Thanks.

12 MR. HEAD: And we could --

13 MEMBER STETKAR: No, that's fine. I can go
14 look up my notes.

15 MR. HEAD: Okay.

16 MEMBER STETKAR: Long-term memory is about
17 15 minutes these days.

18 MR. HEACOCK: And then we've also issued
19 a technical report on this also to the staff that
20 explained of the new pump.

21 CHAIRMAN ABDEL-KHALIK: Any additional
22 questions on this issue?

23 Please proceed.

24 MR. CHAPPELL: The next item for
25 discussion deals with inadvertent flooding in the

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1 lower drywell, RAI 19-5 talked about this in order to
2 avoid a steam explosion.

3 CHAIRMAN ABDEL-KHALIK: I'm sorry. If we
4 go back to the previous slide. The last bullet says:
5 "If containment is inerted, it will remain inerted."
6 What does that mean?

7 MR. CHAPPELL: If the unit is in a
8 refueling mode and the containment is then de-inerted
9 at that point.

10 CHAIRMAN ABDEL-KHALIK: Right.

11 MR. CHAPPELL: Then that would be the
12 condition. It would not be inerted in that condition.
13 It would just stay in that condition.

14 If the containment is shutdown but its not
15 yet de-inerted, then it would just stay inerted.

16 So if you're in that first bullet and you
17 go down to mode 3, you wouldn't inert containment.
18 You'd just keep it inerted so that you could start up
19 again after the event has passed. It's in anticipation
20 of starting up.

21 CHAIRMAN ABDEL-KHALIK: Okay. Thank you.

22 MR. HEAD: Since most of our hurricanes
23 occur in August and September, more than likely the
24 plant would have been at power. So that will be the
25 bullet that's in effect.

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1 CHAIRMAN ABDEL-KHALIK: Yes. Right.

2 MR. HEAD: But we have to -- you know if
3 for some reason it is shutdown and inerted we're not
4 going to go back up.

5 CHAIRMAN ABDEL-KHALIK: is that correct?

6 MR. CHAPPELL: There were several
7 responses to this RAI over a period of time. I just
8 wanted to focus on the response that was provided just
9 previous to the Chapter 19 presentation last year that
10 talked about inputs to the STP and its 3&4 plant-
11 specific technical guidelines.

12 Those guidelines are based on the ABWR
13 emergency procedure guidelines which are part of the
14 ABWR DCD. And we will incorporate industry guidance
15 as well that ABWR DCD input to address how to prevent
16 inadvertent flooding in the lower drywell and other
17 aspects of containment water addition.

18 Specifically, the RAI addressed four
19 conditions for the lower drywell flooder, the fusible
20 plug valve operations, in which case they do not
21 operate when they don't operate as designed or
22 operates prematurely or operates as designed during a
23 scenario that involves core melt and a vessel failure.

24 So that's a specific commitment to go
25 through and evaluate all those pieces, part of the

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1 emergency procedures.

2 I just would note that the lower drywell
3 flooders functions that flood the lower drywell,
4 there's also the AC-independent water addition
5 function can also provide that. And that's discussed
6 in the MDCD.

7 CHAIRMAN ABDEL-KHALIK: Okay.

8 MR. CHAPPELL: For the last bullet, it was
9 clarified that the STP 3&4 will follow the industry
10 commitment to incorporate severe accidents into the
11 overall accident management program. This was the
12 development from the Emergency Procedure Guidelines,
13 the Severe Accident Guidelines, and we're maintaining
14 our commitment to keep up with industry standards
15 there.

16 MR. CORRADINI: So that doesn't reflect a
17 change as much as just as a commitment to continue
18 what your current practice is?

19 MR. CHAPPELL: We will evaluate the
20 strategies of doing the EPG, use other inputs and then
21 determine what our final procedures are and then
22 continue to develop what we like in the plan. That's
23 part of our procedure plan.

24 So, the procedures will be developed in
25 accordance with our procedure development program.

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1 Operators and staff will be trained. That's all part
2 of our operation piece. There's a specific technical
3 piece that we want to make sure we capture as that
4 goes forward.

5 MR. CORRADINI: Okay.

6 CHAIRMAN ABDEL-KHALIK: Okay.

7 MR. CHAPPELL: Okay. Related to this item
8 we had an Action Item 41 that was asked a while back
9 when we had the last Chapter 19 presentation about
10 failure modes and effect analysis for fusible plug
11 valve. We provided a summary of that discussion and
12 we had a follow-on question about how would we detect
13 valve leakage during operation. So just to put things
14 in perspective, there are ten four inch fusible plug
15 valves in the lower drywell flooder system. Each one
16 is capable of passing a minimum of 160 gallons per
17 minute into the lower drywell.

18 So, for a comparison for that we have leak
19 protection in the lower drywell, a floor drain system
20 that we can monitor inputs in there in the order of 1
21 gpm sensitivity and it provides an alarm in the
22 control room.

23 So if one of these valves sort of leak
24 significantly, there would be an unidentified input
25 that would be monitored as one of our tech spec

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1 requirements.

2 MR. CORRADINI: These are temperature-
3 actuated?

4 MR. CHAPPELL: These are temperature-
5 actuated, 500 degrees minimum Fahrenheit.

6 MR. CORRADINI: Maybe this has been asked,
7 so if it, I'll just wait offline. What is the
8 variability on that temperature?

9 MR. CHAPPELL: That's a minimum
10 temperature of 500 and --

11 MR. CORRADINI: So it's been tested so
12 that anything at 495 doesn't happen, 499 doesn't
13 happen and there's a probability that it may open at
14 500, but it may not? Is that what I'm trying to
15 understand?

16 MR. CHAPPELL: It's basically at the
17 specific numbers. There is a range that's provided.

18 MR. CORRADINI: I understand.

19 MR. CHAPPELL: At one point we --

20 MR. CORRADINI: You have a test range that
21 documents it?

22 MR. CHAPPELL: They will be tested in
23 accordance with the requirements of the DCD.

24 MR. CORRADINI: Okay.

25 MR. CHAPPELL: I just wanted to give an

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1 overview on --

2 CHAIRMAN ABDEL-KHALIK: You indicated that
3 if one of these valves were to leak, it would be an
4 unidentified leak and it would be subject to tech spec
5 limits. Is there anyway that if you have an
6 unidentified leak of, you know 10 liters per second,
7 that you would go in with a robot or something like
8 that and explore where the leak might be.

9 MR. CHAPPELL: The accessibility in the
10 lower drywell is very limited.

11 CHAIRMAN ABDEL-KHALIK: Okay.

12 MR. CHAPPELL: I mean, at operation. So it
13 would not -- it would be unlikely that such a scenario
14 would happen.

15 CHAIRMAN ABDEL-KHALIK: It would be
16 impossible?

17 MR. CHAPPELL: It would be the limitations
18 for leakage is very low that would require you to
19 shutdown on the order of several hours. So if your
20 total unidentified leakage is somewhere around 30
21 gallons per minute inputs, which is significantly less
22 than 1 flooder valve, then your tech specs would drive
23 the units to shutdown because you have too much
24 leakage in the tank.

25 CHAIRMAN ABDEL-KHALIK: Right.

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1 MR. CHAPPELL: And we would be very
2 proactive. We would not wait until the limit. We've
3 had the discussion about --

4 CHAIRMAN ABDEL-KHALIK: Right.

5 MR. CHAPPELL: -- leakage in the
6 containment.

7 CHAIRMAN ABDEL-KHALIK: Right.

8 MR. CHAPPELL: That would cover that
9 piece.

10 CHAIRMAN ABDEL-KHALIK: Okay.

11 MR. CHAPPELL: On the right hand side is
12 a cross view. These are the connecting vents and then
13 we have the horizontal vents that go from the upper
14 drywell into the suppression pool, pressure
15 suppression feature for ABWR containment. And you can
16 see how the flooder valve is shown there with a little
17 down portion that goes directly above the base mat in
18 the lower drywell.

19 I've drawn in a location, a similar
20 location of where the floor drain sump would be. And
21 so the ten are located circularly around the perimeter
22 of the lower drywell. And they would be direct inputs
23 into that sump.

24 Just as a basic design of the system, it
25 shows each valve there. There's the fusible plug that

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1 would then melt and the release a direct path of water
2 into the lower drywell.

3 MR. CORRADINI: And then the new level is
4 the second triangle? I'm trying to understand.

5 So when actuated, where does the level
6 come to?

7 MR. CHAPPELL: When actuated it would
8 provide a direct flow path between the suppression
9 pool --

10 MR. CORRADINI: Right.

11 MR. CHAPPELL: -- and the lower drywell.
12 So the level would equalize. Those arrows don't
13 indicate anything except position of the actual
14 fitting.

15 MR. CORRADINI: Okay. And when it
16 equalizes, what is the depth of water in the drywell?

17 MR. CHAPPELL: I don't know the answer to
18 that. It would be significant enough to be noticeable
19 by the operators.

20 MR. CORRADINI: I'm sure it would. But
21 it's still far below a lot of the forest of tubes
22 going in. So I'm guessing it's like three or four
23 meters deep?

24 MR. CHAPPELL: It would be bubble over the
25 bottom of the vessel.

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1 MR. CORRADINI: That's what I was
2 guessing. Okay.

3 MEMBER ARMIJO: What holds that fusible
4 metal plug in that pipe?

5 MR. CHAPPELL: There are many ways that it
6 can be done. In this particular concept it's a
7 fitting in the casing of the valve, and then there's
8 a protective sheath and then there's --

9 MEMBER ARMIJO: It's more in a plastic
10 cap, I would assume.

11 MR. CHAPPELL: The plastic cap is at the
12 bottom. It does nothing more than protect the
13 internals. The disc itself in this area is the Teflon
14 disc that would melt.

15 MEMBER ARMIJO: But the fusible metal plug
16 is it --

17 MR. CORRADINI: I don't think -- is going
18 to fall out, I assume.

19 MEMBER ARMIJO: Well, can it be pushed out
20 by pressure?

21 MR. CHAPPELL: Right. It'll be pushed out.

22 MEMBER ARMIJO: Just from pressure, not
23 even from melting.

24 MR. CHAPPELL: And the way this is tested,
25 its tested at the minimum head that would open it.

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1 MR. CORRADINI: Sot he stainless steel
2 gets pushed out, the Teflon gets melted out and the
3 plastic is dirt control?

4 MEMBER SHACK: The fusible link is the
5 Teflon.

6 MEMBER BROWN: No. The fusible metal plus
7 that it's below the Teflon disc to the plastic --

8 MR. CHAPPELL: Right. The metal is the
9 fusible piece.

10 MEMBER BROWN: And when does that --

11 MR. CORRADINI: Oh, I'm sorry.

12 MR. CHAPPELL: This whole block here.
13 This whole block here would melt.

14 MR. CORRADINI: Oh, that's a piece of
15 metal. I didn't understand --

16 MR. CHAPPELL: See these grooves, they
17 hold that there. This just protects it from anything
18 on this side. And this disc prevents interface and
19 corrosion. And this just covers the outside of the
20 plug.

21 MR. CORRADINI: Okay. Excuse me. I
22 misunderstood.

23 MR. HEAD: Okay.

24 MEMBER ARMIJO: But, you know typically a
25 fusible metal that melts at that temperature is also

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1 very soft and plastic as it gets hot. And I was just
2 wondering, could that thing extrude out and come out
3 before it actually melted?

4 MR. CHAPPELL: What the requirements are
5 for that is the testing. So I'll just run through
6 this slide. I think that might address at least part
7 of the question.

8 MEMBER ARMIJO: Okay. That would help.

9 MR. CHAPPELL: The concern is to maintain
10 a dry cavity so there's not premature flooding. So
11 that there would be negligible probability of
12 premature spurious actuation, the passive flooder
13 operation below 500 degrees or under low differential
14 pressure is maintained by the inspection requirements.
15 Every outage it's looked at to make sure there's no
16 leakage. But then every other outage two of the
17 valves are tested for the setpoint temperature under
18 the corporate conditions to make sure that they don't
19 actuate early.

20 MR. CORRADINI: And the metal hasn't been
21 chosen, right?

22 MR. CHAPPELL: I think it discusses
23 different types in the DCD. I don't know the
24 specifics.

25 MR. CORRADINI: That's fine. That's fine.

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1 CHAIRMAN ABDEL-KHALIK: Now the melting
2 temperature of Teflon, isn't that much greater than
3 500F?

4 MR. CHAPPELL: No. I think that's why it
5 was chosen so it wouldn't interfere. But it's the
6 actual plug properties that are significant.

7 MR. HEAD: So the Teflon just drops out.

8 CHAIRMAN ABDEL-KHALIK: Right. Right. But
9 you know, if this thing is going to actuate at 500F,
10 the Teflon is probably very close to melting itself.

11 MR. CHAPPELL: The Teflon just provides a
12 barrier. So each of these conceptually is just to
13 prevent interface between the water, the plug and then
14 the Teflon prevents interface between the plug and the
15 disc. And then this just protects it from the
16 environment.

17 CHAIRMAN ABDEL-KHALIK: Okay.

18 MR. CHAPPELL: So these small grooves here
19 are one of the examples of once it starts to melt,
20 then it doesn't have any real resistance. It reaches
21 that temperature and then gets pushed out. But there
22 are other designs at similar plants.

23 MEMBER ARMIJO: So this is just conceptual
24 here? There's no specific valve that's actually been
25 built, been tested and qualified?

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1 MR. CHAPPELL: The final design is not
2 chosen, that's correct. The detailed design is not
3 there.

4 MEMBER ARMIJO: Right. What do the
5 Japanese use at Kashiwazaki's site.

6 MR. CHAPPELL: We had a question about
7 this before, and it's not included in the Kashiwazaki
8 design.

9 MEMBER ARMIJO: They do not have that
10 feature in the Japanese --

11 MR. CORRADINI: It's a dry cavity in the
12 Japanese design as my memory serves, is that not
13 correct?

14 MR. CHAPPELL: It's the same basic
15 containment as ABWR.

16 MR. CORRADINI: Right. But I guess I was
17 going with Sam's question. Maybe I jumped ahead.

18 MEMBER ARMIJO: No, go ahead. I just
19 thought if the Japanese use that same feature and that
20 same valve, they'd have some qualification testing
21 that showed it was -- you know, would meet the
22 requirements. But you're saying they do not have such
23 a feature

24 MR. CHAPPELL: That's correct. They don't.

25 MR. CORRADINI: So it's dry?

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1 MR. CHAPPELL: I'm sorry, again I jump. If
2 I get into a severe accident situation, those cavities
3 would remain dry unless there was leakage from other
4 non-prescribed source. There are other ways to flood
5 the lower drywell, this is one.

6 MR. CORRADINI: Oh, I'm sorry. I thought
7 this was --

8 MR. CHAPPELL: This is a purely passive
9 system.

10 MR. CORRADINI: I thought all the other
11 ways were not guaranteed so you had no guarantee of
12 large amounts of water dump.

13 MR. CHAPPELL: No Any system can be -- I
14 mean, it takes a large amount of water, but any system
15 -- or when I mentioned before about the AC-independent
16 water addition function being able to provide the same
17 function --

18 MR. CORRADINI: Right.

19 MR. CHAPPELL: -- it does it through
20 sprays that then go into the suppression pool, fill it
21 up and then it would overflow into the lower drywell.
22 But there's a sustained amount of time needed to do
23 that.

24 But RHR systems can provide --

25 MR. CORRADINI: Sure.

1 MR. CHAPPELL: -- input into this
2 suppression pool. From outside containment you can
3 use high pressure --

4 MR. CORRADINI: Yes, I'm with you there.
5 But I guess -- this is memory now, so this is probably
6 wrong. But in the original submission of the ABWR in
7 '92 it was designed to be dry and any water in there
8 could not be guaranteed to be more than a little bit,
9 a "little bit" meaning less than a meter, inches.
10 Okay. And this I thought was designed to provide high
11 reliability that water would come in there post-hot
12 temperatures.

13 MR. CHAPPELL: Yes.

14 MR. CORRADINI: And none of the others can
15 reliably provide large amounts of water post-hot water
16 temperatures? They might, but they might not. That's
17 what I'm trying to get at.

18 MR. CHAPPELL: Any of the ECCS systems
19 that can add inventory into the pool can reliably
20 raise the level by operating procedures and then
21 direct water into the lower drywell.

22 MR. HEAD: But if you take that logic, I
23 mean if you're a core damaging situation, how you got
24 there could easily be because at that's not available.

25 MR. CORRADINI: Well, I'm glad you said

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1 that, because in '92 that was another group's argument
2 as to why they couldn't guarantee large amounts of
3 water.

4 MR. HEAD: Well, I mean if you're there,
5 it's for a reason. And if that equipment is not
6 cooling the core, then it could be for electrical
7 reasons or whatever. So here's a passive way of--

8 MR. CORRADINI: Exactly. And then just to
9 get to Sam's question, I know he's gone, the Japanese
10 have all these alternative means given the design but
11 they don't have this system?

12 MR. CHAPPELL: That's my understanding.

13 MR. CORRADINI: Okay. Thank you.

14 MR. CHAPPELL: And I would add that an
15 event that would potentially core damage doesn't take
16 into account that you can recover some of those other
17 systems later after several hours that have been
18 developing.

19 MR. CORRADINI: Right. I'm with you there.
20 I just wanted to make sure I understood the logic,
21 that's all. That's fine. Thank you.

22 MEMBER STETKAR: Coley, I'm sorry. My
23 memory really isn't 15 minutes.

24 I was just going back and looking at the
25 design of the RCIC turbine and its self-controlled

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1 governor. The way that thing seems to work is that
2 during normal operation there's a mechanical hydraulic
3 control to maintain a fixed discharge flow such that
4 if discharge flow decreases, it'll open up the turbine
5 throttle valve to supposedly increase flow.

6 And then there's a -- it's called various
7 things in the documentation, there's a kick back that
8 will drop it. Instead of 800 gpm, it'll drop it down
9 to 400 gpm. To enable that, you have to energize a
10 solenoid. So if you don't have DC power, you're not
11 going to get that kick back in place.

12 MR. HEAD: Yes. Yes.

13 MEMBER STETKAR: With a kick back, though,
14 you're still -- the thing will try to control a fixed
15 flow. So it's not clear to me how easily one can
16 control actual discharge flow. If you want to try to
17 get it down below 400 gpm, I think the machine is
18 going to try to maintain it at 400 gpm by emitting
19 more steam, or you know you try running the discharge
20 valve on the pump.

21 MR. HEACOCK: Yes, it'll more likely be --

22 MEMBER STETKAR: If you try one of the
23 steam emission valve, it ought to work.

24 MR. HEACOCK: Yes, sir.

25 MEMBER STETKAR: You can only shut off

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1 steam into the turbine.

2 MR. HEACOCK: Yes. Part of that would be
3 the --

4 MEMBER STETKAR: It is not clear to me
5 how, you know if you don't have DC power, it's
6 probably going to try to make it work at 800 gpm.

7 MR. HEACOCK: Well, it probably will. And
8 again, without having -- but you've looked real quick
9 more likely our procedures, and we talked about
10 earlier on --

11 MEMBER STETKAR: I'm just trying to see
12 the emission valve somehow.

13 MR. HEACOCK: Yes, following steam
14 emission. And we also have the capability of trying to
15 override the solenoid, we'd probably have something in
16 procedure-wise if we can override it, we would. But
17 most likely it will be throttle --

18 MEMBER STETKAR: But even then it's still
19 going to try to maintain that fixed flow --

20 MR. HEACOCK: Yes. Yes. Right.

21 MEMBER STETKAR: -- as far as I can see
22 the way it is worded.

23 MR. HEACOCK: Okay. And the discharge
24 valves will be the other part of it, like you're
25 saying. That'd be the other way to throttle.

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1 MEMBER STETKAR: Yes, but I think if
2 you're trying to throttle water discharge flow from
3 the pump, the control is going to work against you?

4 MR. HEACOCK: It's going to -- right.

5 MEMBER STETKAR: It's going to try to put
6 more steam in there, then you're going to overspeed.

7 MR. HEACOCK: Yes. That's true.

8 MEMBER STETKAR: I just wanted to get a
9 clarification because I thought it wasn't quite as
10 simple as kind of a self -- it's sort of self-
11 regulated.

12 MR. HEACOCK: Yes.

13 MEMBER STETKAR: But it's self-regulated
14 for a fixed discharge.

15 MR. HEACOCK: For a fixed value, yes.

16 MEMBER STETKAR: Yes. At two different
17 levels. And the second level or the lower flow which
18 you would require for longer term cooling, does
19 require power to switch -- there's a little forward
20 solenoid valve --

21 MR. HEACOCK: Yes.

22 MEMBER STETKAR: -- that switches.

23 MR. HEACOCK: Yes, the --

24 MEMBER STETKAR: Yes, I mean there are two
25 little pistons so the valve's hydraulic pressures.

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1 Okay.

2 MR. HUGHES: I would just add since we're
3 on Chapter 19, which is the PRA --

4 MEMBER STETKAR: Right.

5 MR. HUGHES: -- as I'm sure you know when
6 you get into these extreme cases DC depletion and
7 you're looking at the ability of the operator to
8 maintain RCIC flow and maintain everything going with
9 a procedure with limited information, there's
10 significant discounting of any likelihood that that
11 would actually be successful in the PRA. It's good to
12 have the procedures and the plans, and be able to try
13 to do it, but there's not vast credit given for the
14 ability to do that.

15 MEMBER STETKAR: Yes. I mean, we haven't
16 seen -- we'll get to whatever the PRA here is
17 eventually. Yes, we don't know actually how much
18 credit is taken for that operator action in the PRA
19 right now. Whether it's ten to the minus one or point
20 five, or ten to the minus six.

21 CHAIRMAN ABDEL-KHALIK: You know at some
22 point in the future we'll get back to answering some
23 of the earlier questions regarding long-term cooling.
24 And perhaps at that time if you would also include a
25 discussion of manual control of RCIC --

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1 MR. CHAPPELL: Okay.

2 CHAIRMAN ABDEL-KHALIK: -- that would be
3 a very helpful discussion.

4 MR. CHAPPELL: Okay.

5 CHAIRMAN ABDEL-KHALIK: So if we can add
6 that as a follow-up action item.

7 MEMBER RAY: Well, as long as you're
8 making that digression, Said, perhaps, John, you
9 understand it well and you can just explain it to me
10 offline. But what's the normal cooling trend? I
11 mean, I'm used to worrying about pump shaft cooling
12 and on these RCIC points --

13 MEMBER STETKAR: I'll talk to you later.
14 This is a little bit different beast then --

15 MEMBER RAY: I'd like to know if there's
16 a normal cooling but we don't worry about it in a SBO
17 because there are qualified lab cooling, or is this
18 just the wa it ordinarily works and it doesn't matter
19 in long-term cooling.

20 MEMBER STETKAR: I'll talk to you at the
21 break rather than taking up time on the record.

22 MEMBER RAY: All right.

23 CHAIRMAN ABDEL-KHALIK: So, I guess we're
24 keeping track of that? Okay.

25 Please continue.

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1 MR. CHAPPELL: In summary, as we've
2 summarized on previous chapters, no open items. The
3 COL items have been addressed. On previous ACRS
4 action items associated with Chapter 19 have been
5 addressed.

6 You know, we discussed the lower drywell
7 flooders valves. If there are any other questions on
8 that, I want to make sure that we cover them now.

9 MEMBER BLEY: Not on that. But one of the
10 items that was closed, and maybe we had a meeting and
11 I wasn't here for it. But some time ago we talked
12 about the reservoir for terminal flood and the worry
13 about the doors and could you close them quickly. As
14 I understand what I've read, you've now made a
15 commitment to manually keep the big doors closed. And
16 if they should be open, the security forces tagged
17 with noting if there should be a problem with the
18 reservoir and announcing to the plant staff in time to
19 get the doors closed. Have I got that right? And
20 you've removed the discussion of the probabilistic
21 analysis of external flooding?

22 MR. HEAD: Yes, sir. I think that's
23 correct.

24 MEMBER BLEY: Okay.

25 MR. HEAD: I mean, the notification that

1 there's an issue with MCR will be something that
2 Operations management will be immediately involved
3 with.

4 There are people you would contact to
5 close the doors. Security officers interact with
6 doors all the time, it's a logical place to go.

7 MEMBER BLEY: That's fine.

8 MR. HEAD: But I assure you Operations
9 management will be confirming --

10 MEMBER BLEY: But the basic thing is
11 they'll normally be closed and they can be closed --
12 whatever they finally look like, they'll be able to
13 closed reasonably quickly.

14 MR. HEAD: Yes, sir.

15 MEMBER BLEY: Okay.

16 MR. HEAD: That's the --

17 MEMBER BLEY: Fair enough. Just wanted to
18 make sure I understood it.

19 CHAIRMAN ABDEL-KHALIK: Any other
20 questions? Charlie?

21 MEMBER BROWN: Yes, I forgot one. In
22 looking at -- I'm back in the fire pump, which is
23 multiple fire pumps, portable, et cetera. I was
24 looking for in-service testing type provisions. And
25 I looked in the tech specs, I didn't see anything. But

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1 I found something I guess in Chapter 9 that talked
2 about the plan could be developed for post-operational
3 testing of the fire protection system. And since
4 there was nothing there, could you tell me? What do
5 you do on Units 1 and 2 for portable? Are they tested
6 every year, or every six months?

7 A diesel drive pump is an idle pump,
8 diesel pump. There's an idle. You never know whether
9 it's going to work or not.

10 MR. HEAD: It's not only tested in some
11 frequency, but it's also periodically used.

12 MEMBER BROWN: Well, that was my next
13 question. So you're ahead of me. So --

14 MR. HEAD: It's been used to drain circ
15 water pipes and things. And it's our experience that
16 that's better then just letting it sit in a garage
17 or--

18 MEMBER BROWN: I mean that's why I asked
19 the question. What about the pumper truck and the
20 skid-mounted, are they --

21 MR. PULEO: We have a quarterly PM, if you
22 will, to take the pumper out and just kind of drive it
23 around the owner controlled area to make sure that,
24 you know power still spin around and --

25 MEMBER BROWN: That's nice.

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1 MR. PULEO: Yes. We do --

2 MEMBER BROWN: But without hooking it up
3 and seeing that the diesel -- that the pump function
4 works and all of that stuff.

5 MR. PULEO: I don't remember the level of
6 detail on actually running the pumper portion of it.
7 But I do know that because we do keep it in the
8 protected area and being a security kind of guy, too,
9 you know we have to escort it out and all. So I know
10 it comes in and out and is moved pretty regular from
11 that perspective.

12 MEMBER BROWN: Okay.

13 MR. HEAD: I would also note that both
14 pumps will be in D-RAP. And so as part of that review
15 there will be expectations established for testing and
16 then not only testing, but reacting to any failures.
17 That's one of the important parts of the process is
18 reacting to failures.

19 You know, we've had a portable pump at
20 1&2, did have an issue at one point in time. And, you
21 know, Corrective Action Program is now housed in a
22 more pristine environment. So it'll be a process as
23 a go through, but I think in a B5B world and in a
24 world we're about to look at here in the near future,
25 and in the PRA world itself, that these pumps will

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1 get, while not in tech specs, they will get the
2 appropriate testing and monitoring.

3 DESIGNATED FEDERAL OFFICIAL BANERJEE: Are
4 members happy with this, or do you want to follow-up on
5 that?

6 MEMBER BROWN: Well, I was just kind of
7 looking for an answer. Units 1&2 should be portable
8 units, not necessarily I understand your use of the
9 ones in the firehouse. So it gets used itself every
10 now and then. So other than driving the truck around,
11 that except to see that the engine to drive it around
12 works, I didn't get much else out of that, other than
13 that part? Am I correct. You didn't really know. If
14 that's the answer, that's the answer.

15 MR. HEACOCK: It's just like as Scott
16 said, in D-RAP, this will be in D-RAP. We have
17 recommended maintenance in D-RAP as part of this. And
18 we actually have different rated flows for so much
19 time also to make sure that we put the pumps sort of
20 at test to make sure they're pumping at the rate of
21 flow, not just to decide to take them around and drive
22 them around. But there is a periodicity that is
23 defined in the D-RAP process.

24 MEMBER BROWN: But don't you have a
25 similar process for Units 1&2.

1 MR. HEAD: I'm sure we have something
2 similar.

3 MEMBER BROWN: You just don't know your
4 numbers?

5 MR. HEACOCK: Yes.

6 MEMBER BROWN: That's fine. Okay, if you
7 don't. I'm just trying to get a feel for what the
8 number was; whether it was quarterly, whether it was
9 annually, whether it was every fueling outage or
10 something like that.

11 MR. HEAD: The D-RAP table say annually.
12 Yes. There's one a year.

13 And I would guess, you know if our fire
14 protection people were here, that there's requirements
15 regarding just fire protection equipment itself in
16 fire space that would make you do some testing that we
17 would --

18 MEMBER BROWN: I'm not aware of it. That's
19 why I asked.

20 MR. HEAD: I just expect those to be
21 there.

22 MEMBER STETKAR: Scott, when's the time
23 for me to start asking about D-RAP since you've now
24 mentioned it several times? It's either a 17 or a
25 19--

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1 MR. HEAD: Well, in our discussion we had
2 planned on 17.

3 MEMBER STETKAR: You did? Okay. Let me
4 then hold that there and we can talk about --

5 MEMBER STETKAR: Is that where we would
6 talk about the PRA?

7 MEMBER STETKAR: Well, I've got kind of
8 two different things.

9 MR. HEAD: Okay.

10 MEMBER STETKAR: And part of D-RAP is the
11 tables in 19(k). But if you want to hold that to
12 Chapter 17?

13 MR. HEAD: I would guess, unless there's--

14 MEMBER STETKAR: All right. Let's hold
15 that to Chapter 17.

16 MR. HEAD: That's a generic PRA question
17 there that you would --

18 MEMBER STETKAR: Okay. We'll hold that to
19 Chapter 17 then.

20 MR. HEAD: Okay.

21 MEMBER STETKAR: The generic PRA question
22 then is can you describe for us right now what the PRA
23 for record as far as the COL licensing is? Is it the
24 design certification PRA?

25 MR. HEAD: It's the reconstituted PRA.

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1 MEMBER STETKAR: It's the reconstituted
2 PRA?

3 MR. HEAD: That we're using currently for
4 any assessments that we need to do for departures or
5 the assessments that we're doing for D-RAP.

6 MEMBER STETKAR: But that PRA does not
7 include all features of the as-built plant, is that
8 correct?

9 MR. HEAD: Yes, sir. And it doesn't
10 include all features of things that we know is coming.

11 MEMBER STETKAR: Yes. But I mean, does it
12 include the right compliment of condensate booster
13 pumps? Does it include the right compliment of circ
14 water pumps? Does it include the actual configuration
15 of the electric power system of the two RATs and
16 whatever the automatic bus loading is, and that sort
17 of things? Those are things that we know about that
18 are part of the departure.

19 MR. HUGHES: Right. The departures were
20 looked at and they were all evaluated, and they were
21 screened. And the design certification --

22 MEMBER STETKAR: Okay. Let me stop you
23 there. All of those words didn't answer the question
24 of does the PRA include them? Do I have basic events,
25 and gates, or gates in the PRA that include that

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1 equipment right now today?

2 MR. HUGHES: Let me ask Ricky to respond
3 to your question.

4 MR. SUMMITT: At the present time we do
5 have modification -- a modified STP version that does
6 include the changes to the RCIC pumps, it does include
7 the changes associated with condensate booster pumps
8 and it does include looking at the AC power system
9 different alignment --

10 MEMBER STETKAR: You said "looking at,"
11 Ricky.

12 MR. SUMMITT: Yes, it's in the
13 modification--

14 MEMBER STETKAR: I don't want to hear
15 "looking at." I want to see does the PRA --

16 MR. SUMMITT: There are basic events in
17 the model.

18 MEMBER STETKAR: There are basic events in
19 the model? Okay.

20 MR. SUMMITT: Yes. But you have to
21 understand for the RCIC it is at the level of the DCD
22 which is at the executive level at the time of the
23 acceptance. And so therefore, there are some changes
24 that had no impact, if you will, on the physical level
25 of involving within the DCD PRA.

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1 MEMBER STETKAR: Why is it so hard to get
2 a straight answer?

3 MR. SUMMITT:

4 It's not hard to get it straight.

5 MEMBER STETKAR: It is because --

6 MR. SUMMITT: The RCIC system if you look
7 at the model components that are in there and you look
8 at the impact on the failure data of the changes in,
9 say, the cooling loop there was no discernable
10 difference in the reliability. So when you look at
11 it, you don't see that much of a discernable
12 difference in the results.

13 MEMBER STETKAR: So they did --

14 MR. SUMMITT: It did terminate any of the
15 cooling loop that was in the existing DC model because
16 it was no longer necessary to go to the model block or
17 RCIC block.

18 MEMBER STETKAR: That I understand. You
19 said it does include the condensate booster pumps?

20 MR. SUMMITT: Yes.

21 MEMBER STETKAR: Does it include the
22 fourth feedwater pump?

23 MR. SUMMITT: Yes.

24 MEMBER STETKAR: Does it include the four
25 circ water pumps?

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1 MR. SUMMITT: Yes.

2 MEMBER STETKAR: Okay. Good. Good. So
3 it's -- and it includes the second RAT, I mean you
4 reconfigured the electric power system the way--

5 MR. SUMMITT: It includes changes in the
6 electrical distribution system.

7 MEMBER STETKAR: Okay. And that's the PRA
8 of record then for the COL?

9 MR. SUMMITT: That's right.

10 MEMBER STETKAR: Okay.

11 MEMBER BLEY:

12 Is that right, that last statement?

13 MR. SUMMITT: It's the STP-specific with
14 the changes in that model.

15 CHAIRMAN ABDEL-KHALIK: That's not
16 consistent with what Scott said earlier.

17 MR. HEAD: Yes, I said it's the
18 reconstituted PRA.

19 MR. SUMMITT: Well, it is the
20 reconstituted PRA.

21 MR. HEAD: You're saying those things are
22 in the reconstituted PRA, then we're saying the same
23 thing.

24 We are saying the same thing because we
25 did do -- the reconstituted PRA we did make a

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1 reconstituted PRA model to validate that we could
2 produce the same model which was developed by General
3 Electric.

4 MEMBER SHACK: Correct.

5 MR. SUMMITT: We then did, because it was
6 part of the requirement to see what the impacts were,
7 we then modified that to make an STP-specific 3&4 Unit
8 model that included in those basic variations or
9 exceptions to the DCD that were made that led back to
10 the changes in the configurations that -- some of the
11 things that John's talking about, like for example the
12 RCIC changes. And that was the one that was evaluated
13 to see if it made any changes to the DCD in the
14 analysis. It did not make a significant change to the
15 DCD analysis.

16 One of the other things that we did was we
17 also incorporated some of the findings in the original
18 study on the DCD which had to do back with the common
19 cause that was later -- and we put that back into the
20 model also, which is --

21 MEMBER STETKAR: But I understand, that's
22 a focus issue-based.

23 MR. SUMMITT: Right.

24 MEMBER STETKAR: That isn't a
25 comprehensive across the board, right?

1 MR. SUMMITT: Right.

2 MEMBER STETKAR: Okay. But the message is
3 if I went to your house today and looked at the model
4 on some computer, I would actually see a model --

5 MR. SUMMITT: See a model that has all
6 those in there.

7 MEMBER STETKAR: -- that has all of that
8 in there? Okay. That's good.

9 That's a little different impression that
10 I had gotten, and it's a little different impression
11 then from some of the oral things that we're hearing
12 about "Well, we took a look at it --"

13 MR. SUMMITT: Oh, that's past.

14 MEMBER STETKAR: "-- it didn't make too
15 much difference." And the impression was "Well, we'll
16 ge around to making the changes later when we develop
17 the early prong at the STP plant-specific PRA that
18 will be completed before fuel load, right?"

19 MR. HEAD: Well, I can put at least one of
20 those in context. When we talked about RCIC, that we
21 didn't see any change. And we're expecting to see
22 change once there's more data available that we can
23 rely on. At the time there just wasn't enough data to
24 make a probability of success change, which is what
25 we're expecting. That's --

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1 MR. SUMMITT: And Scott's comment, you
2 should note that because, as I said earlier, we took
3 at the level of the current DCD model, we did not go
4 in and make exhaustive new models for the RCIC system.

5 MEMBER STETKAR: But at least you cut out
6 the cooling water loop on it.

7 MR. SUMMITT: That's correct.

8 MEMBER STETKAR: Okay.

9 CHAIRMAN ABDEL-KHALIK: My original
10 understanding of that where it's reconstituted PRA was
11 essentially the PRA that was done to try to duplicate
12 what was done in the original DCD. And is that term
13 now used for something else?

14 MR. HUGHES: No. In order to begin the
15 process, we needed a PRA that represented the DCD.
16 And since we did not have all of the elements of that
17 PRA, we reconstituted the original DCD PRA.

18 CHAIRMAN ABDEL-KHALIK: Okay.

19 MR. HUGHES: And that was our starting
20 point.

21 CHAIRMAN ABDEL-KHALIK: And that was
22 called the reconstituted PRA?

23 MR. HUGHES: Yes.

24 CHAIRMAN ABDEL-KHALIK: And now you've
25 made further revisions to that and still call it the

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1 reconstituted PRA?

