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DCD and Vogtle Units 3 and 4 COL

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ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION
+ + + + +
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
(ACRS)
SUBCOMMITTEE ON THE WESTINGHOUSE AP1000 DCD AND
VOGTLE UNITS 3 AND 4 COL

+ + + + +

THURSDAY

JUNE 24, 2010

+ + + + +

ROCKVILLE, MARYLAND

+ + + + +

The Subcommittee met at the Nuclear
Regulatory Commission, Two White Flint North, Room
T2B3, 11545 Rockville Pike, at 8:30 a.m., Harold B.
Ray, Chairman, presiding.

SUBCOMMITTEE MEMBERS:

HAROLD B. RAY, Chairman

SANJOY BANERJEE, Member

DENNIS C. BLEY, Member

CHARLES H. BROWN, Member

JOHN W. STETKAR, Member

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DESIGNATED FEDERAL OFFICIAL:

WEIDONG WANG

CONSULTANT

THOMAS S. KRESS

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

3 (8:32 a.m.)

4 CHAIRMAN RAY: Okay, we're on the record,
5 please. The meeting will now come to order. This is
6 a meeting of the AP 1000 Reactor Subcommittee,
7 standing subcommittee of the Advisory Commission on
8 Reactor Safeguards. I'm Harold Ray, chairman of the
9 subcommittee.

10 Before I indicate the members present, let
11 me make a general announcement to the effect that we
12 have two subcommittee meetings going on simultaneously
13 here in adjacent rooms. So we will find during the
14 course of our AP 1000 meeting that members will go
15 back and forth between those two meetings.

16 Here with me now are Member Dennis Bley,
17 Sanjoy Banerjee, Charles Brown, ACRS Consultant John
18 Kress is also present, and Weidong Wang is the
19 designated federal official for this meeting.

20 This meeting is part of an ongoing review
21 of a proposed amendment to the AP 1000 pressurized
22 water reactor design control document and review of
23 the associated reference defined operating license
24 application. In the past we've had five AP 1000
25 subcommittee meetings. They were in July, October and

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1 November of 2009, February and April of 2010.

2 This June AP 1000 subcommittee meeting
3 will start to review the advanced final safety
4 evaluation reports on the revision 17 to the AP 1000
5 DCD amendment, and as well as that, the Vogtle AP 1000
6 reference COL final safety evaluation report.

7 The review will focus on open item
8 closing, and new proposed design changes. The
9 presentation includes first Chapters 4, 10, 11, 12, 14
10 and 22 to Revision 17 to the AP 1000 DCD. Secondly,
11 Chapters 4, 10, 11, and 12 for the Vogtle AP 1000
12 reference.

13 Finally and thirdly, action items from the
14 past AP 1000 subcommittee meeting.

15 On the second day time has been provided
16 in the agenda for members of the public to discuss
17 information provided by a letter to the ACRS chairman,
18 Dr. Said Abdel-Khalik, dated April 21st, 2010. We will
19 hear presentations from the reference COL applicant
20 reported by NUSTART, a DCD applicant Westinghouse, and
21 NRC staff. We will hear from any other members of the
22 public who wish to be heard in addition to the
23 discussion scheduled on the morning of the second day.

24 The subcommittee will gather information,
25 analyze relevant issues and facts, and formulate

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1 proposed positions and actions for deliberation by the
2 full committee. The rules for participation in
3 today's meeting have been announced as part of the
4 notice of this meeting that has been previously
5 published in the Federal Register. A transcript of
6 the meeting is being kept and will be made available
7 as stated in the Federal Register notice. Therefore
8 we request that participants in this meeting use the
9 microphones located throughout the meeting room when
10 addressing the subcommittee. The participants should
11 first identify themselves, and speak with sufficient
12 clarity and volume so that they may be readily heard.

13 Weidong, do we have an open telephone line
14 or not?

15 MR. WANG: We do.

16 CHAIRMAN RAY: We do? All right, there
17 is an open telephone line. We ask that listeners
18 place their instrument in the mute mode in order to
19 avoid interruptions of the meeting. And there is a
20 sign up sheet for any members of the public as I
21 indicated earlier.

22 We will now proceed with the meeting, and
23 I am turning to Josie.

24 COL CHAPTER 4 - NRC STAFF

25 MR. CRUZ: No, actually, my name is

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1 Jeffrey Cruz, slight change. My name is Jeffrey Cruz.

2 I'm actually the branch chief responsible for the
3 review of the COL applications that are currently
4 going on. Ms. Eileen McKenna is not available this
5 morning, so I'm here to replace her.

6 As stated we are going to be presenting
7 presentations regarding six chapters over the next few
8 days for the DCD. Four of the chapters have been
9 previously presented to the ACRS Subcommittee, two
10 will be seen for the first time today.

11 Presentations will be made by members of
12 the staff throughout the day. With that, it's going
13 to be very short. We're going to get ahead of
14 schedule right off the bat here, and I'm going to turn
15 it over very early.

16 CHAIRMAN RAY: Yes, Rob.

17 MR. SISK: Good morning, Mr. Chairman.
18 Rob Sisk, Westinghouse.

19 Just wanted to again say we look forward
20 to this discussion today. We won't belabor the
21 issues. Just the cautionary that we will go through
22 the presentations. If there are any questions that go
23 into any depth of a proprietary nature, we will be
24 sensitive to that, but we are not anticipating that
25 unless through the discussions with the committee.

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1 With that just a cautionary note: I'm
2 going to turn it over to Mr. Tom Ray, and we can start
3 into Chapter 4.

4 COL CHAPTER 4 - WESTINGHOUSE

5 CHAIRMAN RAY: Brother Ray.

6 MR. RAY: Good morning, how are you
7 doing. (Laughter)

8 My name is Tom Ray. I have with me. Mr.
9 Bob Fetterman from Westinghouse. We are going to talk
10 about the AP 1000 Design Control Amended Design
11 Chapter 4, basically the closure of the open items
12 from the SER with open items. Next slide, please.

13 An overview of Chapter 4. Basically
14 Chapter 4 covers fuel rods, fuel assemblies,
15 components of the reactor, reactor core, also has
16 nuclear design, thermal hydraulic design, reactor
17 materials, and functional design of reactivity control
18 systems.

19 There were two open items that were
20 identified in the SER with open items for Chapter 4.
21 One was on the use of Reg Guide 1.44, and the CRDM
22 canopy seal weld materials. And the other one was on
23 the spent fuel storage rack criticality analysis. And
24 I will talk a little bit about how those two were
25 closed out.

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1 The first one, what the staff was looking
2 for for closure of that open item was more information
3 related to the use of CRDM design changes, and the use
4 of Reg Guide 1.44 for the prevention of stress
5 corrosion cracking. Westinghouse responded to that
6 open item. We were provided more detail to the DCD.
7 It talked about the use of only one canopy seal weld
8 in the CRDM design, and how that design improved the
9 ability to control stress corrosion cracking.

10 Also we provided more information on the
11 CRDM materials and how they met the requirements of
12 Reg Guide 1.44. Next slide.

13 And this is the open item that had more
14 substance of the two for Chapter 4. And this is
15 actually related to Chapter 9. There were issues with
16 the spent fuel storage race criticality analysis that
17 was provided in DCD Reg 17. The analysis now has been
18 approved by the NRC. This was the analysis of
19 documents the criticality safety evaluation for the
20 storage of PWR. The title is, PWR Spent Nuclear Fuel
21 in the Holtec Region 1 & 2, styled high density spent
22 fuel storage racks.

23 The way this affected Chapter 4, and the
24 reason this was an open item related to Chapter 4, is
25 that we did update the criticality design method

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1 outside the reactor, and the soluble boron credit
2 methodology provided in Chapter 4, just the wording.
3 And that is it for the closure of the open items
4 related to Chapter 4, and I would invite any questions
5 from the DCRS.

6 CHAIRMAN RAY: Thank you. Members have
7 any questions?

8 (No response)

9 Okay, fine, thank you. We will proceed
10 then to the next item. You are quite right that we
11 picked up a little time there, and maybe that will be
12 the balance of the day.

13 We will now hear from staff.

14 COL CHAPTER 4 - NRC STAFF

15 MR. BUCKBERG: Thanks. My name is Perry
16 Buckberg. I'm in NWE II, the AP 1000 projects branch.
17 I work for Eileen McKenna.

18 I'm the senior PM responsible for chapters
19 5, 9, 10 and 13. So I'm up here to do Chapter 4 today
20 in the absence of anyone else.

21 Technical staff responsible for the open
22 item, I'm going to be discussing with Fred Forsaty and
23 the project manager is Phyllis Clark.

24 Fred, if there are any questions?

25 MR. FORSATY: Go ahead.

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1 MR. BUCKBERG: All right. Chapter 4 was
2 previously issued with open items, and was previously
3 presented to the subcommittee. The one item we are
4 going to discuss today is 9.1.1 SRSB-01. Next slide.

5 And as discussed before, this open item
6 basically has a link to Chapter 9, which I'm the
7 project manager for. There was a reference to
8 suitable methodology for criticality analysis for the
9 spent fuel pool, and the open item just needed to - it
10 was an open item because we needed to identify an
11 adequate criticality method in Chapter 4. The
12 analysis and whatnot are all going to be in Chapter 9.

13 Westinghouse has since provided this
14 methodology. It's being evaluated right now for
15 Chapter 9, which you have not seen yet, nor have I.
16 That will come up at a later ACRS meeting. And for
17 the sake of Chapter 4, it's not a confirmatory item;
18 it's considered resolved.

19 MEMBER BLEY: So the actual technical
20 meat of it will be covered when we come to Chapter 9?

21 MR. BUCKBERG: Exactly. This is just a
22 reference or a link to it. And since it's a hefty
23 enough issue that we wanted to at least mention it
24 here in Chapter 4.

25 CHAIRMAN RAY: Any ministerial action at

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1 this point?

2 MR. BUCKBERG: Any questions?

3 (No response)

4 CHAIRMAN RAY: How could we have?

5 (Laughter)

6 All right, we are done with Chapter 4
7 already. Ready to go to Chapter 11 and 12, I guess
8 presented jointly starting with the applicant
9 Westinghouse.

10 MEMBER BLEY: Just a question.

11 MR. WANG: Yes.

12 MEMBER BLEY: Do we have this report that
13 describes the method they are using for the spent fuel
14 racks?

15 MR. WANG: I don't recall for the
16 particular one. It'll just take a moment.

17 CHAPTER 11 - WESTINGHOUSE

18 MR. RAY: This is Tom Ray from
19 Westinghouse again. We are going to discuss the AP
20 1000 design control amended design for Chapter 11, and
21 the open item related to Chapter 11. We'll just begin
22 with an overview of Chapter 11. Chapter 11 is the
23 radioactive waste management system. Information in
24 it is source terms, you have your rad waste, liquid
25 rad waste, gaseous, solid, and radiation monitoring.

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1 With me I have as a technical lead for
2 Chapter 11 Mr. Tim Meneely from Westinghouse.

3 There was one open item that was
4 identified that needed closure in Chapter 11, and that
5 was related to providing more information in
6 Section 11.33 about a consequence evaluation of a
7 gaseous system lead or failure.

8 We went through, we revised the DCD
9 Section 11.3.3.4. We added some information, to talk
10 about the consequence evaluation of a gaseous system
11 leak, and we've shown the assumptions that we used to
12 make that evaluation.

13 And that was basically it for the open
14 item, just providing some more detail in Chapter 11.

15 CHAIRMAN RAY: Chapter 12.

16 CHAPTER 12 - WESTINGHOUSE

17 MR. RAY: Okay, for Chapter 12, overview
18 of Chapter 12 is radiation protection. Chapter 12
19 deals with issues such as ALARA, radiation sources,
20 radiation protection design features, dose
21 assessments, and health physics facility design.

22 I have as a technical lead to help with
23 any questions Aaron Wilmot from Westinghouse.

24 Now Chapter 12 had five open items, so
25 there is actually a little bit more to discuss here.

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1 And I'll go through rather than talking about each of
2 the open items now, I do have the open item on each
3 slide, so I'll talk about each one as it comes up.

4 The first one was on information on design
5 features in our HVAC systems to prevent or minimize
6 contamination of the environment. We have some more
7 information in the DCD, specifically actually in
8 Chapters 9 and 11, to provide clarifying information
9 on how certain design features of the AP 1000 prevent
10 water from entering the HVAC ducting from either the
11 liquid rad waste system or the radioactive waste drain
12 system.

13 The next open item was to provide more
14 detail on the airborne radioactivity because of the
15 expanded fuel pool capacity. We responded by adding
16 more information into the DCD. I'll talk about the
17 bases and calculations made to assess the maximum
18 airborne activity in the fuel handling area along with
19 any changes to the airborne radioactive concentration
20 values anywhere in the specific DCD table 12.2-25, so
21 we provided those.

22 Next one is the dose during the refueling
23 due to a change in the minimum allowable water depth
24 above the active fuel. And what we provided in that
25 response was information about how the deck of the

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1 spent fuel pool bridge actually will provide more
2 adequate chill during the radioactive fuel moves and
3 will be able to maintain the whole body exposures less
4 than 2.5 millirem per hour.

5 Next slide. The next question was based
6 on the integrated RV Head Package Design. The staff
7 was looking for more information discussing
8 containment area radiation zones and doses, increases
9 or decreases in refueling doses due to the new
10 integrated RV Head Package Design.

11 What we did was we looked at the detail
12 that was provided in DCD Chapter 12. We provided more
13 dose estimates, and as we expected the Integrated Head
14 Package does lower the original dose estimate than
15 what was provided in the DCD. So we made those
16 updates to the tables in Chapter 12, and we updated
17 the decreases for both the refueling dose estimates
18 and the reactor head in service inspection dose
19 estimates.

20 And the last one was a change in the
21 concrete density around the spent fuel transfer canal
22 and tube shielding, and its impact on occupational
23 exposure and effect on radiation zones. Just to be
24 clear, this wasn't a change in the actual density of
25 the concrete. This was a change in the assumptions of

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1 the density of the concrete used in the radiation
2 analysis.

3 So we performed more dose calculations,
4 actually more than just around the spent fuel transfer
5 canal and the tube shielding. We did an extent of
6 condition and looked at all the radiation analysis to
7 see what the lower density of concrete assumption to
8 the analysis did. And we did have some changes in
9 radiation zones and rooms, and we did make those
10 changes to the DCD.

11 CHAIRMAN RAY: Okay, on the bridge crane,
12 describe more fully how you achieve, how you assure
13 that this deck is going to be what you are assuming?

14 MR. WILMOT: In the analysis I think we
15 made several conservative assumptions on inventories
16 and some geometry configurations in the deck to ensure
17 that what we expected would be bounded by the
18 analysis.

19 CHAIRMAN RAY: Well, how is this deck
20 specified? How is it required to be what you assume
21 it will be?

22 MR. WILMOT: We'll have design
23 specifications for the components of the system so
24 that we know it will be meeting the assumptions that
25 were used in the analysis, and we can be sure that the

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1 analysis assumptions match up or bound what is
2 actually specified in fabrication.

3 CHAIRMAN RAY: Where is it specified?

4 MR. WILMOT: I'd have to go back and
5 check.

6 CHAIRMAN RAY: Would you do that? I'm
7 trying to figure out how you will make sure that what
8 is in the plant throughout its life is what you are
9 assuming here. And you are talking about the deck of
10 the spent fuel pool bridge. It's a little hard for me
11 to understand right off how you make sure that that
12 deck is going to do what you want it to do throughout
13 the life of the plant.

14 MR. RAY: The response that was provided,
15 and part of the analysis, was that permit deck
16 thickness of 1.25 inches. I'd have to look to see
17 what the actual manufacturing material is. But it was
18 of such a thickness, and that's what was specified,
19 and that was what was used in the radiation analysis.

20 CHAIRMAN RAY: Okay, well, that is a
21 pretty thick deck for a bridge crane, but in any
22 event, I'm still trying to understand how you make
23 sure that that is the case, in other words, what
24 prevents somebody from putting in grate.

25 MR. RAY: Okay. I understand you are

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1 looking for --

2 CHAIRMAN RAY: How you control it.

3 MR. RAY: And control, making sure that
4 what we put in there is what was designed.

5 CHAIRMAN RAY: Right. I mean it's one
6 thing to make assumptions about the concrete density
7 and so on; it's not likely to change. But the deck on
8 the refueling bridge crane manipulator on spent fuel,
9 when most of them were open grating, I don't know how
10 you are going to make sure that that doesn't happen
11 here. I'm not doubting it; I'm just interested in how
12 you would make sure that that is characteristic of
13 this. It is required to be there all the time.
14 Presumably you specify it as something that is
15 required to be adhered to throughout the plant life,
16 is what I'm searching for, and I'm just trying to
17 figure out how you do that.

18 MR. CUMMINS: This is Ed Cummins. I
19 think to some degree that this is - we will supply the
20 crane as it's designed, and then in the life of the
21 plant if somebody, the COL applicant, wants to modify
22 any part of the design, they have a process which
23 considers the impacts of the change on the performance
24 of whatever they happen to be changing. So this is
25 kind of - in fact the plate acts as part of the

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1 counterweight of the crane, so we needed some weight
2 and we needed some shielding, so we combined two
3 functions into a plate, and if you took the plate out
4 then you would have to do something else with the
5 counterweight, and we'd have to assess the shielding,
6 or really that would be a COL applicant function, as
7 they approved the design changes for their machine.

8 CHAIRMAN RAY: Yes, it's a configuration
9 management problem, Ed. It's just the usual thing to
10 find that there is built in shielding in this
11 location. Nothing wrong with it. I just wanted to -
12 you answered part of the question, which is that you
13 are going to supply this bridge to start with, so it's
14 going to have to be a modification to the equipment
15 supplied by the reactor vendor.

16 Okay, that is all right, you don't need to
17 pursue it any further.

18 Any other questions on this chapter?

19 (No response)

20 Okay, if not, thank you. We now turn to
21 our staff on those same two chapters.

22 I should give notice to applicant and
23 staff that if we continue to make good progress here
24 we will strive to advance the agenda accordingly. And
25 so they should be prepared to the extent they can to

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1 respond to that.

2 Okay.

3 MEMBER BANERJEE: We haven't got to the
4 squib valves yet.

5 CHAIRMAN RAY: There is always an
6 opportunity for delay or slowing down. (Laughter)
7 Appreciate that, but nevertheless I just want to make
8 sure we make use of the time as best we can.

9 Okay, staff, Bill

10 CHAPTER 4 - STAFF PRESENTATION

11 MR. BUCKBERG: I'll kick off again. My
12 name is Perry Buckberg, again, senior project engineer
13 in the AP 1000 licensing branch. I'm here to
14 introduce Chapter 11. With me are Steve Schaffer and
15 Ed Roach, two of the technical staff that played into
16 Chapter 11.

17 MR. SCHAFFER: As Westinghouse puts it,
18 there was the one open item on the consequence
19 analysis for gaseous waste management system or leak.

20 And there is one other issue that we are going to
21 talk about, I guess later on today you will learn more
22 about the design change package, but we were able to
23 close one of those design change package changes,
24 number 23. We had before the SER was finalized, so it
25 made it into this version of the SER, and we'll talk

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1 about that too.

2 The applicant actually did perform the
3 accident and consequence analysis for the failure of
4 the delay bed, defined as a delay bed, but it never
5 made it into the Rev. 15 of the application, so we
6 asked them to put it in the subsequent revisions, and
7 they did. They provided us with the details of the
8 analysis. We were able to confirm that it did follow
9 the Branch Technical Position 11.5 methodology, and we
10 also confirmed the results. And the RAI is closed,
11 and now it's a confirmatory item for Rev. 18. Next
12 slide.

13 Changed number 22 in the design change
14 package, actually removed the entire ITAAC from the
15 table 23.11-1 and 23.11-2. There was some
16 misunderstanding. There was an error indicated that
17 it was a seismic design category one when it was
18 really just one half of the design basis earthquake
19 design according to the Reg Guide 11.43.