2 MR. HUGHES: That's correct. No. No.
3 I'm sorry. I answered prematurely. I did not realize
4 you were going to say "And that's called the
5 reconstituted." That's called the plant-specific PRA
6 or the COLA.

7 MEMBER STETKAR: I tend to call them the
8 reconstituted PRA, the COLA PRA and the to-be-
9 developed plant-specific PRA, which is whatever will
10 exist prior to license submittal, for example.

11 MR. HUGHES: That's very clean language.

12 MEMBER STETKAR: It keeps sort of timing.
13 What I'm talking about, you know trying to understand
14 is what I'm calling the PRA for the COLA.

15 MR. HUGHES: Okay.

16 MEMBER STETKAR: And from what Ricky said,
17 it sounds like that does have a number of the
18 departures, you know that we know about wired into it
19 essentially. It's not just a semi-qualitative, semi-
20 quantitative look at issues in the context of the
21 reconstituted PRA.

22 MR. HUGHES: The reason it may be
23 confusing is there were many things looked at. And
24 many of them can be obviously just taken care of
25 qualitatively. Some of them remain, and that's what

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1 we're talking of.

2 MEMBER BLEY: So just for clarity for me,
3 we had a DCD PRA.

4 MR. HUGHES: We have one.

5 MEMBER BLEY: Then there was a
6 reconstituted one, which I suppose is archived
7 somewhere, perhaps. And now we have the COLA PRA, but
8 its evolving?

9 MR. SUMMITT: No, it's done.

10 MEMBER BLEY: It's done. It's a fixed
11 thing also --

12 MR. SUMMITT: Yes. Yes. That's right.

13 MEMBER BLEY: -- kind of archived. And now
14 from now on anything that happens as you move forward
15 will eventually become the plant-specific PRA?

16 MR. HEAD: On the exhibit side. We'll get
17 this up before.

18 We have the PRA that we will be using at
19 this point in time and if there's a departure or
20 something else that's added at this point in time,
21 then we would adjust that to assess the departure.

22 We're building the operational PRA, okay?
23 It's not completed yet.

24 MEMBER BLEY: Okay. You're calling that
25 something separate, the operational PRA? I'll admit

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1 that language.

2 MR. HEAD: I can handle that.

3 MEMBER BLEY: So we have a COLA PRA and we
4 have an operational PRA?

5 MR. HEAD: Right.

6 MEMBER BLEY: And you have them both?

7 MR. HEAD: And once this is available,
8 then that's what we'll be using.

9 MEMBER STETKAR: But the operational PRA
10 is the one that will be available prior to fuel load
11 that will satisfy all of the requirements in terms of
12 quality, you know whatever it is, 12 months or a week
13 before the date of fuel load.

14 MR. HEAD: Yes, and we've alluded to it in
15 this discussion before. It was being built. I'll
16 just, you know to reconfirm with you in our current
17 spending situation we've stopped work on it, but it
18 has a status. And once funding is available, we'll
19 embark upon it again. Because there was something we
20 felt it is important to build early as possible for a
21 lot of reasons, including D-RAP and other insights.

22 MEMBER STETKAR: I have a question: From
23 our perspective, you know our involvement in the
24 process ends at the COLA. So anything that's in the
25 PRA that I'm calling the COLA PRA is conceivably part

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1 of our concern, is part of our review. Anything that's
2 done after that for the operational PRA is interesting
3 in an academic sense, but in the sense of the
4 Committee's involvement, I mean that then falls to the
5 staff and inspection audit type role. That's why I
6 was trying to get a handle on exactly what it is that
7 we need to be thinking about in the context of the
8 COLA, and what is in it and what's not in it.

9 MR. HEAD: I'm sorry for any confusion I
10 introduced to it.

11 MR. HUGHES: I would just like to add that
12 -- that was not the addition. I would like to add
13 that if you look at the original PRA and the
14 reconstituted PRA that got essentially identical
15 results, not in total but for the key sequence types,
16 that PRA does not meet all of the expectations we
17 would have today. However, that PRA is a very good
18 PRA. The event trees that we have in there are fairly
19 good event trees. The system models, given the level
20 of detail of the design certification and the COLA
21 application are pretty good.

22 The places that it comes up short in terms
23 of expectations are places you might expect. The
24 documentation expectations over the past 15 years have
25 changed a great deal.

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1 The expectations for the ability to
2 incorporate operating data can't be fulfilled. And
3 that's true of any design certification or COL PRA.

4 The expectations for human reliability
5 that rely on real procedures that are fully
6 implemented and tested or rely on any simulator
7 experience, it can't be done yet.

8 So there are a number of things in the new
9 PRA that's being developed that's on hold right now
10 that will greatly enhance what we have. But I just
11 want the record to show that the existing PRA is, I
12 think, a very high quality PRA that captures most of
13 the initiating events, most of the sequences and does
14 a really good job of providing the ability to evaluate
15 these departures.

16 CHAIRMAN ABDEL-KHALIK: Any additional
17 questions on Chapter 19? Okay.

18 At this time we'll take a 15 minute break
19 and we will reconvene at 10:30.

20 (Whereupon, at 10:13 a.m. a recess until
21 11:30.)

22 CHAIRMAN ABDEL-KHALIK: We're back in
23 session.

24 At this time the staff will make their
25 presentation on Chapter 19. So, Rocky.

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1 MR. FOSTER: Good morning. My name is
2 Rocky Foster. I'm the Chapter PM for Chapter 19 -
3 Response to Severe Accident Policy Statement.

4 I'd like to thank the Subcommittee to
5 provide us this opportunity to make our presentation
6 on the Safety Evaluation Report without any open
7 items.

8 Our Project Management team for Chapter 19
9 is our leaders George Wunder and myself, Chapter PM.
10 Dr. Todd Hilsmeier to my right -- our right. Dr.
11 Edward Fuller to my right. Marie Pohida, David Jeng
12 and Jason Dreisbach did our loss of large area fire or
13 loss literally of the plant due to fires or explosions
14 or fires. Excuse me.

15 MEMBER BLEY: Not to upset you right from
16 the start, but given the discussion we just had at the
17 end of the last session, I had a couple of questions.

18 You might remember we've talked to this in
19 the past, but we have the reconstituted PRA, and I
20 think you guys said you looked at that or audited it,
21 I think I remember that. And then we have the COLA PRA
22 which now includes some plant-specific items. And
23 have you seen that? Do you have a copy of it or did
24 you go visit and audit that one, and can you say
25 anything about how the COLA PRA compared to the

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1 reconstituted PRA?

2 MR. FOSTER: My understanding of the flow
3 of events that effected the PRA was that we had a PRA
4 that was associated with the level 1 PRA with the DCD.

5 When Toshiba came on board with the
6 applicant, some of the information that was available
7 to GE, who was the original designer, wasn't
8 available, okay?

9 MEMBER BLEY: Right.

10 MR. FOSTER: And so Toshiba had to, in
11 essence, reconstitute that information, they had to
12 provide it themselves or find a lower mechanism either
13 to recreate it or whatever.

14 Based off of that and the information they
15 had to go in onto the PRA and reconstitute it, okay?

16 MEMBER BLEY: Right.

17 MR. FOSTER: And they did their
18 evaluations and basically came out with the same
19 determination at the end, very close results, okay?

20 During the process of going through the
21 COL application licensing the applicant has been able
22 to fill-in certain information that would help to
23 inform the preparation of the level 2 or the site-
24 specific PRA, which is not required as part of
25 licensing, but we have stipulations required later on

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1 in the process prior to fuel load.

2 Now as far as the auditing process of it,
3 Todd, can you provide us input?

4 MR. HILSMEIER: Yes, I can give you a lot
5 of detail on our audits. Would you like that now, or
6 we can talk about that later?

7 MEMBER BLEY: Yes. I didn't see it in
8 your presentation here, so either way would work for
9 me.

10 MR. HILSMEIER: It may take a while,
11 that's what I'm concerned about. Yes, sit back and
12 relax.

13 My name's Todd Hilsmeier.

14 The new lead for STP Chapter 19 Review.
15 Our former lead was recruited by ACRS, and most
16 valuable player. I have no bad feelings.

17 To begin with, we have the ABWR DCD, and
18 with the FSAR, Safety Evaluation Report. And Appendix
19 19(d) documents the foundation of the ABWR PRA. It
20 contains the event trees, fault trees, player
21 probabilities. And it also calculated the core damage
22 frequency of 1.56 E minus seven. And STP wanted to
23 use that PRA model, but bemuse, I want to say,
24 politics, administrative, they couldn't use that PRA
25 model. So they rebuilt the PRA model.

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1 Therefore, they got the PRA model, I
2 believe, using CAFTA and the PRA information came from
3 Appendix 19(d) of the FSAR. And so they basically
4 rebuilt the event trees, the fault trees and used the
5 failure probabilities. And when STP computed the core
6 damage frequency after rebuilding this model, and they
7 named this model the baseline model of records.
8 There's a lot of different names of different models
9 and it's confusing.

10 So this model, the first model that
11 they're working on, is the baseline model of record.
12 And so when STP computed the CDF it came out with a
13 CDF of about twice that of the DCD, 3.96 E to the
14 $\text{minus } 7$.

15 And so STP did investigations. They
16 looked at the accident sequences to see why there's a
17 difference. And what they concluded was that credit
18 for the containment over pressurization system at
19 preventing core damage was included in the level 2
20 event trees of the FSAR. However, it wasn't in their
21 level 1 event trees. And so they added the COP system
22 to level 1 event trees.

23 Also, the CDF results documented in the
24 FSAR reflected the addition of the control rod drive
25 system for ejection, coolant eject. However, the

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1 event trees and fault trees in the FSAR did not
2 reflect the control rod drive system. Basically the
3 event trees, fault trees in the FSAR was of a previous
4 revision while the CDF results in FSAR were the final
5 results that reflected the CRD. So the event trees in
6 the FSAR reflected an earlier revision, basically,
7 which did not include the CRD, control rod drive
8 system.

9 And so when STP added the CRD system to
10 their event trees, they computed a core damage
11 frequency of 1.4 E minus 7. And again, the FSAR core
12 damage frequency is 1.56 E minus 7.

13 They also looked at the accident
14 sequences, and they matched up very well. And so they
15 called this model the reconstituted model of record.

16 MEMBER STETKAR: And, Todd, just to make
17 sure I understood that, that one has credit for CRD
18 injection as cause event?

19 MR. HILSMEIER: Yes. Yes.

20 And then STP goes one step further because
21 the original ABWR and PRA model it did not include
22 common cause failure of the reactor building cooling
23 water system and reactor service water and high
24 pressure core flooders and an RHR system. And during
25 the NRC review of the DCD the staff asked General

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1 Electric to do a sensitivity analyses of these common
2 cause failures which were modeled in the PRA. And for
3 the sensitivity analyses it showed like a 20 percent
4 increase in the CDF, however in the DCD General
5 Electric said that the next time the PRA model is
6 requantified or rebuilt these common cause failures
7 will be added.

8 And so STP took the initiative to add to
9 the reconstituted model of record these common cause
10 for reactor building cooling water, service water,
11 high pressure core flooders and RHD system. And that
12 model now which reflects the COP system, the CRD
13 system and the common cause failures which the DCD did
14 not include, STP called the model the revised model of
15 record. And this is the model that STP used to
16 evaluate the design departures and also site-specific
17 information.

18 And we learned all this through a face-to-
19 face audit with STP, it was back in September of 2009
20 in addition to audits of their documentation at the
21 Westinghouse Twinbrook office.

22 Now they use this model to evaluate the
23 design departures. I don't know if you want me to go
24 into that part of the discussion, how they evaluated
25 the design departure.

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1 MEMBER BLEY: So does anybody else want to
2 get into that?

3 CHAIRMAN ABDEL-KHALIK: Go ahead, please.

4 MR. HILSMEIERS: Okay.

5 CHAIRMAN ABDEL-KHALIK: Yes, go ahead.

6 MR. HILSMEIERS: John, you look like you
7 have a question.

8 MEMBER STETKAR: Yes. Looking at STP
9 departure 10.4-4 in section 19.3.1.3 of FSAR Revision
10 4, I probably can't say all of that twice in a row,
11 but I'm quoting. It says: "Nonsafety-related system
12 which contribute to a successful conclusion of the
13 event have been included in the success criteria. The
14 control rod drive CRD pumps which have limited
15 capacity have not been included in the success
16 criteria." That's why I was kind of --

17 MR. HILSMEIERS: Right.

18 MEMBER STETKAR: I don't know how
19 important it is, but from what you've just said it
20 seems to contradict the statement in the FSAR.

21 MR. HILSMEIERS: The FSAR? What section
22 of the FSAR is that?

23 MEMBER STETKAR: That one I can get.
24 19.3.1.3 and it's under STP departure 10.4-5
25 subparagraph (a) Core Cooling.

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1 I haven't followed through on that. I had
2 sort of remembered that they weren't modeling CRD, and
3 when you said it was added in some incarnation of what
4 you're marching through here --

5 MR. HILSMEIER: Right.

6 MEMBER STETKAR: -- I --

7 MR. DUBE: This is Don Dube. I was part
8 of the audit that we had an RAI on that. And STP
9 responded acceptably. I know we accepted the RAI. I
10 don't know the exact response. But we had that same
11 observation, I recall.

12 MEMBER STETKAR: Okay. I didn't get to
13 the SER. I wanted to go look at the FSAR first.

14 MR. FOSTER: We also have South Texas that
15 will respond to that.

16 MEMBER STETKAR: Yes.

17 CHAIRMAN ABDEL-KHALIK: The applicant
18 would like to make a comment.

19 MR. HUGHES: I expect Don's comment would
20 probably be the same as mine. You're a 100 percent
21 correct, Dr. Stetkar. That statement is in the
22 record.

23 What we did was we looked at that
24 statement, we looked at the results and we concluded
25 from everything we observed that in the final stages

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1 of the original DCD, the documentation and the
2 adjustments that were made were not a 100 percent
3 consistent. And especially we discovered three
4 different areas on which that was the case.

5 The first one that you haven't mentioned
6 was there were some cases that were listed as
7 negligible in the sequences. And yet when we
8 reconstituted and we solved the reconstituted model,
9 we observed that some of the previously negligible
10 were slightly above others that had been reported and
11 retained. And we concluded from our investigation
12 that what happened was in the original early 1990s
13 when this work was done, the solution with one
14 solution for all the sequences was not commonly
15 applied. And so the sequences were individually
16 quantified and after a sequence had been determined to
17 be negligible it appeared the original applicant for
18 the design certified had not always updated the
19 sequences. We did that update and included all of
20 those in.

21 There's a clear statement that CRD is not
22 credited, and that was a very strange statement
23 because from the work I had done in the '80s and
24 through the '90s with the original applicant on other
25 cases, it was surprising that that would be the case.

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1 And with the regulatory history of CRD injection
2 capability, it seemed very strange. And when we put
3 credit for it in, everything lined up exactly the way
4 we thought it would.

5 And the conclusion we reached was that it
6 had been credited in the results table, but it had not
7 been adjusted in the text. So there was a
8 inconsistency between the text and the results.

9 The third place this occurred was with the
10 containment overpressure protection system, which was
11 also not clearly credited but yet when we put it in as
12 we knew it should have been, and its described in the
13 record as something that through discussions with the
14 NRC late in the game of going through the review, the
15 decision was made to incorporate it in the design. It
16 clearly was not modified fully in the text, but when
17 we put it in all the results came into alignment. So
18 that's how we concluded that was the case.

19 We made that information clear to the NRC,
20 and I think Dr. Dube was about address the fact that
21 during the audit that was indeed found to be true.

22 CHAIRMAN ABDEL-KHALIK: Don?

23 MR. DUBE: That's correct.

24 CHAIRMAN ABDEL-KHALIK: Okay. Thank you.

25 MR. DUBE: John Lai is getting the RAIs up

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1 here if there's interest.

2 CHAIRMAN ABDEL-KHALIK: Okay.

3 MEMBER STETKAR: I just pulled the SER
4 discussion of it. I see it here.

5 MR. FOSTER: So, John, does that pretty
6 much kind of clear things out for you here?

7 MEMBER STETKAR: Yes. Thanks.

8 CHAIRMAN ABDEL-KHALIK: Please continue.

9 MEMBER STETKAR: I'm sorry, Todd. I
10 interrupted. You had a good head of steam going
11 there.

12 MR. HILSMEIERS: So now the model that STP
13 used to evaluate the departure and site-specific
14 information is called the revised model of record.

15 And STP has approximately 170 departures.
16 And STP screened the departures in accordance with
17 Regulatory Guide 1.206 Section C.3.1.19 that describes
18 the process for developing the plant-specific PRA from
19 the design certification PRA including evaluating
20 departures and design changes. In the screening
21 process STP also developed the procedure in accordance
22 with this Regulatory Guide 1.206 for screening
23 departures.

24 And the results of the screening process
25 id documented in Table 19.2-2 of the FSAR, which I

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1 have here. And this set of departures and then how it
2 impacts the PRA. And our staff thoroughly went
3 through the table and asked many RAIs for
4 justifications why certain departures were screened.
5 And this was a major effort then. This was discussed
6 at the last ACRS meeting last year.

7 Eleven departures remain on the screen of
8 the approximately 170 departures and six were
9 determined to have a negligible impact on PRA and five
10 had potential impact. And also STP looked at the
11 updated loss of offsite power frequency.

12 So STP used the revised model of record to
13 evaluate the departures and design changes and site-
14 specific information.

15 The five departures that had a potential
16 impact on the PRA model included:

17 The change in ultimate heat sink;

18 RCIC turbine pump departure;

19 The medium-voltage electrical system
20 departure;

21 The updated digital architecture departure
22 and that should be also considered the updated loss of
23 offsite power frequency.

24 So, I'll next provide the overall results
25 of the impact of the departures on the CDF.

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1 Again, the revised model of record which
2 reflects the DCD CDF is 2.13 E minus 7.

3 The plant-specific core damage frequency
4 which reflects the five departures, that could
5 potentially impact CDF using the DCD loss of offsite
6 power frequency had a CDF value of 2.05 E minus 7.
7 That's a four percent delta. And based on our Interim
8 Staff Guidance for PRA with a four percent change in
9 CDF and those changes in risk insights, they did not
10 need to report the numerical values, the quantitative
11 values.

12 Now the plant-specific CDF using the site-
13 specific loss of offsite power frequency was actually
14 a lower one, .79 E minus 7. The largest contributor
15 to the difference in core damage frequency of four
16 percent was due to the ultimate heat sink design, and
17 that's because of the forced cooling pans.

18 I believe the DCD uses a cooling pond for
19 the ultimate heat sink. I'd have to check that to be
20 exact. But however, STP's ultimate heat sink is based
21 on forced cooling.

22 And that's about all I have to say on that
23 part.

24 CHAIRMAN ABDEL-KHALIK: Okay. Is that
25 okay for you --

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1 MEMBER BLEY: That's all my questions.

2 Thank you.

3 CHAIRMAN ABDEL-KHALIK: Thank you.

4 Please go ahead.

5 MR. FOSTER: There's one thing I'd like to
6 say about the PRA itself, because I've been involved
7 from the beginning process here. You can tell back in
8 the '90s we went through the evaluation of a PRA we
9 were vastly different in a lot of the approaches that
10 we took the PRA and how we quantified things. And now
11 we're much more detailed.

12 From my observation of the applicant, I'd
13 like to actually commend them for the hard work
14 they've done. They've went back in and tried to
15 identify the shortcomings of the PRA and address it a
16 system, do any of the adjustments to try to figure out
17 and pull the threads on things within the PRA itself
18 where things were addressed, where the numbers didn't
19 match up right or the conclusions were right and
20 pulled that together such that we the staff could
21 understand the process that they were going through on
22 that.

23 Chapter 19. We have no open items. We've
24 closed all the open items. We've got some notable
25 confirmatory items, mainly 19-15, and then we have one

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1 associated with Chapter 17 which deals with the D-RAP
2 which we'll talk at the end of the chapter, basically
3 referring us to Chapter 17, which is our next chapter.

4 We do have multiple loss of large area
5 fire confirmatory items. I think we have
6 approximately ten of them.

7 And the staff has no ACRS action items.

8 For the first discussion, I'll turn it
9 back over to Todd.

10 MR. HILSMEIERS: Thank you, Rocky.

11 The next two slides, this slide deals with
12 the main cooling reservoir breach and the slide after
13 that deals with hurricane risk assessment. They were
14 both evaluated by Maria Pohida, but she couldn't be
15 here today, so I'll be filling in for her. And I'll
16 do my best. She has all the detailed, nitty-gritty
17 stuff, but I think I can cover all the bases.

18 Okay. So on this slide, the closure of
19 Open Item 19-12 is discussed.

20 Open Item 19-12 relates to RAI 19-30 that
21 addresses STP's risk evaluation for external flooding
22 due to postulated main cooling reservoir breach. So
23 I don't get tongue twisted; main cooling reservoir
24 breach I'm going to refer to MCR breach. Usually MCR
25 is main control room, but I'll just call it MCR.

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1 MEMBER STETKAR: If we could figure out
2 all of the incarnations of the PRA, we can handle this
3 one.

4 MR. HILSMEIER: The risk evaluation for
5 the MCR breach risk assessment was based on the
6 watertight control room access door being normally
7 open and two watertight doors in the reactor building
8 access corridor being normally open.

9 On June 8, 2010, the staff discussed with
10 the ACRS Subcommittee this open item and its
11 resolution, which is to change in the FSAR the status
12 of the watertight doors and hatches to be normally
13 closed. And this change is reflected in STP's final
14 response to RAI 19-30, which is dated July 28, 2010.

15 And so in essence these watertight doors
16 which could cause potential flooding of the control
17 building will be normally closed rather than normally
18 open. And in the RAI response, STP used criterion (a)
19 in Section 6-2.3 of the ASME PRA standard to screen
20 external flood scenarios from a detailed quantitative
21 evaluation. And the staff confirmed that the proposed
22 revisions are incorporated into Revision 4 of the
23 FSAR, and therefore Open Item 19-12 is closed.

24 Any questions?

25 All right. Next slide?

1 In this slide we addressed closure of Open
2 Item 19-9. Under the standard departure 1.1-2 for the
3 shared fire water system between Units 3&4 the staff
4 concluded that this departure impacts the site's
5 hurricane risk assessment. Therefore, the staff issued
6 RAI 19.01-31 requesting the applicant to provide a
7 shutdown in full power hurricane risk assessment for
8 the site that considered the shared fire water system.
9 And in response to RAI 19.01-31 and to satisfy
10 requirements of 10 CFR 52.70(d)(1) the applicant
11 provided simplified risk assessments to evaluate
12 hurricanes at or below the design basis wind speed of
13 134 miles per hour or three second gust, and also to
14 evaluate hurricanes above this design basis wind speed
15 which would fail the fire water pump house and the
16 combustion gas turbine structure.

17 And these risk assessments credited the
18 hurricane compensatory measures that the applicant
19 discussed during their presentation. And these
20 hurricane compensatory measures will be documented in
21 the next revision of the FSAR.

22 Also, STP developed the commitment 19.4-1
23 to develop abnormal operating procedures for
24 hurricanes that are consistent with the Guidelines of
25 NUMARK 87-00 on procedures and hurricane preparations

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1 for addressing station blackout. And these procedures
2 will also include the hurricane compensatory actions.

3 The staff also found that the results from
4 the hurricane risk assessments satisfied the
5 requirements of 10 CFR 52.79(d)(i) and meet the
6 Commission Guidelines for New Reactors. Therefore,
7 the staff concluded that the issues associated with
8 Open Item 19-9 are resolved. And verification of the
9 proposed changes to the revised FSAR is being tracked
10 as Confirmatory Item 19-15

11 MEMBER STETKAR: Don't put the slides up.

12 A couple of questions. I think that we
13 heard in the applicant's presentation that they did
14 perform the quantitative analysis that you have
15 summarized here and that the conclusions of that
16 analysis were that the hurricane induced core damage
17 frequency was -- I don't know. They mentioned
18 something ten to the minus eight, or whatever. And as
19 a result of that, it could be screened out, therefore
20 it's not actually quantified in the current PRA of
21 record, whatever that is called. Is that true?

22 MR. HILSMEIERS: We agreed that the --

23 MEMBER STETKAR: Because it's less than
24 the ten to the minus seven core damage frequency --

25 MR. HILSMEIERS: Yes, it's very low

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1 MEMBER STETKAR: -- per your magic number?

2 MR. HILSMEIER: The risk assessment, that
3 included in the FSAR.

4 MEMBER STETKAR: Okay.

5 MR. HILSMEIER: However, the compensatory
6 actions are.

7 MEMBER STETKAR: Yes.

8 MR. HILSMEIER: And that's where most of
9 the focus is.

10 MEMBER STETKAR: No. I understand that.
11 I'm trying to understand what is in the risk
12 assessment and what is not in the risk assessment.
13 And I care less about very precise, very small numbers
14 then understanding what indeed has been evaluated --

15 MR. HILSMEIER: Right.

16 MEMBER STETKAR: -- in the risk assessment
17 and the basis for that.

18 On your slide here it says that hurricanes
19 at or below the design basis wind speed of 135 miles
20 per hour had a frequency of one in a 100 years. They
21 assumed that if at one in a 100 years you would have
22 a hurricane with a wind speed greater than 134 miles
23 per hour, and they explained this morning that they
24 failed some structures.

25 My question is that 100 -- I'm sorry.

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1 The frequency of a hurricane with a three
2 second gust wind speed that exceeds 134 miles per hour
3 is a construct from ASCE 07-05. It's a structural
4 design guidance.

5 The three second gust wind speed, again,
6 of 134 miles per hour corresponds to about the mid
7 range of a Category 2 hurricane. The question is did
8 you in your review of this response question their
9 assigned frequency of once in a 100 years of a
10 Category 2 hurricane striking the South Texas site?
11 Because if you look at historical hurricane data for
12 the last 50 years or so which are available, it's not
13 at all clear that that once in a 100 year frequency is
14 a conservative number, for example.

15 MR. HILSMIEIER: I agree with you.

16 MEMBER STETKAR: I want to focus on the
17 very small numbers.

18 MR. HILSMIEIER: All right. Exactly.

19 MEMBER STETKAR: I don't care at one level
20 whether it's something times ten to the minus eight or
21 a few times ten to the minus six even.

22 MR. HILSMIEIER: Right.

23 MEMBER STETKAR: But whether or not there
24 is an explicit treatment of these events in the PRA is
25 of concern, moving forward in particular.

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1 MR. HILSMEIERS: Yes. I agree with you on
2 that in this event frequency. First I'm going to
3 answer your first question why the risk assessment is
4 not in the PRA.

5 The increase in the overall risk is less
6 than ten percent. And by the Interim Staff Guidance
7 they don't need to include the quantitative results.

8 When I was preparing for this meeting I
9 also asked that question: Is this .01 per year
10 frequency for winds less than 134 miles hour, is it
11 conservative? Conservative high? And I looked at
12 NUREG-CR/6890 that analysis loss of offsite power
13 frequency. And they quoted or they stated that the
14 frequency for whether related loss of offsite power
15 for coastal plants is on the order of seven to E minus
16 2 per year, and that's mostly dominated due to
17 hurricanes.

18 MEMBER STETKAR: Yes, but you got to be
19 careful because that includes Turkey Point and St.
20 Lucie, which is they're really bad actors.

21 MR. HILSMEIERS: Right.

22 MEMBER STETKAR: And so that's got lump
23 data in it, so that might not necessarily be fair to
24 South Texas to use that.

25 MR. HILSMEIERS: Well, I agree. But I

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1 wanted to do a ultra-conservative analysis.

2 MEMBER STETKAR: Yes.

3 MR. HILSMIEIER: So when I use the seven E
4 minus 2, the Commission guidelines were still met.

5 MEMBER STETKAR: Yes.

6 MR. HILSMIEIER: And I brought everything
7 except for my calculator.

8 MR. CORRADINI: Here, pass this over.

9 MEMBER STETKAR: Todd, as I said, I didn't
10 want to bring up the absolute numbers because i
11 understand your criteria and things like that.

12 MR. HILSMIEIER: Right. Yes.

13 MEMBER STETKAR: I'm just trying to
14 understand how --

15 MR. HILSMIEIER: So, it ended up being like
16 seven or eight E minus 8. And the analysis are very
17 conservative because they don't take credit for diesel
18 recovery and they don't take credit for the portable
19 diesel driven fire pump. So even factoring that in,
20 there was a risk even substantially more. So the
21 staff performed other sensitivity analyses.

22 And our major concern was with the other
23 risk assessment for a hurricane greater than 135 miles
24 per hour. Because the ACIWA's structures failed along
25 with the combustion turbine generators. And so that

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1 was a higher priority to us.

2 MEMBER STETKAR: Yes.

3 MR. HILSMEIER: I hope that answers your
4 question of this morning?

5 MEMBER STETKAR: It helps a lot. I mean,
6 I understand the process. It sounds like you did delve
7 into it.

8 MR. HILSMEIER: Yes. These are
9 sensitivity studies and there's always a question
10 regarding what values to use.

11 MEMBER STETKAR: Well, that's why I asked
12 about it. You know, did they look at the
13 uncertainties in that frequency as a function of
14 hurricane severity. The answer is no, they haven't.
15 You've done a little bit looking at different types of
16 data sources.

17 MR. HILSMEIER: Right.

18 MEMBER STETKAR: You know, within a factor
19 of seven, let's say, on that mean frequency.

20 MR. HILSMEIER: Right.

21 MEMBER STETKAR: Which helps a bit.

22 MR. HILSMEIER: Okay.

23 MEMBER STETKAR: Okay. Thanks.

24 MR. HILSMEIER: Is there any questions on
25 the basis of the hurricane risk assessment greater

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1 than 135 miles per hour? Otherwise, I'm done with
2 this slide.

3 CHAIRMAN ABDEL-KHALIK: Please continue.

4 MR. HILSMEIERS: Next Rocky.

5 DR. FULLER: I'm going to be discussing
6 the next few open items.

7 My name is Edward Fuller. I'm in the
8 Severe Accident and Probabilistic Risk Assessment
9 Branch of the Office of New Reactors, the same branch
10 that Todd is in except he's call the RA and Severe
11 Accident Analysis Branch.

12 I bring this up to remind folks that
13 Chapter 19 is not just about PRA. It's about severe
14 accident, evaluation of mitigation features. It's
15 about accident management, severe accident management
16 and it's about severe accident mitigation design
17 alternatives or SAMA; SAMDAs or SAMA. So in the PRA
18 part, which is roughly half, is obviously
19 probabilistic in nature and the severe accident part,
20 which is the other half, is deterministic in nature
21 and is based on meeting the Commission's guidelines on
22 severe accident prevention and mitigation features.

23 So, the first of these open items is a PRA
24 item related to the level 2 PRA. And it's related to
25 the open item you just heard from Todd on the

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1 hurricane risk during shutdown.

2 We asked an RAI, we had concerns about
3 startup and shutdown operations when the containment
4 would not be inerted. So we asked an RAI to have
5 issues pertaining to level 2 PRA and also severe
6 accidents. We were wondering what would happen if you
7 had a severe accident if the containment was not
8 inerted and how it would impact the overall risk.

9 And so we took advantage of a departure where
10 they were going to remove the hydrogen recombiners to
11 get at this notion a little bit.

12 And so we did two parts to this RAI: One
13 related to the hydrogen combination what its
14 consequences might be, and the other one related to
15 the impacts on large release frequency for low power
16 and shutdown operations.

17 And as you just heard, the staff issued
18 another RAI 19.01-31 which you just head the
19 discussion of related to the shared fire water system.
20 As we evaluated the response to RAI 19-3, the
21 applicant spent a fair amount of effort to describe
22 how the hydrogen combiners would be ineffective for
23 low power and shutdown severe accidents when the
24 containment was de-inerted. And so w believed that
25 they did address our concern relative to the

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1 departure. However, we don't assume that the risk
2 associated with these kinds of conditions is very low
3 because there was not a shutdown level 1 and level 2
4 PRA performed in the original design certification.
5 And the COL applicant didn't provide one either.

6 We believe, though, that Open Item 19-9 is
7 now resolved because 19-8 is resolved with respect to
8 the risk of these kinds of events. Because this risk
9 assessment that Todd and sensitivity study that Todd
10 just talked about gives us confidence that the
11 Commission guidelines on large release frequency would
12 probably be met.

13 Okay. IS there any questions on that one
14 before I go to the next one? Okay.

15 The next one, next slide, please.

16 These next two items are not PRA related.
17 They're severe accident related.

18 Open Item 19-5, coincidentally, is also
19 based on RAI 19-05 and it's related to severe accident
20 management.

21 We looked at the commitment originally
22 made in Section 19.9.14 on how they're going to be
23 addressing possible changes in the accident management
24 procedures to go from the existing BWR designs to the
25 ABWR. And basically there are two SAGs in the BWR

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1 Owners Groups, AP Emergency Procedure
2 Guidelines/Severe Accident Guidelines, there are two
3 of them related to severe accident management. One is
4 related controlling radioactive releases, and that's
5 not up for discussion here, but the other one is
6 related to flooding the RPV and/or containment during
7 a severe accident. And we looked at what the
8 applicant said was going to be done. And we
9 determined that with respect to the ABWR design, it
10 wasn't a complete enough picture because we believed
11 that the existing Containment Flooding Guideline
12 needed to be expanded to address possible implications
13 of flooding the lower drywell, not necessarily the
14 upper drywell because the applicant originally was
15 referring to flooding the upper drywell.

16 So, we needed them to bring in actions
17 pertaining to the consequences of having the passive
18 flooder work and put water in the lower drywell to
19 cool debris.

20 And we asked them to make a commitment to
21 do so. And you see in this last bullet here the
22 commitment number is 19.9-30 and it was in a letter
23 that we got last fall, last October. And if you look
24 in South Texas Project's presentation slide 7, they
25 basically list what the commitment was. That

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1 basically strategies for a primary containment
2 flooding would incorporate generic industry guidance
3 as necessary and use existing site-specific design
4 features to the extent possible to provide indication
5 of and address flooding in the lower drywell when the
6 lower drywell flooder doesn't operate, does operate as
7 designed, operates too soon or operates design during
8 a severe accident scenario that involves a core melt
9 and vessel failure.

10 And you'll hear in a minute that we had
11 done a confirmatory assessment to address consequences
12 of lower drywell flooding from the passive flooder.
13 And based on the results of our confirmatory
14 assessment we conclude that, indeed, that this
15 commitment would address all of the conceivable
16 outcomes in a severe accident. So we now believe that
17 this open item can be closed.

18 Now let's go to the next one, because it's
19 closely related.

20 MR. FOSTER: Said, are you -- okay.

21 DR. FULLER: This is Open Item 19-13, and
22 i was based on a departure taken in Section 9, not 19,
23 but it relates to what I've just been talking about.

24 The staff had concerns that we could not
25 necessarily ensure containment integrity for 24 hours,

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1 because that's one of our criteria in the Commission
2 guidelines, in SECY 93-087. And so what we decided to
3 do was to do a confirmatory assessment using the
4 MELCOR code to see if we could assure that one could
5 maintain containment integrity for 24 hours whether or
6 not the drywell flooder system operated as designed.

7 So, we asked a couple of RAIs to get
8 information from the applicant so we could do this
9 confirmatory assessment. They complied. And we had two
10 separate questions to get all the information we
11 needed.

12 And one of the other things we did was we
13 decided to elaborate a little bit on this confirmatory
14 assessment by doing some of the scenarios ourselves
15 with MAAP as well. So we asked them for their MAAP
16 parameter file as it existed at the time, as well as
17 the some of the input files that we could modify as
18 appropriate to do our confirmatory assessment.

19 So we went ahead and did the confirmatory
20 assessment. And if we go to the next slide,
21 fortunately we found that whether or not you flooded
22 the drywell, it would take more than 24 hours to get
23 basemat melt-through.

24 Recall in this design if you have a severe
25 accident, the containment pressure is going to go up

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1 even before vessel failure and then after vessel
2 failure would continue to the point where the
3 containment over protection system would work, the
4 COPS. And it would be, presumably, automatic and it
5 would, presumably, take place well below the ultimate
6 pressure of the containment. And the confirmatory
7 assessments showed that that was the case the COPS
8 would open less than 24 hours after the start of the
9 accident, probably about somewhere between 15 and 20
10 hours depending on the calculations.

11 So, by the way, the MELCOR and the MAA
12 P calculations agreed very, very closely for everything
13 of significance here.

14 MR. CORRADINI: So just to clarify when
15 you say that that's a hardened vent release from
16 above the wetwell, right?

17 DR. FULLER: That's correct. It's in the
18 wetwell air space and it's quite high up, above the
19 vacuum breakers.

20 MEMBER STETKAR: Ed, do you have -- I'm
21 searching desperately here and I can't find the
22 information. You said the COPS would probably open
23 automatically 15 some odd hours?

24 DR. FULLER: Well depending on the
25 accident scenario, but in that ballpark?

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1 MEMBER STETKAR: What is it powered from?