20 So Westinghouse reinstated the ITAAC with
21 the proper design criteria that was specified in 1.43,
22 and now again it's confirmatory.

23 That's it for Chapter 11.

24 CHAIRMAN RAY: Okay. Any questions?

25 (No response)

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1 MR. PROCTER: Now we are going to move on
2 to Chapter 12.

3 CHAPTER 12 - NRC STAFF PRESENTATION

4 MR. PROCTER: Chapter 12 is a pretty
5 straightforward chapter. We only have had a couple of
6 open items. There were five open items. We are only
7 going to cover three here; there were only three that
8 were really worth of being discussed.

9 MR. ROACH: Okay, thanks Chris. Good
10 morning.

11 CHAIRMAN RAY: Good morning.

12 MR. ROACH: Chapter 12, three items, the
13 first one we'll discuss is open item SRP 12.1-CHPB-01,
14 and as previously discussed by Westinghouse, we asked
15 for additional information to determine compliance
16 with 10 CFR 20.1406, not 10.1406. And part of that
17 was using operating experience from the generation of
18 plants and issues we've reviewed to ensure that the
19 applicant has considered design features that would
20 minimize contamination of ventilation ducting and air
21 conditioning, and whether the spent fuel pool, the
22 exhaust was too close to the actual water level so
23 that you could actually draw moisture out of the pool,
24 it has been an operating experience lesson learned.

25 The features were provided and discussed

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1 in the response in the various chapters. And we felt
2 that the features were adequate to prevent and
3 mitigate the spread of contamination through the
4 ventilation systems.

5 CHAIRMAN RAY: What are these features?

6 MR. ROACH: In the case - there are a
7 couple of places within the system, for instance a
8 spent fuel - spent resin monitoring tank, it vents to
9 the ventilation system. There is an example where if
10 you ever pressurized that tank when you transfer the
11 resin to that tank, you can actually put resin into
12 your ventilation ducting. So the design feature is to
13 provide that there is a seal that doesn't allow the
14 resin to get into the ventilation; it's separated from
15 the actual ventilation duct where it vents off to.

16 The other features were, there has been
17 experienced --

18 CHAIRMAN RAY: You have to do that a
19 little more clearly.

20 MR. ROACH: Okay, the applicant described
21 where their waste system went directly to a
22 ventilation duct, they provided either an isolation
23 capability or a seal or moving that out of the duct
24 immediately so it's not connected to the duct, so that
25 the materials don't go right into the duct without an

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1 opportunity to be stopped when contaminating the duct.

2 CHAIRMAN RAY: This requires operator
3 action, I assume?

4 MR. ROACH: Not necessarily. It's
5 actually in the design features. So that for instance
6 the vent coming out of the spent resin metering tank
7 doesn't necessarily connect right into the duct. It
8 connects and it comes out and vents in an area near to
9 where the exhaust of the duct is so that the air would
10 be drawn and then not blown directly into the duct.

11 CHAIRMAN RAY: So it vents to a room?

12 MR. ROACH: Yes, to an area.

13 CHAIRMAN RAY: All right, it sounds like
14 the feature is to separate the vent from the intake or
15 the ventilation and the gas?

16 MR. ROACH: Yes.

17 CHAIRMAN RAY: I didn't understand the
18 seal part of it.

19 MEMBER BLEY: How did they convince you
20 on the moisture issue that you raised?

21 MR. ROACH: The condensates, you mean?

22 MEMBER BLEY: You talked about it being
23 too close to the spent fuel tank.

24 MR. ROACH: Actually in looking at the
25 design drawings that show where the exact exhaust is,

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1 going back and looking at operating experience, the
2 plants or facilities have had issues with that
3 ventilation or contamination going into their ducting,
4 that exhaust port was very close to the water level
5 within a couple of feet, in the AP 1000 the exhaust is
6 up approximately 10 - 12 feet above the water level.

7 MEMBER BROWN: Is there a metric that
8 saws 12 feet is good and three feet is not?

9 MR. ROACH: Well, in actuality there is
10 constant turnover in the spent fuel pool, moisture,
11 evaporation. The example in lessons learned is, the
12 closer it is to the water level if there is movement
13 of components or people working in the pool there is
14 more likely to splash and the duct - get water up
15 closer to the ductwork. The farther away the ductwork
16 is from the water surface the less delta p, or the
17 less ventilation draw there is right across the
18 surface of the water. It wasn't an actual calculation
19 as much as operational --

20 MEMBER BROWN: -- actually splash?

21 MR. ROACH: Well, it can be - overflow
22 can be splash also.

23 MEMBER BROWN: I am just curious as to
24 why 12 is good and three is not.

25 MR. ROACH: Oh, okay.

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1 MEMBER BLEY: It sounds like it's just
2 the places where they've seen the problems.

3 MEMBER BROWN: Okay, so it's just based
4 on experience alone.

5 MR. ROACH: Okay.

6 MEMBER BROWN: So if it's 12 feet it's
7 okay; if it's three feet it's possibly a problem.

8 MR. ROACH: Possibly a problem, that's
9 correct.

10 MEMBER BROWN: And something in between
11 you'd make other arguments?

12 MR. ROACH: Well, we would go back and
13 ask for additional information. Part of I guess is in
14 the ventilation system you try to maintain a negative
15 pressure in the spent fuel pool area, and as you get
16 closer to the water level there is more likelihood to
17 entrain particles.

18 The other item, the other design feature,
19 was the fact there are heating ventilation and air
20 conditioning systems that will draw air from the
21 controlled area, the radiologically controlled area,
22 condense that moisture. And then there have been
23 lessons learned where that moisture has gone to a
24 sanitary drain as opposed to a controlled drain. And
25 so the applicant committed in there to direct those

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1 situations to a controlled drain, such that any
2 tritium that would be condensed within that system
3 would go into the waste system and be accounted for.

4 The next open item is under design
5 features for the AP 1000. It's Open Item 12.3-01, and
6 as discussed earlier, the applicant changed to the
7 Integrated Head Package. And the impact of that
8 Integrated Head Package on radiation exposures, doses
9 to the workers, and the zones wasn't fully described
10 in the initial interim package that was presented, so
11 we have several RAIs or RAIs related to that. And as
12 a result of their analysis they came back with a
13 revision to the DCD Table 12.4-12, 12.3. Overall the
14 exposure drops by about 4 REM for a person per year.

15 Which is in a plant that has an estimate of about 67
16 personal REM annual dose. So very decent.

17 CHAIRMAN RAY: Okay, so that is closed on
18 that basis?

19 MR. ROACH: Yes.

20 CHAIRMAN RAY: Anything else?

21 MR. ROACH: That's all. That's what we
22 have. Any other questions?

23 CHAIRMAN RAY: All right, any other
24 questions on Chapter 11 for the staff?

25 (No response)

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1 CHAIRMAN RAY: Okay, if not we will
2 proceed. Rob, are you ready to go on Chapter 14?

3 MR. SISK: Yes, we can bring in the
4 support for 14.

5 CHAIRMAN RAY: You're ready to present
6 it, but I don't know that we have our hard copies of
7 the slides you are going to be using. Thank you. My
8 filing system is down. Okay, I'm ready.

9 CHAPTER 14 - WESTINGHOUSE PRESENTATION

10 MR. SISK: Ready to go, Mr. Chairman?

11 CHAIRMAN RAY: Yes.

12 MR. SISK: I'll introduce John DeBlasio
13 with Westinghouse licensing for Chapter 14.

14 MR. DeBLASIO: Okay, good morning, I'm
15 going to talk about Chapter 14. Chapter 14 primarily
16 is on initial plant test programs that cover specific
17 information being included in the preliminary and
18 final safety analysis. Pre-op test, certified design
19 material, and combined licensee applicant
20 responsibilities.

21 As regard to the initial review by the
22 staff, the draft SER identified three open items. The
23 first two were COLA holder information items.
24 Westinghouse attempted to draft a technical report to
25 partially close out both of the holder items. The

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1 first one was TR-71A which addressed test
2 specifications and procedures. And for the second
3 holder item it was 71B which is conduct of test
4 programs.

5 The staff reviewed them, and the staff
6 felt that they can only partially close out the COLA
7 holder items because they were very generic, and at
8 that time we didn't have enough information - that's
9 more of a COL licensee role to draft up the pre-op
10 test procedures as well as the start up
11 specifications, with assistance from Westinghouse if
12 necessary.

13 So the resolution that closed these items
14 were to withdraw both of the CRs, restore the
15 information items back to Rev. 15, and remove any
16 reference of both of the TRs from then DCD.

17 CHAIRMAN RAY: Before we go on to the
18 third one, let's drill down a little bit further.
19 Tell us more about each of these items.

20 MR. DeBLASIO: Well, TR-71A is primarily
21 to develop pre-operational specifications.

22 CHAIRMAN RAY: Excuse me, I need to track
23 against your own slides here. The first one is:
24 restore COL information item 14.4.2.

25 MR. DeBLASIO: Yes, that was - to restore

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1 it we had to remove TR-71A, which was a technical
2 report which developed 88 pre-operational
3 specifications, and approximately 59 startup
4 specifications. They were basic generic test
5 procedures which didn't have all the information,
6 plant specific, to make it a final procedure. Staff
7 felt that they were incomplete, and that they would be
8 more appropriate if the licensee would do these at a
9 latter time when the information was available, with
10 the assistance of Westinghouse if necessary.

11 So we basically withdrew those, because
12 they wouldn't close out the COL information item,
13 restored it back to a COLA Item, which was Rev. 15
14 certified design.

15 CHAIRMAN RAY: In that case there was I
16 think you said 38 --

17 MR. DeBLASIO: There were 88 pre-ops.

18 CHAIRMAN RAY: Pre-ops.

19 MR. DeBLASIO: And 59 startups.

20 CHAIRMAN RAY: It's a huge batch of stuff
21 then.

22 MR. DeBLASIO: Right.

23 CHAIRMAN RAY: It's going to remain as a
24 COL?

25 MR. DeBLASIO: Yes.

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1 CHAIRMAN RAY: Does that include your
2 valve testing?