2 DR. FULLER: I don't think it's powered.

3 I think it's --

4 MEMBER STETKAR: It's just a DP?

5 DR. FULLER: Yes, it's a passive system.

6 MEMBER STETKAR: Thanks.

7 MR. CORRADINI: And then from then on it's
8 a hardened vent or it is a filtered vent? What is the
9 design.

10 DR. FULLER: The filter is the suppression
11 pool.

12 MR. CORRADINI: Okay. But the venting is
13 at the top of the reactor building? I'm just trying
14 to remember.

15 DR. FULLER: All I've seen is a cartoon,
16 and it just goes up, I guess --

17 MR. CORRADINI: Into the reactor building
18 or on the reactor --

19 DR. FULLER: It has to go into the reactor
20 building to get out, but I don't know specifically how
21 it would go through the reactor building. Maybe we
22 can get some information from South Texas, because I
23 really don't know for sure.

24 MR. CORRADINI: Okay.

25 DR. FULLER: I assume if it's hardened,

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1 it's harden and it would not fail, I would hope.

2 MR. CHAPPELL: This is Coley Chappell.

3 Just to respond to that question, it vents
4 outside of the containment, outside of the secondary
5 containment. It's an elevated release, similar to a--

6 DR. FULLER: Okay. But I think his
7 question was how does it get from the torus through --
8 how does it get out.

9 MR. CHAPPELL: The wetwell.

10 DR. FULLER: How does it get out of the
11 reactor building? Not torus. My mind is in
12 Fukushima.

13 MR. CHAPPELL: It's a direct pipe. IT
14 doesn't interface once it gets -- it has the isolation
15 valves that are open and then it has the rupture disc,
16 and then it just goes straight up.

17 MEMBER ARMIJO: It doesn't go through any
18 kind of a cleanup system?

19 MR. CHAPPELL: No, it's a direct vent.

20 PARTICIPANT: No, the assumption is the
21 whiteout was the cleanup.

22 MEMBER ARMIJO: Okay.

23 MR. CORRADINI: And then the only other
24 question I had pertains with the slide before, but
25 don't go back.

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1 The geometry in the lower drywell has not
2 changed. There is an access hatch, right, and it's
3 high up relative to the floor, if I remember.

4 DR. FULLER: An access hatch? For what
5 purpose?

6 MR. CORRADINI: I thought, maybe I've got
7 designs mixed up in my head. I thought there was a
8 personnel access into the lower drywell through a
9 hatch.

10 DR. FULLER: I don't know. I've never
11 seen it on any cartoons.

12 MR. CORRADINI: In 1992 I thought there
13 was an access hatch. I could be misremembering.
14 That's what I wanted to ask.

15 CHAIRMAN ABDEL-KHALIK: Would the
16 applicant care to comment on this?

17 MR. CHAPPELL: This is Coley Chappell.

18 We'll have to look at specifics on that
19 and get back.

20 MR. CORRADINI: Okay. Let me tell you why
21 I'm asking just so you can see where I'm coming from.

22 So what I'm trying to understand is the
23 water level upon the deluge, whatever they call these
24 things, the plug --

25 DR. FULLER: Passive flooder.

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1 MR. CORRADINI: Thank you. Whatever it
2 is.

3 DR. FULLER: Lower drywell flooder.

4 MR. CORRADINI: Yes. Where that water
5 level is relative to the hatch. But again, my
6 memory's wrong and I haven't looked, I honestly
7 haven't looked in the drawings. And I just want to
8 know the relative location of that to that, because
9 you had some other --

10 DR. FULLER: There is a pressure relief
11 line high up in the lower drywell that goes into the
12 downcomers.

13 MR. CORRADINI: Yes.

14 DR. FULLER: So you have pressure
15 communication.

16 MR. CORRADINI: Well, I want to know --

17 DR. FULLER: And this is way above where
18 the water would be.

19 MR. CORRADINI: Okay. But where I'm
20 coming from is if the hatch is submerged and there's
21 a pressure within the water pool, what does it do to
22 the hatch? I'm not worried about the concrete. I'm
23 worried about the hatch.

24 DR. FULLER: If you had a steam explosion,
25 it would be of concern, wouldn't it?

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1 MR. CORRADINI: That's why I'm kind of
2 getting there, yes.

3 DR. FULLER: Yes. I didn't know. I didn't
4 realize there was one.

5 MR. CORRADINI: Well, again, there used to
6 be. I could be wrong.

7 CHAIRMAN ABDEL-KHALIK: Can we just hold
8 on to this as a follow-up item?

9 MR. CORRADINI: Sure.

10 CHAIRMAN ABDEL-KHALIK: Perhaps the
11 applicant can provide that information, the relative
12 elevation of the two? Thank you.

13 DR. FULLER: Okay.

14 MEMBER ARMIJO: Before you go on, could
15 you go back to page 8.

16 DR. FULLER: Page 8?

17 MEMBER ARMIJO: Yes. The fusible plug,
18 I'm trying to understand how important they are. If
19 they melt too soon, you could have core debris
20 entering and falling onto water.

21 DR. FULLER: That's correct.

22 MEMBER ARMIJO: If they melt too late,
23 you'd have no cooling of the debris that's on the
24 floor. And so the timing is tricky to make sure they
25 melt at the time you wanted melt. And I just wonder

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1 how important is this or do you have -- are these
2 other backup systems going to take care of it even if
3 they don't work?

4 DR. FULLER: When we did the confirmatory
5 assessment both codes predicted that you would get
6 your lower drywell temperature up to 500 degree
7 Fahrenheit within a minute or two after the vessel
8 would breach. And these are passive. So one would
9 assume that they have fairly high reliability of
10 working.

11 MEMBER ARMIJO: But if the vessel doesn't
12 breach, is there no chance that they would melt
13 prematurely?

14 DR. FULLER: We looked at that, and the
15 answer is yes.

16 MEMBER ARMIJO: There is no chance?

17 DR. FULLER: There is no chance?

18 DR. FULLER: Yes, there is a chance. I'm
19 sorry.

20 MEMBER ARMIJO: Okay.

21 DR. FULLER: But not in the station
22 blackout scenarios we looked at, but instead in the
23 main steamline break scenario that we looked at we
24 found that the drywell temperatures got up pretty
25 high. And in one of the variations we ran, it was

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1 within a couple of degrees by the time the vessel
2 failed. So what we did was considered that, and then
3 we jumped back into PRA space again. Because we know
4 that these main steamline break events have a much
5 lower frequency of occurrence than the station
6 blackout.

7 When General Electric did its original
8 design certification work in their level 2 PRA, they
9 showed two or three orders of magnitude difference
10 between the station blackouts and the main steamline
11 break. And, indeed, the station blackout scenarios
12 account for nearly all of the core damage frequency
13 for internal events at power. I'd say in the order of
14 maybe two-thirds to three-quarters of the CDF. I
15 don't remember -- or maybe I didn't make a note of
16 what the breakdown was in South Texas to the
17 reconstituted PRA. But I can only assume that they're
18 relatively the same proportions.

19 MEMBER ARMIJO: So just getting back to
20 what I just wanted to understand. That if the vessel
21 breaches, you have little doubt that these things will
22 melt pretty quickly?

23 DR. FULLER: That's correct.

24 MEMBER ARMIJO: But you do have some
25 uncertainty, and I don't know how big it is and how

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1 important it is, that they won't melt prematurely?
2 That it won't get hotter in those regions and they'll
3 melt, that it won't get hotter in those regions and
4 they'll met before the breach?

5 DR. FULLER: We have a fairly high
6 confidence that that's true, yes.

7 MEMBER ARMIJO: Okay. I'm still confused.
8 You have confidence that they won't met prematurely?

9 DR. FULLER: Yes, but we thought it was
10 possible, that's why we wanted to look at it.

11 MEMBER ARMIJO: Okay. Okay. All right.
12 Well, I'll just stop there.

13 MEMBER SHACK: And you concluded that it
14 came close, at least in the main steamline break --

15 DR. FULLER: The main steamline break it's
16 an issue --

17 MEMBER ARMIJO: But not in the station
18 blackout?

19 DR. FULLER: -- it is relevant, but it
20 didn't seem to be relevant in the station blackout.

21 MEMBER ARMIJO: Okay.

22 MR. CORRADINI: So let me follow on his
23 question with another question. There's nothing in
24 the two calculations that have any physics in it
25 anyway -- so let me go back.

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1 In the original submission in the early
2 '90s that I remember they purposely wanted to make the
3 lower drywell as dry as possible. There could be
4 incidental water, but they weren't going to
5 purposefully put stuff down there.

6 DR. FULLER: Right, correct.

7 MEMBER SHACK: For all the reasons we've
8 been -- all right. But if I'm late in water arriving
9 or I don't have water arriving, I don't think MAAP or
10 MELCOR know the difference. So just because you run
11 the calculations, it's going to burn through whether
12 I have water on top or not, at least for MELCOR.

13 DR. FULLER: For MAAP, MAAP matters,
14 simplistic as they are, assume to get quenching with
15 water on the top?

16 MEMBER SHACK: Well, let's stick with
17 MELCOR. I'm not as conversant in MAAP. But in
18 MELCOR's world whether I have water on top or not
19 water on top, it penetrates. I know that because I've
20 done enough calculations with MELCOR it doesn't know
21 the difference.

22 DR. FULLER: Yes. But one of the good
23 things that have come out of the CSNI -- OECD CSNI
24 MMCI 2 program, particularly the last couple of large
25 scale experiments that were done at Argonne, show that

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1 you indeed can get effective cooling with water on
2 top. You can get eruptions of --

3 MEMBER SHACK: Right.

4 DR. FULLER: And so even if you reject all
5 of the modeling that goes in both codes, the data show
6 that there's a higher reliability you're going to be
7 able to cool that debris.

8 MEMBER SHACK: Right. That I'm aware of.
9 I guess I wanted to kind of couple on to what asking
10 what Sam's saying, which is at least from the risk
11 standpoint that's in the analysis that we're talking
12 about, having the water arrive late or not at all and
13 from the standpoint it doesn't really effect -- there
14 was some timing thing. Maybe it was the previous
15 slide. There was some timing thing about it and the
16 order of the day, or something. It doesn't matter at
17 all, at least from what the modeling is saying.

18 DR. FULLER: Okay. The confirmatory
19 assessment said, I believe it was in the order of
20 between 1 and 2 days after vessel failure before you
21 would breach the basemat if there was no water on top.
22 And if you did have water on top, you would basically
23 cool down the debris, and what would happen -- and
24 this would be coming from the lower drywell flooder,
25 okay?

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1 And so what you've got here is this is the
2 drywell, this is the suppression pool. The flooder
3 aligns are down here. Water would come in and then you
4 would equilibrate somewhere well above the top of the
5 topmost vent. There are three vents, as you know.
6 However, that's only part of the story, and this is
7 one of the major outcomes of our confirmatory
8 assessment.

9 As time went on if that's all the water
10 you put in, you would boil away the water in the lower
11 drywell and steam would go out the cock's vent And
12 since the suppression pool is saturated, you would
13 gradually boil down the water in the suppression pool
14 until eventually you got a dried out lower drywell
15 again. This is two to three days after start of the
16 accident. And then as time went on you could uncover
17 the topmost vent if you didn't do anything else.

18 At that time you have a lot of high
19 temperature fission product vapors that would come out
20 through that uncovered vent and go up the cocks to the
21 environment. That's a bad situation.

22 So what we determined was, we established
23 some timing necessary to bring in some of these other
24 water systems, most importantly the AC-independent
25 water addition system that we heard quite a bit of

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1 discussion about earlier, the ACIWA. And we also in
2 looking at what would be needed to reestablish a
3 covered core debris in the lower drywell and to keep
4 the suppression pool water level above the top most
5 vent but not so high that you over fill it. You
6 needed to be putting water in a controlled manner and
7 quite a bit less gpm then the specs on these that
8 South Texas was telling you about earlier today.

9 So, the lower valve does exist to
10 establish long-term control until you actually got AC
11 power back. Once you got AC power back, everything
12 would be fine. You would have a mitigated release,
13 okay? It would be relatively fine. You'd have a
14 release, but it would be a mitigated release.

15 MR. CORRADINI: So just to hand off my
16 question, so from the standpoint of what you want
17 first; the timing assess that you would like, you said
18 "high reliability." You would want, at least the way
19 the design is stated, you want almost certainty of no
20 early water release?

21 DR. FULLER: We would --

22 MR. CORRADINI: That's why I'm trying to
23 get back to what Sam was asking.

24 MEMBER ARMIJO: Yes.

25 DR. FULLER: Yes. You would really want

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1 that lower drywell flooders system to work fairly
2 quickly after vessel failure, but not before vessel
3 failure.

4 MR. CORRADINI: You want that?

5 DR. FULLER: And as far as I'm concerned,
6 if they're fusible plus that are going to be melting
7 at 500 degrees Fahrenheit, you'll put some uncertainty
8 on that number, plus or minus I don't know, even 50
9 degrees --

10 MEMBER ARMIJO: Well, melting temperature
11 you could set that very easily. But the problem is
12 how hot does it get, and that's a thermal analysis to
13 make sure it gets up to that temperature. But those
14 materials can be tested.

15 DR. FULLER: Well, the codes are pretty
16 good about mass and energy balances. They get the
17 temperatures pretty correct, I think.

18 MEMBER ARMIJO: But except for the main
19 steamline break, the possibility of premature melting
20 of those plugs is very, very low.

21 DR. FULLER: By the way, this material is
22 documented in a report which we -- it's not ADAMS yet,
23 but it will be soon.

24 MR. CORRADINI: And just maybe you said it
25 and I missed it when you were answering --

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1 DR. FULLER: No, no. Maybe you put it in.

2 MR. FOSTER: It's already in ADAMS, yes.

3 DR. FULLER: You did? Yes, it's in ADAMS.

4 MEMBER ARMIJO: Have we seen it?

5 MEMBER BLEY: No, but we should get a

6 pointer to that. Maitri?

7 MR. CORRADINI: Just to finish off the one
8 thing. So to answer Sam you said now what is it with
9 the main steamline that makes it touch and go? I
10 missed that.

11 MEMBER ARMIJO: Well, I think the staff
12 said --

13 DR. FULLER: The main steamline break
14 accident initiator.

15 MR. CORRADINI: Right. And that just
16 essentially floods the area with -- and heats up the
17 whole region? I'm just trying to get a --

18 DR. FULLER: You get a very hot
19 containment here.

20 MR. CORRADINI: Okay.

21 MEMBER ARMIJO: And that gets the fusible
22 plugs closer to their melting temperature and not
23 over?

24 DR. FULLER: Yes. Well, it's within a
25 couple of degrees or something.

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1 MEMBER ARMIJO: Yes.

2 DR. FULLER: The saving grace is that's a
3 remote type of initiator.

4 MEMBER ARMIJO: Understand.

5 MEMBER BLEY: I guess what isn't
6 completely clear to me is what happens if that happens
7 and you do get premature water down there?

8 DR. FULLER: Well, you're opening yourself
9 up to the possibility of a steam explosion.

10 MEMBER BLEY: Creating a pressure --

11 DR. FULLER: That's the only thing
12 different from whatever else might happen in other
13 scenarios. And if Professor Corradini is correct that
14 there's a hatch down there, you'd need to do a load
15 analysis on whether or not that hatch could take it.
16 Where would stuff go if the hatch failed?

17 MEMBER BLEY: Gotcha.

18 MEMBER STETKAR: There is a lower drywell
19 access hatch. Personnel and equipment access.

20 MEMBER ARMIJO: Somewhere.

21 MR. CORRADINI: We didn't do any
22 structural work in our confirmatory assessment, so we
23 don't know.

24 CHAIRMAN ABDEL-KHALIK: Have you done any
25 sensitivity analyses on the effect of the melting

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1 temperature of these fusible plugs?

2 DR. FULLER: No.

3 CHAIRMAN ABDEL-KHALIK: I mean, if they
4 were slightly higher, you may avert the problem with
5 the steamline break and it may have little or no
6 impact on how much later would they melt in the event
7 that you have a vessel breach.

8 DR. FULLER: Well, what would be different
9 is you would start generating noncondensable gases
10 before you end up getting water on top of debris
11 attacking the concrete. And you may have some radial
12 attack of the pedestal.

13 The CSNI work has indicated that one can
14 expect greater radial ablation of concrete than axial.

15 CHAIRMAN ABDEL-KHALIK: I don't think
16 you're answering my question.

17 DR. FULLER: I'm sorry.

18 CHAIRMAN ABDEL-KHALIK: The question is,
19 I mean you indicated that if you have vessel breach,
20 you'll reach 500 degrees within a couple of minutes
21 after that.

22 DR. FULLER: Yes. Yes.

23 CHAIRMAN ABDEL-KHALIK: And at the same
24 time you sort of touch and go in the case of a
25 steamline break with the peak temperature being very

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1 close to 500. I mean, you can sort of engineer that
2 material so that the melting temperature can be
3 different than 500 degrees. And the question is: If
4 it were higher than 500 degrees so that you're not
5 touch and go with the steamline break, how much longer
6 would it take for it to melt following a vessel break?
7 If it was 550 degrees?

8 DR. FULLER: It would be a fairly simply--
9 well, we could just look at the calculation results
10 and just look at -- in fact, the time differential
11 between when it reached 500 and 550 or 600.

12 CHAIRMAN ABDEL-KHALIK: Correct.

13 MR. FOSTER: And so you'd raise the
14 melting point to compensate for the steamline break by
15 taking into consideration with a breached vessel,
16 you're going to go pretty fast.

17 CHAIRMAN ABDEL-KHALIK: Right. I mean, it
18 may take only three minutes.

19 MR. FOSTER: Yes.

20 DR. FULLER: There's another sensitivity
21 study which we didn't do, but you couldn't really do
22 why I just said, is suppose you didn't have a complete
23 ejection of core debris into the vessel after vessel
24 failure? And how long would it take to get to 500
25 degrees if you, say, you failed through an instrument

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1 tube failure, you know after it took maybe quite a bit
2 longer. You know, we don't know those fine details
3 here.

4 CHAIRMAN ABDEL-KHALIK: Okay. Any other
5 questions o this issue?

6 DR. FULLER: Yes, I believe I covered --

7 MR. CORRADINI: I think you beat it.

8 DR. FULLER: Any other questions?

9 CHAIRMAN ABDEL-KHALIK: Please continue.

10 DR. FULLER: That's all I have.

11 CHAIRMAN ABDEL-KHALIK: Okay. Thank you.

12 MR. FOSTER: Thank you, Ed.

13 Let's move on to the seismic margins
14 analysis open items.

15 Our first open item was Open Item 19-14.
16 We had a couple of different RAIs we asked about it.
17 And really what it dealt with was we had a standard
18 departure T1 2.15-1, which was the reclassified
19 Radwaste Building from Seismic Category 1 to a non-
20 seismic per Regulatory Guide 1.143.

21 We asked an RAI requesting details on the
22 analysis procedures used for the reclassification.

23 The applicant responded with an update to
24 the FSAR Section 3H.3, revised to show that the
25 Radwaste Building be designed not to collapse on

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1 adjacent Seismic Category 1 structures for SEE, design
2 basis tornado and design basis flood specified in the
3 DCD. It also allowed for stability against sliding
4 and overturning the evaluated using site-specific
5 loading parameters. Based off of that response, we
6 accepted it and closed the RAI.

7 Questions? Okay.

8 The next open item was 19-17. This dealt
9 with the COL license information of 19-4, which
10 included a update of the system model developed in the
11 DCD to incorporate capacity reductions due to site-
12 specific events and site-specific SSCs.

13 In the RAI response the applicant
14 committed to perform the following prior to fuel load:

15 Develop a site-specific and as-built HCLIP
16 capacities;

17 Assess the margins against soil failure;

18 Update the systems models for site-
19 specific capacities to the SSCs to obtain sequence-
20 level and plant-level seismic HCLPF capacities.

21 Based off of that, the staff accepted it
22 and closed the open item.

23 Any questions?

24 And the last one for the seismic margin
25 analysis, this dealt with the AC-independent water

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1 addition system in the building and the building
2 capacities associated with COL license. Information
3 Item 19.19b.

4 We issued an RAI requesting more detail on
5 the approach, methods of analysis, seismic structural
6 analysis.

7 The fire water pump house which is where
8 the AC-independent water sources pump is, associated
9 it as a nonsafety-related structure.

10 The applicant provided procedures or
11 defined what the procedures would contain for
12 assessing against site-specific external events in the
13 PRA, which is evaluation for earthquakes, flooding,
14 tornados and high winds. We found that to be
15 acceptable.

16 This was a cooperative effort between our
17 Seismic Group and our High Winds Shutdown Margin. And
18 so we had to kind of work that situation through with
19 both of them. We both were able to come to
20 conclusions on things. We accept their response and
21 closed the RAI.

22 Questions? Okay.

23 That concludes the seismic margin analysis
24 section.

25 The next section is on loss of large areas

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1 of the plant due to explosion or fire. This is the
2 public section only. Okay? All right? The non-
3 public section will be scheduled and presented at a
4 later time. It will provide much more detail on this.

5 The Mitigative Strategy Report, which
6 addresses the flow of a large area fire, loss in large
7 areas, came in as Part 11 to the application. And in
8 the SE we listed it as 19.14, for your records.

9 They submitted in May of 2009 under Part
10 52.80. We issued multiple RAIs, 17 of them to be
11 exact, in October. And they responded back in February
12 of 2011.

13 We have about ten confirmatory items
14 associated with it. There were multiple commitments
15 made in the RAI responses. We also included a license
16 condition related to the implementation schedule and
17 to maintain the strategies associated with it.

18 The staff finds the strategies and the
19 commitments acceptable to close out all the RAIs. And
20 we didn't really have any open items on this because
21 this wasn't presented during the phase 2. Okay.

22 CHAIRMAN ABDEL-KHALIK: Do we have a
23 schedule for the non-public section of 50.54 hh?

24 MR. FOSTER: I'm trying to shoot for June
25 21st. It all depends on when I can get the SE in from

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1 the technical staff. They're trying to work through
2 that right now. And it kind of hinges with the work
3 that's going on with Vogtle. But that's what I'm
4 putting forward to my management to see if we can
5 support that.

6 June 21st is kind of a full day, so we're
7 going to have to see when we can work it in.

8 CHAIRMAN ABDEL-KHALIK: Well, we'll talk
9 later then.

10 MR. FOSTER: Yes. And it ought to be a
11 closed session, too, because we talked a lot about
12 security of the information.

13 CHAIRMAN ABDEL-KHALIK: Okay.

14 MR. FOSTER: Okay?

15 Ongoing with the different strategies,
16 under 50.54 hh(2)(i) were fire fighting. Okay. We
17 have onsite capabilities. This includes staging
18 areas, the triage, free event coordination and
19 training.

20 For offsite resources with the MOUs.
21 That's associated with different fire departments, the
22 military and the airport situation.

23 Communication. Command and control and
24 hardware.

25 Fire protection yard. Fire protection

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1 yard main backup supply. Okay. This deals with the
2 portable pump used to supply to the ring header.

3 We went on to 50.54 hh(2)(ii), the
4 mitigate fuel damage strategies:

5 Portable pump. And this is the spent fuel
6 pool internal/external strategies, makeup to the CST
7 via the AC-independent water addition system.

8 And the spent fuel configuration, it's a
9 1 by 4 situation, empty spaces, et cetera.

10 Makeup sources. Demin tanks, wellwater
11 tanks and the UHS basins.

12 And manual operations we have EDGs and the
13 RCIC. So you also have CRDs and the aqua system, too.

14 Okay. The final area, to minimize
15 radiation releases, we have:

16 Vent capabilities, active and passive.
17 Please strike out the term "to stack." That's not
18 applicable in the situation. Okay.

19 We have atmospheric control systems to the
20 SBGTS or the RBVES systems, COPS and no venting from
21 primary to secondary containment.

22 The sprays for scrubbing using portable
23 pumps.

24 And then we have injections of the drywell
25 and the wetwell. This is with the AC-independent

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1 water addition system.

2 CHAIRMAN ABDEL-KHALIK: I understand --

3 MR. FOSTER: We got a whole string of
4 different strategies --

5 CHAIRMAN ABDEL-KHALIK: I want to make
6 sure that this part of the presentation will have to
7 wait until we get the non-public section presentation.

8 MR. FOSTER: And I'll go, you know,
9 definitely much more in detail in the process of
10 everything.

11 CHAIRMAN ABDEL-KHALIK: Okay. Thank you.

12 MR. FOSTER: Okay. Chapter 19, all open
13 items are closed.

14 We accepted the confirmatory items and the
15 applicant's addressed the information related to
16 response to severe accident and the loss of large
17 areas to the plant due to explosions or fire.

18 With the exception of the confirmatory
19 items, the staff concludes the SER Chapter 19 is
20 acceptable and conforms to regulatory requirements.

21 We've got one more area, this deals with
22 the Chapter 17 item which we mentioned in the first
23 part of the presentation.

24 CHAIRMAN ABDEL-KHALIK: Get to it.

25 MR. FOSTER: And basically that's the list

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1 of significant SSCs, we will discuss that in Chapter
2 17.

3 CHAIRMAN ABDEL-KHALIK: This afternoon?

4 MR. FOSTER: This afternoon.

5 Any final questions for Chapter 19?

6 I think the takeaway we have is to provide
7 the ADAMS accession number for the report that we had
8 a contractor work for the MELCOR and the MAAPing.

9 CHAIRMAN ABDEL-KHALIK: Yes.

10 MR. FOSTER: Is that right, Maitri? And
11 we do have that in ADAMS. I can provide that this
12 afternoon to you, to Maitri.

13 CHAIRMAN ABDEL-KHALIK: All right. Are
14 there any questions for the staff on -- yes, sir?

15 MR. HEAD: We'll show the Member that was
16 asking the question about the access, we'll show him
17 a drawing at the break.

18 CHAIRMAN ABDEL-KHALIK: Yes.

19 MR. HEAD: And ask if that's answering the
20 question.

21 CHAIRMAN ABDEL-KHALIK: Well, the question
22 pertained to the relative elevation of the water level
23 versus the hatch level, is that correct, Mike?

24 MR. CORRADINI: Yes, that's right.

25 CHAIRMAN ABDEL-KHALIK: And I think it

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1 would require more than just looking at drawing.

2 MR. HEAD: Okay. Well, I'll make sure
3 we're answering the right question. And then --

4 MR. CORRADINI: Yes. What I'm curious
5 about is with your procedures as you have in place
6 what do things settle out relative to the access
7 hatch.

8 MR. HEAD: Okay.

9 CHAIRMAN ABDEL-KHALIK: Okay? Thank you.

10 MR. TONACCI: I just want to get
11 clarification. That was your question: Where does the
12 water settle out?

13 MR. CORRADINI: Yes. Yes.

14 MR. TONACCI: Okay.

15 MR. CORRADINI: Yes. Because it couples
16 into what Sam and I were kind of going at, which is if
17 there's an inadvertent early discharge, I want to
18 understand the implications of it relative to --

19 CHAIRMAN ABDEL-KHALIK: Are there any
20 additional questions for the staff on Chapter 19?

21 Okay. Thank you.

22 The schedule calls for us to go onto
23 Chapter 17 for the applicant presentation. But we're
24 sort of 20 minutes behind schedule. So, with your
25 indulgence, we'll just take a shorter lunch and we

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1 will reconvene at 12:30.

2 DESIGNATED FEDERAL OFFICIAL BANERJEE:

3 Well, we have an informal meeting scheduled with
4 Research for today's lunch between 12:15 and 1:15
5 according to my book.

6 CHAIRMAN ABDEL-KHALIK: Okay. Because of
7 this previously scheduled meeting, let's take a break
8 for lunch until 1:00 p.m. We will reconvene at 1:00
9 p.m. and at that time the applicant will present
10 Chapter 17.

11 (Whereupon, at 11:52 a.m. the meeting was
12 adjourned, to reconvene this same day at 12:59 p.m.)

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1 A-F-T-E-R-N-O-O-N S-E-S-S-I-O-N

2 12:59 p.m.

3 CHAIRMAN ABDEL-KHALIK: We're back in
4 session.

5 This time the applicant will present
6 Chapter 17

7 MR. HEAD: Okay. And I would propose at
8 the end of the that that we would review some of the
9 stuff that we addressed during the break.

10 CHAIRMAN ABDEL-KHALIK: Yes.

11 MR. HEAD: The elevation and some other
12 feedback.

13 CHAIRMAN ABDEL-KHALIK: Yes.

14 MR. HEAD: And since both of those members
15 aren't here, we'll, they're right next door.

16 MR. HEAD: Our standard agenda.

17 Today joining us for Chapter is Tim
18 Walker, who was here for the first time we presented
19 our Chapter 17. He's our Manager of Quality.

20 We have other attendees in the room with
21 us. And Evan Heacock, who is up here today. And he
22 will be leading most of D-RAP discussion.

23 Okay. And I'll turn it over to Coley now.

24 MR. CHAPPELL: Recap on Chapter 17, as was
25 discussed last March of 2010, Chapter is comprised of

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1 a few DCD sections that were incorporated by reference
2 that describe the quality assurance and reliability
3 assurance programs in the development of the DCD.

4 We've added in supplemental sections to
5 address reliability assurance, quality assurance and
6 Maintenance Rule.

7 And all of the COL items have been
8 addressed.

9 We'll briefly discuss updates since the
10 last meeting on the quality assurance program
11 description, QAPD. Revisions were made for Nuclear
12 Innovation North America, NINA organizational changes.
13 I've also incorporated the latest NEI template of 1614
14 Alpha and the responses to RAIs that required change
15 of the QAPD.

16 And with that, I will turn it over to
17 discussion reliability assurance program.

18 MR. HEACOCK: Good afternoon. My name is
19 Evan Heacock. And I'll go over the reliability
20 assurance program, the design phase of it.

21 Just going to have a recap of where we've
22 been in the last year or so. We have an expert panel
23 that is convened, and we continue to refine and
24 identify SSCs using deterministic risk ranking. And
25 we identify risk ranked significant SSCs not modeled

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1 in the PRA. We augment PRA techniques in risk ranking
2 of SSCs using deterministic techniques and expert
3 judgment. And also we re-reviewed on any changes that
4 have been made to PRA updates.

5 Like I said, the program has been
6 implemented and we have been meeting and the expert
7 panel has been identified. We've been meeting
8 quarterly.

9 The process, again, using deterministic
10 type insights. And we are generating those items, so
11 we'll go over some of those as an example a little bit
12 further in my presentation.

13 The deterministic and the design
14 reliability assurance program is an ongoing program
15 for the duration of construction, and actually it then
16 turns out where the maintenance will end.

17 We also have, of course, ITAAC that exists
18 for the D-RAP. Looks at:

19 Scope, purpose and objectives;

20 Process used to evaluate and prioritize
21 SSCs;

22 List of rank significant SSCs;

23 A process for determining dominant failure
24 modes in risk significant SSCs, and;

25 Key assumptions and insights are

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1 considered.

2 Any questions so far? Okay. I'm sure
3 we'll get one here pretty quick. Because everyone's
4 been waiting for one and it may have something to do
5 with this Action Item.

6 I'd like to go over Action item #30, which
7 was asked. This is address when D-RAP list will be
8 effectively populated and the staff review is
9 complete.

10 We basically provided an updated list last
11 October at the ACRS, as you might remember. And we
12 had examples of deterministic ranking on the following
13 slides that went forward with our ranking progress.
14 So if you'd like to go to the next slide, we can look
15 at some of the examples.

16 As an example of one that we actually
17 added to the D-RAP process that was not initially PRA
18 ranked, is the neutron monitoring system. The panel
19 had a weighted score of neutron monitoring of 65.

20 And I'll try to go through what the table
21 that you see in front of you means.

22 There is five questions, deterministic
23 questions that are asked to come up with a
24 deterministic risk ranking, which are the five that
25 are on the sheet. I'm not going to read those.

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1 Each one of those questions has an
2 assigned weight factor already in place, and it's
3 defined in our COLA. Weight factors are 5, 5, 4, 3
4 and 3,m which the reason for having those set of
5 numbers is that the maximum assigned value you could
6 have any question is five. And so when you end up
7 multiplying any weight factor by an assigned factor of
8 five, you end up with a total score of 100. So that
9 always works out well for us from a standpoint of a
10 deterministic weighting.

11 Each one of the assigned values is based
12 on questions that we ask when we go through and look
13 at the particular system that we're interested in, or
14 component.

15 Of course, you can see on there assigned
16 values from zero up through five. A zero response is
17 basically a negative response where the question does
18 not seem to apply to the system that we're looking at
19 or component. On the way up through five, which is a
20 positive response having a high impact and/or
21 occurring frequently, and each one of these
22 definitions the impact and occurrence is broken down
23 also for looking at trying to weight what we need to
24 do with the assigned value. Again, from occurring
25 frequently, continuous or always on demand to very

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1 little demand, like once per four year lifetime.

2 And then impact definitions also the same
3 sort of deal. High impact: If the system is lost,
4 would it result in the likelihood of damage to the
5 core down to low impact?

6 So all of this goes into determining the
7 assigned value.

8 MEMBER ARMIJO: Why would you bother with
9 a weight factor when the assigned value is zero? I
10 don't understand.

11 MR. HEACOCK: Well, the weight factor is
12 constant. It's a constant value.

13 MEMBER BLEY: It goes with the question?

14 MR. HEACOCK: It goes with the question,
15 right.

16 MEMBER ARMIJO: Oh, okay.

17 MEMBER BLEY: It's pre-assigned.

18 MR. HEACOCK: It's pre-assigned.

19 MEMBER ARMIJO: Oh, all right.

20 MR. HEACOCK: Okay. This is actually a
21 pull-out from our expert panels. This is actually
22 what we put together. So it's obvious --

23 MEMBER ARMIJO: The importance or the
24 questions, right?

25 MR. HEACOCK: Yes.

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1 MEMBER ARMIJO: Okay.

2 MEMBER BLEY: I have a question.

3 Everything kind of hangs together for me except your
4 second question. If something is used to mitigate
5 accidents and transients, if the loss of functions
6 were significant and so on, all high but it isn't
7 called out in the EOPs, that would lower the score but
8 it seems to me it would tell me it darn well out to be
9 called out.

10 MEMBER ARMIJO: It should feed back.

11 MR. HEACOCK: Yes, you would expect that
12 to be the case. I would agree.

13 MEMBER BLEY: So can you explain?

14 MR. HEACOCK: I'm going to go back to a
15 little bit more on the history. This goes back to
16 proceeding for -- this explicitly calling out, we may
17 actually have some items, and this is a very long
18 history, it actually goes back through 1 and 2. And
19 so I'm a little bit weak in that regard. But my
20 emphasis that we put on this is that we may actually
21 have some functions, the mitigated accidents may be
22 low, but it may actually be called out in the OP
23 separately. So trying to weight each other equally.

24 You may actually have some situations
25 where -- and I can't give you an example off the top

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1 of my head, mind you. But you may have some
2 situations where you may flip-flop and not actually be
3 able to respond to one, but actually carry you in the
4 other one.

5 MR. CHAPPELL: So a system that might be
6 capable of moving water but is not credited for
7 mitigating an accident but is something you would go
8 to beyond design basis space and have a call out to
9 use in the emergency operating procedures.

10 MEMBER BLEY: Well, I guess it -- and
11 maybe you use it in a way that would make sense. It's
12 that second question strikes me as a different thing
13 then the rest. Now you could say it's the same thing
14 and that we want to make sure of the things that are
15 called in the procedures is available, but it would
16 strike me if an expert panel was going through this
17 and sees everything else high and the fact that it's
18 in the OP, it ought to raise some kind of flag that
19 maybe we're not organized the way we ought to be.

20 MR. HEACOCK: And you're correct. I mean,
21 that's part of the feedback from the expert panels
22 actually say if we are missing a pertinent piece of
23 information, then it should be called out somewhere
24 else. And then that's the expert panel's function is
25 go ahead and make sure it gets in the process that it

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1 gets the significant treatment that it needs.

2 I think Bill had a --

3 MR. MOOKHOEK: I'm Bill Mookhoek. I'm the
4 licensing supervisor for Unit 3&4. And I used to be
5 shift supervisor at 1&2.

6 And the real importance of this question
7 is to make sure that those items that the Operations
8 staff rely upon in the EOP are in a reliability
9 program and are consistent. So even if they weren't
10 credited in the PRA and may not have hit the
11 deterministic type importance, if it's an information
12 item that the control room needs in evaluating what's
13 going on with the plant, we want it to be reliable and
14 accurate.

15 MEMBER BLEY: Okay. I can see that.

16 CHAIRMAN ABDEL-KHALIK: Can you give us an
17 example of the opposite situation where something is
18 important and yet is not called out explicitly in the
19 EOPs?

20 MR. HEACOCK: Yes. Let me get back to
21 you. Let me --

22 MEMBER BLEY: That's my concern. Yes, my
23 concern was more that the question seemed different
24 than all the others, except that was the acknowledged
25 could be the basis for it; it's just there.

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1 CHAIRMAN ABDEL-KHALIK: But how about the
2 opposite problem? If you have something less
3 important that's not called out in the EOPs
4 explicitly. Is there an example?

5 MR. WALKER: Well I think the safety
6 relief valve is not going to be in the EOPs--

7 MEMBER BLEY: Right, because you can't
8 operate that.

9 MR. WALKER: -- and I remember in the 1&2
10 we spent a whole afternoon in the safety valve because
11 they weren't modeled deterministically to our
12 acceptance. So that's an example of one.

13 CHAIRMAN ABDEL-KHALIK: Okay.

14 MEMBER BLEY: Are you going to tell us how
15 you use the total scores here?

16 MR. HEACOCK: Yes. Yes.

17 MEMBER BLEY: Okay.

18 MR. HEACOCK: The next part of -- and it's
19 a good lead in because that's where I'm going next.
20 There's two ways to get something into the D-RAP by
21 the expert panel. And single question response of 15
22 or greater will put us in the De-RAP or a total
23 weighted score of above 40; basically 41 and above
24 will put you into the D-RAP.