3 MEMBER BANERJEE: I was going to ask
4 about that. I don't know where the right place is.
5 But we've had some interactions with the staff on the
6 squib valve testing. Can you clarify for me what the
7 changes were with regard to the RAIs and the
8 interactions after that? I am not sure that I
9 completely understand the staff's response either.
10 But then I'll ask the staff.

11 MR. CUMMINS: This is Ed Cummins. I will
12 give you my perception of this. My perception is that
13 the NRC cooperates with other regulators, and the UK
14 regulator got really interested in the scoop valve and
15 starting asking NRC questions about it and why it was
16 acceptable, and why it was okay, which caused the
17 staff to ask us questions about it. And I think that
18 the ultimate issue that the UK regulator was really we
19 claim in the PRA that these are very reliable. And we
20 presented as part of the certified design to the ACRS
21 and to the staff the reliability of these actuator
22 squibs that they use that are by people from Sandia,
23 and they have done thousands and thousands of these
24 squib tests and they use them on satellites and
25 airbags, and they are extremely reliable.

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1 And we based our assessment of the valve
2 reliability that if these squibs were going to go off,
3 then the explosive will go off, and just based on I'll
4 say mechanics they will operate. And I will say that
5 the UK regulator thought that that was a bit of a leap
6 of faith, that just because the squib goes off doesn't
7 absolutely mean that the valve actually opens. So and
8 what they would really like to see is thousands of
9 tests enough to get a probabilistic, reliability basis
10 for actual functioning of the valve. And we have
11 these valves are new in an AP 1000, and new at this
12 size, then the BWR have been using squib valves about
13 3-inch size for a long time. And our largest squib
14 valve, we have 4-inch, 6-inch and - 14-inch, 6-inch
15 and 8-inch squib valves.

16 MEMBER BANERJEE: The 14 is ADS4.

17 MR. CUMMINS: Yes, the 14 is ADS4. And
18 so there is perhaps a bit of an engineering extension
19 here. And so we recognize that, Westinghouse
20 recognizes that. And Westinghouse has been doing a
21 program where I'm not sure there has been - originally
22 broadly interacted with the NRC, but we have - I know
23 that the NRC has seen some of these tests which were
24 run on that test lab.

25 MEMBER BANERJEE: Full size.

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1 MR. CUMMINS: Full size, yes.

2 MEMBER BANERJEE: And full pressure.

3 MR. CUMMINS: No, the initial tests are
4 just all blown on the stand, and you blow it and see
5 if it opens. And you have some I'll say some band of
6 minimum explosive and maximum explosive, and you kind
7 of have to prove that the minimum amount will work
8 also. And actually in these tests Westinghouse, they
9 worked, every one of them has worked so far, so that
10 is a good thing.

11 MEMBER BANERJEE: Are they Wylie Labs?

12 MR. CUMMINS: They are Wylie Labs, and
13 I'm not sure where, that's somewhere on the East
14 Coast here. And so Westinghouse found that the
15 squibs, or the 14-inch squibs at least, the reaction
16 of the pipe was unacceptable, I mean was - the loading
17 of the piping, of the good quality pipe from the
18 actuation was something that we couldn't qualify the
19 pipe for, so we worked to redesign it, and we are just
20 now testing the next series of it. And it's the same
21 valve, but you can by using like different areas to
22 multiply the load from the explosive, you can have a
23 smaller explosive and not have the same effect and
24 have less impact on the pipe. And so we are learning
25 I think on the 14-inch valves we have tested them

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1 three or four times already and we tested them in
2 different configurations. And I think ultimately we
3 intend to do a flow test with it. The pressure at the
4 time of the scoop valve opening is for ADS4 is I don't
5 know 30 psi if it's depressurized. So it has to take
6 full reactor pressure in the closed state when it
7 opens at flow pressure. But the flow characteristics
8 are somewhere important.

9 MEMBER BANERJEE: I always was concerned
10 also -- water come through, back from the pressurized,
11 but I don't know that disposition --

12 MR. CUMMINS: Yes, I think that is formal
13 hydraulics Chapter 15. And there is that absolutely.

14 I mean even if there wasn't the pressurized. Because
15 there is a lot of water that gets carried out of the
16 ADS4, and that helps us in boric acid concentration
17 among other things. So yes there is definitely a two-
18 phase flow that goes through it. And I think there is
19 some test of a flow test, and I'm not really familiar
20 with what the characteristics of the test are. After
21 it opens it's just like a pipe. I mean as long as the
22 thing opens correctly as it's been doing, and we are
23 going to see if it does it in a flow environment, then
24 it acts essentially like a pipe does.

25 MEMBER BANERJEE: The facts of this RAI

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1 it was related to, if I recall something about
2 testing, that you would not be testing after the
3 valves were installed.

4 MR. CUMMINS: I'm a little bit out of my
5 expertise here. But there is an ASME requirement to
6 test squib valves, squibs. And I believe that at
7 every shutdown you have to test something or a third
8 of the squibs, and you take them out of the valve and
9 you put them in a test chamber, and you explode them,
10 or at least not the full explosion but the squib
11 actuation is tested. And then you put a new squib in,
12 and each of the squib valves has three of those train,
13 and two safety divisions, and that's squibs. So each
14 of the ADS4 ones does. And so there is a
15 qualification or a - what you are proving is that the
16 radiation environment hasn't affected the squibs.

17 And then there obviously is the
18 qualification of the squib valves that in their
19 entirety is with - we actually have not been doing the
20 qualification test. We have been doing engineering
21 verification tests to adjust valves until we - and
22 then we will do a qualification test that proves the
23 I'll say aged squibs operate acceptably.

24 MEMBER BANERJEE: These squibs can be
25 replaced periodically?

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1 MR. CUMMINS: The squib valve or the
2 squibs? The little squibs are tiny little actuators.

3 MEMBER BANERJEE: The little explosives
4 actuators?

5 MR. CUMMINS: Yes. They can be replaced.
6 They must be taken out on a sample basis, some every
7 outage. And I think in the end at about 10 years all
8 of them are replaced. So then you start again and
9 keep going.

10 MEMBER BLEY: What about the explosive
11 itself? Is it ever removed and analyzed?

12 MR. CUMMINS: I don't believe that there
13 is a requirement to remove and analyze the explosive.

14 MEMBER BLEY: There isn't. Okay for the
15 chemistry?

16 MR. CUMMINS: Yes, that is a good
17 question. I don't know where that comes in. I think
18 that what we are looking at is whether the code, the
19 industry code requirements, relative to verification
20 of those squib valves, and we are following those
21 recommendations. And this is probably a topic for
22 Chapter 3, the details of reactor cooling system
23 components. But since we have some time it's okay to
24 talk about it. But soon you are going to need
25 somebody who knows more than I do.

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1 MEMBER BLEY: I think this is a little
2 generic too. But it's one I just wanted to put on the
3 table. There is another one I wanted to ask about. I
4 don't recall. It's been a long time since I looked at
5 the ones in BWRs. There must - I don't know the
6 velocity that you get on the valves disk as this
7 travels. I assume it gets a pretty good lick. It
8 must have some kind of latching device when it moves,
9 hits the back seat or something so it doesn't bounce
10 back. Is that in the design, or how do you make sure
11 they stay where you want them to go. And now we got a
12 much bigger valve with a lot more momentum on the disk
13 itself.

14 MR. CUMMINS: I think that we intend to
15 test that, and we found - we didn't have flow in any
16 of these tests so far. But we did have the ability to
17 go and see if the valve opened correctly, and it was
18 not partly in the way of the flow. So what I
19 understand is, all of the valves have been
20 successfully tested, and the disk or the seat was out
21 of the flow. And I don't believe that there is a
22 latch, but I do believe there is a design indication
23 that falls into and intends for it to be almost like a
24 pipe when you are done with the opening process.

25 MEMBER BLEY: I don't know, I haven't

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1 looked real hard, I wonder if mount them all so that
2 in the direction you drive them, all the different
3 ones that have the squib, gravity is helping to keep
4 them where they are supposed to go afterwards.

5 MR. CUMMINS: There's two different kinds
6 of designs. In ADS4, gravity helps you with flow,
7 helps you keep it open. I think in some of them there
8 are kind of two-way things, and I'm really getting -
9 in that design I don't think gravity helps you or
10 hurts you.

11 MR. SISK: I was just going to say, I
12 think these are some really good questions. I'm
13 taking notes just to make sure that we cover them
14 accurately in Chapter 3. We should have the squib
15 valves experts to address these questions in more
16 detail. I just wanted to caution that this --

17 MEMBER BANERJEE: I wonder if you have a
18 verification program? What I'm trying to understand
19 is, what change was there from the original certified
20 - what was the amendment that led to this RAI? Was
21 there a change in the testing procedure or what? What
22 was it?

23 MR. CUMMINS: Ed Cummins again. No,
24 there was no change in the squib valve designs from
25 the certified design. Obviously there was a change in

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1 what we know about the squib valves, because we have
2 been building them, and we need to build them and test
3 them. So where in the realm of regulation is that.
4 And we are quite willing to have an interaction with
5 the regulator. You can have it now or you could have
6 it later as some sort of post-certification
7 implementation verification. And if we are ready we
8 are happy to have them look at it as we go. And the
9 other regulators have different policies of what they
10 think that is supposed to be in their certified design
11 or whatever the equivalent is. So that causes us to
12 be interacting with the other regulators.

13 MEMBER BANERJEE: So if I understand it,
14 there is some change in some sort of reliability
15 number for the PRS?

16 MR. CUMMINS: Yes.

17 MEMBER BANERJEE: But what - I understand
18 that, why you do that, and what you are doing. But
19 with regard to the testing of the valves - so the
20 squibs are tested, but do you ever test the valves
21 completely after they are installed?

22 MR. CUMMINS: Yes.

23 MEMBER BANERJEE: Because these are
24 fairly crucial valves, that they work.

25 MR. CUMMINS: Yes, so you do not - I

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1 don't remember, I think you have to test 10 percent,
2 or some fairly - it's not that you have to test every
3 valve. You have to test one of each kind, or in that
4 situation. And then when you test them obviously you
5 have to take the valve, you have to put a new really
6 seat assembly in. So it's a significant thing. And
7 so it sort of limits the requirements for the test.

8 MEMBER BANERJEE: The ADS4 valves, for
9 example, will these occasionally be tested?

10 MR. CUMMINS: I think they have to be
11 tested in place at least at the beginning on a
12 percentage basis.

13 MEMBER BLEY: Actually firing the
14 explosives?

15 MR. CUMMINS: On 10 percent or something
16 like that.

17 (Simultaneous voices)

18 MR. CUMMINS: We're testing real valves
19 at real - we are testing - we are so far not doing
20 qualification tests. We are trying to get the -
21 before you qualify you have to get to where you think
22 the design is exactly what you want it to be. And we
23 found that you adjust it.

24 MEMBER BANERJEE: But it's really -
25 you've answered my question. They will be tested at

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1 some point after they've been installed in that state?

2 MR. CUMMINS: I believe so on a sample
3 basis. I'd like to really defer the formal answer to
4 that to our experts.

5 CHAIRMAN RAY: As I understand what we
6 were on awhile ago, and this has been a useful
7 discussion we've had. But we were talking about an
8 effort that had been made to address some of this
9 subject and many others in the DCD, but now it has
10 reverted back to it's be a COL item. And I just want
11 to ask Leon to make sure that we repeat in case you
12 are not here for some reason this discussion in
13 context of the COL, because I think that is really
14 where the question gets answered. Westinghouse would
15 have liked to have answer it now. Now they have given
16 up, gone back we'll do it at the COL, so we need to
17 make sure that we do that.

18 Now that chapter of the COL isn't before
19 us this time.

20 MEMBER BANERJEE: But there is the
21 detailed design and support or whatever that will go
22 into the COL, right?

23 MR. CUMMINS: Well, actually I think it
24 is the answer to your question, how often will we be
25 testing these valves, and what will the test consist

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1 of and so forth. Now I understood Ed to say that the
2 squibs themselves are required to be tested, but you
3 are asking a question about the valve. And Ed's tried
4 to answer it but I think rightly said, we need to - or
5 at least I'm saying we need to follow up in the COL
6 and look at it and make sure you are satisfied.

7 MEMBER BLEY: I would like to ask one
8 more follow up question. With this issue of the large
9 valve pressing on the pipe or the moment on the pipe,
10 is the design aimed at the pipe, the pipe supports, or
11 actually something you'd be doing to the valve?

12 MR. CUMMINS: The redesign was aimed at
13 the valve. And the nature of the thought process is
14 to use a smaller explosive force then multiply it
15 mechanically in a different way, so that the impact on
16 the pipe is less.

17 Just to come back to the startup
18 procedures, so how did we get into this? Westinghouse
19 kind of views that they are in our scope of supply,
20 because we are supplying the plant including the
21 testing procedures. And so we said, we had a goal in
22 getting the revisions of the certified is to use the
23 engineering related COL-open items from - as risk for
24 our customers.

25 So basically what you are hearing here is

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1 that the staff considers these COL open items more
2 like a program than a pile of all of the startup
3 procedures. And I would say that probably at the
4 time that we gave them the startup procedures they
5 were preliminary, though they were about AP 1000. And
6 as we go forward we keep working on them, and we can
7 get them to - the day we do them they are going to be
8 pretty good I hope. So --

9 MEMBER BANERJEE: You also have some
10 experience on that?

11 MR. CUMMINS: Right, we do. And in this
12 case we deferred to the staff who wanted to make this
13 more like a program than a --

14 CHAIRMAN RAY: Charlie.

15 MEMBER BROWN: When you get back to
16 talking about, you say you are in the engineering
17 phase right now to make sure you got what you wanted
18 to qualify, and you would come back to discuss it. It
19 would be nice to have that qualification program, what
20 you intend to do, how many tests, what's the
21 configuration, what are the upstream depth of
22 pressures, all that, closed, et cetera, to make sure
23 we understand that for the qualifications, aside from
24 how you test them once you're in service.

25 MR. SISK: Just to be very clear on the

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1 three-way, what you'd like to do is have a - when we
2 come back to discuss the squib valves in detail that
3 we could provide a good description of our
4 qualification program for the squib valves?

5 MEMBER BROWN: Yes.

6 MR. SISK: We can do that.

7 MEMBER BROWN: Including the thought
8 process of how many tests you have to run to make sure
9 you have confidence that you will always - with
10 whatever your statistics are going to be.

11 MEMBER BANERJEE: Harold, are you going
12 to sort of divide things in the COL or whatever. How
13 is this determination going to be made, what things
14 are going to be in the COL? I'm going to be slightly
15 confuse this from boundaries what is taken up.

16 CHAIRMAN RAY: Well, I think this
17 discussion reflects the fact that it's not only you
18 that's confused. But as Ed just explained, there was
19 an effort to move the answers to your questions, what
20 testing is going to be done, to these things in the
21 plant, into the DCD.

22 MEMBER BANERJEE: It's clear, yes, these
23 are risks to the company.

24 CHAIRMAN RAY: That's what they sought
25 to do. And they found they couldn't do that. So it

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1 isn't a matter of choice on our part or anything else.

2 By default it ends up in the COL. My only point was
3 to make sure that we did revisit this in the COL
4 context, in whatever detail you'd like, and not have
5 it be a fall through the cracks because you didn't
6 happen to be here or something like that. That was my
7 only point. I am not trying to put it one place or
8 the other. I welcome it as part of the DCD, as
9 Westinghouse would have as well. It just didn't work
10 out. We can ask the staff why.

11 So I think that talked about 14.42-88,
12 things in ATR that has been withdrawn. What was in
13 14.43?

14 MR. DeBLASIO: 14.43, the TR was conduct
15 of best programs. Such as site administrator, sort
16 out manuals, program management descriptions,
17 organizational staffing. And that was an attempt to
18 review it as a COLA item partially, last one to work,
19 that also indicated they felt it applied better with
20 the COL and asked us to withdraw it.

21 CHAIRMAN RAY: All right, well, again, we
22 can ask them about their perceptions on that and so
23 on. But --

24 MR. DeBLASIO: So essentially we removed
25 it and restored the DCD so that the verbiage reflected

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1 exactly what it looked like for certified design and
2 we're at 15.

3 CHAIRMAN RAY: Right. In other words
4 you're not changing it?

5 MR. DeBLASIO: Right.

6 CHAIRMAN RAY: Can you just say very
7 briefly what on earth does it say in Rev. 15, that
8 incurred certified design on this topic? Does it say
9 anything more than that these areas will be addressed
10 by the COL applicant?

11 MR. DeBLASIO: It just says it's going to
12 be addressed by the COL applicant. I can get the
13 exact words.

14 CHAIRMAN RAY: No, that's all right, I've
15 read that so many times I know how it reads generally.
16 Okay. Well it's interesting.

17 MEMBER BANERJEE: Were you finished?

18 CHAIRMAN RAY: I was.

19 MEMBER BANERJEE: I'm very puzzled by
20 this definition of "as built." Because I can see that
21 Westinghouse has agreed to use this definition. When I
22 read the definition I can't figure out what it means.
23 And perhaps it's my English. But let me read out
24 what it is, somebody can comment.

25 "As built" means the physical properties

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1 of a structure, system or component following
2 completion of its installation of construction
3 activities at its final location at the plant site.
4 In cases where it is technically justifiable,
5 determination of physical properties of the "as built"
6 structure system or components may be based on
7 measurements, inspections or tests that occur prior to
8 installation, provided that subsequent fabrication,
9 handling, installation and testing do not alter the
10 properties.

11 Now there are going to be situations where
12 it may not be feasible to do these things, but it
13 could be technically justifiable. So by adopting this
14 definition, what have we actually done? I don't
15 really understand this controversy, or what is going
16 on here?

17 MR. CUMMINS: So this is Ed Cummins.
18 That definition was --

19 MEMBER BANERJEE: Is an NEI definition?

20 MR. CUMMINS: Yes - well, it's a result
21 of a committee negotiating a definition, and people
22 giving and taking on issues. And I think that if I
23 could sort of describe the two sides. The staff would
24 kind of like all the ITAAC -- we are talking about
25 ITAAC here - all of the ITAAC to be done if they could

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1 have their way at the site. And then you know that
2 the valve that is there is really the valve that is
3 there, not the valve that you tested at the shop that
4 somehow got sent to the other project or something.
5 So they have some justification for this desire to
6 have it there, and I would say the vendors and the
7 utilities have some desire to accomplish the ITAACs as
8 early as possible, and to do it in a rational way
9 where there is the best place to measure the inside
10 diameter of the reactor vessels is probably in the
11 shop or some - and mechanical testing of the welds and
12 the metal must be done in the shop. So there is a
13 mixture of all these things, and there are some things
14 where you have modules, and you could measure the
15 modules before you put the thing in or after you put
16 the thing in, and the nature of the words is, if there
17 is a good reason to measure them before, then you have
18 to make sure that you didn't change it when you put it
19 in, and that was the end of the compromise solution
20 that people then agreed to. And it was a compromise
21 on the staff's part from saying everything must be
22 actually physically in the - and that was a compromise
23 by I'd say the industry in saying, yes, you might
24 alter it, and if you did alter it in some way by
25 installing it, then you'd need to remeasure it. So

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1 that's where we got it.

2 MEMBER BANERJEE: It's sort of things
3 like physical dimensions, when it comes to performance
4 for example if you - and this goes back - you now
5 installed that valve, and if you could not test it
6 afterwards, then you really don't know what the
7 installation did compared to what happened when you
8 tested it offsite.

9 MR. CUMMINS: There's a lot of ITAAC that
10 are qualification tests, both environmental and
11 seismic qualification tests. And you really can't do
12 those at the site. But if you take the staff concern,
13 then we the industry has to make sure that whatever we
14 tested or its relative really is the same thing that
15 we put in the plant, and that's where the staff's side
16 of the concern is, that we tested one thing, you
17 actually put in the plant something pretty much like
18 that but slightly different, and different enough so
19 that it was not the same.

20 CHAIRMAN RAY: Thank you. Any other
21 questions on this point which we've gotten to, screen
22 item. Anything you want to say about it further than
23 what we've discussed here just now?