25 And that's what the significance of the

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1 weighed score is, and also the assessed value. So
2 for example, if we have a question -- just for the
3 example if the very first one in this case was 5
4 across the assigned value and weighted factor is 5,
5 you've got an assessed value of 25 just for that
6 question. All the rest of those would have been zero.
7 Then this item would still go in to D-RAP because of
8 the importance of the one question. So that's the
9 other part of this.

10 MEMBER BLEY: And the score here isn't
11 directly related to what kind of treatment?

12 MR. HEACOCK: The score is not what kind
13 of treatment, but that the system would require to
14 have the special treatment apply to it.

15 And for this case, the neutron monitoring
16 system, as you can see this was actually not something
17 that was in the PRA. The expert panel gave it a
18 weighted score of 65. And you can see, really on the
19 first few questions, the emphasis that the expert
20 panel put on the weighting of the neutron monitoring
21 system.

22 MEMBER BLEY: And the 15 and 40 come from
23 where?

24 MR. HEACOCK: The 15 and 40 are basically
25 part of our structures that we put in our COLA. We

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1 described this in 17.4S. And it's thresholds.
2 They're basically assigned redetermined thresholds of
3 saying anything above 15 --

4 CHAIRMAN ABDEL-KHALIK: I know what they
5 mean.

6 MR. HEACOCK: Yes.

7 MEMBER BLEY: But what is the logic for
8 getting those numbers?

9 MR. HEACOCK: The logic? I'd probably
10 have to go back to maybe helping from my PRA friends
11 for some of these, for the history on this again.

12 MR. HUGHES: I'm Gene Hughes.

13 I sat in recently on a two day session of
14 the expert panel and applied these questions. And we
15 went through the process and looked the values.

16 The numbers that are used for the
17 weighting system are based on judgment. There may
18 have been a significant amount of effort back when
19 Unit 1 and 2 implemented 50.69 to generate the basis
20 for them. But what we did was simply apply them
21 without regenerating that basis. And in going through
22 it we also took a look at where do we end up after we
23 apply the instructions? Does it make sense? Is this
24 a case where the system should be in and it got a 10?
25 What's going on.

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1 And we thought it through pretty
2 carefully, but we did not review a specific numerical
3 basis to support either these numbers or the .0005 and
4 the factor of 2 in the PRA side. They're just factors
5 that come in.

6 The other thing I would point out is if
7 something comes in from the PRA, it does not ask the
8 numerical value to be risk significant, that does not
9 mean that the PRA input to the process is that it
10 should not be in D-RAP. The numerical value is a
11 guidelines that comes in from what the PRA calculates,
12 but the PRA person also brings with it knowledge of
13 things that might not be in the PRA or might not have
14 been modeled. Reasons that the numerical value
15 regenerate may not really represent what we would
16 expect to be there.

17 CHAIRMAN ABDEL-KHALIK: I'm afraid this
18 answer is not response to the question that I asked.
19 So, I guess you'd follow-up what is the basis for 15
20 and 40? Where does it come from? That's not what
21 you're talking about.

22 MEMBER BLEY: It might help us if you
23 could show us the guidance that's provided to the
24 expert panel for what zero through five mean and their
25 assigned values.

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1 MR. HEACOCK: Yes, I can show you.
2 Actually, that's what I was kind of reading because
3 there's a lot behind it. And I have it right here if
4 you'd like it.

5 MEMBER BLEY: That would help some. That
6 doesn't get to why these totals are there, but it gets
7 you part way there.

8 MR. HEACOCK: Right. The part where Gene
9 was listing, a lot of this is a judgment call on the
10 emphasis of, again, where should you have a break.
11 Like Gene was saying, there's a difference between
12 Units 1&2 and 3&4. Unit 1&2 actually have a high,
13 medium and low where we actually want to have a high
14 and low. So we broke ours a little differently.

15 And, again, all this is based on it's
16 going to be mostly a judgment of the expert panel
17 deliberating on what really is a threshold for
18 significant and what is really not a threshold for
19 significance.

20 There's actually not a whole lot more
21 behind it then the deliberations of the expert panel
22 saying this is where we think the thresholds should
23 break.

24 CHAIRMAN ABDEL-KHALIK: If you can provide
25 us more information, that's fine. If not, just come

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1 back and tell us there's nothing to it.

2 MR. HEACOCK: Okay. I can also tell you
3 a little -- I can also show you in our procedures, you
4 know based on what we have in the FSAR is also a
5 regurgitation of what we have in our --

6 MEMBER SHACK: Now I can't remember. Is
7 this what South Texas used for their 50.69?

8 MR. HEACOCK: Yes.

9 MEMBER SHACK: I mean, this goes back to
10 that?

11 MR. HEACOCK: Back to that.

12 MR. HEAD: We never implemented 50.69.

13 MEMBER SHACK: Well, yes.

14 MR. HEAD: No one has.

15 MEMBER SHACK: Right, no one has. Right.
16 But the risk ranking you just did?

17 MR. HEAD: This is the exemption and this
18 is where we got --

19 MR. HEACOCK: It's the same process.

20 MR. HEAD: Very familiar to what we did
21 for 1&2 for hundreds of thousands of components.

22 So, actually, I can try just a preview.
23 I don't know how reconciled you'll be with our answer
24 that we give in the future because it was a judgment
25 call when we built the exemption. And so it has a

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1 legacy that's just probably from whatever we
2 originally built for the exemption.

3 But here I want to focus on something that
4 Gene noted that irrespective of the scores, at the end
5 of the day everyone still looks at and goes "Does that
6 make sense?" And so there's an ultimate boundary of,
7 okay, it didn't get high enough points, but we're
8 still uncomfortable with that. And the panel is
9 perfectly capable at that point in time of going
10 "Well, we still want it in."

11 So we'll see what we can do in terms of a
12 little more detail on the scores.

13 CHAIRMAN ABDEL-KHALIK: I mean, you know
14 I would have thought that somebody had looked at all
15 the scores and there might have been a clear
16 separation point where things sort of clustered way
17 down below 15, and there was a group around 15 that
18 was questionable, and then a lot of things were way
19 above 15 and that's how you selected that. Because
20 there's a question mark at that point.

21 MR. HEACOCK: Oh, yes.

22 CHAIRMAN ABDEL-KHALIK: Whereas below that
23 there was no ambiguity. But it just didn't seem like
24 that that thought process went into it.

25 MEMBER BLEY: But again, the thing you

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1 just described, I would bet if you could go back to
2 the first time this was done, I would bet but I could
3 be well wrong, that they didn't have these set scores
4 until they had gone through it once and say "Look at
5 this."

6 MR. HEACOCK: Yes.

7 MEMBER BLEY: This is kind of the way it
8 falls out.

9 MR. HEACOCK: And evolution, correct.
10 There's a lot of feedback, and that's why there's
11 continuous integration.

12 MEMBER BLEY: But maybe you wrote
13 something on it back then.

14 MR. HEACOCK: That's what we're going to
15 go do.

16 MEMBER BLEY: Than you.

17 DESIGNATED FEDERAL OFFICIAL BANERJEE: Are
18 we taking any action here?

19 CHAIRMAN ABDEL-KHALIK: They'll get back
20 to us and tell us where the 15 and 40 come from.

21 MR. HEACOCK: Okay. Any other particular
22 question on this slide?

23 MEMBER BROWN: Well, I had one.

24 MR. HEACOCK: Okay.

25 MEMBER BROWN: Relative to some of the

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1 other things, maybe. But are some things self-evident
2 that they needed considered --

3 MR. HEACOCK: Yes.

4 MEMBER BROWN: -- in a design, and neutron
5 monitoring systems seems to be fairly important in a
6 reactor plant. And that why bother with it, you know
7 you're going to put it in the table and you're going
8 to make sure it works. And follow it over its life,
9 you know making sure it's doing whatever it's supposed
10 to do.

11 So, I guess the other I had looked at
12 this, is does the loss of the function in and of
13 itself directly cause an initiating event? I guess
14 with the range of zero to five, somebody gave it a
15 one. And then I can only relate to the program I was
16 in. If I lost my nuclear instruments, I didn't cause
17 anything to happen, it just sat there and we didn't
18 like it, and so we just had an alternate action like
19 shutting down or something like that. So I had a how
20 in the world did a panel come up with a value,
21 assigned value of one in that when it either works,
22 it's either on or it's off but it doesn't cause a trip
23 or a scram. I don't know about you alls, it didn't in
24 mine, a loss of a prior range or intermediate range or
25 whatever the neutron monitoring source is.

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1 MR. HEACOCK: Well, part of that goes back
2 to the way you have to answer, again, the questions
3 from a negative response to a positive response. And
4 the information in there.

5 One, in this case, is a positive response
6 having an insignificant impact or occurring very
7 rarely. So, as they went through and deliberate the
8 questions you have to say, "Okay, in significance of
9 the impact is it high or is it low?" And then the
10 other part is how often would we expect this to occur?
11 You know, once in 40 years or is it, you know once in
12 a cycle, a fuel cycle type question.

13 So, in going through and talking about
14 basically what you said, what happens, well in and of
15 itself, like you said, if it doesn't do the thing it
16 just stops, there's other means to shutdown. There's
17 other things, you'll have other indications saying
18 that you have problems and you can trip manually. So,
19 that's other considerations into the deliberations as
20 what other functions do you have that are available to
21 you to top rate from indications to --

22 MEMBER BROWN: Well you've got to take it
23 you really can't operate without this, right?

24 MR. CHAPPELL: They're in tech specs.

25 MR. HEACOCK: Right, yes.

1 MEMBER BROWN: Yes.

2 MR. CHAPPELL: You'd have to shutdown to
3 use the function.

4 MEMBER BROWN: Yes.

5 MR. HEACOCK: Yes

6 MEMBER BROWN: So it doesn't cause an
7 initiating event other than a human response to go
8 shut the plant down. I don't really call that an
9 initiating event. I would initiate the automatic
10 something, but maybe I don't understand what you mean
11 by "an initiating event."

12 I won't mouse-milk this anymore. It just
13 seemed when I went through these and checked the
14 discussion and checked the 17, and you all went from
15 your three categories to two and lumped everything
16 above 15 into the high category, I just -- and then I
17 started reading these and I said "Oh, that's
18 interesting how they fit in."

19 So anyway, we can go on. I don't want to
20 slow this process down here.

21 MR. HEACOCK: Okay. Any other questions?
22 Okay.

23 For the next item that we actually ranked
24 was the steam bypass and pressure control system. The
25 expert panel gave this a weighted score of 48. Again,

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1 either way, this would have gone into our D-RAP
2 process because we have a single question that has a
3 15, and the total score was above 41.

4 Again, similar deliberations occurred to
5 try to go into the overall supporting and ranking for
6 this device of the system.

7 Any questions with that? Okay.

8 Go to the next slide.

9 Most of what we've done in the expert
10 panel to date has been at the system level. Just to
11 kind of give you an example of what the expert panel
12 process would be for a component, we picked high
13 pressure core flooder, the injection isolation value
14 Echo 22-Foxtrot 0003 Bravo.

15 Again, from the standpoint of what happens
16 in this particular device, this component, you see the
17 weighted score was 40. Again, this is just an example.
18 We haven't gone through a full deliberation on this.
19 But the weighted score is 40, but two of the questions
20 are actually 15 and above. So this component would
21 actually go into the D-RAP process.

22 MEMBER BLEY: I'm a little surprised by
23 the third question given the discussion we had before
24 lunch.

25 MR. HEACOCK: Again, this is just an

1 example. This has not actually --

2 MEMBER BLEY: I know. I'm just saying if
3 you had the early -- this thing failed by dumping the
4 water too soon, it does lead to other failures.

5 MR. HEACOCK: Well this high pressure core
6 flooder, not the lower --

7 MEMBER BLEY: Oh, I'm sorry. Yes, it is.

8 MR. HEACOCK: Yes.

9 MEMBER BLEY: Yes, it is. I'm sorry.

10 MR. HEACOCK: Yes.

11 MEMBER BLEY: Never mind.

12 MR. HEACOCK: Okay.

13 MEMBER STETKAR: Evan, I'm going to wake
14 up now.

15 MR. HEACOCK: Okay.

16 MEMBER STETKAR: This particular valve,
17 the reason that the expert panel is evaluating it is
18 because it's not in the PRA?

19 MR. HEACOCK: No. It would not actually --
20 I could not tell you if it's in the PRA off the top of
21 my head.

22 MEMBER STETKAR: Okay. Question: Is it
23 in the PRA?

24 MR. HEACOCK: Do you know.

25 MR. HUGHES: Yes, it should be in the PRA.

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1 MR. HEACOCK: It is in the PRA?

2 MEMBER STETKAR: I don't know why the
3 expert panel is evaluating it, but then it's somewhat
4 interesting. This is a normally closed motor-operated
5 valve that has to open for the high pressure core
6 floodder to inject.

7 MR. HEACOCK: Right.

8 MEMBER STETKAR: So if it doesn't open,
9 it's kind of important.

10 If I go to Table 19K, whatever it is, 1 --
11 I'm not going to go look it up right now. I just did
12 the search myself. I notice that the PRA determined
13 that the high pressure core floodder pumps were
14 important. The maintenance of the high pressure core
15 floodder pumps remain important. High pressure core
16 floodder maintenance valve was important. I couldn't
17 even find the valve on the PNID that I looked up.

18 This valve, for whatever reason from the
19 PRA wasn't identified as important. You know, your
20 backstop catch from the expert panel, luckily, will
21 make it important; 40 is just below your inclusion.

22 And all that makes me feel a bit uneasy
23 about the PRA numerical stuff.

24 MR. HEACOCK: Well, let me kind of two
25 things real quick --

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1 MEMBER STETKAR: Only because things in
2 series with this valve are in from the PRA.

3 MR. HEACOCK: Yes.

4 MEMBER STETKAR: But this particular valve
5 isn't.

6 MR. HEACOCK: Just real quick, also from
7 the standpoint we may evaluate anything that says that
8 PRA says it needs to be in from the Fussell-Vesely
9 value or the RAW, number one. We may go, or we may
10 not, depending on how we're proceeding down the path.

11 The other part is that part of the table
12 that we presented back in October, the 19K-4 kind of
13 update, this valve was included. So --

14 MEMBER STETKAR: In last October?

15 MR. HEACOCK: Yes, the last October on
16 page 4 -- 7, I'm sorry.

17 MEMBER STETKAR: Page 7. Okay. I didn't
18 look at that. I looked at the 19L Rev. 4 of the FSAR,
19 which is what I thought was the current applicable --

20 MR. CHAPPELL: It was added in the FSAR.

21 MR. HEACOCK: Yes.

22 MR. CHAPPELL: Whether it's in Rev. 4 or
23 whether it's in an RAI, I'm not clear as to where it
24 is. But it would be in the FSAR.

25 MEMBER STETKAR: Well, that's part of my

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1 problem, isn't it?

2 MR. CHAPPELL: Yes.

3 MR. HEACOCK: Yes.

4 MEMBER STETKAR: Yes, it is. There it is.
5 Hokey smokes.

6 MEMBER BROWN: That's for the recorder,
7 "hokey smokes." H-O-K-E-Y.

8 MEMBER STETKAR: Yes, smokes.

9 Now part of my problem on this is, and
10 indeed I have the October 20 list that you gave me.
11 And I heard this morning that the condensate pumps are
12 in the PRA, which I'm happy to hear. I notice the
13 feedwater system pumps are on this list, which I would
14 expect for a boiling water reactor.

15 I notice the condensate pumps which have
16 to work, and the condensate booster pumps which have
17 to work so that the feedwater pumps can work are not
18 on this list. So that's sort of curious to me if
19 they're in the PRA and the feedwater pumps are in but
20 the condensate pumps are aren't.

21 MR. HEACOCK: But the system as a hole is
22 in, which would include the condensate and condensate
23 booster.

24 MEMBER STETKAR: Well, I' not sure that I
25 see system things. I see some systems. I see some

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1 components. I see some component failure modes in
2 Table 19K in the FSAR like if I look at 19K-1 -- let
3 me ask you this: I took a look at 19K-1 in Rev. 4 of
4 the FSAR. Should I ask you any questions about that
5 or not? Because I don't want to waste time asking
6 questions about something that you're going to say has
7 been superseded by some RAI responses?

8 MR. HEACOCK: Mainly specifically for the
9 condensate booster pumps?

10 MEMBER STETKAR: Well, they're certainly
11 not.

12 MR. HEACOCK: No.

13 MEMBER STETKAR: They're not in anything
14 I've ever seen. And that's a curiosity, but --

15 MR. HEACOCK: Well, they're included as
16 part of the system. Again, it's not -- we may not
17 have the whole system list, but the booster pumps are
18 part of the condensate system, and the condensate and
19 feedwater system which will be automatically included.

20 PARTICIPANT: I think there are two
21 different questions here. One of them is what's
22 included --

23 MEMBER STETKAR: Let me ask the question
24 first before you tell me what I'm going to ask.

25 There are some systems in here, there are

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1 some components in here, and there are some specific
2 component failure modes in here.

3 MR. HEACOCK: Yes.

4 MEMBER STETKAR: And I'm not sure that
5 I've seen the condensate system, so you might want to
6 look through it and find it. I don't see something
7 that sees the feedwater system. I see the feedwater
8 pump.

9 MR. HEACOCK: Yes, there's feedwater
10 pumps.

11 MEMBER STETKAR: Yes. I don't see the
12 feedwater system and I don't see the condensate
13 system. So that's why I'm a little bit curious about
14 saying the systems in there because I don't see it
15 quite readily.

16 I'm curious about what level of detail and
17 what degree of completeness will exist in this list at
18 the stage of issuance of the COL license of the COL?
19 If the intent is, as it's stated, to go to the level
20 of detail of individual not only components, but
21 components failure modes because I see things like
22 RCIC steam supply bypass valve F045 a limit switch
23 fails --

24 MR. HEACOCK: Yes.

25 MEMBER STETKAR: -- it's doggone detailed

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1 for, by the way, a component that doesn't exist in
2 your plant. That's in the list.

3 MR. HEACOCK: Yes.

4 MEMBER STETKAR: In the FSAR table. That
5 type of detail starts to make me feel really uneasy
6 because I know the PRA doesn't have that level of
7 detail in it across the board for all equipment.

8 If it's the intent is to not have level of
9 detail of specific component failure modes, like fails
10 to open versus fails to close, but the intent is to
11 have a level of detail at the component level like
12 feedwater pump, I feel a little bit more comfortable
13 about the PRA and the expert panels to be able to
14 think at that level.

15 If the intent is to have the level of
16 detail at a system level, then I feel more confident
17 that you'll be complete.

18 MR. HEACOCK: Yes.

19 MEMBER STETKAR: So the question is at
20 what level of detail is the intent to have this most
21 populated in terms of is it system, is it component,
22 or is it component failure mode at the time of COL?

23 MR. HEACOCK: Primarily it'll be at the
24 system level?

25 MEMBER STETKAR: System level?

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1 MR. HEACOCK: Yes. Mainly is, is that
2 it's the program. This program is set up, it's
3 continuing and most of the information that you will
4 actually see down the road won't be necessarily
5 updated in 19K, but it'll be turned over into the
6 databases of the plant.

7 MEMBER STETKAR: But does that mean, Evan,
8 if an entire system is in there, let's take the
9 condensate system --

10 MR. HEACOCK: Your favorite.

11 MEMBER STETKAR: No, no, no. Honestly, it'
12 a good example because it's a nonsafety-related system
13 that's pretty pervasive, you know depending on where
14 you draw your dotted lines around what you call part
15 of the condensate system. But just give it a system
16 designator. There might be a lot of equipment in
17 there that you may not want to classify as being in
18 your D-RAP program from a quality assurance
19 procurement.

20 MR. HEACOCK: Right. You're correct.

21 MEMBER STETKAR: So, you know the simple
22 answer at the system level might not be the
23 appropriate answer. But that's why I'm struggling with
24 it. I'm trying to figure out at what level of detail
25 you plan to have that list populated --

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1 MR. HEAD: Yes, the process --

2 MEMBER STETKAR: -- and when indeed the
3 process will be complete for this. I know I've read
4 that there's a milestone date of September 30th of
5 this year --

6 MR. HEACOCK: Yes.

7 MEMBER STETKAR: -- to have the list
8 complete.

9 MR. HEACOCK: Right.

10 MEMBER STETKAR: So you must be -- you
11 know, it's a work in progress to some extent?

12 MR. HEACOCK: Oh, that's right. Yes.

13 MEMBER STETKAR: But have you made
14 decisions about the level of detail yet?

15 MR. HEACOCK: Yes, we have.

16 MEMBER STETKAR: Okay.

17 MR. HEACOCK: We've made decisions.

18 MEMBER STETKAR: And?

19 MR. HEACOCK: And eventually as we go
20 forward with the process, it'll go down to component
21 level.

22 MEMBER STETKAR: Yes. But I'm asking at
23 COL, because that's all that, unfortunately --

24 MR. HEACOCK: Yes. COL is going to be
25 where we're at with the systems. That will be the

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1 broader level view at the system level. And then as we
2 continue, we'll start -- we'll start populating at the
3 component level.

4 MEMBER STETKAR: But, for example -- this
5 will probably be more a question for the staff, I
6 guess. But the implications of something being in
7 your D-RAP list, are it's not just a list.

8 MR. HEACOCK: Right.

9 MEMBER STETKAR: I mean, you know it has
10 implications on procurement --

11 MR. HEACOCK: Right.

12 MEMBER STETKAR: -- on quality programs,
13 on --

14 MR. HEACOCK: Testing.

15 MEMBER STETKAR: -- Maintenance Rule you
16 know, going forward. So it's not a list to be taken
17 trivially.

18 MR. HEACOCK: Correct.

19 MEMBER STETKAR: From an equipment
20 procurement standpoint then, is the version of the
21 list, do you take a snapshot of immediately before you
22 send out the bid for purchase, the version that you'll
23 use?

24 MR. HEACOCK: Well yes, essentially it is
25 a snapshot as the data has been turned over and put

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1 into the rest of the process it is a "snapshot in
2 time" as based on the quarterly reviews or however
3 often we need to actually update our --

4 MEMBER STETKAR: So from our perspective,
5 you know given the fact -- I'm trying to understand
6 how we as a Committee view this list.

7 From our perspective since we have no
8 involvement whatsoever once the COL licensing process
9 is issued, in a sense once we complete our review of
10 the COL application we have no information about
11 whether, for example, a condensate pump might
12 eventually be classified as an item on this list given
13 the fact that at the last time we see it it just said
14 "condensate system."

15 MR. HEACOCK: Yes.

16 MEMBER STETKAR: Is that right?

17 MR. HEACOCK: I'll probably have to get
18 back to on that.

19 MEMBER STETKAR: In a sense, it's more a
20 question for the staff.

21 MR. HEACOCK: Yes.

22 MEMBER STETKAR: But as i understand the
23 process from what you're saying is if the intent is at
24 the COL stage to simply populate this list at the
25 system level, then we won't, I guess, officially know

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1 anything about components even though in various
2 incarnations of the list right now it's not only at
3 the component, but a much detailed level.

4 MR. HEACOCK: Yes. There's more for the
5 19Ks, that's probably a little bit more broad than
6 where we're at with overall expert panel.

7 MR. HEAD: If I could, I think embedded in
8 your question though are some things we ought to at
9 least consider. I don't know with respect to this
10 process what the COL really means. I mean, we could be
11 buying everything full-bore right now and the COL
12 still be years away, literally.

13 MR. HEACOCK: Yes.

14 MR. HEAD: Or we could be with a COL and
15 haven't bought and anything. So I'm not sure what
16 this has to do with maybe from a COL standpoint.

17 What I think we're really trying to show
18 you is the process that we're licensing.

19 MR. HEACOCK: Yes. Yes.

20 MR. HEAD: And the existence lists and
21 insights and individual components I believe is
22 somewhat -- you know, it's interesting from a
23 perspective of how the process works, but we're
24 licensing a processing. And the process is ongoing
25 and will continue to on go, and it will be updated,

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1 for example, when the new PRA that we talked about,
2 the operational PRA and its insights are provided to
3 the expert panel.

4 So it'll be it's a process that is ongoing
5 through the construction phase. And I can see, just
6 like we did on 1 and 2, you could get down the road
7 and some insight occur, either due to a model change
8 or even operating experience, that's going to cause
9 you to go back and look at previous decisions.

10 So, anyway, this is probably just a long
11 way of saying in somewhat from my 1&2 perspective that
12 we're licensing a process. And so I don't know that
13 we're going to be able to --

14 MEMBER STETKAR: I'm going to ask the
15 staff more about what this means from a review. But,
16 thanks. That helps a bit.

17 Let me ask, I want to get some details in
18 here and then I'm going to step back, if you'll allow
19 me.

20 CHAIRMAN ABDEL-KHALIK: Okay.

21 MEMBER STETKAR: Let me then focus a bit,
22 since I'm a PRA guy, on -- well, let me ask the
23 question I asked earlier. Should I pay any attention
24 to the tables 19K-1 and 19K-2 in FSAR Revision 4, or
25 are those --

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1 MR. CHAPPELL: You should look at both the
2 DCD and the FSAR. The changes to the table are shown
3 in the FSAR. So those two documents combined show its
4 incorporated, not changing what's there.

5 MEMBER STETKAR: Okay.

6 MR. CHAPPELL: The scope of changes in
7 RAIs, I'm not clear exactly what they are, but I don't
8 expect it to be significant.

9 MEMBER STETKAR: Okay. Thanks. That
10 helps.

11 Then let me ask a couple of questions. In
12 Table 91K-1, only because I picked a system to take a
13 look at that I understood, there are two entries in
14 Table 19K-1 for the RCIC minimum flow bypass. It's
15 the minimum flow valve from the RCIC system. It's
16 valve E41F011. But there are two separate line item
17 entries for that valve.

18 One has in parenthesis "NOFO" and one has
19 in parenthesis "NCFC." Now the PRA people may need to
20 help me, but the normal PRA jargon say normally open
21 fails open, normally closed fails closed. Unless for
22 example those abbreviations in this context mean
23 something different.

24 So first, let me ask the PRA people what
25 do those things mean?

1 MR. SUMMITT: Okay. For that specific
2 valve what you're talking bout is for RCIC is you
3 initially have to have it go open because you need to
4 be able to have some in flow to be able to keep the
5 pump from tripping off because you're at a higher
6 pressure. As the pressure drops and you're responding
7 to the event, you then have to have that valve go
8 closed so you can accurate flow, mainly both
9 associated with like a small LOCA or something like
10 that.

11 So what you have a valve that has a
12 failure mode that's associated with being in the wrong
13 position at the wrong time. So there's two different
14 failure modes: It has to go open and then it has to
15 go closed.

16 MEMBER STETKAR: So this is an example of
17 two different very specific failure modes for one
18 valve?

19 MR. SUMMITT: That is correct.

20 MEMBER STETKAR: Now in principle if I
21 quantified the PRA one of those failure modes might
22 have crossed the border of Fussell-Vesely .0051 and
23 the other one might have been .0049. So you might have
24 only had one of those two failure modes in principle?

25 MR. SUMMITT: In this particular case it

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1 probably would not be because the --

2 MEMBER STETKAR: No, I understand how the
3 numbers work.

4 MR. SUMMITT: Yes, you're right.

5 MEMBER STETKAR: But in principle?

6 MR. SUMMITT: You're right. No different
7 then if a pump start and a pump run --

8 MEMBER STETKAR: Okay. Yes. Yes. Right.

9 MR. HUGHES: By postulating that case, the
10 PRA input to the process might be even if you had two
11 that were very close, that they should both be listed
12 as in scope as important. Because the PRA input is
13 grounded and founded on the numbers, but it's an input
14 that includes the understanding of the PRA person as
15 to uncertainty, as to modeling, as to treatment in the
16 PRA. And that can come through with the recommendation
17 that it should be in through the PRA. And if it were
18 not, it would the other way, the PRA insights that
19 said the PRA doesn't bring it, you'd still do the
20 deterministic to see if the evaluation of other
21 factors would bring it in.

22 MEMBER STETKAR: Thank you.

23 Let me ask you a follow-on question to
24 that because Table 19K-1 lists equipment that is
25 determined to be important to risk. So I'm assuming

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1 Fussell-Vesely importance or risk achievement worth,
2 and Table 19K-1 does have this example of those two
3 different failure modes for that valve in that.

4 Table 19K-2 is characterized as things
5 that have moderate risk achievement worth as opposed
6 to 19K-1 that are characterized has greatest
7 importance for CDF.

8 19K-2, the not so important stuff, I see
9 the same valve listed. So it's curious to me how it
10 can have the greatest importance for CDF and also be
11 of moderate importance. So that --

12 MR. HUGHES: You are pointing out -- I'd
13 like to go back and reanswer your question with a
14 little fuzz around the edge.

15 Your question was: How to view this
16 table? And the answer is the table provides useful
17 information and so it should be viewed. However, the
18 useful information does not go as far as I think we
19 may be pushing it.

20 The table provides an understanding of the
21 intent of the program as the lot to designed to put
22 into the CDC. What we're doing with the expert panel
23 in implementing it is taking this table and the form
24 of it, but applying it from a system level straight
25 down systematically.

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1 And I would agree with you; when I look at
2 the table I see things in there that are hard to
3 reconcile as to how they came in from the original
4 evaluation and some judgment was clearly applied. But
5 the details of how that string can be pulled is not
6 provided. So what we're doing is starting at the
7 system level, coming straight down and providing a
8 path that can be pulled and we can answer all those
9 questions.

10 MEMBER STETKAR: Let me just for the
11 record get the last example that I have on there.
12 Because I mentioned it earlier. This is in 19K-2,
13 it's the RCIC steam supply bypass valve limit switch
14 fails. It's characterized as moderate risk
15 achievement for it. It's not in the top tier.

16 That valve apparently exists in the PRA
17 but it does not exist in the plant anymore because the
18 RCIC design change removed that valve from existence.

19 A subtle difficulty of having that valve
20 in the PRA and evaluating its numerical risk
21 importance is that by doing that you can skew
22 numerical risk importances of other pieces of
23 equipment, especially Fussell-Vesely because it's a
24 kind of an average short of thing. So you have to be
25 a bit careful about that for values, numerical values

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1 that are close to the margins. And, you know and the
2 concern is that if you're just drawing a very hard
3 black line of .004999 is out and .0005 is in, that
4 skewing process is something that could come into
5 play.

6 And I'll just leave it there.

7 MR. HUGHES: I would like to comment that
8 you're not only correct, but at the last two day panel
9 meeting we actually discussed that in some length.

10 MEMBER STETKAR: Ah.

11 MR. HUGHES: And we determined after
12 obviously discussing it that we have to be careful to
13 make sure that the insights that come are not derived
14 from a computer with a .0001 level of detail. We're
15 looking at what is the importance of the component as
16 determined by a model that has much in it, but not
17 everything.

18 MEMBER STETKAR: I know you're still
19 sitting there. But let me finally get back to if the
20 process will be completed by September 30th, what I'm
21 personally looking for -- and I know it's a process.
22 I hear everything that people are saying. I think you
23 also need to appreciate our role in this review is at
24 some level, let's call it a sanity check. I think
25 we're interested in looking at that list and doing

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1 what I'm calling, that type of sanity check.

2 In other words, looking at the population.
3 If it's at the system level, you know the feedwater
4 system is called out but the condensate system isn't
5 called out, you know what not? It would seem like a
6 reasonable question.

7 Or, for example, the condenser circulating
8 water system isn't called out but that the PRA takes
9 credit for in heat removal from the condenser, for
10 example: That type of larger picture sort of sanity
11 check. And that's one of the reasons why I'm
12 interested about when the final populated list will be
13 available, at whatever level of detail and when we
14 might have an opportunity to see that.

15 MR. HEACOCK: You know, most of this is
16 going to be more at the system level. That's the
17 upper level that we will need to use to start drilling
18 down into the specific components for each one of the
19 systems. And that's the one that's really going to be
20 completed by September time frame.

21 MEMBER STETKAR: September 30?

22 MR. HEACOCK: Right. And that's actually
23 where we've been, and we've done quite a bit of work
24 on that list already, and it does include condensate
25 systems.

1 MEMBER STETKAR: Yes. But honestly, Evan,
2 at that level, you know in terms of a lot of the stuff
3 that I've brought up, these specific examples about
4 failure modes --

5 MR. HEACOCK: Yes.

6 MEMBER STETKAR: -- and the concerns about
7 being above and below a particular numerical margin,
8 while I in principle might be concerned about that,
9 you know sometime in the future as this list becomes
10 more detailed and evolves, I quite honestly have no
11 means of evaluating that.

12 MR. HEACOCK: Yes.

13 MEMBER STETKAR: That's up to the staff in
14 terms of their audit and inspection functions.

15 MR. HEACOCK: You know, and I accept that.
16 But at least at the system level I'd like to have the
17 opportunity to say that the list seems to make sense
18 given what we know about risk, given what we know
19 about power plants and things like that.

20 MR. HEACOCK: Yes. All the insights.
21 Okay.

22 MR. HEAD: And there is an ITAAC, so it's
23 not just audits, but there is an ITAAC that we have to
24 close. And so --

25 MEMBER STETKAR: But again, we don't get

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1 involved in that.

2 MR. HEAD: And somewhat you'll see me, you
3 should be sensing that I'm a little concerned about
4 this action item because the process -- you used the
5 term "process complete in September." Well, the
6 process is not complete. We will have a population,
7 but clearly going down into the components and all the
8 details that go with that, that's an ongoing process.
9 And the process won't be complete because we don't
10 have the final PRA that we'll be using to assess. So
11 I'm --

12 MEMBER STETKAR: But you will have the
13 input from the expert panel.

14 MR. HEAD: Yes, sir. Yes.

15 MEMBER STETKAR: And I'm not looking --
16 I'm honestly as long as you're saying it's at the
17 system level, I'm not looking for microscopic stuff at
18 that point. I'm looking at a macroscopic top down.

19 MR. HEAD: Yes.

20 MEMBER STETKAR: Because I recognize that
21 instead of saying the condensate system, eventually
22 you'll have individual components. I'm not sure about
23 failure modes.

24 MR. HEAD: Right.

25 MEMBER STETKAR: But individual components

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1 listed so that you don't have some drain valve off of
2 the condensate polisher or something as a quality
3 item, for example.

4 MR. HEAD: Yes.

5 MEMBER STETKAR: I recognize that. But at
6 a high level kind of completeness system level it
7 would seem reasonable for us to look at that list.
8 Because it does have implications about how you will
9 later treat nonsafety-related equipment, some subset
10 of that system less equipment in your follow-on
11 Maintenance Rule program.

12 MR. HEAD: I believe you have the
13 evidence, though, how we will do that. These are not
14 based on safety-related.

15 MEMBER STETKAR: No.

16 MR. HEAD: Okay. There's no safety-
17 related aspect of this that is relevant to the
18 deterministic review.

19 CHAIRMAN ABDEL-KHALIK: September 30th of
20 this year is still within the timeline of our review.

21 MR. HEAD: Yes, sir. It is.

22 CHAIRMAN ABDEL-KHALIK: And perhaps it
23 might be a good idea to just have a follow-up item
24 that we'll look at the list when it's completed --

25 MEMBER STETKAR: I understand the process,

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1 and I have confidence in the process. And if I have
2 confidence in the process and you have confidence in
3 the process, it should be a pretty much pro forma, gee
4 this seems reasonable.

5 MR. HEAD: My, I guess concern is that
6 even if on September 30th we have some interaction
7 that says well where's this system or where's that,
8 that's still not an issue with the process. The
9 process is still ongoing and there is still
10 opportunities for -- you know even after September
11 30th for example a system that's applied to the
12 project from a rule change that will get added to the
13 system. So --

14 CHAIRMAN ABDEL-KHALIK: Yes. But
15 nevertheless, you know on September 30th you would
16 have that coherent list to the same level of detail
17 that would allow sort of some one to look at it and
18 make sense out of rather than different levels of
19 detail.

20 MR. HEAD: And would we present that list
21 in this meeting, or is that something that we would --

22 CHAIRMAN ABDEL-KHALIK: Oh, yes. I would
23 imagine there would be --

24 MEMBER STETKAR: Let's ask the staff that
25 because, you know we are treading -- I understand why

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1 Scott's uneasy about this discussion because I
2 understand why you're uneasy. So, let's ask the staff
3 a little bit about the --

4 CHAIRMAN ABDEL-KHALIK: The timeline?

5 MEMBER STETKAR: -- you know that timeline
6 and what that list means and what connotation that
7 list has at a specific snapshot in time from their
8 perspective. That might help us a bit also.

9 MR. HEAD: Okay?

10 CHAIRMAN ABDEL-KHALIK: Okay.

11 MR. HEAD: Evan?

12 MR. HEACOCK: Okay. Actually, this next
13 slide we've already talked about. And again, any new
14 SSCs identified will be added to D-RAP, and any
15 changes in the PRA model will be evaluated against
16 what's in D-RAP at that particular point of time and
17 feed back into the process.

18 Are there any other questions on 30?

19 MR. HEAD: Are there any other questions
20 on 30?

21 MR. HEACOCK: So the next is go over
22 Action Item #88, which is a question we had just
23 recently on Startup Administrative Manual does not
24 seem to include the SSCs going into RAP following PRA
25 or expert panel review.

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1 Actually, the answer is yes they do. By
2 process it's required to. Regulatory Guide 1.68
3 "Initial Test Programs for Water Cooled Nuclear Power
4 Plants" is referenced in the SAM and requires the test
5 program to include suitable testing of all SCCs
6 important to safety.

7 So, any of that we put in the D-RAP by
8 process will get called out and get tested. Okay.

9 MEMBER STETKAR: So there is a traceable
10 point to that.

11 MR. HEACOCK: Yes.

12 MEMBER STETKAR: Good.

13 DESIGNATED FEDERAL OFFICIAL BANERJEE: So
14 we can close this action item now?

15 MEMBER STETKAR: Yes, I mean that's what
16 I was just looking for --

17 MR. HEACOCK: Yes.

18 MEMBER STETKAR: -- that indeed there was
19 a traceable hook that --

20 MR. HEACOCK: Yes.

21 MEMBER STETKAR: -- ensured that.

22 MR. HEACOCK: Right. Okay? Anything else
23 for 88? Okay. So we're closed?

24 CHAIRMAN ABDEL-KHALIK: Okay. You wanted
25 to provide some answers to some of the questions that

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1 were raised earlier today, or would you like to wait
2 until--

3 MR. HEAD: Sure, we can. If there are no
4 other questions on Chapter 17.

5 CHAIRMAN ABDEL-KHALIK: Let's see. Are
6 there any additional questions on Chapter 17?

7 MEMBER STETKAR: Can we just -- it's here.
8 You see everybody stiffen up.

9 MR. CORRADINI: That's just because the
10 respect.

11 MEMBER STETKAR: Watch my back when I walk
12 out of here.

13 Going from Rev. 3 to Rev. 4 of the FSAR
14 you changed the level of detail coming out of the
15 expert panel. You used to have four categories and
16 you've split it into only two. And philosophically I
17 understand why that is because you only have two
18 coming out of the PRA and it's a lot of easier to sort
19 things into an important or not important event.

20 Since you have the process ongoing now and
21 since the score for high is 41 to 100, do you have any
22 sense of whether you're overpopulating the high
23 importance because of that?

24 MR. HEACOCK: Well --

25 MEMBER STETKAR: Only because, you know

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1 you do have numerical weights and datings and things
2 like that.

3 MR. HEACOCK: Yes.

4 MEMBER STETKAR: So it seems to be a
5 rather fine process. But --

6 MR. HEACOCK: Well, again, it's not just
7 the 41, it's also any single question.

8 MEMBER STETKAR: That's true. I mean,
9 that's the sort of backstop thing that you rely on.

10 MR. HEACOCK: From what we have gone
11 through so far my answer to that would be no, that we
12 don't feel like we're overpopulating.

13 MEMBER STETKAR: You have confidence in
14 terms of what's coming? Okay.

15 MR. HEACOCK: Yes. It's based on what
16 we've seen and what we've evaluated so far. Nothing
17 seems to be that we're throwing in a lot more systems,
18 you know.

19 MEMBER STETKAR: Okay. Good. Good.
20 Because, I mean you used to have that sort of medium
21 importance --

22 MR. HEACOCK: Yes.

23 MEMBER STETKAR: -- and there were some
24 guidelines that say well I need to think about the
25 medium importance.

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1 MR. HEACOCK: That was that carryover from
2 1&2 that we talked about.

3 MEMBER STETKAR: Okay. Thanks.

4 MR. HEACOCK: Yes.

5 CHAIRMAN ABDEL-KHALIK: Okay.

6 MR. HEAD: Okay. Coley, do you want to
7 describe what --

8 MR. CHAPPELL: Oh, the reference? There
9 was a reference we went over with Mr. Brown about
10 providing the required flow rate for AC-independent
11 water addition.

12 MEMBER BROWN: He gave it to me. That's
13 fine.

14 MR. CHAPPELL: I just wanted to confirm
15 that--

16 CHAIRMAN ABDEL-KHALIK: Would you state
17 them on the record?

18 MR. CHAPPELL: The requirement is a COL
19 item 5.9 that specified in Table 1.9-1. It references
20 back to a section in Chapter 5, Section 5.4, the
21 subsection is 5.4.711103.

22 CHAIRMAN ABDEL-KHALIK: And those are the
23 flow rates that are specified?

24 MR. CHAPPELL: The flow rates that were --

25 MEMBER BROWN: Flow rates are specified.

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1 There's another point that we don't want to talk about
2 it under this.

3 MR. CHAPPELL: So that addresses the
4 question about the flow rates.

5 CHAIRMAN ABDEL-KHALIK: Okay.

6 MR. HEAD: Okay. And then we described --

7 MEMBER BROWN: I'm all set.

8 MR. HEAD: But what we described was --

9 MR. CORRADINI: We're allowed to talk
10 about it?

11 CHAIRMAN ABDEL-KHALIK: Right. And it has
12 to be on record.

13 MR. HEAD: We showed the elevation of the
14 hatches and the top bottom of the tunnel between
15 them, and that it was above the suppression pool
16 elevation. And that once any water went into the
17 drywell that it would also be below the level of the
18 hatch. And so, I think that --

19 MR. CORRADINI: Yes. That answers. That
20 was, I guess, the whole point of me wanting to know
21 what it was. So I feel better.

22 CHAIRMAN ABDEL-KHALIK: And the difference
23 in elevation between the bottom of the lower drywell
24 and the lower edge of the hatch is what? Three or
25 four meters, something like that

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1 MR. HEACOCK: The lower bottom of the
2 drywell and a hatch?

3 CHAIRMAN ABDEL-KHALIK: Right.

4 MR. CORRADINI: The floor and the bottom
5 of the hatch.

6 MR. HEAD: Probably more than that.

7 MR. HEACOCK: More than that. The bottom
8 of the drywell, it's a little bit higher -- not much.
9 Probably about a meter or two higher than the
10 suppression pool elevation. So they're basically
11 almost at the same level. And the water in the
12 suppression pool goes up to seven meters. So, I can't
13 give you exact, but it'll be a little bit more than
14 that when you're said and done with you're trying to
15 equalize water between the suppression pool and the
16 lower drywell.

17 CHAIRMAN ABDEL-KHALIK: The concern was
18 when the water is equalized, does the water level
19 exceed the level of that --

20 MR. HEACOCK: No. Yes. It's more than
21 several --

22 CHAIRMAN ABDEL-KHALIK: -- of the hatch.

23 MR. HEACOCK: It's probably several meters
24 at the worst case. We didn't sit down and measure,
25 you know try to calculate what the difference in

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1 level, but it's within several meters at least from
2 elevation below the hatch.

3 MR. CORRADINI: Yes. I guess my concern
4 was I just wanted to make sure you weren't submerging
5 the equipment hatch with the water.

6 MR. HEACOCK: Right. Right.

7 MR. CORRADINI: And if the answer to that
8 is no based on the drawings you showed me, then I feel
9 safe.

10 MR. HEACOCK: Yes.

11 CHAIRMAN ABDEL-KHALIK: All right. Thank
12 you.

13 Is there something else?

14 MR. HEAD: Well, sir, just we'd probably
15 want a chance to just go over the bookkeeping on all
16 the follow-up items.

17 CHAIRMAN ABDEL-KHALIK: Right.

18 MR. HEAD: And are we going to do that now
19 or are we going to do that after?

20 CHAIRMAN ABDEL-KHALIK: If you'd like, we
21 can do that now.

22 MR. HEAD: Okay. We have a follow-up item
23 on what I'll call the hurricane return interval.

24 CHAIRMAN ABDEL-KHALIK: Right. The sort of
25 uncertainty analysis associated with the hurricane

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1 return interval.

2 MR. HEAD: Right.

3 PARTICIPANT: There was a three second
4 gust --

5 MEMBER STETKAR: You know, honestly, I
6 wouldn't at this stage in the game I wouldn't make
7 that an issue, really. Because I understand it's not
8 quantified in the PRA. That's a different -- and I
9 don't believe that hurricanes within the context of
10 the PRA are going to dramatically increase the
11 numbers. They might. It's simply they're not
12 quantified in an integrated risk perspective.

13 CHAIRMAN ABDEL-KHALIK: It's out, John?
14 Okay.

15 MEMBER STETKAR: It shouldn't be in.

16 CHAIRMAN ABDEL-KHALIK: All right.

17 MEMBER STETKAR: I don't think we need
18 to--

19 CHAIRMAN ABDEL-KHALIK: Unless somebody
20 else objects, can we just take this item off the list?

21 MR. HEAD: Okay.

22 CHAIRMAN ABDEL-KHALIK: Okay.

23 MR. HEAD: And we had the request to
24 describe the manual control of RCIC and the long-term
25 cooling --

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1 CHAIRMAN ABDEL-KHALIK: Yes.

2 MR. HEAD: -- discussion that we'll do on
3 June 21st.

4 CHAIRMAN ABDEL-KHALIK: Right.

5 MR. HEAD: And we'll also, just for
6 everyone, we'll summarize RCIC operation. We'll go
7 back over it's --

8 MEMBER STETKAR: Some of the stuff there's
9 a technical report.

10 MR. HEAD: Right.

11 MEMBER STETKAR: It's got some good
12 pictures.

13 CHAIRMAN ABDEL-KHALIK: There was an issue
14 earlier related to particulate matter getting into the
15 bearing cooling for the RCIC pump.

16 MR. HEAD: And that's one of --

17 CHAIRMAN ABDEL-KHALIK: A\and that's
18 another follow-up item.

19 MR. CHAPPELL: We'll add this to the two,
20 we have two follow-up items with RCIC that we plan to
21 address.

22 CHAIRMAN ABDEL-KHALIK: Right.

23 MR. CHAPPELL: Are currently planning to
24 address on the same date.

25 CHAIRMAN ABDEL-KHALIK: Right. Okay.

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1 Thank you.

2 MEMBER STETKAR: Well, as long as you're
3 making those, Harold's not here, if you'd bring some
4 graphics with you on the RCIC pump design --

5 MR. CHAPPELL: Yes.

6 MEMBER STETKAR: -- make sure you bring a
7 good cross section that shows the internals of the
8 pump and the turbine. Because he had voiced some
9 concerns about seals and seal cooling.

10 MR. CHAPPELL: Yes. Yes.

11 MEMBER STETKAR: Seal and seal cooling,
12 which is --

13 MR. CHAPPELL: Okay.

14 MEMBER STETKAR: I don't want to prejudice
15 it, but a good cross section drawing would help to
16 explain that.

17 MR. HEAD: Okay. And then we had a
18 follow-up item, the basis for the 15 and 40.

19 MR. CHAPPELL: Yes. Right.

20 MR. HEAD: Okay.

21 DESIGNATED FEDERAL OFFICIAL BANERJEE:
22 Fifteen and 40 or -- I have those zero to five because
23 15 becomes multiplication of three times five.

24 MEMBER BLEY: No. The 15 is the criterion
25 for -- and 40 was the criterion for the --

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1 MEMBER BROWN: It's 15 and then it goes--

2 CHAIRMAN ABDEL-KHALIK: I guess just the
3 logic, that's all.

4 MR. HEAD: Okay.

5 MEMBER BROWN: Which and the 40 is the
6 other --

7 MEMBER BLEY: Which would include, and I
8 know you have it, the word description of what the
9 score zero to five means.

10 MR. HEACOCK: I can show you that today,
11 if you'd like.

12 MEMBER BLEY: That would be great.

13 MR. HEACOCK: Okay. Because I have it
14 right here.

15 MEMBER BLEY: Okay.

16 MR. HEAD: And then I captured one that
17 the RCIC bypass valve does not exist. And I think we
18 owe you something on that.

19 MEMBER STETKAR: No, it's not the RCIC.
20 But it's the steam emission -- the original design,
21 there was a main steam emission valve and a little
22 bypass valve. The bypass valve opened first because
23 the old terry turbine design didn't like to start real
24 fast. It opened and then the main steam emission
25 valve came open after a little time delay. Well, in

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1 the new turbine design you only have a single steam
2 emission valve, the bypass valve has been removed.
3 It's pretty evident that that bypass valve is still in
4 the PRA model because assigned in the numerical risk
5 significance to the extent that it shows up in one of
6 the tables in 19K. It was only an example that I
7 brought up to kind of illustrate the concern about
8 individual components. And in that case, it was a
9 limit switch failure, individual component failure
10 modes as perhaps not a justifiable level of detail
11 today given the status of the PRA, for example.

12 But if indeed you're populating the list
13 at least as far as we draw the line of our involvement
14 at the system level, I'm not really concerned about
15 that.

16 MR. HEAD: Okay.

17 MEMBER STETKAR: So that's another one
18 that from my perspective is a curiosity but doesn't
19 merit any follow-on.

20 MR. HEAD: Okay. 88 we closed. And 30
21 we're keeping open and we will show you the status of
22 the list on September 30th, or whatever the --

23 MEMBER STETKAR: Let's wait for the
24 interaction with the staff on that one.

25 CHAIRMAN ABDEL-KHALIK: Okay. Good. Thank

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1 you.

2 DESIGNATED FEDERAL OFFICIAL BANERJEE: I
3 have a question here. Also Dr. Stetkar asked if there
4 is in the PRA any consideration of probability of wind
5 damage versus wind speed, whether that was looked at
6 or not. Is that still a question or is it --

7 MEMBER STETKAR: No. Because that's all
8 involved in how are they treating high winds and
9 external events. The answer is they're not.

10 DESIGNATED FEDERAL OFFICIAL BANERJEE:
11 Thank you.

12 And I have another that's actually
13 staff's, and that was the contractor's report on
14 MELCOR/MAAP. And I have the ADAMS reference. Rocky
15 provided them, I understand. So I'm going to
16 distribute it to the members.

17 CHAIRMAN ABDEL-KHALIK: Okay.

18 DESIGNATED FEDERAL OFFICIAL BANERJEE:
19 That's all.

20 CHAIRMAN ABDEL-KHALIK: All right. Thank
21 you.

22 We are nearly 45 minutes behind schedule.
23 So at this time we'll move on to the staff's
24 presentation of Chapter 17.

25 MR. EUDY: Good afternoon.

1 I'm Mike Eudy, Project Manager. And I'm
2 going to be discussing the staff's review of the phase
3 4 product for Chapter 17 Quality Assurance.

4 So, again, there are no open items.

5 George Wunder and myself are Project
6 Managers. And we have Garrett Newman here and Todd
7 Hilsmeier will be going over specific sections of
8 Chapter 17.

9 In summary, what we're going to talk about
10 today is Garrett Newman will be discussing Section
11 17.5S, which is Quality Assurance Program Guidance.
12 We're going to discuss a previous open item we had
13 identified, closure of some confirmatory items, the
14 recent change in ownership/applicant impact on this
15 Chapter and some COL item closure.

16 And then Todd Hilsmeier will be discussing
17 Section 17.4S which includes the Reliability Assurance
18 Program. We're going to be discussing COL item
19 closure, an ongoing confirmatory item that he is doing
20 with an audit, and then just going to discuss the
21 staff's ACRS action item that obviously will have some
22 interesting discussion.

23 So, I'm going to go ahead and turn it over
24 to Garrett Newman to discuss 17.5S.

25 MR. NEWMAN: Thank you.

1 Good afternoon. Again, my name is Garrett
2 Newman and I work in the Quality Assurance and Vendor
3 Branch.

4 I'll be talking about Chapter 17.5S. This
5 review also includes 17.01 and 2.

6 The last time we met we had an open item
7 regarding the QAPD and the regulatory commitment
8 section. Specifically, Regulatory Guide 1.33 and the
9 operational requirements as well as some consistency
10 items between Chapter 17 and Chapter 1.

11 The applicant responded to the RAI and
12 proposed some changes to the QAPD which included
13 updating for the latest version of the NEI template,
14 which the staff approved, I believe last summer. I
15 don't have the date on that, though.

16 Since the writing of the SER they've
17 incorporated those changes, and the staff found those
18 acceptable so that confirmatory item as well as two
19 others are closed now.

20 The applicant's Version 5 of the FSAR
21 which made some changes to the name of the applicant
22 and the organizational structure, and there's also
23 some changes in the Quality Assurance Program as well.
24 The staff reviewed those, had a couple of questions
25 which were included in RAI 17.5-10 which the applicant

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1 has responded to and staff found acceptable and is
2 tracking as Confirmatory Item 17.5-10.

3 And that's the only confirmatory item
4 remaining that the staff is tracking.

5 It can address COL License Information
6 item 17.1 by including the Quality Assurance Program
7 for construction and operation.

8 And finally, there was no ACRS action on
9 this regarding the Quality Assurance Program.

10 That's all I have, unless there's any
11 questions.

12 MEMBER BROWN: I have a follow-up
13 question. You said Revision 5 of the FSAR?

14 MR. EUDY: We had a recent Revision 5 that
15 was specifically devoted to South Texas' change in
16 applicant ownership and there was some impact on a few
17 of the chapters.

18 MEMBER BROWN: Okay. I just have Rev. 4.
19 I didn't know there was anything relevant to the fact
20 that we --

21 DESIGNATED FEDERAL OFFICIAL BANERJEE: Is
22 that noted in your --

23 MR. EUDY: In the SER unless otherwise
24 noted refers to Rev. 3 most of the time, but often
25 staff will have time to incorporate Revision 4 of the

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1 COL.

2 MR. NEWMAN: The changes in the FSAR were
3 just a title change to the Quality Assurance Program.
4 The significant changes were in the referenced Quality
5 Assurance Program itself changing the different two
6 organizations to where it was under construction and
7 turning it over to STP at operation. So minimal
8 changes to the actual FSAR.

9 DESIGNATED FEDERAL OFFICIAL BANERJEE: I
10 guess what Mr. Brown was asking is your enterprise
11 management system where you load this FSAR has
12 actually been forwarded, that's what was distributed
13 to the Members. So Rev. 5 has it been loaded yet?
14 That's what I want to ask.

15 MR. EUDY: I believe it has. I can get
16 back to you on that. I believe it was recently put
17 into ADAMS --

18 DESIGNATED FEDERAL OFFICIAL BANERJEE:
19 Yes, I believe like two weeks ago.

20 MR. CHAPPELL: But, George, did you --

21 MR. WUNDER: Are we talking about what's
22 in SharePoint?

23 MR. EUDY: Yes. What's in ADAMS?

24 DESIGNATED FEDERAL OFFICIAL BANERJEE:
25 What's in your management system, where I go to--

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1 MR. WUNDER: That's SharePoint. It hasn't
2 been there for long.

3 DESIGNATED FEDERAL OFFICIAL BANERJEE:
4 It's in there?

5 MR. WUNDER: Yes, that's correct.

6 DESIGNATED FEDERAL OFFICIAL BANERJEE:
7 Okay. Because I distributed Rev. 4.

8 MEMBER BROWN: Yes, and we didn't even do
9 all the chapters in Rev. 4. And some of those --

10 MEMBER STETKAR: Right. We tend to get
11 them--

12 DESIGNATED FEDERAL OFFICIAL BANERJEE: In
13 pieces.

14 MEMBER BROWN: Yes. Because it's got 11
15 or 12 chapters there out of the 19 or 20, or something
16 like that. Okay. Yes. I even use Rev. 3 for some
17 stuff.

18 DESIGNATED FEDERAL OFFICIAL BANERJEE:
19 That was last year.

20 MEMBER BROWN: When I was reviewing for
21 this I used Rev. 3 a couple of times. That was the
22 only point I was trying to make. I was just trying to
23 make sure I knew what was going on.

24 CHAIRMAN ABDEL-KHALIK: This doesn't have
25 any material impact on the issue that's being

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1 discussed here.

2 MEMBER BROWN: It doesn't sound like it.

3 MR. CHAPPELL: Okay. We'll turn it over
4 to Todd Hilsmeier to discuss 17.4S and an ACRS action
5 item.

6 MR. HILSMEIER: Thank you, Mike.

7 FSAR 6 and 17.4S addresses COM
8 information items of the DCD related to the
9 Reliability Assurance Program or RAP. And Section
10 17.4S discusses the methodology for updating and
11 maintaining a list of RAP SSCs during the design and
12 construction phases of the plant, the integration of
13 RAP into operational programs and discusses also the
14 essential elements of D-RAP. D-RAP is simply during
15 the design and construction phase of the plant.

16 And the staff's review of Section 17.4S
17 discussed in detail at the ACRS Subcommittee meeting
18 on March 18, 2010 which resulted in one ACRS Action
19 Item. And the SER in Section 17.4S has no open items
20 and one notable confirmatory item that is related to
21 the ACRS Action Item.

22 The next slide.

23 MEMBER BROWN: Just one question, because
24 this is educational. Okay. You said RAP is one thing
25 and D-RAP, and where is the transition point again and

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1 which is which?

2 MR. HILSMEIER: Yes. RAP has two stages
3 and the transition point is at fuel load, basically.
4 So before fuel load during the design and construction
5 phase, we call the design Reliability Assurance
6 Program. Then after fuel load, RAP is integrated into
7 operating programs.

8 MEMBER BROWN: D-RAP is integrated? Which
9 is it?

10 MR. HILSMEIER: Either way. You could
11 think of D-RAP as integrated into operating programs.

12 MEMBER BROWN: Okay.

13 MEMBER BLEY: And they drop the D.

14 MEMBER BROWN: And you drop the D and call
15 it RAP; that's what I was trying to get to.

16 MR. HILSMEIER: Actually, we even drop the
17 RAP. We call it Maintenance Rule --

18 MEMBER BROWN: All right. Why do I keep
19 doing this to myself?

20 MR. HILSMEIER: In early days there used
21 to be an O-RAP. And industry interpreted O-RAP as an
22 additional program, but O-RAP is simply the
23 Maintenance Rule Quality Assurance.

24 MEMBER BROWN: All right.

25 MR. HILSMEIER: And so I'm sorry for --

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1 MEMBER BROWN: Plow on.

2 MR. HILSMEIER: -- confusing you. I mean,
3 in making this is more complicated.

4 MR. EUDY: And RAP is all the rage with
5 the young kids, by the way. So --

6 CHAIRMAN ABDEL-KHALIK: Please continue.

7 MEMBER BROWN: You remind about my
8 grandson.

9 MR. HILSMEIER: The ACRS Action Item is
10 stated on this slide. This action item includes
11 addressing when the D-RAP list will be effectively
12 populated and how does the staff ensure the D-RAP list
13 is acceptable?

14 Now I should have this memorized like
15 that, since we've talked about it so much at ACRS.
16 But the remainder of this presentation will address
17 the ACRS Action Item.

18 Now, first, we need to understand why a
19 risking of the SCCs are identified in D-RAP. A
20 risking of the SSCs were identified for D-RAP, and I
21 like to call them D-RAP SSCs rather than risk
22 significant SSCs. Because different applications
23 identify risk significant SSCs differently. So mostly
24 refer to risk significant SSCs as D-RAP SSCs.

25 They're identified because these D-RAP

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1 SSCs are subjected to quality assurance controls
2 during the detail design and construction phase, and
3 also even in the operation phase. This is primarily
4 relevant to the nonsafety-related D-RAP SSCs which
5 must meet the QA requirement under Part D of Standard
6 Review Plan Section 17.5.

7 The safety-related SSCs must meet QA
8 requirements of the Appendix B 10 CFR Part 50
9 irrelevant of D-RAP.

10 There's some other RAP activities during
11 the operation phase which includes ensuring that the
12 test maintenance activities address dominant failure
13 modes of the risk significant SSCs, and that RAP SCCs
14 are considered high safety significant in the
15 Maintenance Rule.

16 During a D-RAP phase we're mostly focused
17 on ensuring those D-RAP SSCs are subjected to quality
18 assurance controls.

19 Next slide.

20 Before I start this slide, during the
21 presentation given by STP, ACRS asked you a question
22 regarding why the high pressure core floodler injection
23 valve F003B was not included in D-RAP. And if it's
24 okay with ACRS and STP, I would like to address that
25 question Is that okay? Okay. Thank you.

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1 One of the limitations of the DCD PRA
2 model is a lack of common cause failure modeling,
3 especially in high pressure core floodler system,
4 reactor building cooling water system, reactor service
5 water system an the RHR system. And this valve F003B
6 was not modeled, did not have a common cause failure
7 mode associated with it. And as a result, when the
8 risk importance is recalculated the RAWs were based
9 on independent failures. And so the RAWs fell below
10 the screening criteria, and thus the DCD did not
11 include the valve in the D-RAP program. And that's
12 part of the DCD space.

13 And what's really nice about STP's
14 approach to deterministic approach is it identified
15 this valve as risk significant. And so it helped
16 compensate for the limitations of the PRA. And that's
17 the main reason why we have this deterministic method;
18 to help compensate for the limitations of a 15 year
19 old PRA model.

20 I don't know if STP wants to add anything
21 to that. Okay.

22 So back to the slides. This slide
23 addresses D-RAP list during COL application phase. In
24 accordance with 10 CFR 52.79(d)(1) STP's D-RAP list
25 and FSAR is incorporated by reference with the

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1 appropriate departures and site-specific supplements.
2 It's incorporated through the D-RAP list in the
3 certified approved DCD. And this process conforms
4 with regulatory requirements.

5 The completeness of STP's D-RAP list in
6 the FSAR is directly attributed to the adequacy of the
7 DCD's PRA and the DCD's D-RAP list, which is subjected
8 to 10 CFR 52.63 on the "Finality of Standard Design
9 Certifications.

10 MEMBER STETKAR: Okay. But we know by
11 your example that that wasn't a very good process
12 because it wasn't --

13 MR. HILSMEIER: Right, exactly. Yes.

14 MEMBER STETKAR: Despite the fact that it
15 was certified.

16 MR. HILSMEIER: In your seat you can focus
17 on the technical. In my seat I need to focus on the
18 technical and also regulatory requirement.

19 MEMBER STETKAR: Understand.

20 MR. HILSMEIER: And so because of finality
21 STP's D-RAP list in the FSAR for the COL application
22 phase conforms to regulatory requirements. And
23 because of finality, we find it acceptable although we
24 still expressed the same concern that you have that
25 the D-RAP list is not effectively populated in the

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1 DCD.

2 So the next slide addresses your technical
3 concern, and the staff's technical concern. For
4 during the detailed design and construction phases of
5 the plant, STP took the initiative and made a
6 commitment to update the D-RAP list by September 2011
7 using the probabilistic and deterministic method
8 describe in FSAR. This is Commitment 17.4-1.

9 And the methodology is summarized in the
10 slide, but I will not go into detail here since it was
11 discussed at the last ACRS meeting.

12 The staff is conducting ongoing audits on
13 the implementation of this methodology to ensure that
14 the D-RAP list will be effectively populated. And
15 this is Confirmatory Item 17.04-9 in the SER. I'll
16 talk about this audit in a few minutes.

17 Next slide.

18 IT should be understood that the D-RAP
19 list is a living list and it is continually updated
20 and maintained, much like the PRA is updated and
21 maintained. So in accordance with the STP's RAP
22 program, STP will maintain and update the D-RAP list
23 as changes are made to the plant-specific design and
24 PRA. This includes updating the D-RAP list with a
25 plant-specific PRA that is developed before fuel load.

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1 Any new SSCs that are added to the scope
2 of D-RAP are subject to the D-RAP program
3 requirements, such as the QA requirements. So if
4 through the deterministic method they miss some RAP
5 SSCs that the plant-specific PRA before fuel load
6 identifies as risk significant, those new risk
7 significant SSCs are still subjected to QA controls.

8 The staff is currently conducting ongoing
9 audits to examine STP's updating of the D-RAP list.
10 The intent of this audit is not to verify the
11 completeness of the D-RAP list. The intent of this
12 audit is to verify that the process of updating the D-
13 RAP is sufficient to ensure that the D-RAP list will
14 be effectively populated and updated as needed.

15 Preliminary findings from the audit
16 include:

17 The staff found that STP developed a D-RAP
18 procedure that is consistent with the description of
19 the D-RAP program in the FSAR which includes updating
20 the D-RAP list as changes are made to the design in
21 PRA, including the plant-specific PRA before fuel
22 load.

23 The staff also found that the expert panel
24 when determining risk significance also considered the
25 ATWAS rule under 10 CFR 50.62, the Loss of All AC

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1 power Rule under 10 CFR 50.63. The expert panel also
2 considered containment performance, external events,
3 low power shutdowns, industry experience, regulations
4 and engineering judgment.

5 And the staff found that STP had
6 identified the risk significant systems and system
7 functions in accordance with the methodology described
8 in the FSAR, though the risk ranking of the system is
9 still in draft form and undergoing peer review,
10 numerous non-PRA modeled systems were added to D-RAP
11 based on the deterministic method.

12 And based on the preliminary audit
13 findings in comparison with other design-centered D-
14 RAP lists, the methodology for identifying the risk
15 significant systems appear to be appropriate.

16 Staff also found that the risk
17 categorization at the component level has not yet been
18 performed. What STP showed today was an example of
19 how they would do it. And the staff will verify the
20 implementation of this activity identifying the risk
21 significant components through another audit, likely
22 during the summer as such Confirmatory Item 17.04-9
23 remains open.

24 Now to verify the completeness of the D-
25 RAP list, and I don't want to call it the final D-RAP

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1 list, but the D-RAP list -- the most complete D-RAP
2 list in addition to verifying implementation of D-RAP
3 activities, the staff plans to conduct inspections
4 prior to initial fuel load. These inspections will
5 likely be integrated with inspections of other
6 programs and requirements, such as inspection of the
7 D-RAP ITAAC, inspection of the initial Maintenance
8 Rule Program, inspection of Defense Specific PRA under
9 10 CFR 50.71, or the inspection of the Quality
10 Assurance Program.

11 And that concludes my presentation. Are
12 there any questions?

13 CHAIRMAN ABDEL-KHALIK: Go ahead.

14 MEMBER STETKAR: No. I'll let you go
15 first.

16 CHAIRMAN ABDEL-KHALIK: I was going to
17 ask, I mean you indicated that you intend to do an
18 inspection sometime in the summer of this list at the
19 component level?

20 MR. HILSMIEIER: This summer we will be
21 performing the audit.

22 CHAIRMAN ABDEL-KHALIK: Audit, excuse me.
23 Yes.

24 MR. HILSMIEIER: To -- go ahead.

25 CHAIRMAN ABDEL-KHALIK: And yet the

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1 applicant said that what they will have on September
2 30 is a list at the system level. Is there a
3 misunderstanding here of --

4 MR. HILSMEIERS: We had a telecon last week
5 in which we discussed, because there's two phases to
6 the deterministic method: Identifying the risk
7 significant systems and then the components. And
8 based on my understanding of the telecon, they would
9 have not all this components identified, but some
10 samples of components identified by September. And
11 that's what we're interested in. We want to see a
12 sample of components that were identified as risk
13 significant. I'm not sure if STP wants to comment on
14 this.

15 MR. HEACOCK: Yes, this is Evan Heacock.

16 Basically what we've agreed to is that we
17 give some samples. We won't go through and identify a
18 majority of the components. This is just to give a
19 flavor of how we would do this, kind of like the
20 example that we showed during the presentation.
21 That's to give them an idea of how we'll be ranking
22 the components also. It won't be very in depth.

23 CHAIRMAN ABDEL-KHALIK: Okay.

24 MR. HILSMEIERS: But from the sample we can
25 close the Confirmatory Item. If the sample is

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1 adequate, then we would have a level of confidence in
2 the process to close the Confirmatory Item.

3 CHAIRMAN ABDEL-KHALIK: Okay.

4 MEMBER STETKAR: Todd, let me ask you
5 this, because you're right. You wear two hats. You
6 wear a technical hat and you wear a regulatory hat.
7 So, let me ask you the regulatory hat question.

8 MR. HILSMEIER: Okay.

9 MEMBER STETKAR: After about nearly four
10 years dealing with new plant licensing, I'm starting
11 to get a sense of what a PRA at the design
12 certification stage might mean in the context of the
13 licensing process. And that's different from my
14 interpretation of what a PRA is.

15 MR. HILSMEIER: Right.

16 MEMBER STETKAR: But I'm starting to get
17 a sense of what that might mean.

18 What does a D-RAP list at the COL stage
19 mean? In other words, if I can use the PRA analogy,
20 the PRA, good, bad or indifferent as long as no one is
21 applying -- you know, doing any risk-informed
22 applications either at the design certification or the
23 COL stage, the PRA purpose is to give some confidence
24 that the level of core damage frequency and large
25 early release frequency is reasonable, let's call it

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1 that. And that's, as best as I can tell, the only
2 purpose of the PRA other than to be a tool, and only
3 one of the tools that feeds into the D-RAP list.
4 Because those risks importance measures are used as at
5 least one of the parameters for populating this list.
6 And we've had a lot of discussions about that.

7 So in that same context what is the
8 function of the D-RAP list at the stage of COL? In
9 other words, how do you view that D-RAP list in a
10 licensing context in terms of degree of completeness,
11 level of detail, you know consistent specificity, for
12 example?

13 MR. HILSMIEIER: Right.

14 MEMBER STETKAR: What sort of criteria are
15 applied? Because, you know in the sense of PRA I've
16 kind of described at least my interpretation of those
17 sort of things. So what's the D-RAP list mean?

18 MR. HILSMIEIER: Are you referring to the
19 COL application phase or the license phase? After
20 they get the license or during --

21 MEMBER STETKAR: No, no, no. The last
22 stage, for example, at which ACRS sees the thing.

23 MR. HILSMIEIER: Okay.

24 MEMBER STETKAR: So it's when the final
25 SER for the COL is issued.

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1 MR. HILSMEIER: Okay.

2 MEMBER STETKAR: At that point, that
3 snapshot.

4 MR. HILSMEIER: Right.

5 MR. HILSMEIER: Based on the ISG for RAP.

6 MEMBER STETKAR: So called Mini-Me.

7 MR. HILSMEIER: Because I spend so much
8 time on it. Actually, I should call it Mini-Malcolm
9 and Me. Because Malcolm Patterson also worked on
10 this.

11 But what's important, the overall result
12 is that the D-RAP SSCs at fuel load are subjected to
13 the Quality Assurance controls.

14 MEMBER STETKAR: I understand. But you've
15 jumped to fuel load again.

16 MR. HILSMEIER: Yes.

17 MEMBER STETKAR: I'm going to bring you
18 back. I got that.

19 MR. HILSMEIER: And so that's the overall
20 result. Now if they can identify those D-RAP SSCs
21 early, it makes -- it would be a lot more easy for the
22 applicant to ensure those components are subjected to
23 the QA controls. If they identify additional SSCs
24 before fuel load, they need to go back and make sure
25 those components meet the QA requirements. So it's to

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1 the advantage of the applicant or licensee to identify
2 that list early on so that they don't have to go back
3 and ensure that the QA controls are met.

4 And so from a D-RAP perspective it's okay
5 to identify new SSCs throughout the design
6 construction phase. But that fuel load, when we do
7 our inspection, like inspection of initial Maintenance
8 Rule, I think that's the best place to inspect the
9 complete list of D-RAP SSCs is when we do the initial
10 inspection of the Maintenance Rule. Because those D-
11 RAP SSCs are incorporated in the Maintenance Rule.

12 At that point we're going to make sure
13 that complete list of D-RAP SSCs have been subjected
14 to QA controls. And like I said earlier, it's to
15 their best advantage to identify --

16 MEMBER STETKAR: Yes, it's a little late
17 after a valve is welded into the system to go back and
18 backfit.

19 MR. HILSMEIERS: Exactly. Exactly. If
20 they can't go back and show that the QA requirements
21 are met for that nonsafety-related SCC, they may have
22 to reinstall the component or replace it with another
23 component. So identifying it early on is key to
24 reduce the burden on the applicant.

25 MEMBER STETKAR: Okay. But everything

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1 you've described is sort of pragmatism about if I'm an
2 applicant, the benefit for me developing a complete or
3 reasonably complete list as soon as possible. What I
4 ask you is from a licensing perspective --

5 MR. HILSMEIER: Right.

6 MEMBER STETKAR: -- what is the licensing
7 connotation of that list at the point at which the COL
8 was issued? But what does in mean in terms of
9 licensing?

10 I'm trying to keep you on licensing --

11 MR. HILSMEIER: Yes.

12 MEMBER STETKAR: -- rather than technical
13 because, you know we've already talked a lot about the
14 technical issues.

15 MR. HILSMEIER: Yes.

16 MEMBER STETKAR: I'm trying to understand
17 from a licensing perspective what it means. Because
18 that might help me in terms of how I think about it.
19 I've learned how to think about a PRA, for example, in
20 that context.

21 MR. HILSMEIER: I think I understand your
22 question. I hope this answers it.

23 The guidance for RAP and D-RAP is through
24 SECY 95-132. It's Commission policy for D-RAP.

25 And in SECY 95-132 they say that the COL

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1 applicant will provide a D-RAP list. And it's because
2 of that we require the applicants to provide a D-RAP
3 list in the COL application.

4 Now from my personal perspective, I'd
5 rather not see the D-RAP list during the application
6 phase. I'd rather see the process for developing the
7 D-RAP.

8 MEMBER STETKAR: Okay.

9 MR. HILSMEIERS: AS a matter of fact, I'd
10 also from my professional point of view, I'd rather
11 see instead of a list of risk significant SSCs, a list
12 of risk significant functions, or at least that's
13 included. Because I think that's more beneficial.
14 Because any SCCS that support the function would then
15 be subjected to D-RAP activities.