24 MR. DeBLASIO: No, I think I've said
25 everything, or Ed said it. What I didn't say Ed said.

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1 (Laughter)

2 CHAIRMAN RAY: All right, well, it's an
3 interesting challenge. We may secure something on a
4 seismic shaker table that isn't the same way it's
5 secured in the plant for example.

6 MR. CUMMINS: That was a good example.

7 CHAIRMAN RAY: And it happens all the
8 time.

9 Okay, any other questions before we turn
10 to the staff.

11 (No response)

12 Is the staff ready to go on Chapter 14?
13 It looks like it is.

14 MEMBER BANERJEE: Do any of the other
15 BWRs have a load-follow test? Here the load follow
16 demonstration.

17 MR. CUMMINS: Ed Cummins. We have a kind
18 of unique way of load following on AP 1000. Most BWRs
19 load follow by adjusting boric acid to get the
20 reactivity correct, and it's a little bit of work
21 intensive and a little bit difficult because it's a
22 process. So we load follow with rods. And most gray
23 rods and black rods. And so we claim that we can load
24 follow I think 80 percent of the core life with only
25 runs. Now in reality most people don't load - unless

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1 you are French and you have 70 percent of your
2 electricity from nuclear plants - most people don't
3 load follow at all. So we would market this way of
4 load following as an advantage of AP 1000 because it
5 simplifies the role of the operator.

6 CHAIRMAN RAY: The world of the future
7 will be different when you are trying to integrate
8 resources, and it's going to be a big advantage.

9 MEMBER BANERJEE: But going back to the
10 tests, because I was really more asking you about the
11 power ascension and low power test. You've got a load
12 follow demonstration

13 MR. CUMMINS: Yes, I believe that is
14 something like in a 24 hour period, 8 hours at 100
15 percent, 2 hours transition to 50 percent, 8 hours at
16 50 percent, 2 hours to transition to 100 percent. All
17 with the rods. So you actually do a load follow
18 maneuver.

19 MEMBER BANERJEE: That's really it.
20 Sorry, I didn't mean to --

21 MEMBER BLEY: That's is all right, I was
22 just going to ask, have you been very clever, or if
23 somebody had to load follow a lot would they pay a
24 penalty in fuel utilization by using rods? Not that
25 that is a safety concern, but I'm just curious.

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1 MR. SISK: We happen to have one of our
2 fuel experts here. So I was going to invite Mr. Bob
3 Fetterman to come up here.

4 MR. FETTERMAN: The answer to your
5 question is no, it would not be a penalty on fuel
6 cycle economics or use of a fuel due to load follow
7 operations. The plant is designed to operate with
8 control rod and surge throughout the whole cycle.

9 CHAIRMAN RAY: That would be valuable
10 characteristic, that's true.

11 MEMBER BANERJEE: The more wind we have
12 to put in for whatever reason, the better these parts
13 will be. So there are batteries (laughter), some very
14 sensitive batteries. (Laughter)

15 (Comments off the record)

16 CHAIRMAN RAY: Okay, staff on Chapter 14.
17 David, you are doing go speak?

18 CHAPTER 14 - NRC STAFF PRESENTATION

19 MR. JAFFE: Good morning, my name is Dave
20 Jaffe. I'm lead project manager for the design
21 certification amendment and chapter project manager
22 for Chapter 14. It's a pleasure to be here with you
23 again this morning.

24 When we here previously discussing Chapter
25 14, we provided a description of the staff's

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1 evaluation, and we also talked a little bit about open
2 items, and at that time most of the presentation had
3 to do with the open item which the staff feels is
4 significant having to do with the definition of "as
5 built." And at that time we indicated the reason we
6 felt this was significant was because it was
7 prototypical for us of the various design centers, and
8 was significant in that it provides guidance as to
9 where ITAACS, where and when ITAACS will be closed
10 out.

11 We also talked about our conversations
12 with industry and specifically NEI 0801 which formed
13 the initial basis for this definition. The problem
14 that we were having at least at that time was that
15 there was a definition that provided some additional
16 flexibility to allow closeout of ITAACS outside of the
17 file installation location. However, there was a
18 clarification that appeared elsewhere in the document.

19 The definition of as built was to be a tier one
20 information, but the clarification which was also
21 needed was perhaps Tier 2, and based on additional
22 clarification from Westinghouse they had suggested
23 Tier 2 star.

24 Now it's really more than just a semantic
25 thing. We felt that all of this should appear

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1 together, and subsequent discussions with industry did
2 in fact achieve it. I'd like to introduce Nanette
3 Gilles who is with me this morning to basically talk
4 about this important open item.

5 CHAIRMAN RAY: Very good. Nan.

6 MS. GILLES: Good morning.

7 CHAIRMAN RAY: Good morning.

8 MS. GILLES: I'm afraid I probably don't
9 have too much new for you other than what you have
10 heard in the previous discussion. If we turn to slide
11 four. The issue is the Tier 1 definition of "as-
12 built" again, it appears in all the previous certified
13 designs, and will be a definition in all the designs
14 that are being certified now. You see here the
15 original definition, the definition that was certified
16 in the original AP 1000. During the staff's review of
17 the Westinghouse amendment, Westinghouse proposed a
18 change to this definition that would have allowed,
19 again, additional flexibility to perform some of these
20 ITAAC activities that use the term, as built, at
21 offsite locations, locations other than the final
22 installed location.

23 The staff found their first proposal
24 unacceptable, because it would have allowed ITAAC
25 closure activities at offsite locations for all ITAAC.

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1 The issue was identified as a generic issue, and
2 discussions ensued between the staff and the industry,
3 and a series of public meetings, and eventual
4 agreement was reached, and Westinghouse adopted the
5 generic definition, which is the definition you
6 discussed previously in the earlier discussion which
7 added the second phrase, in cases where it was
8 technically justifiable, the determination of physical
9 properties of structures, systems and components could
10 be based on measurements, inspections or tests that
11 occur prior to installation provided that subsequent
12 activities, handling and installation, did not alter
13 those activities.

14 MEMBER BANERJEE: I guess it's still
15 niggling me, I'm sorry, this problem.

16 MS. GILLES: That is okay.

17 MEMBER BANERJEE: From what you are
18 really saying is that we are going to make a case in
19 certain cases that installation and bringing it into
20 the plant is not changing the properties of whatever
21 it is we are talking about.

22 MS. GILLES: Right.

23 MEMBER BANERJEE: And this is going to be
24 justified by some technical analysis or whatever. It
25 worries me because how is that justification sort of

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1 done? Is it a formal process that okay, I can't
2 invest this to inspect this because one of us had said
3 you can't go into the reactor vessel and measure the
4 inside dimension or something. But we are pretty sure
5 that it's going to be the same as what was measured in
6 the shop. So there are certain things which are
7 relatively easy to justify.

8 MS. GILLES: Yes.

9 MEMBER BANERJEE: There are other things
10 which are not so easy to justify.

11 MS. GILLES: Exactly.

12 MEMBER BANERJEE: And how is that going
13 to be done? What is the process? This is really what
14 I wonder.

15 MS. GILLES: During these discussions we
16 have kind of determined that there are sort of two
17 categories, and they are the two categories you've
18 just outlined. There are the categories where we all
19 can agree up front about specific situations, specific
20 ITAAC where we all agree that it is technically
21 justifiable to perform that ITAAC closure activity at
22 an offsite location. And NEI is in the process of
23 revising their ITAAC closure guidance to add a section
24 on just this topic. That section will discuss these
25 various categories where the staff and the industry

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1 have agreed up front that these particular activities
2 can be technically justified to be performed at other
3 than the final location. And in those cases where a
4 licensee is performing one of those activities, they
5 will not need to provide a separate technical
6 justification; they will simply need to refer to the
7 guidance where that justification is already in.

8 But you are right that there is a category
9 of things that we have not predetermined to be
10 technically justifiable that the particular licensee
11 is going to have to address at the time if they choose
12 to perform an activity that hasn't been previously
13 discussed with the staff at an offsite location. And
14 they will be required to provide that technical
15 justification and include it in their onsite ITAAC
16 closure package, that documentation will be referenced
17 in their ITAAC closure letter, so that if the staff
18 wants to go take a look at that justification or has
19 concerns about where those particular ITAAC activity
20 is performed, that information could be available.

21 MEMBER BLEY: I have almost the opposite
22 concern, although I have the same one Sanjoy had.
23 Some of these things just can't be done, especially
24 the heat kind of stuff have to be done at an outside
25 facility. So how are you incorporating this into the

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1 other applications that are ongoing that certainly
2 have the same problem, but I guess they didn't bring
3 it up.

4 MS. GILLES: Well, no, we've actually
5 been having discussions with pretty much all of the
6 design centers on this issue.

7 MEMBER BLEY: Okay, so this is all going
8 to be - once you decide on the policies and programs.

9 MS. GILLES: Right, remember again this
10 was generically resolved through interactions with NEI
11 on the guidance. Now the design centers are adopting
12 this generally agreed to definition. The Mitsubishi
13 for the APWR has adopted it. My understanding is
14 that the APR is about to adopt it.

15 MEMBER BLEY: From when this was
16 discussed at an earlier meeting or different meeting,
17 is this actually a change that you are going to have
18 to make to the rules somehow? Is this definition in
19 the rule, the old one, that they are trying to change?

20 MS. GILLES: Which rule are you referring
21 to?

22 MEMBER BLEY: Somewhere in Part 52.

23 MS. GILLES: No, this definition only
24 appears in Tier 1 of each of the DCDs.

25 MEMBER BLEY: Of each? So it's part of

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1 the rule as the certifications were done, so does it
2 actually require an amendment to the certification to
3 change this?

4 MS. GILLES: For those previously
5 certified designs, yes.

6 MEMBER BLEY: Okay, thanks. I was just
7 curious how you were doing this.

8 MS. GILLES: Yes. As I mentioned, NEI is
9 also revising their guidance documents, so that ITAAC
10 closure guidance document that was previously endorsed
11 by the NRC in a Reg Guide. But he did review that reg
12 guide, and there will be a revision of course to the
13 reg guide to endorse the new NEI guidance that you
14 will be seeing probably later this year.