16 Does that answer your question? Basically
17 the D-RAP list is required now because of the
18 guidance--

19 MEMBER STETKAR: Because somebody said we
20 have to have a list.

21 MR. HILSMEIERS: Yes.

22 MEMBER STETKAR: But, I mean, it could be
23 a grocery list or it could be a -- I don't want to be
24 that flip. But because you have to have a list, you
25 need to check off the licensing box that, indeed, you

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1 have a list.

2 MR. HILSMEIER: Right.

3 MEMBER STETKAR: Recognizing that it may
4 not be complete nor may it be at -- probably won't be
5 at the final level of detail as it will eventually be
6 implemented --

7 MR. HILSMEIER: Right, exactly.

8 MEMBER STETKAR: -- as you transition
9 throughout the license.

10 MR. HILSMEIER: And STP's at a
11 disadvantage because the PRA is 15 years old. The
12 current designed COL, the PRA is of decent quality for
13 this application. And so the D-RAP list, especially
14 the latest D-RAP list for a design center that I'm
15 reviewing, I'm really -- I'm not going to mention the
16 design center, but really impressed with the amount of
17 work they put into the D-RAP list. This is for a
18 design certification. And COLs that reference this
19 design certification will be at a great advantage.

20 STP was at a disadvantage because of the
21 DCD --

22 MEMBER STETKAR: But even there, Todd, I
23 mean theoretically here you have a certified design D-
24 RAP list which I think most people sitting in this
25 room would admit has some deficiencies that, you know

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1 some of which have been remedied to this point in time
2 and as the process continues, perhaps others might be
3 remedied going forward.

4 MR. HILSMEIER: Right.

5 MEMBER STETKAR: So even your example of
6 a much better D-RAP list --

7 MR. HILSMEIER: Right.

8 MEMBER STETKAR: -- could also suffer from
9 some of those things as the PRA evolves as its
10 compliance with additional requirements on level of
11 detail and quality evolve until it eventually meets
12 that fuel load PRA.

13 MR. HILSMEIER: Yes. And I don't mean to
14 put down the DCD.

15 MEMBER STETKAR: No, no, no, no.

16 MR. HILSMEIER: It's based on the
17 standards 15 years ago, and so --

18 MEMBER STETKAR: Sure. Sure.

19 MR. HILSMEIER: The other point that I
20 wanted to make, which is a very important point and it
21 just slipped my mind. Shoot.

22 MEMBER STETKAR: I'll babble for about one
23 more minute to give you a chance to remember.

24 In the sense of what you were saying about
25 functions, I mean that's a little a bit akin to what

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1 I was talking about having confidence, let's say, at
2 the system level. I quite honestly at this stage of
3 the game is you're trying to say that the D-RAP list
4 will be populated down to the limit switch fails to
5 show that the valve is open failure mode, I'd have
6 real problems with the implications of that if there
7 was any licensing issue, you know creditability
8 assigned to it at that level.

9 At the system level or even the large
10 component level, a valve or a pump for example, that's
11 a confidence-builder to stay that although the process
12 isn't finished, the process is working.

13 MR. HILSMEIER: Yes.

14 MEMBER STETKAR: In other words, if you
15 can look at the list at not just at the functional
16 level, but at the system level and say "Well, the list
17 of systems seems to be reasonable given what I know
18 about the PRA, given what I know about the plant,
19 given what I know about the process. And it seems to
20 be capturing the importance," recognizing that it will
21 evolve.

22 If you look at it at the system level and
23 say "Well, you're missing systems that don't seem to
24 have a logical explanation of why they're not there."
25 The example of the condensate system. That might mean

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1 that that system will be picked up later, or it might
2 mean that there is some flaw in the process hat we
3 haven't recognized, either through your audits or
4 through whatever involvement we've been able to have,
5 for example, as a set of other eyes. And that's sort
6 of my concern about seeing what that list is.

7 MR. HILSMEIER: Right.

8 MEMBER STETKAR: Recognizing it's a
9 snapshot in time.

10 MR. HILSMEIER: Yes.

11 MEMBER STETKAR: I think I understand a
12 little bit better of what licensing implications there
13 are.

14 MR. HILSMEIER: Yes. When I was writing
15 Mini-Me ISG-18, I wanted to just require system
16 function, the significant system functions. But
17 because of the Commission direction, that wasn't
18 possible.

19 MEMBER STETKAR: Okay. Thanks. That
20 interchange, it's helped me a little bit understand at
21 last how you wearing your licensing hat, you view that
22 list. Okay.

23 MR. HILSMEIER: And I can't remember the
24 comment that I forgot. But I just hope we can bring
25 closure to this ACRS Action Item.

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1 MEMBER STETKAR: I think we'll probably
2 like to see that list. If there is a milestone, it's
3 written September 30th. So --

4 DESIGNATED FEDERAL OFFICIAL BANERJEE:
5 That's the audit report.

6 MEMBER STETKAR: Huh?

7 DESIGNATED FEDERAL OFFICIAL BANERJEE: The
8 audit that the staff is going to be.

9 MEMBER STETKAR: Well, your audits are
10 ongoing. But you're looking at -- you already said
11 you're looking more at the process --

12 MR. HILSMEIER: Right.

13 MEMBER STETKAR: If put my only technical
14 hat, I'm sort of interested in looking at that list.

15 MR. HILSMEIER: Okay. Would the other
16 report be sufficient, looking at our audit report or
17 would you want us to come back and --

18 MEMBER STETKAR: I'm sort of interested to
19 see the list.

20 MR. HILSMEIER: Okay.

21 MR. CORRADINI: John's a detail person.

22 MEMBER STETKAR: All right.

23 DESIGNATED FEDERAL OFFICIAL BANERJEE:
24 They are going back.

25 MR. EUDY: Okay. Well, if there aren't

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1 any more questions, I'll go ahead and conclude.

2 MEMBER BROWN: Well, I want to repeat i
3 back since I'm the neophyte relative to this stuff, in
4 that I'm going to rephrase what you said from this
5 whole D-RAP process prior to licensing.

6 In other words, you want to see the
7 process that they're going to use to make sure you
8 understand and see that the process results in results
9 as you would expect them to be. In other words, it
10 will select critical risk significant component
11 systems or whatever.

12 Then you're going to audit during the next
13 prior to whenever you put the final Betty Crocker/Good
14 Housekeeping Seal of Approval on this thing, you'll
15 audit a sample to see that, yes, the process delivers
16 a set of systems, components, structures, whatever,
17 that are risk significant and you agree with them.

18 Now that's not the final list. That's
19 just the list you'll have at that point.

20 And then STP will then populate or
21 continue to populate that list as they go past that
22 point when you come to fuel load. And at that point,
23 you will then go "Here's their list," and you will
24 then audit the fact that they've actually or do you go
25 through every item on the list? This is where my

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1 question gets a little fuzzy. You say there's 2,000
2 items on the list, do you look at every one to see
3 that they actually met their QA/QC requirements or
4 qualification requirements?

5 MR. HILSMEIER: No.

6 MEMBER BROWN: Do you just audit the list?
7 That's question one.

8 And question two is: If at close to
9 getting there or while you're reviewing it, do you say
10 "Oh, the process missed a very critical or very highly
11 significant risk significant component, how do you
12 handle that?"

13 So that's two questions, kind of. And I
14 don't know what you do at that point.

15 MR. HILSMEIER: Right. The audits so far
16 we looked at the risks, the identified risk in the
17 systems. Actually, we looked at the methodology
18 identifying risk significant systems. And that was I
19 found the process for identifying risk significant
20 systems, systems functions acceptable.

21 MEMBER BROWN: Yes, I got that part.

22 MR. HILSMEIER: That's the first part.

23 And the second part is looking at how they
24 identify risk significant components. And that'll be
25 this summer. I'll be looking at --

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1 MEMBER BROWN: That's their process again?

2 MR. HILSMEIER: Yes. Just a sample. But
3 I won't be looking at the complete list.

4 MEMBER BROWN: No, I understand that.

5 Now you finished that --

6 MR. HILSMEIER: Right.

7 MEMBER BROWN: -- and you're going to
8 issue a license at some point.

9 MR. HILSMEIER: Right.

10 MEMBER BROWN: And then they're going to
11 start doing whatever they do, and now you're coming up
12 to fuel load. Now they've got a complete list up to
13 that point.

14 MR. HILSMEIER: Right.

15 MEMBER BROWN: And do you just audit that
16 list or do you go through every item, or it can be a
17 pretty long list.

18 MR. HILSMEIER: Yes, we will inspect the
19 list.

20 MEMBER BROWN: Okay. That's a frozen
21 word. What does that mean.

22 MR. HILSMEIER: And look at samples

23 MEMBER BROWN: Okay. So you'll sample the
24 list at that time?

25 MR. HILSMEIER: Right.

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1 MEMBER BROWN: Okay. You answered
2 question 1. Question 2 is: In the process of doing
3 that, you get a light bulb that goes off and says hey,
4 there's nothing in this list that hits this risk
5 significant component.

6 MR. HILSMEIER: Right.

7 MEMBER BROWN: I've identified a new one
8 the 11th hour and 59th minute. How do you handle that
9 one? Because, I mean the process you've agreed with,
10 their list is there, you've audited it at some time --
11 I presume there's an auditing process that goes on up
12 to fuel load of some sort?

13 MR. HILSMEIER: Yes.

14 MEMBER BROWN: Now what do you do with
15 that?

16 MR. HILSMEIER: Yes. The inspection
17 procedure is driven. We're doing that --

18 MEMBER BROWN: Now forget the procedure.
19 You have identified a piece that's not covered.

20 MR. HILSMEIER: Right.

21 MEMBER BROWN: I don't want to hear
22 process. I found a new risk significant component
23 that's not covered on the list. What do you do with
24 that?

25 MR. HILSMEIER: Right. I had a "but" at

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1 the end of the sentence. I just want to say, because
2 I can only speak for what I would do, because we don't
3 have inspection procedures written yet.

4 What I would do is if I identify SSCs that
5 are not -- that should be in the list, I would do more
6 sampling. Because that indicates that maybe --

7 MEMBER BROWN: Well what are you going to
8 do with the one that's not there? Okay. I'm sorry.
9 I interrupted you. I apologize for that.

10 MR. HILSMIEIER: So if I inspect the list,
11 identify some SSCs or just one SSC that's not there,
12 I may do more sampling because that may indicate
13 deficiency in the process.

14 MEMBER BROWN: I got that.

15 MR. HILSMIEIER: And then after that for
16 those new SCCs that need to be added, we would
17 identify that as a finding. The licensee would need
18 to include those SSCs in the RAP and make sure the QA
19 requirements are met.

20 Now if this is done at the 11th hour and
21 59th minute --

22 MEMBER BROWN: Fifty-ninth minute.

23 MR. HILSMIEIER: -- the burden's on the
24 applicant to address it. It's to their advantage to
25 have a good process, I would say.

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1 MEMBER BROWN: I understand that part.

2 MR. HILSMEIER: And to ensure that
3 everything's done well before that.

4 MEMBER BROWN: Yes, I got that.

5 CHAIRMAN ABDEL-KHALIK: Scott?

6 MR. HEAD: Yes. I just would add, you know
7 one thing is, as we alluded to earlier, there is an
8 ITAAC at the end of all this. And I would assume that
9 if this was found as part of our ITAAC closure
10 process, there's a number of things that'll happen.
11 And first of off, it might end up in enforcement
12 space. And clearly we would not only have to ask the
13 question or just address that one component, we would
14 have to ask how did that happen and what are the
15 ramifications. You know, what else in our process got
16 us to that point?

17 So if it occurred during the ITAAC
18 closure, you know the significance of it would be, you
19 know obviously we're not going to close the ITAAC, but
20 then we'd have to look into actually how we got there
21 also.

22 CHAIRMAN ABDEL-KHALIK: Okay. Thank you.

23 MR. HILSMEIER: Scott raises a very good
24 point. D-RAP was have a corrective action process.
25 So if there are any errors or deficiencies found in

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1 the D-RAP process, these would be identified --

2 MEMBER BROWN: You said "process." But I
3 understand they didn't identify one, so you try to fix
4 the process part of it. But you end up with some
5 parts or some pieces at confluence that still have to
6 -- that didn't get in there and they have to be
7 addressed. And I'm just trying to understand the
8 regulatory handcuffs, if you have any, in terms of
9 enforcing or if somebody says no, you know this is in
10 the list. I'm just trying to get a feel for the
11 ability of the NRC to say "Hey, look, it's got to be
12 taken care of. You don't have this, this and this in
13 there. And therefore, we can't proceed until we get
14 it." And do you have the ability to do that or not?
15 Or, are you not the right person to ask?

16 MR. EUDY: Well, they wouldn't be able to
17 close to the ITAAC, so --

18 MEMBER BROWN: If that's the case, I
19 didn't see an ITAAC on it.

20 MR. HILSMEIER: There's another ITAAC
21 which is the Maintenance Rule. Because STP references
22 NEI document, I think 0702-A, which is a generic
23 template for SRP Section 17.6. Basically how STP will
24 implement Maintenance Rule. So basically STP's
25 Maintenance Rule description says that all RAP SSCs

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1 will be included in the Maintenance Rule as high
2 safety significant. And since Maintenance Rule is a
3 regulatory requirement, that's also a handcuff in that
4 if they don't add this RAP SSC to Maintenance Rule, or
5 this risk significant SSC to the Maintenance Rule,
6 then the Maintenance Rule there's findings associated
7 with the Maintenance Rule for that.

8 MEMBER BROWN: Okay. I'll stop now.

9 CHAIRMAN ABDEL-KHALIK: Mark, did you want
10 to --

11 MR. TONACCI: I simply wanted to give a
12 big picture perspective of the process.

13 We've been talking for months now about
14 licensing. And then we're going to transition into
15 ITAAC inspection where we have to make a decision to
16 allow the folks to start up. So we're talking about
17 audits that we do now during this licensing part, we
18 talk about an ITAAC where we have to make a startup
19 type of decision, "we" being the Commission. Then you
20 transition into inspection where you have true
21 inspectors going out looking at, writing up inspection
22 reports and delivering those to the senior management
23 where it goes into South Texas Corrective Action
24 Program and there's engagement by our management as
25 well. Depending on the significance. It can go in

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1 many different directions, as well as additional
2 inspections.

3 You saw a glimmer of this during AIA when
4 you were reacting to some of the inspection findings.
5 That was a typical inspection action.

6 So that's where this would do at the later
7 stages, post the ITAAC completion and permission to
8 start up the plant. It transitions into another whole
9 program.

10 CHAIRMAN ABDEL-KHALIK: All right. Thank
11 you.

12 Are there any additional questions to the
13 staff on Chapter 17? Okay.

14 Thank you very much.

15 At this time we are nearly an hour behind
16 schedule. Before we get to the next item, I'd like to
17 propose that we take a ten minute break. We'll be
18 back at five after. Five after 3:00, please.

19 (Whereupon, at 2:53 a.m. a recess until
20 3:05.)

21 CHAIRMAN ABDEL-KHALIK: We're back in
22 session.

23 At this time we'll move to the next
24 presentation, which deals with a question raised by
25 ACRS on Part 21. And which would like to make a

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1 comment?

2 MR. BURTON: Good afternoon, everyone. My
3 name is Butch Burton. I'm Chief of the Rulemaking and
4 Guidance Development Branch in NRO. And joining me
5 today are Omid Tabatabai and Al Issa from NRO's
6 Construction Inspection Team -- Construction
7 Experience Team I should say, along with Ram
8 Subbaratnam, who is also in the Rulemaking and
9 Guidance Development Branch.

10 And we're here to follow-up on some
11 questions that were raised in some earlier meetings
12 regarding Part 21. It was raised in the context of
13 the STP meeting, so we're addressing these questions
14 in the same context. But the questions themselves are
15 actually generic and do apply across design centers.

16 And the two questions having to do with
17 Part 21 was:

18 (1) Exactly how does the staff screen and
19 evaluate Part 21 reports, and how do we actually
20 document the guidance or the expectations for the
21 staff in turn to reviewing those reports?

22 So Omid is actually going to start the
23 presentation, and he's describe the screening and
24 evaluation process.

25 MR. TABATABAI: Thank you, Butch.

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1 Yes, good afternoon. My name is Omid
2 Tabatabai, and I'm a Senior Partner and Manager in the
3 Division of Construction Inspection and Operational
4 Programs. And I'm the Program Manager for the Office
5 of New Reactors Construction Experience Program.

6 On this slide what we have here is the
7 process, the Agency's process for collecting,
8 screening, evaluating and communicating construction
9 and operational experience.

10 I apologize for the slides. They're not in
11 the right order as the handouts that you have. So,
12 that's --

13 MR. SUBBARATNAM: The third slide on your
14 handout.

15 MR. TABATABAI: Since I'm not involved in
16 STP preview, this is a generic program for the Office
17 of New Reactors, the best way to describe to the
18 Committee how we obtain operating and construction
19 experience information and how we process them, how we
20 use information to incorporate lessons learned into
21 NRC programs, I think this slide does the job very
22 well.

23 If you look at this chart on the front or
24 the top of the screen, you see these boxes. There are
25 multiple of sources of information that we use from

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1 operating experience including international events
2 and domestic operating experience including Part 21
3 notifications. Inspection reports, LER reports, event
4 notifications and preliminary notifications.

5 On the construction experience side we
6 receive information from international sources, such
7 as CNRA, Nuclear Energy Agency, MDEP, bilaterals and
8 other sources.

9 From the domestic side we have
10 construction experience from Watts Bar-2, Louisiana
11 Energy Services, MOX and other sources.

12 On a daily basis we get together with
13 representatives from Office of Nuclear Reactor
14 Regulation. We have representative in the meeting, as
15 well as Office of Research. We get together at 1:00
16 every afternoon. We go through all these sources of
17 information that we receive on a daily basis and we
18 screen them.

19 If issues, we have screening criteria. If
20 issues need the screening criteria, we communicate
21 them to multiple groups, various groups, including New
22 Reactors.

23 If there is a Part 21 report, we take the
24 Part 21 and we work with the technical branches and
25 technical divisions in the Office of New Reactors to

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1 evaluate Part 21s with respect to applicability and
2 implications on new reactor designs.

3 And at the end of their evaluation, if the
4 issue does not need any further action, we collect
5 them for trending purposes. If there are lessons
6 learned that can be applied to licensing and
7 inspection programs, we do that by suggesting to
8 revise inspection procedures or modifications to SRP
9 chapters. And in many cases we communicate the results
10 of our evaluations to various groups. We feed back to
11 operating reactors, exchange information with our
12 international partners, or we issue generic
13 communications.

14 On a yearly basis we have 24 technical
15 review groups that on a yearly basis they go through
16 all of this operating experience and they look at them
17 collectively to see if they can identify any trends
18 and come up with a big picture, and if there are any
19 additional recommendation that we can follow on.

20 Going to the next slide, to summarize
21 basically what I just described on this flow chart, in
22 summary we screen basically all incoming Part 21
23 reports to the Agency. We screen them for
24 applicability to Office of New Reactor and New Reactor
25 Designs. And we screen and we evaluate those Part 21

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1 reports that meet our screening criteria, which
2 includes scope of reactor design, safety significance
3 of the issue and we apply lessons learned to
4 inspection and licensing programs.

5 We have two major office instruction that
6 we use for evaluating Part 21 reports. The first one
7 is Office Instruction, NRO-REG-112. That's New
8 Reactor Construction Experience Program. And we are
9 jointly writing an office instruction specifically for
10 handling Part 21 and 50.55 report with the Office of
11 Nuclear Reactor Regulation.

12 That's basically my presentation, which
13 was just to describe what the Construction and
14 Operating Experience Program is and how we process
15 Part 21 reports.

16 Do you have any questions?

17 CHAIRMAN ABDEL-KHALIK: Well, the original
18 concern -- I guess you have another slide here
19 regarding proposed changes.

20 MR. SUBBARATNAM: I'll be talking about
21 that.

22 CHAIRMAN ABDEL-KHALIK: The original
23 concern came about because there was a long time
24 between the original DCD certification and the time
25 when the COL application was made. And in the

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1 meantime, who is keeping track of all the Part 21s
2 that pertain to that particular design center? That
3 was the original concern. And, hopefully, what you're
4 proposing as far as changes to the SRP process will
5 address that concern.

6 MR. TABATABAI: I would like to answer
7 that question. The Operating Experience Program was
8 established in 2005 in NRR. And since then they have
9 been basically collecting and going through the
10 process for evaluating Part 21 reports. And they have
11 been documenting all of those reports and evaluations
12 of those reports.

13 NRR has the primary responsibility to
14 receive and to process Part 21 reports. And the short
15 answer to your question: Who is keeping all of this
16 reports? Is the NRR. NRR Operating Experience Branch
17 has that responsibility.

18 CHAIRMAN ABDEL-KHALIK: Yes, but there was
19 nothing that directed STP to go back and look at the
20 Part 21s that were issued were from the time the
21 design certification was issued to the time that they
22 applied for the COLA.

23 MR. TABATABAI: We actually, we have a
24 database that NRR maintains. It's called Reactor
25 Operating Experience --

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1 CHAIRMAN ABDEL-KHALIK: Perhaps what we
2 ought to do until we hear the next slide and then --

3 MR. SUBBARATNAM: We do have a handle
4 there. If you just go in and put rhetorical hook that
5 the people -- let me read the guidance, but then we'll
6 go back to that point.

7 CHAIRMAN ABDEL-KHALIK: Please, go ahead.

8 MR. SUBBARATNAM: My name Ram Subbaratnam,
9 I'm a Project Manager from Guidance and Rulemaking
10 Branch.

11 Continue next slide, please.

12 The staff is in the process of modifying
13 the Standard Review Plan and the Chapter 1 guidance to
14 include review of applicant evaluations of defects and
15 non-compliances submitted in Part 1 notifications.

16 The guidance should be public for comments
17 until next week. It's going to appear this week.

18 Especially there is language, as shown in
19 the meeting handouts. If you see the last two slides,
20 you'll see exactly what the words are of our insert
21 totally new Chapter 1 of SRP.

22 The guidance that we've proposed that all
23 applicants should have a program in place for
24 implementing requirements of 10 CFR Part 21 in the
25 applicant submittal.

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1 Applicant evaluation should determine the
2 applicability and potential implications of DC
3 notification, DC renewals and COLs that reference a
4 DC. This requirement applies to all design centers.

5 As for the scope for DC renewals and COLs,
6 DC evaluations should address notifications issued
7 between the original design certification rulemaking,
8 DCR, and the DC renewal, or COL application. That is
9 the one just going to put your rhetorical hook to make
10 it mandatory for the applicants to cover that. So
11 it'll go back in time to capture all of those reports.

12 Staff is to perform review of applicant
13 evaluations or perform confirmatory review and then
14 staff will document these results in a Safety
15 Evaluation Report. And third, an opportunity for the
16 ACRS coming to their review and comment on the
17 findings when the ACRS, presented to the ACRS like the
18 way they did in STP.

19 CHAIRMAN ABDEL-KHALIK: Okay.

20 MR. SUBBARATNAM: And then we'll go back,
21 and then fully tally of happened between the
22 rulemaking to the COL submittal.

23 CHAIRMAN ABDEL-KHALIK: Okay. I guess
24 from this process completes the logic. But the
25 question is have you gone back and seen if any, for

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1 example, earlier DC renewals or DC modifications, or
2 DC updates, or whatever, amendments have been effected
3 by this?

4 MR. SUBBARATNAM: I think in the STP case,
5 at least they identified there of the items --

6 CHAIRMAN ABDEL-KHALIK: No. I guess we
7 talked about the STP case in detail about which Part
8 21s pertained to them. I'm looking at process
9 questions. Have you looked at other design centers
10 where this may apply?

11 MR. SUBBARATNAM: Well, I mean the change
12 is going to apply to all the design centers straight
13 across the board. And this guidance is just kind of
14 going out for comments to the stakeholders, NEI and
15 all the applicants. So we're going to have a little
16 bit more deliberations with the applicants to see what
17 they do have in house with respect to how the prepare
18 their applications before they bring it in.

19 CHAIRMAN ABDEL-KHALIK: I'm sorry. You
20 didn't answer my question precisely. Have you looked
21 at what other design centers may have been effected by
22 this?

23 MR. BURTON: Yes. Let me piggyback on what
24 Ram just said.

25 In terms of the applicability, it does

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1 apply across design centers. And since you first
2 raised the issue for STP, we've gone back and
3 communicated to our project staff that this is
4 something that -- this is a loose end that we need to
5 make sure that we tie up. So, they're in the process
6 of following up with their respect design centers to
7 capture that information.

8 Because the guidance isn't on the street yet,
9 that hasn't prevented us from going and having those
10 interactions.

11 So what's going on now is internally our
12 project managers are pursuing that. We're also going
13 to be having a public, what we call Generic Topics
14 Meeting in the next couple of months where we're going
15 to be talking directly to the other design centers
16 about this issue and what the expectations are. and
17 then we're going to be following up with the guidance
18 and the paperwork to institutionalize that.

19 Now, and understand that what we're doing
20 now are revisions to the SRP which is the staff
21 guidance. Usually when we do any kind of SRP revision
22 there is a follow-up to our Regulatory Guide 1.206
23 which is the guidance that we give to the industry. So
24 they go out matching together. But because that takes
25 a little bit of time, we're communicating before those

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1 hit the street to make sure that we get that covered.

2 CHAIRMAN ABDEL-KHALIK: But the plan is to
3 revise the Reg. Guide sometime in the future?

4 MR. BURTON: Absolutely.

5 MR. SUBBARATNAM: Certainly. We'll retain
6 them, too.

7 As far as the ACRS Committee goes in
8 modifying and changing the guidance to Chapter 1, we
9 do have a process in place. We have to come to the
10 ACRS Committee through, I guess, through a
11 communication that we did publish the guidance. These
12 are all the stakeholders comments we got. And then
13 you will have another opportunity to comment on
14 something before the final guidance is put to place.

15 CHAIRMAN ABDEL-KHALIK: Okay.

16 MR. BURTON: And what we envision in terms
17 of the final documentation in the SER for Part 21 is
18 that Chapter 1 is going to be a collection of all the
19 Part 21s that were evaluated and identified for a
20 particular design center, as well as there will be
21 discussions about anything that came up where it
22 applies throughout the SER. But we we'll collect
23 everything in one place in Chapter 1. So, it'll be
24 easy to find and look at.

25 CHAIRMAN ABDEL-KHALIK: Do you have a time

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1 estimate of when the Reg. Guide will be revised?

2 MR. SUBBARATNAM: The SRP guidance is out
3 today -- I mean, next week, let's say. So it's going
4 to be out there for comment for a month. So the Reg.
5 Guide should be getting updated after the final
6 guidance issued. So, I would think like before the
7 end of fiscal year 2011 I think should get that one
8 updated.

9 CHAIRMAN ABDEL-KHALIK: All right. Are
10 there any questions for the staff on this issue?

11 PARTICIPANT: No, it sounds good.

12 CHAIRMAN ABDEL-KHALIK: Okay. Thank you.

13 MR. BURTON: Thank you.

14 CHAIRMAN ABDEL-KHALIK: I guess I've been
15 informed by STP that the next item on the agenda, the
16 ACRS Action items there's no such presentation. We've
17 already covered the action items in earlier
18 presentations. Is that correct?

19 MR. CHAPPELL: Yes, sir.

20 CHAIRMAN ABDEL-KHALIK: Okay.

21 DESIGNATED FEDERAL OFFICIAL BANERJEE: I
22 was wondering if we can go through the action items
23 that were covered in various presentations today. And
24 check the status.

25 CHAIRMAN ABDEL-KHALIK: Right. Right.

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1 DESIGNATED FEDERAL OFFICIAL BANERJEE:
2 Okay. The first one that was covered by the staff was
3 under Chapter 1 action item #18 has to do with the
4 aging management program. And the ACRS question was if
5 that should be implemented at the beginning instead of
6 waiting for the decision to do license renewal. And
7 it looked like what they told us that this would not
8 come into picture until a decision is made. It says
9 it doesn't appear that STP will implement GALL right
10 now, only after they decide to renew license. And
11 whether that's good enough to close this item or not,
12 I'm not sure.

13 CHAIRMAN ABDEL-KHALIK: I guess their are
14 certain rules, right. And then they're in compliance
15 with whatever rules there are. So I don't think we're
16 purposing that new rules.

17 DESIGNATED FEDERAL OFFICIAL BANERJEE: So
18 we can close action item?

19 CHAIRMAN ABDEL-KHALIK: Yes.

20 DESIGNATED FEDERAL OFFICIAL BANERJEE: So
21 close Item #18.

22 The next one that was discussed --

23 MEMBER SHACK: I mean, in all fairness,
24 it's clear they've incorporated all sorts of
25 improvements in the choice of materials, chemistry

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1 that should make their aging management --

2 CHAIRMAN ABDEL-KHALIK: Yes, when the time
3 comes.

4 MEMBER SHACK: But to actually commit to
5 GALL is a different beast.

6 CHAIRMAN ABDEL-KHALIK: Right.

7 DESIGNATED FEDERAL OFFICIAL BANERJEE:
8 Okay. The next one had to do with Action Item #30.
9 And that had to do with the D-RAP list. And the last
10 thing I heard that Dr. Stetkar still wants to see the
11 list until --

12 CHAIRMAN ABDEL-KHALIK: September 30.

13 DESIGNATED FEDERAL OFFICIAL BANERJEE: --
14 September or end of the year.

15 MEMBER BROWN: You said Item #13?

16 DESIGNATED FEDERAL OFFICIAL BANERJEE:
17 Thirty.

18 MEMBER BROWN: Oh, 30. I'm sorry.

19 MEMBER STETKAR: Thirty.

20 DESIGNATED FEDERAL OFFICIAL BANERJEE:
21 Sorry.

22 MEMBER BROWN: No, no, that's all right.

23 MR. HEAD: Yes, sir. We agree with that,
24 but we're probably going to try to show you that list
25 on the June 21st meeting.

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1 CHAIRMAN ABDEL-KHALIK: Okay. It's a
2 sanity check more than anything else. Okay. Good.
3 Thank you.

4 MR. TONACCI: We're fine with that, but
5 anything for the staff to prepare?

6 DESIGNATED FEDERAL OFFICIAL BANERJEE: I
7 guess what we have is the audit report. Are the
8 Members going to be interested to see the report?

9 CHAIRMAN ABDEL-KHALIK: I think that would
10 be helpful.

11 MR. TONACCI: Okay. Thank you.

12 MEMBER BROWN: You just said two pieces.
13 John wanted to see the list, not just the audit
14 report.

15 MEMBER STETKAR: But the list will come
16 from the licensee.

17 MEMBER BROWN: Oh, yes. Yes.

18 MEMBER STETKAR: Or the applicant.

19 MEMBER BROWN: And the audit report is the
20 staff, I think.

21 DESIGNATED FEDERAL OFFICIAL BANERJEE:
22 Comes from the staff. The audit that's going to be
23 done summer of this year. I don't know whether you're
24 going to be ready by June or not.

25 MR. TONACCI: I'll follow up on that.

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1 DESIGNATED FEDERAL OFFICIAL BANERJEE:
2 Okay. And then the next item that was discussed was
3 Item #41 had to do with the lower drywell flooder
4 fusible plug valve. A long discussion took place and
5 I'm not sure what that item is. Is it still open?

6 The drywell flooder valve failure modes
7 other than failure of fusible plug considered in FSAR
8 or not, operating experience, question about the small
9 leak normal operation, that can go undetected or not?
10 Those were the three subquestions in there.

11 CHAIRMAN ABDEL-KHALIK: As far as I'm
12 concerned the applicant has addressed these questions,
13 unless somebody --

14 MEMBER BROWN: Well, they commented there
15 was a sensor, there was some type of something that
16 sensed leakage down in the drywell.

17 CHAIRMAN ABDEL-KHALIK: Yes, they could
18 detect leakage.

19 MEMBER BROWN: I don't remember the
20 explicit details of what they said, but there was
21 something. I don't know whether its dribbles --

22 MEMBER SHACK: It's unidentified leakage,
23 so they identified --

24 MEMBER BROWN: Right.

25 DESIGNATED FEDERAL OFFICIAL BANERJEE: And

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1 failure modes of the fusible link, flooders valve
2 failure modes other than failure of fusible link.

3 MEMBER ARMIJO: My question was just a
4 question of whether it could fail other than by just
5 simply getting warm and literally extruding out of
6 that pipe that's in and leaking or draining before it
7 was supposed to. But, you know it's just a matter of
8 temperature and materials properties.

9 DESIGNATED FEDERAL OFFICIAL BANERJEE:
10 Temperature and timing.

11 MEMBER ARMIJO: Temperature and timing and
12 materials properties and the applicant should know.
13 You know, it's not just melting that can cause that
14 thing to leak. It has that -- that link material will
15 have no mechanical properties when it gets warm
16 enough. So I didn't know if they had included that or
17 not in their FMEA.

18 MEMBER SHACK: Well, is the test program
19 under a head comparable to what they would expect? I
20 mean, you --

21 MR. CHAPPELL: They're under a head.
22 They're under -- this is Coley Chappell from STP.

23 They're under a comparable head to the
24 most limiting case for the suppression pool and the
25 temperatures --

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1 MEMBER ARMIJO: That'll catch it if it's
2 going to happen.

3 MEMBER SHACK: Yes. Sos that should
4 address that question.

5 DESIGNATED FEDERAL OFFICIAL BANERJEE: So
6 we can close #41?

7 MEMBER ARMIJO: Yes. Yes.

8 CHAIRMAN ABDEL-KHALIK: Unless somebody
9 objects.

10 MEMBER ARMIJO: Well, you know, you were
11 starting to raise it, you know why is it -- what is it
12 500?

13 CHAIRMAN ABDEL-KHALIK: Five hundred.

14 MEMBER ARMIJO: Why isn't 550 to get away
15 from the slow probabilities of a steamline link. How
16 close do you want it to be to the limit?

17 MEMBER BLEY: Right. How fast does the
18 temperature go up?

19 MEMBER ARMIJO: Right, and how fast does
20 it go up. It seems like you've got plenty of margin
21 on the more likely events, but not much on the less
22 likely event. So, why not get the same amount of
23 margin for all of the events? But, you know, it's--
24 that a detail that the staff and the applicant --

25 CHAIRMAN ABDEL-KHALIK: Perhaps we should

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1 just modify this Action Item. We see a possibility of
2 sensitivity analyses on the selection of the 500
3 degree melting temperature.

4 MR. HEAD: Mr. Chairman, that is a part of
5 the certified design.

6 CHAIRMAN ABDEL-KHALIK: Yes.

7 MR. HEAD: And went through a process
8 that--

9 MEMBER ARMIJO: So it's finalized. But,
10 you know separate that you guys may want to look at it
11 yourself.

12 MR. HEAD: Yes, sir. But for this
13 process--

14 CHAIRMAN ABDEL-KHALIK: You have a lot of
15 other things to look at. I agree.

16 MR. HEAD: Okay.

17 CHAIRMAN ABDEL-KHALIK: I agree. Just
18 take it off, please, at this stage.

19 DESIGNATED FEDERAL OFFICIAL BANERJEE:
20 That's all I have.

21 CHAIRMAN ABDEL-KHALIK: In addition to the
22 other items that we talked about today?

23 MR. HEAD: No, sir.

24 CHAIRMAN ABDEL-KHALIK: Okay. All right.
25 Anything else that we --

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1 MR. HEAD: Item 88, I believe.

2 CHAIRMAN ABDEL-KHALIK: Right. We closed
3 that.

4 MR. HEAD: Okay.

5 DESIGNATED FEDERAL OFFICIAL BANERJEE:
6 Eighty-eight is closed.

7 MR. TONACCI: 51?

8 MEMBER ARMIJO:

9 DESIGNATED FEDERAL OFFICIAL BANERJEE: 51?

10 MR. TONACCI: 51 was the Part 21 we just
11 went through.

12 DESIGNATED FEDERAL OFFICIAL BANERJEE: Oh,
13 we just talked about. We've closed Part 21?

14 CHAIRMAN ABDEL-KHALIK: Yes. Well, I
15 guess ACRS in the normal course of action will review
16 the proposed modification to the SRP and the Reg.
17 Guides.

18 DESIGNATED FEDERAL OFFICIAL BANERJEE:
19 Right.

20 MEMBER SHACK: At least we'll have the
21 opportunity.

22 DESIGNATED FEDERAL OFFICIAL BANERJEE: The
23 opportunity.

24 CHAIRMAN ABDEL-KHALIK: Right. What was
25 that item number?

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1 DESIGNATED FEDERAL OFFICIAL BANERJEE:
2 Number 51.

3 CHAIRMAN ABDEL-KHALIK: Fifty-one?

4 DESIGNATED FEDERAL OFFICIAL BANERJEE:
5 Yes. Actually --

6 CHAIRMAN ABDEL-KHALIK: Oh, I see. Right.

7 DESIGNATED FEDERAL OFFICIAL BANERJEE: --
8 this had a previous item, but --

9 CHAIRMAN ABDEL-KHALIK: Right. Okay.
10 Anything else? Mark or George? Okay.

11 At this time I'd like to see if there any
12 members of the public who wish to make a statement?

13 Is the telephone bridge line open?

14 DESIGNATED FEDERAL OFFICIAL BANERJEE: Ah,
15 looks like I don't have to write anything.

16 CHAIRMAN ABDEL-KHALIK: It is open. If
17 there anyone on the bridge line, please make a sound
18 so that we know that you're there. Hello?