15 MEMBER BROWN: I want to clarify my
16 understanding relative to at least an area which I am
17 interested in. It seems to me the only real change
18 between their initial proposal and what you eventually
19 compromised was the addition of end cases where it was
20 technically justifiable?

21 MS. GILLES: Yes.

22 MEMBER BROWN: Okay the seven words.

23 MS. GILLES: You wouldn't believe how
24 tough it was to come to agreement on those seven
25 words.

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1 (Laughter)

2 MEMBER BROWN: I initially read these
3 months and months ago, but I did it in the context -
4 and we had this discussion, Dennis is right, we had
5 this discussion.

6 MEMBER BLEY: I don't remember what
7 session it was in.

8 MEMBER BROWN: Well, I don't either, but
9 I remember going. Because one of my concerns was,
10 I've got two concerns. You're right, there are many
11 things you can go measure. In fact you can measure
12 the diameter of a reactor vessel in place. It can be
13 laborious, but you can do it. The programs I have
14 been involved in have done that routinely, as a matter
15 of course.

16 But there are other systems and components
17 that you don't want to do that. You get a set of
18 instrument cabinets, and you don't want somebody
19 disassembling the instrument cabinet on site and
20 putting it back together after it's been through a
21 full set of tests and production tests, to show that
22 it really has all the wires, the lengths of the
23 terminal boards in the right place or the connectors
24 or what have you. So I'm a little bit concerned
25 about how we are going to eventually resolve this. I

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1 can see some level of disassembly in order to do this
2 if you can't reach agreement on whether the niggling
3 little details from the design centers, is that going
4 to be written down, or is it just going to be kind of
5 floating from project to project?

6 MS. GILLES: Well, again in the guidance
7 document we are trying to document cases where we all
8 agree it is technically justifiable or in some cases
9 even preferable to perform those activities at the
10 fabrication facility. So we are trying to come up
11 with that generic list.

12 MEMBER BROWN: So you are looking at
13 having something that is kind of a standard that
14 everybody understands that these will fall in this.

15 MS. GILLES: Right.

16 MEMBER BROWN: These will fall over here
17 where you have to do it, and then there will be some
18 fuzziness based on nuances in some of the designs.

19 MS. GILLES: Exactly.

20 MEMBER BROWN: And that will be an
21 agreement that NRC would put in place some place?

22 MS. GILLES: Again the industry is
23 providing their ITAAC closure guidance, NEI 0801. We
24 have endorsed that in Reg Guide 1.215. There will be
25 revision to both of those documents. So that once

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1 the NEW guidance is revised the NRC will endorse the
2 revision in a Revision 2 of our Reg Guide.

3 MEMBER BROWN: Okay, now I hate to bring
4 this up, but how are you going to segregate the
5 concept of DAC from this ITAAC? Or are you lumping
6 them altogether, where design acceptance criteria are
7 notably different from at least my perception of what
8 ITAAC are, at least based on all the discussions we
9 had. And we've had some concerns about where and how
10 that gets done. I don't want to go into the details,
11 but is that in the thought processes in terms of how
12 DAC is separated out from this, particularly when it
13 comes to new digital I&C systems. Pipes are pipes.
14 They are blacksmith technology, big round things that
15 you can measure. But DAC for I&C systems, digital I&C
16 systems, well any I&C systems are totally different
17 and really do not fall into this category very neatly.

18 MEMBER BLEY: Either place. It's not a
19 place examination.

20 MEMBER BROWN: Exactly. I mean it's not
21 a final examination of a final product when it leaves
22 say a facility, a factory or a manufacturing
23 operation.

24 MEMBER BLEY: It is more marked based on
25 what it looks like.

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1 MEMBER BROWN: But it's still
2 encompassed under the ITAAC umbrella.

3 MS. GILLES: Yes, and I will say that
4 first of all that I am in no way an expert on the
5 digit I&C DAC.

6 MEMBER BROWN: Well, nobody else is
7 either right now.

8 MR. CUMMINS: This is Ed Cummins. I
9 think a couple of things. One thing about a DAC is
10 that the product that gets inspected and produced is
11 not something that gets installed in the plant.

12 MEMBER BROWN: Exactly.

13 MR. CUMMINS: And so the design isn't -
14 and in the ITAAC it doesn't say the as-built design.
15 And we have as-built we don't use in ever one of the
16 ITAAC. And the DAC you won't find the as-built DAC.
17 It'll be - a design is what is inspected. And so I
18 don't think that this really applies to the DAC.

19 It might apply to the I&C, the hardware,
20 but not to the design.

21 MEMBER BROWN: Okay, thank you.

22 MS. GILLES: The only other item to
23 mention is that in the process of revising this
24 definition Westinghouse did do a complete review of
25 their ITAAC to ensure that the term as-built as used

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1 in ITAAC was consistent with the new definition, and
2 the staff reviewed the changes they made --

3 MEMBER BROWN: This is their change to
4 the DCD?

5 MS. GILLES: Right.

6 MEMBER BROWN: Which hasn't been issued?

7 MR. SISK: This change being discussed is
8 being incorporated into the DCD currently under
9 review.

10 MS. GILLES: So the second item is this.

11 CHAIRMAN RAY: Okay understood, carry on.

12 MR. JAFFE: I just did want to say in
13 closing that we did have two open items which we
14 didn't choose to address because we felt that they
15 were minor and administrative in that they call for
16 restoration of DCD to its Revision 15 form, because
17 the staff did not accept Technical Report 71A and B.

18 We wrote two letters to Westinghouse
19 explaining our rationale concerning those two reports.

20 I've provided those letters to the ACRS staff should
21 you choose to see the staff's detailed reasoning
22 there.

23 CHAIRMAN RAY: Okay, thank you, I think
24 we will want to look at that.

25 MR. JAFFE: Weidong has it now.

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1 CHAIRMAN RAY: All right.

2 MR. JAFFE: Thank you.

3 CHAIRMAN RAY: Is that no longer part of
4 Chapter 15?

5 MR. JAFFE: These two are no longer part
6 of the application in that we have restored the DCD.
7 And these are areas that the COL applicant, or holder,
8 will have to address.

9 CHAIRMAN RAY: But before you leave,
10 because I'm not sure the letters answered this
11 question. Can you say whether the staff sees merit in
12 trying to avoid what you felt compelled to do here,
13 which is to put off test programs and other things to
14 the COL stage? Is it a good idea generally not to do
15 that.

16 MR. JAFFE: No, think that historically
17 these sorts of developments have been the purview of
18 license holders, and they should be developed when the
19 plant is nearer to operation.

20 CHAIRMAN RAY: Because?

21 MR. JAFFE: Well, because the development
22 of these administrative matters really depend on a
23 better understanding of how the plant will be operated
24 in the final as-built configuration. This is when
25 those sorts of things are normally addressed. And

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1 they are rather late in the process. And it should
2 be. Because procedure writing, final procedures are
3 very often the purview of the operating organization.

4 CHAIRMAN RAY: That may be so, but let's
5 take the other end of the thing. How about testing of
6 critical design features in the plant. And the
7 question is, how frequently will they be tested and
8 how will they be tested. Do you take the same
9 position on that?

10 MR. JAFFE: I'm afraid I'm not an expert
11 in this area. I can arrange for the QA staff to come
12 and talk to you on this, but I fear delving further
13 into this, as I am not expert in these areas. But
14 hopefully the letters that we provided, the ACRS staff
15 would be helpful in this, I would ask that the
16 subcommittee review those documents, and if we can be
17 of further assistance, we will be sure that the
18 experts in this area appear before you.

19 CHAIRMAN RAY: All right, thank you, any
20 other questions?

21 (No response)

22 Okay, appreciate it. This then completes
23 what by our agenda would have taken us to 11:15 to
24 accomplish. We have not yet had a break, which was
25 scheduled to occur at 10:30, so we will take that

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1 break shortly. But first let me look ahead and ask
2 if we are prepared to move on after the break, which
3 would mean we would be picking up with the COL or are
4 we going to have to wait until after lunch to do
5 that.

6 MR. JOSHI: This is Ravi Joshi, lead
7 project managers. And yes we are ready from NRC side
8 to go all the way up to the lunchtime, Chapters 4, 11
9 and 12, we would be able to do that.

10 CHAIRMAN RAY: And the applicant?

11 MS. AUGHTMAN: Amy Aughtman from
12 Southern. The applicant will also be ready.

13 CHAIRMAN RAY: So we will do that after
14 we return from our lunch break - not lunch break,
15 excuse me, after we return from our break. So we
16 will recess for that purpose and return at 10:30.

17 (Whereupon at 10:09 a.m. the proceeding in
18 the above entitled matter went off the record to
19 return on the record at 10:29 a.m.)

20 CHAIRMAN RAY: Back on the record please.

21 Okay, we will resume here. There was a question
22 asked during the break about the fact that we are
23 going to be going into some material in which we
24 would normally expect, I would expect and crave the
25 participation of Dr. Ryan, Member Ryan. He is unable

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1 to be with us, that is our problem, not yours, the
2 applicant's or the staff's. He is reviewing the
3 material and will review the material that we will
4 review here now. And we will simply have to give you
5 hopefully an indication that he has no questions or
6 comments. But if he does, we will arrange to follow
7 up with you.

8 And as long as I am digressing in this
9 way, let me say to both applicant and staff, by way of
10 a head's up, we have had reason to do some review
11 internal to the ACRS looking in as much detail as we
12 can at the coding system applied to the containment
13 exterior surface and to the program for its
14 inspection. I think we know what you said. I can't
15 say we understand it absolutely totally. But the
16 thing I am wanting to communicate to you is that at
17 the July meeting if possible, if not as soon as it is
18 possible, we are going to look for some more detail
19 at how this coding system is applied, given the
20 complexity of the containment exterior surface, and
21 more importantly how it's inspected during the plant
22 life, particularly as it would regard the protection
23 against localized corrosion.

24 So this is an initiative that has involved
25 other applications and proceedings here for some time.

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1 It's come to our attention that we will need to go
2 into more detail than anything we can put our hands on
3 now. So I just wanted to alert you that we are going
4 to ask you to delve into some detail on that subject.