19 MEMBER BLEY: Hung up.

20 CHAIRMAN ABDEL-KHALIK: Okay.

21 MEMBER BLEY: I ain't talking to nobody.

22 CHAIRMAN ABDEL-KHALIK: Anyone here wishes
23 to make a comment or remark? Okay.

24 At this time maybe we can go around
25 quickly and see if there are any additional comments

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1 that Members would like to make on the material that
2 was presented today?

3 Sanjoy?

4 MEMBER BANERJEE: I'd like to see a little
5 bit more about this code or some more reference
6 material on the ADCIRC

7 MR. CORRADINI: ADCIRC.

8 MEMBER BANERJEE: ADCIRC. If they could
9 make that available. But I have no real comment. I
10 just want to see the basis of the --

11 CHAIRMAN ABDEL-KHALIK: Now which chapter
12 would that belong to/ That's presumably --

13 MEMBER BANERJEE: It's 2, isn't it?

14 CHAIRMAN ABDEL-KHALIK: Okay.

15 DESIGNATED FEDERAL OFFICIAL BANERJEE:
16 It's coming up --

17 MEMBER BANERJEE: Well, if it's going to
18 come up later, then it's fine.

19 MR. HEAD: We've already presented that in
20 the first session.

21 PARTICIPANT: Yes. I suggest could you
22 just make available the RAI response?

23 MEMBER BANERJEE: I'm happy to look at
24 that if the reference is there.

25 CHAIRMAN ABDEL-KHALIK: Okay.

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1 MEMBER BANERJEE: Yes, that's fine.

2 CHAIRMAN ABDEL-KHALIK: But let's keep
3 track of it anyway. We'll look at the RAI.

4 MEMBER BANERJEE: I'll look at the
5 response, yes.

6 DESIGNATED FEDERAL OFFICIAL BANERJEE:
7 Somebody has to give me the correct reference. I'll
8 get it from ADAMS.

9 MEMBER BANERJEE: And the reference to the
10 code so I can look at the code.

11 DESIGNATED FEDERAL OFFICIAL BANERJEE:
12 Reference to the code.

13 MEMBER BANERJEE: And its validation.

14 DESIGNATED FEDERAL OFFICIAL BANERJEE:
15 Everyone has code validation in STP.

16 MEMBER BANERJEE: There are a lot of large
17 cyclones in the Bay of Bengal. And I'm wondering if it
18 has been validated.

19 CHAIRMAN ABDEL-KHALIK: Harold?

20 MEMBER RAY: I was in a learning mode
21 today. I am most interested in the questions John
22 asked, and so I'll be interested in what he has to say
23 now. But that's what I was mostly wanted to learn
24 about.

25 CHAIRMAN ABDEL-KHALIK: Okay. Sam?

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MEMBER ARMIJO: No.

CHAIRMAN ABDEL-KHALIK: Dennis?

MEMBER BLEY: Nothing additional.

CHAIRMAN ABDEL-KHALIK: John?

MEMBER STETKAR: Nothing.

CHAIRMAN ABDEL-KHALIK: Okay. Bill?

Charlie?

MEMBER BROWN: No. I'm fine.

CHAIRMAN ABDEL-KHALIK: Okay. Mike?

Okay. Thank you very much.

I'd like to express our thanks to both the applicant and the staff for very meaningful presentations. Thank you.

Meeting adjourned.

(Whereupon, at 3:33 p.m. the Subcommittee meeting was adjourned.)

**ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
MEETING OF THE ABWR SUBCOMMITTEE ON STP COLA – OPEN/CLOSED
APRIL 21, 2011, ROCKVILLE, MD
PROPOSED AGENDA**

ABWR Subcommittee Chair: Said Abdel-Khalik

Cognizant Staff Engineer/DFO: Maitri Banerjee Maitri.Banerjee@NRC.GOV (301) 415-6973

Topics	Presenters	Time
Opening Remarks	Said Abdel-Khalik, ACRS	8:30 am - 8:35 am
NRO/NINA Staff Introductions	Mark Tonacci, NRO Scott Head, NINA	8:35 am – 8:45 am
STP COLA FSAR Chapter 1 SER with No Open Items	Coley Chappell, NINA Stacy Joseph, NRO	8:45 am – 9:15 am 9:15 am – 9:45 am
STP COLA FSAR Chapter 19 SER with No Open Items	Coley Chappell, NINA	9:45 am – 10:30 am
Break		10:30 am – 10:45 am
STP COLA FSAR Chapter 19 SER with No Open Items	Rocky Foster, NRO Todd Hilsmeier, NRO Edward Fuller, NRO	10:45 am – 11:30 am
STP COLA FSAR Chapter 17 SER with No Open Items	Coley Chappell, NINA	11:30 am – 12:15 pm
Lunch		12:15 pm – 1:15 pm
STP COLA FSAR Chapter 17 SER with No Open Items	Michael Eudy, NRO Todd Hilsmeier, NRO	1:15 pm – 1:45 pm
Part 21 Program in New Reactor Licensing	Ram Subbaratnam, NRO Omid Tabatabai, NRO	1:45 pm – 2:30 pm
Break		2:30 pm – 2:45 pm
ACRS Action items	Coley Chappell, NINA	2:45 pm – 3:15 pm
Public Comments		3:15 pm – 3:30 pm
Subcommittee Discussion and Closing Remarks	Said Abdel-Khalik, ACRS	3:30 pm – 4:00 pm
Adjourn		4:00 pm

Notes:

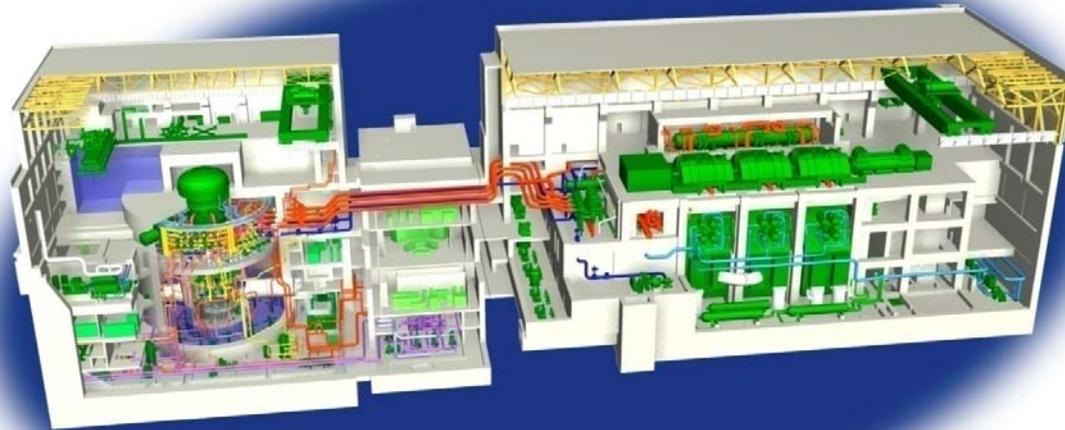
- During the meeting, use 301-415-7360 to contact anyone in the ACRS Office.

- Presentation time should not exceed 50 percent of the total time allocated for a given item. The remaining 50 percent of the time is reserved for discussion.
- Thirty five (35) hard copies of each presentation or handout should be provided to the Designated Federal Official (DFO) / ACRS Contact 30 minutes before the meeting.
- One electronic copy of each presentation should be e-mailed to the DFO/ACRS Contact one day before the meeting. If an electronic copy cannot be provided within this timeframe, presenters should provide the DFO/ACRS Contact with a CD containing each presentation at least 30 minutes before the meeting.
- To protect proprietary information, parts of the meeting may be closed to the public.
- A telephone bridge line (1-866-822-3032, pass code 8272423#) has been established to allow members of the public and stakeholders listen in the open portion of the meeting. Such participants may ask questions at a designated time at the end of the meeting only.

South Texas Project Units 3 & 4

Presentation to ACRS ABWR Subcommittee

Chapter 1 Introduction and General Description of Plant



Agenda

- Introduction/Attendees
- Items of Interest
- Summary
- Conclusion

Attendees

Scott Head	NINA Manager, Regulatory Affairs, STP 3 & 4
Coley Chappell	NINA Licensing, STP 3 & 4

Chapter 1 Items of Interest

Since the Chapter 1 presentation at ACRS ABWR Subcommittee on March 2, 2010, the following updates have been provided:

- Change in Licensees and Contractors/Agents
 - Nuclear Innovation North America (NINA) is the licensee responsible for design and construction of STP 3 & 4.
 - STP Nuclear Operating Company (STPNOC) is the licensee responsible for operation and maintenance of STP 3 & 4.

Items of Interest

- The design and construction of STP 3 & 4 will be completed by Toshiba America Nuclear Energy (Toshiba) and Shaw Group, Inc. acting in conjunction with subcontractors.
 - Toshiba and Shaw will have overall responsibility for design and configuration control.
 - Sargent & Lundy will provide architect/engineer services.
 - Westinghouse will provide engineering services, including design of instrumentation and controls.

Items of Interest

Departures

- In addition to the twelve standard Tier 1 departures and one site-specific Tier 1 departure (Site Parameters) noted in the previous Chapter 1 presentation, three Tier 1 departures have been incorporated into the application.
 - Addition of condensate booster pumps (STD DEP T1 2.10-1)
 - Shows the addition of condensate booster pumps on Tier 1 Figure 2.10.2a (RAI 10.04.07-3).
 - Discussed with Chapter 10 presentation on April 6, 2011.

Items of Interest

- Definition of As-Built (STD DEP T1 1.1-1)
 - Modifies the definition of as-built to clarify that determination of physical properties may be based on measurements, inspections, or tests prior to installation.
 - Provided that subsequent fabrication, handling, installation, and testing do not alter the properties.
 - Same as definition proposed by NRC staff at meeting with industry (2009) and as contained in NEI 08-01.

Items of Interest

- RHR, HPCF, and RCIC NPSH (STD DEP T1 2.4-4)
 - ABWR DCD provided a value of 50% for debris blockage of ECCS suction strainers for adequate NPSH margin, based on RG 1.82 Rev 0.
 - STP 3&4 design has been updated to RG 1.82 Rev 3, which provides guidance for mechanistically determining debris head loss across ECCS strainers.
 - Associated ITAAC for determination of adequate NPSH margin for RHR system, RCIC system, and HPCF system were revised.
 - Discussed during Ch 6 presentation on March 8, 2011.

Chapter 1 Summary

- All COL License Information Items have been addressed.
- All responses to Requests for Additional Information have been submitted.
- No previous ACRS action items for STP associated with Ch 1.

Chapter 1

Questions and Comments





Presentation to the ACRS Advanced Boiling Water Reactor Subcommittee

South Texas Units 3 and 4 COL Application Review

**SER/OI Chapter 1
“Introduction and General Description of Plant”**

April 21, 2011

Staff Review Team

- **Project Managers**
 - George Wunder, Lead PM, DNRL/BWR
 - Stacy Joseph, Chapter PM, DNRL/BWR

- **Reviewers**
 - Earl Libby, DNRL/NRGA

- **Staff Technical Consultants**
 - Dr. John Larkins and Dr. Roy Karimi, ERI

Chapter 1 Open Items

Open Item	Title
01-01	Tier 1 Exemption
01-02	Numbering discrepancy
01-03	Plant aging management
01-04	Hydrodynamic loads
01-05	Financial qualifications
01-06	Part 30, 40, and 70
01-07	Aircraft Impact
01-08	Table 1.9S
01-09	Table 1.9S-4
01-10	Impacts of Construction

Open Item 01-3 and ACRS Action Item #18 Plant Aging Management

- STP FSAR describes Design and Aging Management Program
 - Design considerations to maintain plant's original design basis for life of plant
 - Condition monitoring
 - Design life maintenance
 - Aging Management
- Staff agrees that description of management plan satisfies COL license information item
- Staff determined that no additional review is required during COL licensing
- License renewal applications must meet requirements of 10 CFR Part 54

Open Item 01-4 Alternate Vendor Qualification – Hydrodynamic Loads

- Follow-up audits performed in March and June 2010
- Staff examined Toshiba derivative documents to determine how hydrodynamics loads definitions were reconstituted.
- Staff determined that:
 - Toshiba possessed the necessary information to reconstitute the forcing functions
 - Toshiba has access to correlation data needed for the X-quenchers
- Toshiba qualified to supply certified design

Open Item 01-7 Aircraft Impact Assessment

- Applicant incorporated by reference STPNOC aircraft impact application to amend certified ABWR
- NRC staff found STPNOC's application to amend certified design acceptable – currently undergoing rulemaking
- Staff requested applicant to identify any changes to COL application required to implement AIA

Open Item 01-7

Aircraft Impact Assessment (continued)

- Further, staff requested applicant to:
 - Identify if any COL departures affect key design features of AIA
 - Provide a list of departures that could affect key design features
 - Describe evaluation process
 - Document conclusions of “no impact” in STP 3 and 4 COL departures report
- Applicant described evaluation process and committed to document findings in next revision of departures report
- Staff determined that applicant evaluated impact of departures on AIA
- Applicant meets requirements of 10 CFR 50.150

Open Item 01-10

Impact of Construction Activities on Units 1 and 2

- FSAR provided evaluation of potential hazards to SSCs important to safety at Units 1 and 2 due to construction on Units 3 and 4
- FSAR also provided description of managerial and administrative controls
- To address additional guidance in COL/ISG-022 , applicant provided procedure “Interface Evaluations of Units 3 and 4 on Units 1 and 2”
- Staff found applicant’s procedure and FSAR consistent with requirements of 10 CFR 52.79 (a)(31) as expressed in DRAFT COL/ISG-022

Chapter 1 Appendices

- OI 01-1 Tier 1 Exemptions Evaluations
- OI 01-5 Financial Qualifications
- OI 01-6 Parts 30, 40 70 Licenses

Remaining Open Items

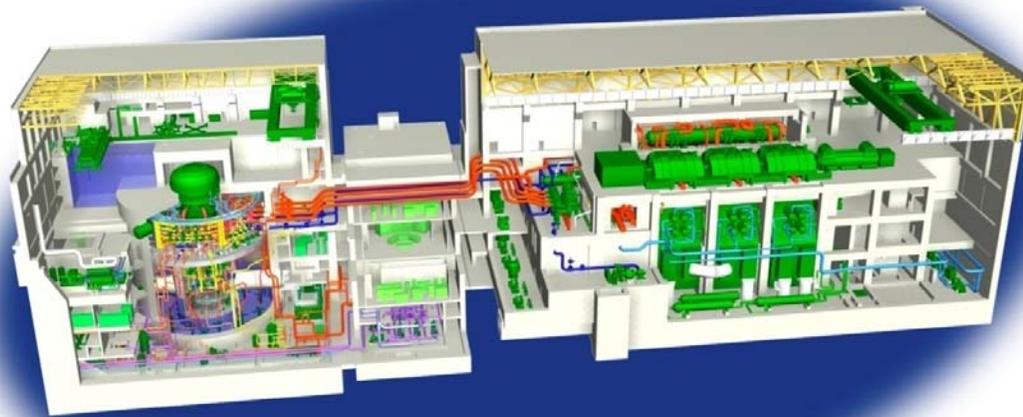
- OI 01-2 Typographical Errors in Section 1.2
- OI 01-8 QA Regulatory Guides - Evaluated in Ch. 17
- OI 01-9 Table 1.9S-4 Tier 2 departures requiring prior NRC approval



Chapter 1 Conclusion

South Texas Project Units 3 & 4 Presentation to ACRS Subcommittee

Chapter 19 Response to Severe Accident Policy Statement (PRA)



Agenda

- Introduction/Attendees
- Items of Interest
- ACRS Action Item
- Summary
- Conclusion

Attendees

Scott Head	NINA Manager, Regulatory Affairs, STP 3&4
Coley Chappell	NINA Licensing STP 3&4
Gene Hughes	NINA PRA STP 3&4 / ETRANCO
Scott Bannert	NINA PRA STP 3&4
Ricky Summitt	RSC
Fred Puleo	NINA Licensing STP 3&4
Bill Mookhoek	NINA Supervisor, Licensing, STP 3 & 4

Chapter 19 Items of Interest

Items of interest that have been addressed since the presentation to ABWR Subcommittee on June 8, 2010:

- External events (hurricanes)
- Inadvertent flooding in lower drywell

External Events – Hurricanes

- High winds due to hurricanes
 - Since the STP site is close to the Gulf of Mexico, a quantitative assessment of hurricanes was performed that demonstrated the risk from hurricanes does not significantly affect the shutdown risk analysis or the external events analysis described in the DCD.
 - Related to the shared fire water system departure (dual unit departure STP DEP 1.1-2), the response to RAI 19.01-31 (2/16/2011) addressed impact on shutdown and hurricane risk, hurricane CDF, LERF, and risk significant SSC's.
 - STP Units 3 &4 have one diesel-driven pump (ACIWA), a fire (pumper) truck (ACIWA), and a portable diesel-driven fire pump described in the RAI response.

External Event – High Winds (cont'd)

- Specific hurricane shutdown requirements for STP Units 3 & 4 will be similar to those established for STP Units 1 & 2, and an abnormal operating procedure will require the following:
 - At least 2 hours prior to sustained winds > 73 mph, initiate action to place the units in Mode 3 Hot Shutdown.
 - Prior to sustained winds on site > 73 mph:
 - One EDG per unit is started and loaded onto its safety bus.
 - If unstable grid, remaining EDG's are started and loaded onto their safety buses (disconnect from offsite).
 - The portable diesel-driven fire pump will be staged in an on site Seismic Category I structure.
 - If applicable for current mode, RCIC will be verified available.
 - If containment is inerted, it will remain inerted.

Flooding in Lower Drywell

- RAI 19-5 responses (Aug 2009, 5/27/2010) address avoiding inadvertent flooding of the lower drywell, preventing steam explosion.
 - STP 3&4 plant specific technical guidelines and emergency operating procedures will incorporate industry guidance as necessary and use site specific features to address flooding in the lower drywell when the lower drywell flooders:
 - Does not operate
 - Does not operate as designed
 - Prematurely operates
 - Operates as designed during a severe accident scenario that involves a core melt and vessel failure
 - STP 3 & 4 will follow NEI 91-04 Rev 1 Severe Accident Issue Closure Guidelines, industry commitment to incorporate severe accident strategies into overall accident management program.

Action Item #41

Lower drywell flooders fusible plug valve (FPV) failure modes.

Response: On October 20, 2010, the results of a failure modes and effects analysis performed by Toshiba on the lower drywell flooders (LDF) fusible plug valves (FPV) was discussed.

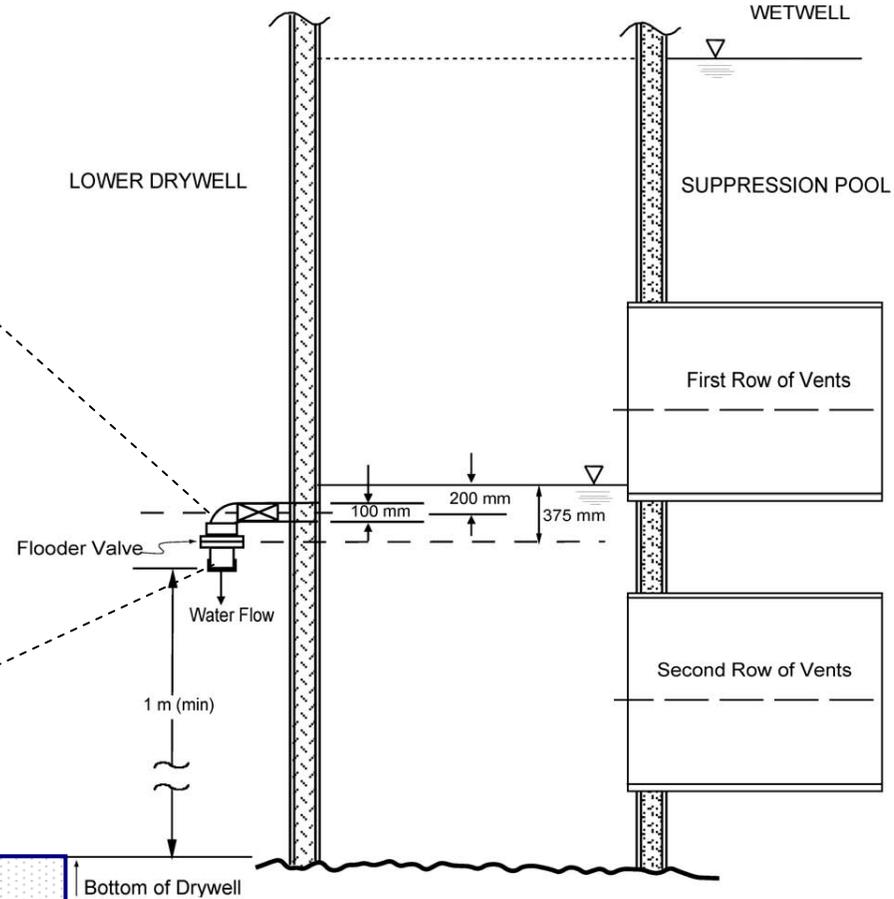
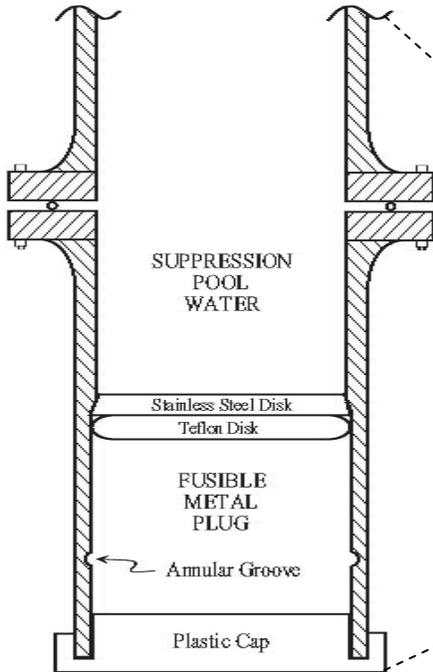
- FMEA functional requirement for the FPV is zero leakage under all operating and design basis accident conditions.

Additional question asked on valve leakage during normal operation:

- When opened, each flooders valve passes a minimum 10 L/s (~160 gpm) to the lower drywell (9.5.12.2)
- The primary detection method for small unidentified leaks within the drywell includes drywell floor drain sump pump activity, sensitivity 1 gpm, alarm at 19 L/min (~5 gpm) (5.2.5.1.1)
- Drywell floor drain sump monitoring system is included in Technical Specification 3.4.5.

Action Item #41 (cont'd)

Basic design of flooder valve



Lower Drywell Flooder System Arrangement/Configuration (Figure 9.5-3)

Action Item #41 (cont'd)

PRA based reliability and maintenance actions for the lower drywell flooders (LDF), from Section 19K.11.4:

“In order to assure a dry cavity at the time of vessel failure, it is important that there be negligible probability of premature or spurious actuation of the passive flooders valves at temperatures less than 533K (500°F) or under differential pressure associated with reactor blowdown and pool hydrodynamic loads.”

Activities suggested by RAP are given in Table 19K-4:

- The ten fusible plug valve flanges and outlets should be inspected every refueling outage to assure there is no leakage.
- Two of the ten fusible plug valves should be removed, inspected and their temperature setpoints tested every two refueling outages.

No testing of the LDF system required during normal operation (9.5.12.4).

Chapter 19 Summary

- No SER Open Items
- All COL License Information Items have been addressed
- All previous ACRS Action Items have been addressed

Chapter 19

Questions and Comments





Presentation to the ACRS Subcommittee

South Texas Project Units 3 and 4 COL Application Review

**Advanced SE Chapter 19
Response to Severe Accident Policy Statement**

April 21, 2011

Staff Review Team

- **Project Managers**

- George Wunder, Lead PM, DNRL/BWR
- Rocky Foster, Chapter PM, DNRL/BWR

- **Technical Staff**

- Dr. Todd Hilsmeier, Reliability & Risk Analyst, DSRA/SPRA
- Dr. Edward Fuller, Senior Reliability & Risk Analyst, DSRA/SPRA
- Marie Pohida, Senior Reliability & Risk Analyst, DSRA/SPRA
- David Jeng, Senior Structural Engineer, DE/SEB2
- Jason Dreisbach, Senior Fire Protection Specialist, DSRA/SBPA

Open/Confirmatory Items Status

- All Chapter 19 open items are closed
- Notable confirmatory items (19-15, 17.04-9)
- Multiple LOLA confirmatory items
- No ACRS action items

Chapter 19 - Response to Severe Accident Policy Statement

- **Closure of Open Item 19-12 (RAI 19-30)**
- RAI 19-30 - address justification of the external probabilistic flooding analysis due to postulated main cooling reservoir (MCR) breach with significant watertight doors being normally open
- June 8, 2010, staff discussed with ACRS sub-committee this open item and its resolution (i.e., change the status for all watertight doors and hatches to be normally closed in FSAR)
- Final RAI Response (July 28, 2010):
 - Changed status for all watertight doors and hatches to be normally closed in FSAR (e.g., FSAR Sections 2.4S.10 and 2.4S.14)
 - Screened external flood scenarios from detailed quantitative evaluation using criterion (a) in ASME/ANS RA-Sa-2009, Section 6-2.3, “The Fundamental Criteria for Screening External Events Other Than Fire and Seismic Events”

Chapter 19 - Response to Severe Accident Policy Statement

- **Closure of Open Item 19-9 (RAI 19.01-31)**
- RAI 19.01-31 - provide the shutdown and full-power hurricane risk assessment that considered the shared fire water system under departure STP DEP 1.1-2
- Applicant provided a simplified quantitative assessment to evaluate:
 - Hurricanes at or below design basis wind speed (≤ 134 mph; frequency 0.01/yr)
 - Hurricanes above design basis wind speed (> 134 mph; fails fire water pump house and combustion gas turbines)
- Assessments met Commission guidelines for new reactors:
 - Crediting the compensatory measures to be documented in FSAR Section 19.4.6, “ABWR Shutdown Risk” and Commitment COM 19.4-1 (**Confirmatory Item 19-15**)
 - Assumed LRF \leq CDF
- Key Compensatory Measures

Chapter 19 - Response to Severe Accident Policy Statement

- **Closure of Open Item 19-8 (RAI 19-3)**
- RAI 19-3 – concerning startup and shutdown operations when the containment would not be inerted.
 - Hydrogen combustion during severe accidents
 - Impacts on LRF and CCFP from low-power and shutdown scenarios.
- RAI 19.01-31 (Open Item 19-9) related to the shared fire water system.
 - Description of the dominant sequences contributing to the shutdown and full power hurricane CDF and LRF estimates.
- The staff concluded the hydrogen recombiners would be ineffective for low power and shutdown severe accidents with the containment de-inerted. Staff does not assume that the risk associated with these conditions is very low since a shutdown Level 1 and Level 2 PRA was not performed for ABWR design certification.
- Because Open Item 19-9 is now resolved , Open Item 19-8 is also resolved.

Chapter 19 - Response to Severe Accident Policy Statement

- **Closure of Open Item 19-5 (RAI 19-05)**
- Open Item 19-5: Information in Section 19.9.14 is insufficient to establish the technical basis for developing accident management procedures:
 - Must address consequences of flooding the lower drywell (LDW)
 - Confirmatory assessment indicates that LDW temperatures may exceed 533 °K before vessel breach
 - The accident management strategies may have to consider the consequences of premature LDW flooding, including steam explosions
- The staff concluded that the existing containment flood guideline in the BWROG's EPGs and SAGs will be revised as necessary to consider actions to address flooding the lower drywell, including ex-vessel steam explosions and the need to continue to provide water to the suppression pool in a controlled manner until ac power is restored.
- Since meeting commitment COM 19.9-30 would address these concerns, the staff considers that Open Item 19-5 is resolved.

Chapter 19 - Response to Severe Accident Policy Statement

- **Closure of Open Item 19-13 (RAIs 19-1 & 19-28)**
- Open Item 19-13
 - The LDW fusible plugs will melt at a temperature of 533 °K (500 °F), after molten core debris enters the lower drywell
 - Valves would remain open to allow water to flow through each floodler pipe into the LDW and cover the core debris
 - Debris coolability by an overlying water pool has not yet been conclusively demonstrated
 - Staff concern that the containment liner failure may not be averted for 24 hours after core damage. Staff performed a confirmatory assessment using the MELCOR 1.8.6 and MAAP 4.0.7 computer codes

Chapter 19 - Response to Severe Accident Policy Statement

- **Closure of Open Item 19-13 (continued)**
- Confirmatory assessment confirmed that liner failure would be averted for 24 hours after core damage. Could not be averted for more than 3 or 4 days unless more water was added to the containment.
 - Adding water within two days after core damage would minimize fission product releases.
- Use of the ACIWA system to provide firewater to the suppression pool, preferably via the drywell sprays is the best option.
- The staff concluded that adding this action to the BWROG RPV and Containment Flooding SAG, as applied to the ABWR, as part of meeting COM 19.9-30, resolves Open Item 19-13.

Chapter 19 Seismic Margins Analysis

- **Open Item 19-14 (RAIs 19-24 & 19-33)**
- STD DEP T1 2.15-1 reclassified Radwaste Building from Seismic Category I to Non-Seismic per Reg Guide 1.143
 - RAI 19-33 - requested details on the analysis procedures used for II/I analysis.
 - FSAR Sec 3H.3 was revised to show that the RWB be designed not to collapse on adjacent Seismic Category I structures for SSE, DBT and DBF specified in DCD.
 - Stability against sliding and overturning evaluated using site-specific loading parameters.
- STP RAI response was accepted and the Open Item was closed.

Chapter 19

Seismic Margins Analysis

- **Open Item 19-17(RAI 19-27)**
- STP COL license information item 19-4 to include an update of the system model developed in the DCD to incorporate capacity reductions due to site-specific effects and site-specific SSC.
 - STP committed to perform the following prior to fuel load:
 - Site specific and as-built HCLPF capacities
 - Assess margins against soil failures (e.g., liquefaction)
 - Update the systems model for site-specific capacities of SSCs to obtain sequence-level and plant-level seismic HCLPF capacity.
- STP response was accepted and the Open Item was closed.

Open Item 19-16 (RAI 19-22) AC-Independent Water Addition (ACIWA) Building Capacity (COL Information Item 19.19b)

- RAI requested more detailed information on approach, methods of analysis and seismic structural analysis.
- Fire Water Pump House is not a safety-related structure
- The staff finds the procedures for assessing against site-specific external events in PRA (i.e., earthquake, flooding, tornado and hurricane) to be acceptable.
- STP response was accepted and the Open Item was closed.



Chapter 19

Loss of Large Areas of the Plant Due to Explosions or Fires

50.54 hh (2)

- Submitted May 2009 under 52.80
- RAIs October 2010-February 2011
- Confirmatory Items
- Commitments
- License condition related to implementation schedule and maintain strategies
- Staff find strategies and commitments acceptable



Chapter 19

Loss of Large Areas of the Plant Due to Explosions or Fires(Cont.)

50.54 hh (2) (i)

- **Fire fighting**
 - On site capabilities
 - Off site resources with MOUs
 - Communications
 - Fire Protection yard main backup supply

50.54 hh (2) (ii)

- **Mitigate fuel damage**
 - Portable pump (1000GPM) for SFP and RPV
 - SFP configuration
 - EDGMs
 - Makeup sources
 - Manual operation



Chapter 19

Loss of Large Areas of the Plant Due to Explosions or Fires (Cont.)

50.54 hh (2) (iii)

- **Minimize radiation release**
 - Vent (active and passive means) to stack
 - Sprays for scrubbing using portable pump
 - Injection to drywell and wetwell

Chapter 19 - Response to Severe Accident Policy Statement

- **Conclusions**
- All Chapter 19 open items are closed.
- With the exception of the confirmatory items, the applicant has addressed the required information relating to Response to Severe Accident Policy Statement and Loss of Large Areas of the plant due to Explosions or Fires.
- With the exception of the confirmatory items, the staff concludes that STP FSAR Chapter 19 is acceptable and conforms to regulatory requirements.

Chapter 19 - Response to Severe Accident Policy Statement

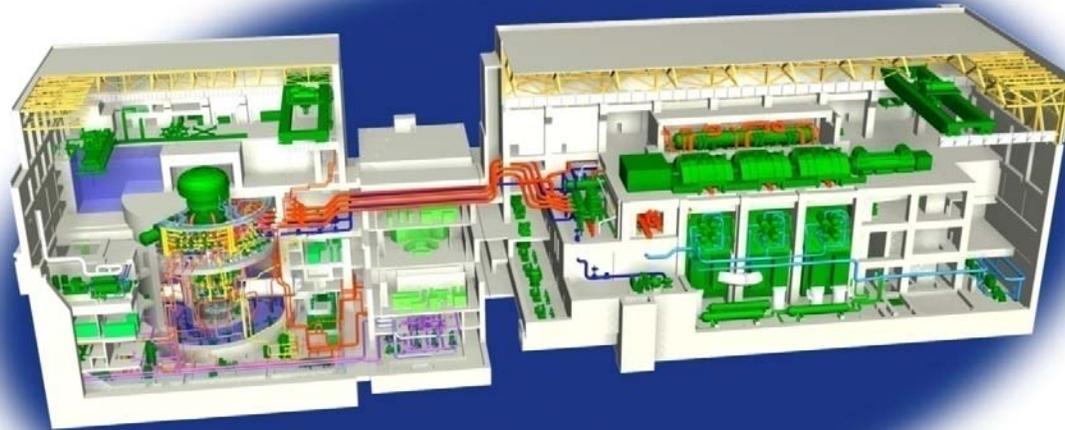
- **List of Risk-Significant SSCs**
- Staff's review of STP FSAR, Appendix 19K (i.e., list of risk-significant SSCs), will be discussed under Chapter 17 (**Confirmatory Item 17.04-9**)



Chapter 19 - Response to Severe Accident Policy Statement

Questions/Comments

South Texas Project Units 3 & 4 Presentation to ACRS ABWR Subcommittee Chapter 17 Quality Assurance



Chapter 17 Agenda

- Introduction/Attendees
- Items of Interest
- ACRS Action Items
- Summary
- Conclusion

Attendees

Scott Head	NINA Manager, Regulatory Affairs, STP 3 & 4
Tim Walker	NINA Manager, Quality, STP 3 & 4
Bill Mookhoek	NINA Supervisor, Licensing STP 3 & 4
Evan Heacock	NINA Design Engineering Lead, STP 3 & 4
Coley Chappell	NINA Licensing STP 3 & 4
Scott Bannert	NINA PRA, STP 3 & 4
Gene Hughes	NINA PRA, STP 3 & 4 / ETRANCO
Jim Agles	NINA Licensing STP 3 & 4

Chapter 17

Chapter 17 was discussed at the ACRS ABWR Subcommittee meeting on March 18, 2010, and summarized as follows:

- DCD Sections 17.0, 17.1, 17.2 and 17.3 related to Quality Assurance and Reliability Assurance during DCD development were incorporated by reference.
- FSAR Supplemental Sections 17.4S, 17.5S and 17.6S added to address Reliability Assurance, Quality Assurance and Maintenance Rule, respectively.
- COL License Information Items addressed.

Items of Interest

17.5S Quality Assurance Program Guidance

- Quality Assurance Program Description (QAPD) revisions for:
 - North America Nuclear Innovation (NINA) organizational changes.
 - Incorporate latest staff approved NEI 06-14A QA template.
 - Incorporate responses to Requests for Additional Information (RAI).

Items of Interest

17.4S Reliability Assurance Program

- Expert Panel continues to refine and identify SSC's by:
 - Identify risk significant SSC's not modeled in the PRA.
 - Augment PRA techniques in risk ranking of SSCs using deterministic techniques and expert judgment.
 - Updated after each plant specific PRA update.
- Program has been implemented and expert panel members identified.

Items of Interest

17.4S Reliability Assurance Program

- Process for using PRA and deterministic insights is in place and results are being generated.
- Ongoing for the duration of construction.
- For the certified ABWR DCD, ITAAC exists for D-RAP:
 - Scope, purpose, and objectives
 - Process used to evaluate and prioritize SSC's
 - List of risk significant SSC's
 - Process for determining dominant failure modes (risk significant SSC's)
 - Key assumptions and insights considered

Action Item #30

Address when D-RAP list will be effectively populated and staff review is completed.

Response: An updated D-RAP list was discussed and provided to ACRS on 10/20/2010.

Examples of Deterministic Risk Ranking for system inclusion in D-RAP are provided on the following slides.

Action Item #30 (cont'd)

- Neutron Monitoring System (C51)
 - Expert Panel weighted score – 65

Question	Assigned Value	Weight Factor	Assessed Value
Is the function used to mitigate accidents or transients?	5	5	25
Is the function explicitly called out in EOPs or ERPs?	5	5	25
Does the loss of the function directly fail another risk-significant system?	0	4	0
Is the loss of the function safety-significant for shutdown or mode changes?	4	3	12
Does the loss of the function, in and of itself, directly cause an initiating event?	1	3	3
		Weighted Score	65

Action Item #30 (cont'd)

- Steam Bypass & Pressure Control System (C85)
 - Expert Panel weighted score – 48

Question	Assigned Value	Weight Factor	Assessed Value
Is the function used to mitigate accidents or transients?	3	5	15
Is the function explicitly called out in EOPs or ERPs?	3	5	15
Does the loss of the function directly fail another risk-significant system?	0	4	0
Is the loss of the function safety-significant for shutdown or mode changes?	3	3	9
Does the loss of the function, in and of itself, directly cause an initiating event?	3	3	9
		Weighted Score	48

Action Item #30 (cont'd)

- Example of Expert Panel ranking process:
 - **High Pressure Core Flooder-Injection Isolation Valve E22-F003B**

Question	Assigned Value	Weight Factor	Assessed Value
Is the function used to mitigate accidents or transients?	4	5	20
Is the function explicitly called out in EOPs or ERPs?	4	5	20
Does the loss of the function directly fail another risk-significant system?	0	4	0
Is the loss of the function safety-significant for shutdown or mode changes?	0	3	0
Does the loss of the function, in and of itself, directly cause an initiating event?	0	3	0
		Weighted Score	40

Action Item #30 (cont'd)

Any new SSC's identified later in the project are also subject to the same D-RAP evaluation.

PRA model changes are evaluated for impact on D-RAP.

Action Item #88

Startup Administrative Manual (SAM) does not seem to include SSC's going into RAP following PRA or Expert Panel review.

Response: SSCs added to RAP are included in start-up testing.

RG 1.68, "Initial Test Programs for Water-Cooled Nuclear Power Plants," is referenced in the SAM and requires the test program to include suitable testing of all SSC's important to safety.

- Any SSC included in D-RAP is defined as important to safety.

Response to RAI 14.02-4 (June 17, 2009) clarified that SAM Section 6.3, "Regulation and Regulatory Requirements," addresses systems important to safety that include non-safety systems with a safety function credited in the FSAR or ABWR DCD. The specific examples provided were not intended to be all-inclusive.

Chapter 17 Summary

- No SER Open Items
- All COL License Information Items have been addressed
- All responses to Requests for Additional Information have been submitted
- All ACRS Action Items have been addressed

Chapter 17

Questions and Comments





Presentation to the ACRS Advanced Boiling Water Reactor Full Committee

South Texas Units 3 and 4 COL Application Review

**Advanced SER with no Open Items - Chapter 17
“Quality Assurance”**

April 21, 2011

Staff Review Team

Project Managers

- George Wunder, Lead PM, DNRL/NGE2
- Michael Eudy, Chapter PM, DNRL/NGE2

Technical Staff Presenters

- Garrett Newman, Reviewer, DCIP/CQVB
- Todd Hilsmeier, Reviewer, DSRA/SPRA

STP Units 3 & 4 COLA SER

Chapter 17

Presentation Summary

- **17.5S Quality Assurance Program Guidance**
 - Previous Open Item
 - Closure of Confirmatory Items
 - Change of ownership/applicant impact
 - COL item closure
- **17.4S Reliability Assurance Program**
 - COL item closure
 - Ongoing Confirmatory Item
 - ACRS Action Item discussion

STP Units 3 & 4 COLA SER

Chapter 17.5S

Chapter Summary

- One (1) Open Item related to the QAPD previously identified regarding Regulatory Commitments. This open item had been closed for this chapter and is now confirmatory in the SER.
- The staff reviewed Revision 5 of the COL FSAR and associated QAPD changes. The staff issued RAI 17.5-10 regarding interfaces between NINA and STPNOC.
- The applicant has responded with proposed changes to the QAPD. The staff has reviewed the response and proposed changes and is tracking this item as Confirmatory Item 17.5-10.
- COL License Information Item 17.1 was addressed and found acceptable.
- No ACRS Action Items.

STP Units 3 & 4 COLA SER

Chapter 17.4S

Chapter Summary

- FSAR Section 17.4S addresses COL License Information Items 17.2, 17.3, and 17.4 through the discussion of the following:
 - Essential Elements of D-RAP
 - Methodology for updating/maintaining the list of risk-significant SSCs
 - Integration of RAP into Operational Programs

- Status of SER Section 17.4S
 - No open items
 - One ACRS action item
 - One notable confirmatory item (17.04-9)

STP Units 3 & 4 COLA SER

Section 17.4S

Reliability Assurance Program

Addressing ACRS Action Item

- ACRS Action Item
 - Address when D-RAP list will be effectively populated and staff review is completed. How does staff ensure the D-RAP list and the process (COLA vs. ITAAC) related to it are acceptable?

- Purpose for Identifying the D-RAP SSCs
 - Scope of D-RAP applies to those SSCs, both safety-related and non-safety-related, that are identified as being risk-significant
 - D-RAP SSCs are subjected to D-RAP activities such as quality assurance (QA) controls for non-safety-related, risk-significant SSCs during the detailed design, procurement, fabrication, construction, and preoperational testing phases of the plant

STP Units 3 & 4 COLA SER Section 17.4S Reliability Assurance Program

Addressing ACRS Action Item (continued)

- STP's D-RAP List in Preparation of the COL Application
 - Initial identification of site-specific, risk-significant SSCs (i.e., D-RAP list) in preparation of the COL application incorporates by reference (with the appropriate departures and site-specific supplements) the D-RAP list in Appendix 19K of the certified and approved ABWR DCD
 - This process conforms to regulatory requirements
 - Completeness of this D-RAP list is directly attributed to the adequacy of the ABWR DCD PRA and the D-RAP list in Appendix 19K of the ABWR DCD, which is subjected to 10 CFR 52.63 on "Finality of Standard Design Certifications"

STP Units 3 & 4 COLA SER

Section 17.4S

Reliability Assurance Program

Addressing ACRS Action Item (continued)

- STP's D-RAP List in the Detailed Design and Construction Phases
 - STP committed to update the D-RAP list by September 2011 using the methodology described in FSAR Section 17.4S.1.4 (Commitment 17.4-1):
 - PRA (FV \geq 0.005, RAW \geq 2.0, consideration of risk insights and key assumptions)
 - Use of deterministic techniques and operating experience under the cognizance of a full expert panel to augment PRA techniques in the risk ranking of SSCs

STP Units 3 & 4 COLA SER

Section 17.4S

Reliability Assurance Program

Addressing ACRS Action Item (continued)

- STP's D-RAP List in the Detailed Design and Construction Phases
 - In accordance with FSAR Section 17.4S, STP will maintain and update the D-RAP list as changes are made to the plant-specific design and PRA:
 - This includes updating the D-RAP list for the plant-specific PRA developed to meet the requirements of 10 CFR 50.71(h)(1)
 - Any new SSCs added to the scope of D-RAP are subject to D-RAP program requirements (e.g., QA requirements)
 - Staff conducting ongoing audits on the implementation of this methodology to ensure that the D-RAP list will be effectively populated (**Confirmatory Item 17.04-9**)
 - Staff plans to conduct inspections prior to initial fuel load to verify implementation of D-RAP activities, including ensuring the D-RAP list is updated and maintained as necessary (e.g., as part of inspections for D-RAP ITAAC, initial maintenance rule program, quality assurance program, or the plant-specific PRA under 10 CFR 50.71(h)(1))

STP Units 3 & 4 COLA SER

Chapter 17

Chapter Conclusions

In conclusion, with the exception of the confirmatory items identified, the staff has confirmed that the applicant has addressed the relevant information as specified in the referenced ABWR DCD. In addition, the staff concludes that the applicant has met the applicable regulations and is in conformance with applicable guidance with respect to the QA Programs, the RAP, QAPD and Maintenance Rule Programs.

In addition, the staff believes that they have successfully addressed the ACRS action item pertaining to D-RAP.



Questions/Comments

Part 21 Process

ACRS Meeting April 21, 2011

Part 21 Process- NRO Internal ConE Review

- All Incoming Part 21 Notification:
 - Screened for NRO applicability and safety significance.
 - Evaluated once minimum safety significance threshold is met.
 - Applied to NRC programs upon completion of technical evaluation.
- Applicable NRO Office Instructions:
 - NRO-REG-112, “New Reactor Construction Experience Program”
 - Draft NRR/NRO joint office instruction LIC-403/NRO-REG-122, “Procedures for Handling Deficiency Reports.”

Part 21 Process - Proposed Changes to SRP Ch.1

- Modifying the SRP Ch. 1 guidance to include review of applicant evaluations of defects and non-compliances submitted in Part 21 notifications
- Definition of defect includes ESPs, DCs, and COLs
- All applicants should have a program in place for implementing the requirements of 10 CFR part 21
- Applicant evaluations should determine applicability and potential implications on DCs, DC renewals, and COLs that reference a DC, as applicable for the specific design center
- For DC renewals and COLs, evaluations should address those notifications issued between the original design certification rulemaking (DCR) and the DC renewal, or COL application
- Staff to perform review of applicants evaluations or perform confirmatory review and document results in SER

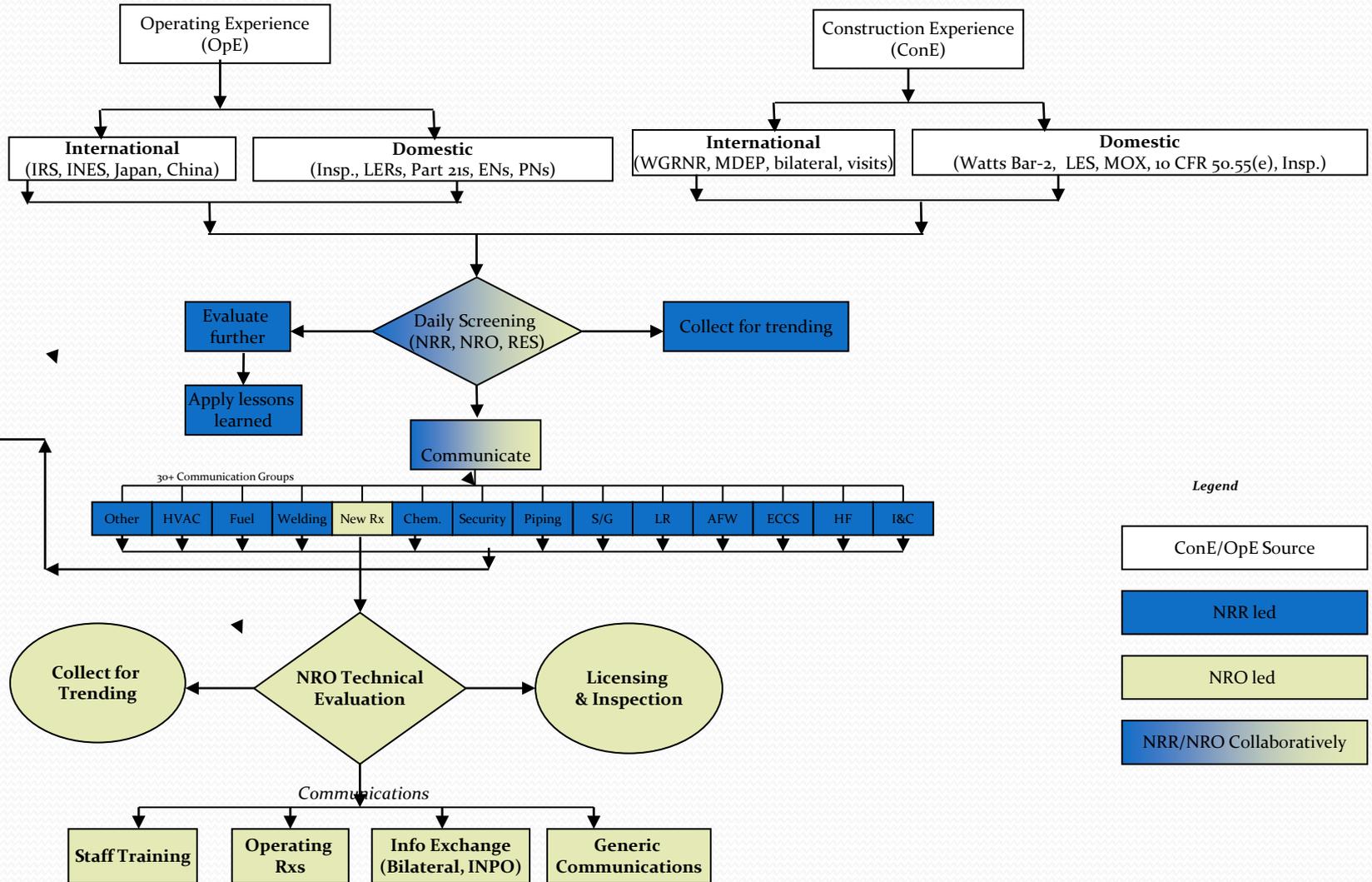
Part 21 Process (Backup Slides)

ACRS Meeting April 21, 2011

NRC Process for Collecting, Screening, Evaluating, and Communicating Construction and Operational Experience

24 TRGs

- Other
- HVAC
- Fuel
- Welding
- New Rx
- Chem.
- Security
- Piping
- S/G
- LR
- AFW
- ECCS
- HF
- I&C



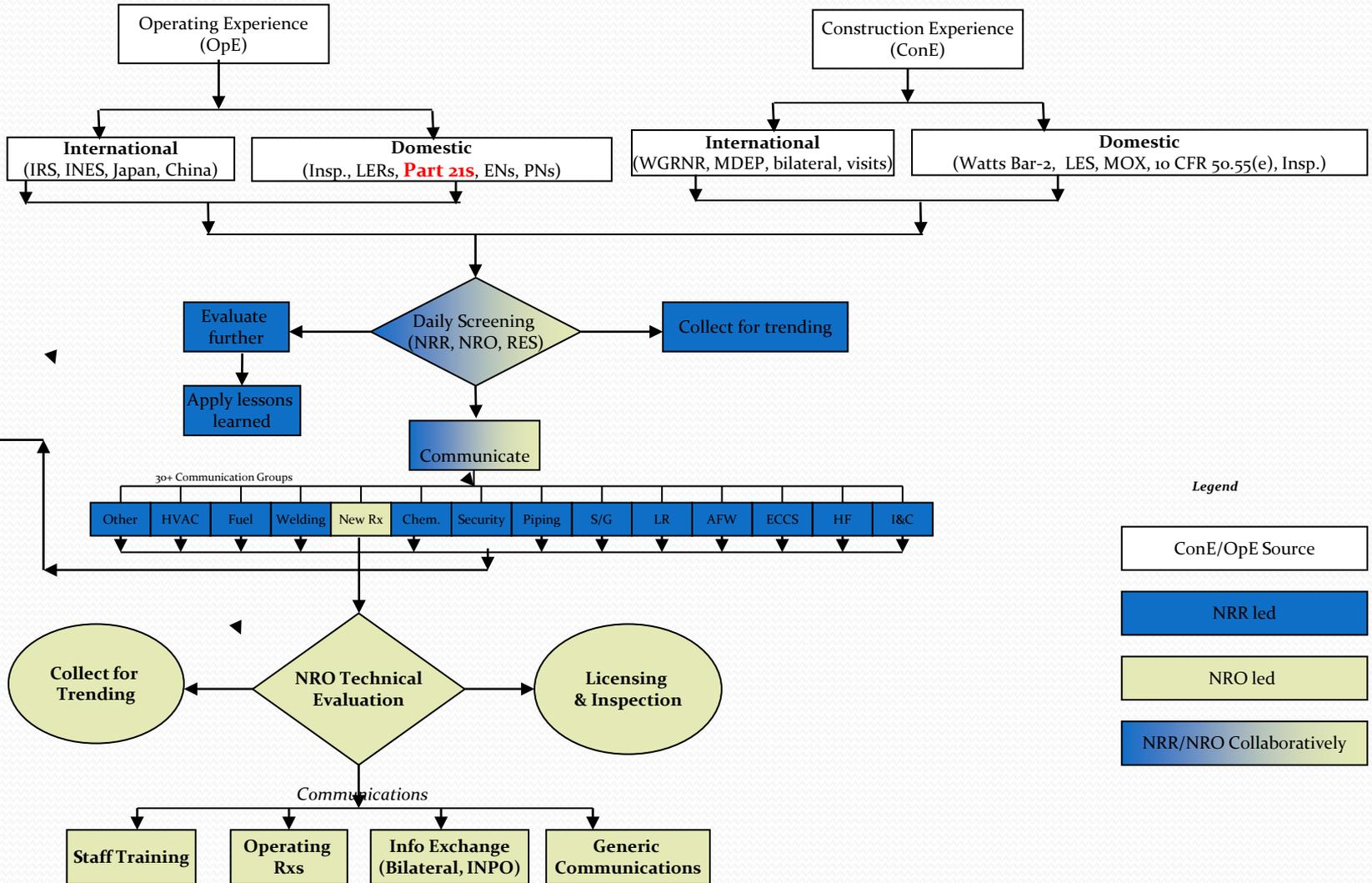
Legend

- ConE/OpE Source
- NRR led
- NRO led
- NRR/NRO Collaboratively

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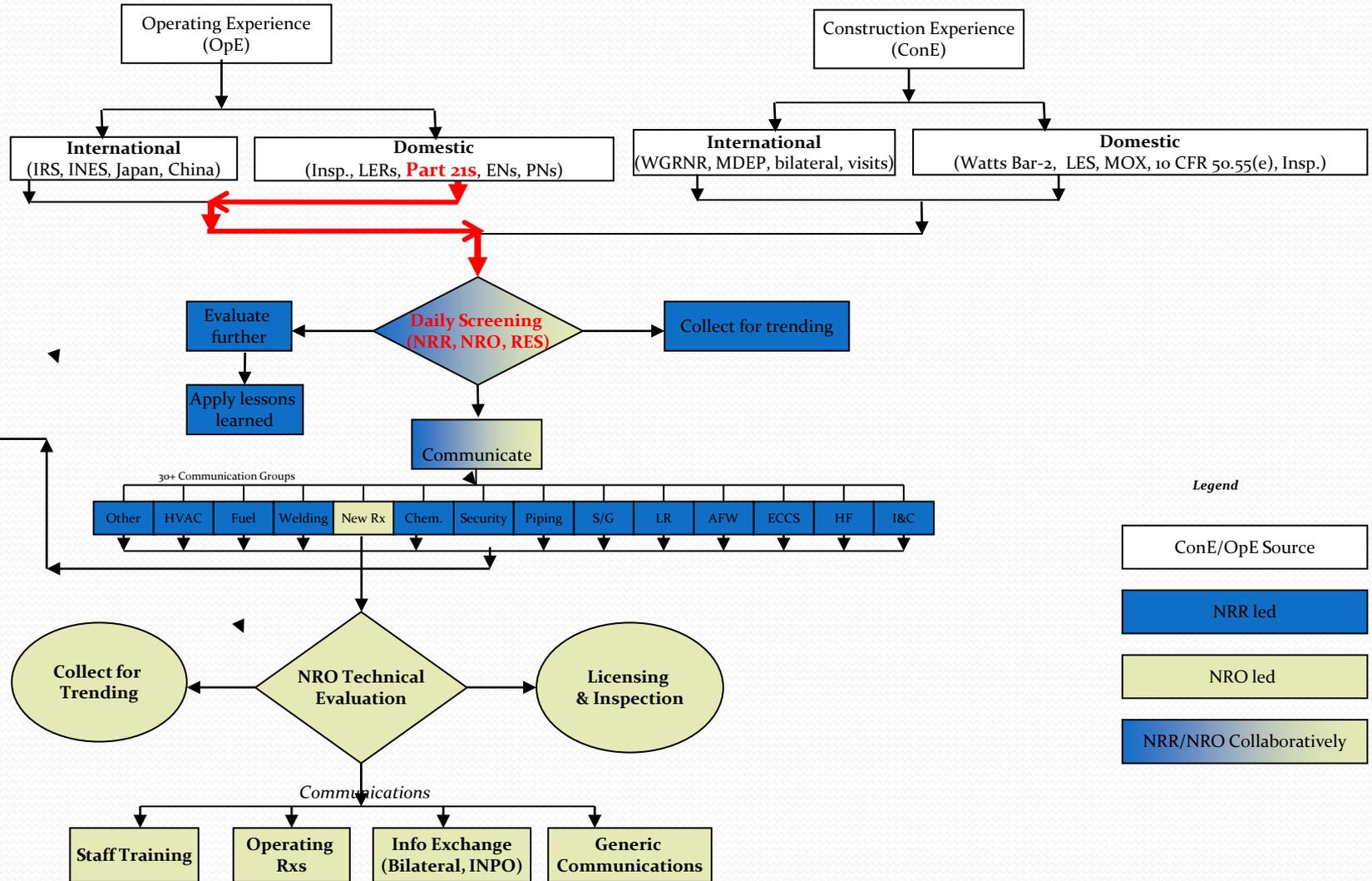
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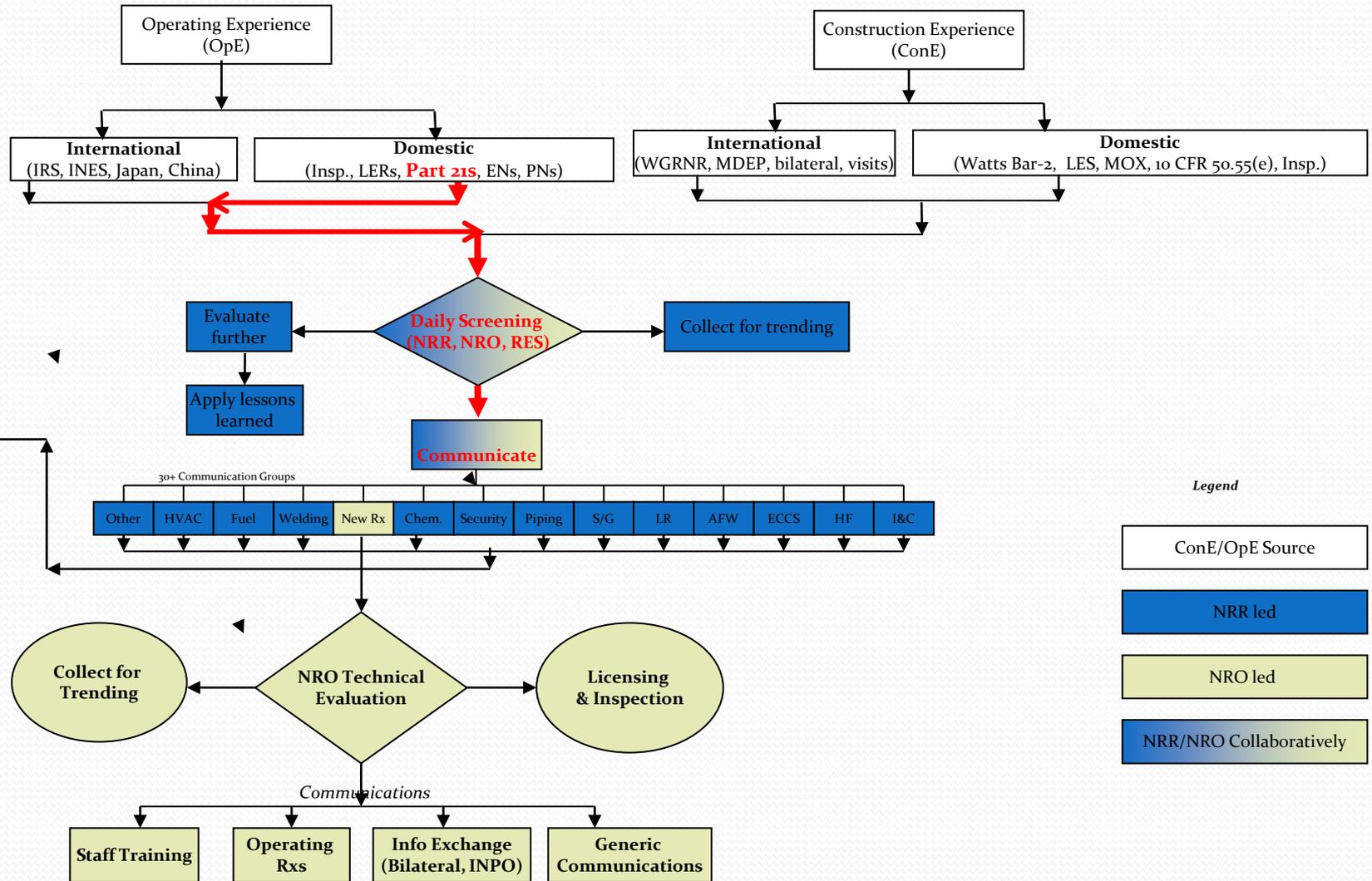
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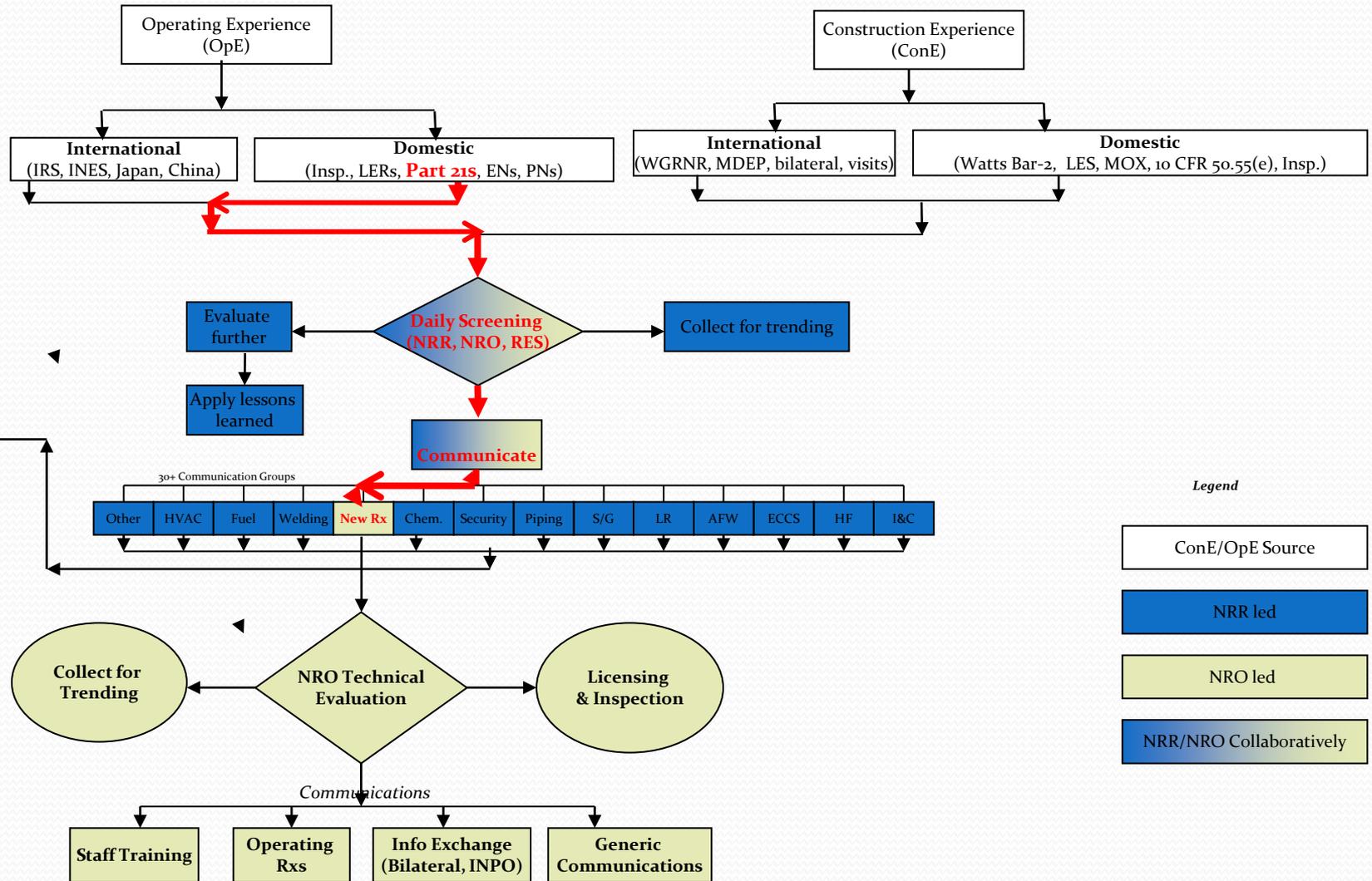
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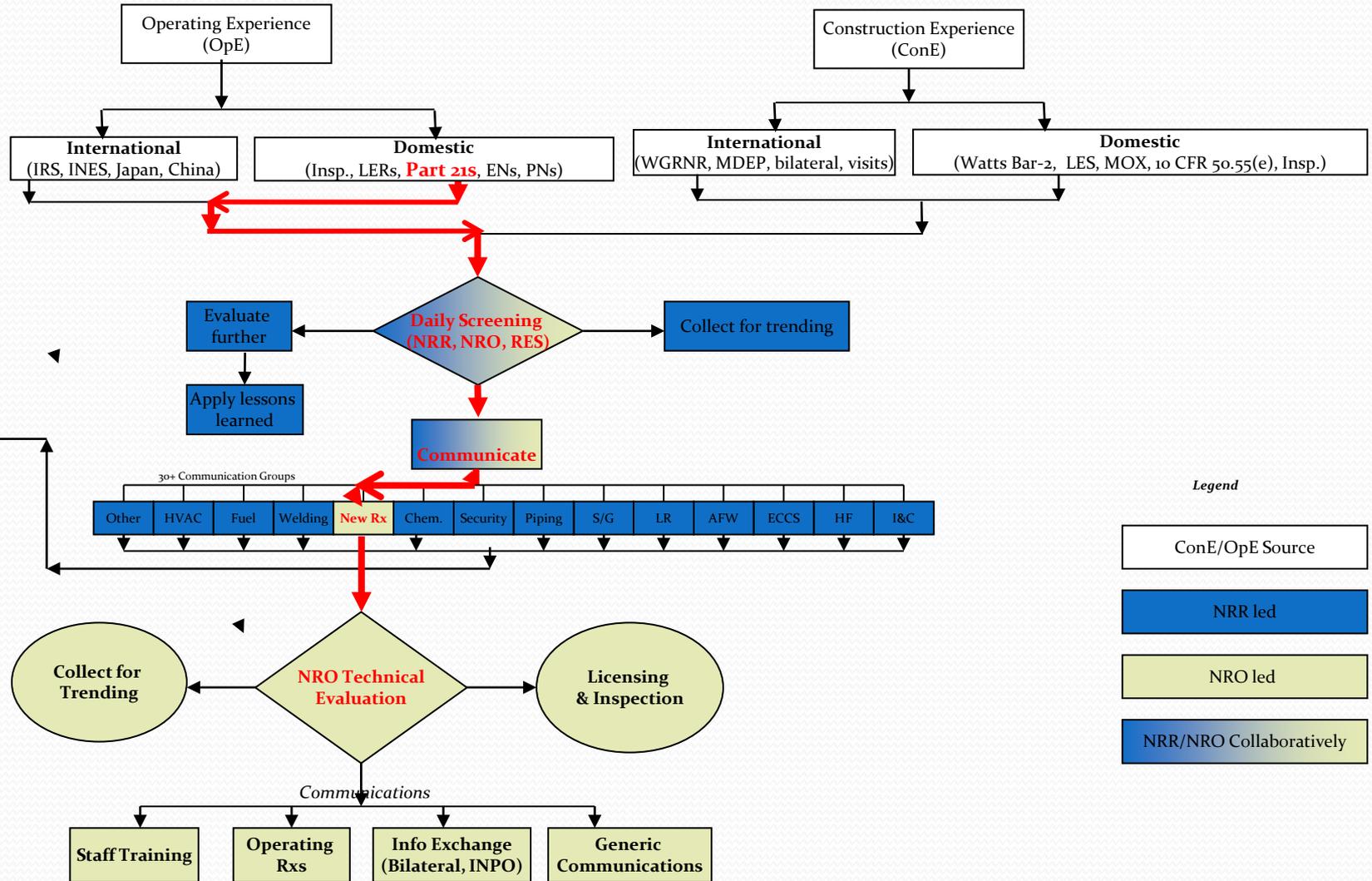
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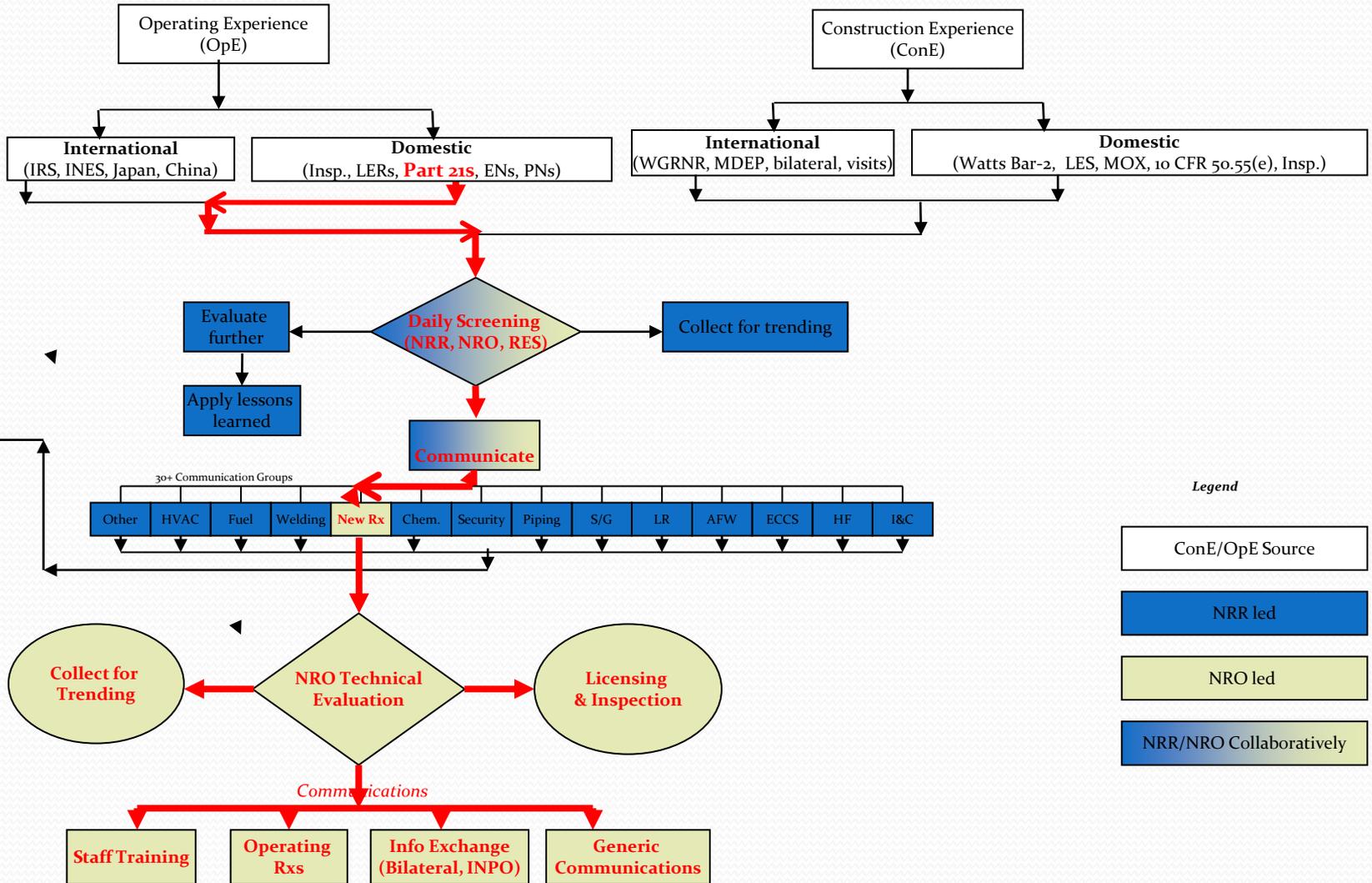
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Legend

- ConE/OpE Source
- NRR led
- NRO led
- NRR/NRO Collaboratively

Part 21 Process

- Proposed Changes to SRP NUREG-0800 Chapter 1.0
- SRP Page 1.0-5
-
- Part 21 Notification of Failure to Comply or Existence of a Defect and its Evaluation
-
- An evaluation by the applicant of all defects and noncompliance reports submitted under 10 CFR Part 21 to determine their applicability and potential impacts on applications for design certification (DC) , DC renewal, and combined licenses (COLs) that reference a DC. For DC renewals and COLs that reference a DC, the evaluation should address those notifications issued between the original certification and the DC renewal or COL application, as applicable for the specific design center, and as stipulated in 10 CFR 21.21.

Part 21 Process

- Proposed Changes to SRP NUREG-o800 Chapter 1.0
- SRP Page 1.0-7
- 9. 10 CFR 21.21 as it relates to reviews of failure notifications and an evaluation of the impacts from operational experience and implementation of lessons learned on engineering design for the review of DC/COL applications. The applicability, relevancy and significance of these failure notifications in DC/COL reviews shall be determined by the individual applicant and specific to each design center with emphasis on significant notifications. The applicants evaluation shall include all defects and noncompliance reports submitted under 10 CFR 21.21 to determine their applicability and potential impact on the application under review by the staff. For design certification reviews, the scope of the applicants review should include notifications issued prior to submittal of the DC application. For DC renewals, and COL applications that reference a DC, the scope of the applicants review should include those notifications issued between the original DCR and submittal of the DC renewal, or COL application that references the DCR, as applicable.