5 It's primarily a COL item. That's why it occurs to
6 mention it here now. But of course there is material
7 in the DCD as well. If we are looking to the COL to
8 tell us how this works over the long term. And that
9 is just by way of head's up, I don't expect we'll
10 discuss it any earlier than July.

11 MS. AUGHTMAN: I appreciate the advance
12 notice so we can prepare adequately.

13 CHAIRMAN RAY: Okay, fine, with that
14 having been said, let's proceed then. It's applicant,
15 Chapter 4. And Amy, if you will introduce it, go
16 ahead.

17 MS. AUGHTMAN: Actually, sir, we were
18 going to give the overview and introduction of the
19 payroll application first.

20 CHAIRMAN RAY: Yes, all right.

21 MS. AUGHTMAN: And Chuck Pierce is
22 actually going to kick us off.

23 CHAIRMAN RAY: As you wish.

24 MR. PIERCE: My name is Chuck Pierce.
25 I'm the AP 1000 licensing manager for new reactors

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1 for Southern Nuclear. It's a please to be here with
2 you today to discuss our COL application in the first
3 of these ACRS with regard to our professional civic
4 applications.

5 With regard to our program - and I'm going
6 to run over this presentation in about four or five
7 minutes who is going to take the bulk of the
8 discussion - but with regard to our program, just
9 going back in time, we submitted our ESP application
10 on August 15th, 2006. We did some LWA application in
11 August 15th, 2007, and we did receive both our ESP and
12 our LWA submittal from the NRC in August, actually the
13 26th, 2009. And that as you can see August is a very
14 important month for us in that process, most of these
15 activities occurred in August.

16 But I must say, all that work went on
17 schedule for both the NRC and us. We actually got the
18 - our ESP and LWA on schedule from the time we
19 submitted it. Got our PSE certification which allowed
20 us to begin the activities in the middle of 2009,
21 which started our excavation in August, 2009, and we
22 actually began backfill operations in March 8th, 2010.

23 Now our program is very very active. And
24 what I mean by that is we actually began procurement
25 and the fabrication of major components last year.

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1 Many more components going on this year, but for
2 example last year the reactor vessel started, the
3 steam generator, the pressurizer, all that began last
4 month. In the next month or so we are starting the
5 construction of the batch plant onsite. We will be
6 starting to receive in the next few weeks as well the
7 containment vessel plates, and we'll actually begin
8 fabrication of the containment vessel on site in
9 September this year.

10 So there is a lot of activity that is now
11 starting to gear up as we start moving onto that
12 program in preparation for our COL.

13 CHAIRMAN RAY: I see media,
14 congratulations, I understand you have your DOE loan
15 guarantee agreement in place. It has nothing to do
16 with our responsibilities but I can't - I still have
17 curiosity - does that loan guarantee apply only to the
18 Southern Nuclear share, or does it apply to 100% of
19 the project. In other words your other project
20 participants, do they participate in the loan
21 guarantee or not, do you know.

22 MR. PIERCE: I can't speak to that. I'm
23 not close to the loan guarantee work personally. I've
24 been more involved in the licensing activity. I've
25 got your questions, but I have not been involved in

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1 that work activity. I apologize, I can get that
2 answer to you.

3 CHAIRMAN RAY: I looked at it in the
4 media reports and had that question in mind.

5 MR. PIERCE: I'll ask during break and
6 let you know, sir.

7 CHAIRMAN RAY: Okay, thanks.

8 MR. PIERCE: The bottom line that I think
9 I wanted to mention as well before I jump off this
10 slide is that we do expect our NRC residents on site
11 in August as we move forward with these activities,
12 they have actually been named, and they are actively
13 participating in oversight of the site now along with
14 the rest of NRC Region 2. And they will be physically
15 onsite later this year. Okay, just again as a matter
16 of a high level overview, just to let people know
17 where we are, we are located 25 miles southeast of
18 Augusta on the Savannah River. It is a soft soil site
19 that is there. It's a soft soil design. And as a
20 result of the soft soil design if you go down about 80
21 feet, what we have is a limestone layer that has
22 voids. So what we do, and you'll see it on the next
23 slide, as we start getting into the next slide, we
24 have a progression on the next slide, it goes from a
25 progression to construction program.

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1 But before I jump to that I wanted to be
2 able to say that we have to excavate down. We did
3 present this during the ESP side of the house to the
4 ACRS. We need to excavation down to about 100 feet
5 down about 100 feet down to what we call the blue
6 bluff morril (phonetic), which is through the
7 limestone layer to the first competent layer, which is
8 a clay layer at that point as the first competent
9 layer of the soil material. And then we built back
10 up, a backfill from there until we get to a point that
11 we can put the nuclear facility up there, the safety-
12 related nuclear facility and triple-S design facility,
13 the reactor building and so forth.

14 So we are in the process of actually
15 building it back up now, and I think the next series
16 of slides actually shows that if you want to jump
17 into that.

18 CHAIRMAN RAY: Well, these pictures that
19 you gave us are quite nice, so we'll look at those
20 while we're waiting.

21 (Pause)

22 Did you move that transmission line, or is
23 it just that the second picture is--

24 MR. PIERCE: We move the transmission
25 line, moved the transmission line that went over unit

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1 #3 or #4 -- #3, and we moved it.

2 Look here, this is how the site was, and
3 it's going to be pretty quick, and you can see the #3
4 and #4 footprints, 3 in the foreground, 4 in the
5 background. And you can start seeing the excavation.

6 We actually had to remove a lot of the old concrete
7 foundations from Unit #1 and #2 before we started.
8 Again, that's always a nice looking shot.

9 And you can see we start the excavation
10 downward, as we go 100 feet down. There'll be a
11 picture of the blue bluff morril as we hit that. It
12 really is a gray looking layer, and there that is. It
13 really is a stark change in the contrast of the soil
14 layers as you get to the blue bluff morril. And we're
15 building back up here with the Unit #3 and #4
16 backfill. And that's basically it. It's very quick,
17 but again, that represents about, what about seven or
18 eight months.

19 CHAIRMAN RAY: You ran short of some
20 backfill and had to make some changes.

21 MR. PIERCE: That's correct. We actually
22 have had to file some amendments, and as we work
23 through making sure we have enough backfill to support
24 completion of the program.

25 Finally I'll just say that regarding our

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1 commercial operation before I turn it over to Amy, we
2 are headed toward a commercial operation date of April
3 2016. We actually have a construction schedule. It's
4 one of the more complicated construction schedules
5 that has ever been developed in the United States.
6 Close to 120,000 activities. So nuclear construction
7 is very complicated as everybody knows. And there
8 are some activities, as you might expect, that are
9 behind. There are some activities that are on
10 schedule, and some are ahead. But generally speaking
11 at this point in time we are on schedule with our
12 program, and we are moving toward -- we are on
13 schedule with all of our activities to head toward
14 this April 2016 date.

15 So hopefully as we move forward that we'll
16 be able to say that.

17 CHAIRMAN RAY: Well, getting it done
18 right is the important thing, but on time and cost
19 would be nice too.

20 MR. PIERCE: Doing it right is number one
21 criteria.

22 MS. AUGHTMAN: All right.

23 Well I just wanted to take this
24 opportunity to make sure everyone was familiar with
25 how we incorporated the ESP application into our COL

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1 application. Along with all the other AP 1000 single
2 applicants we have incorporated by reference, or we
3 shorthand it, IBR the DCD. So in addition to that
4 though we have the ESP application, specifically the
5 site safety analysis report, is IBRed into the SSAR.

6 And I know that you've all been briefed
7 before about the RCOLA transition period, and so I did
8 want to make note of that here. This is our first
9 meeting as the RCOLA. We are excited about that and
10 looking forward to finishing out all the other
11 chapters.

12 CHAIRMAN RAY: The hardest part is you
13 have to count.

14 MS. AUGHTMAN: Right. So as I mentioned,
15 since we have incorporated as a large part of what
16 would be in the FSAR, primarily the information we
17 present in our FSAR is mostly standard content. There
18 is some site specific content remaining for review,
19 but by and large it's most standard.

20 Okay, so how did we pull in the ESP, and
21 how can the reviewer or the reader know where the ESP
22 is brought in, and what remaining actions we have.
23 Again we've made use of left-margin annotations, or
24 LMAs, to indicate where we've addressed ESP permit
25 conditions, ESP COL action items, and any ESP

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1 variances we may have had to take.

2 And we've got some tables in Chapter 1
3 that help you figure out where each of those items
4 are covered. So I'm going to pull just few snapshots
5 out of the application to give you a feel for how that
6 is displayed. So on Table 1.6-202, that's where we
7 provided a listing of all the ESP SSAR sections, and
8 it gives you just the title there, what it was called
9 in the ESP phase, and then how we have incorporated
10 into the FSAR. And if there was a variance taken,
11 that gets called out here in the left hand margin,
12 and the justification for the variance is presented in
13 Part 7 of the application.

14 Then in Table 1.6-203, that's where we
15 list all the ESP COL action items, and provide the
16 cross-reference for where those are addressed. Permit
17 conditions are provided in 1.6-204, along with their
18 corresponding COL locations.

19 CHAIRMAN RAY: Would you go back to 10
20 please. I think the second one down, 1.3, where it
21 says, with the exception of Figures 1.15 COLA Part 7
22 requests a variance for this ESPA section. Part 7?

23 MS. AUGHTMAN: Part 7 is normally, for
24 everyone else it's just departures and exemption
25 requests. We tacked on the variances along with

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1 that part.

2 CHAIRMAN RAY: All right, I got it now,
3 thanks.

4 MS. AUGHTMAN: Just to have another
5 example for how it would show up actually in the text,
6 since we are covering Chapter 11 later today, I
7 thought this would be a good example to bring up now.
8 We did have a COL action item that we could not
9 respond to or address during the ESP phase. So
10 the staff wanted to capture that as a COL action item
11 for us to address. And they wanted to make sure that
12 we could confirm that there would be any chelating
13 agents that would commingle with any rad waste
14 liquids so that the agents would not mitigate an
15 accident release. And what we responded to that with
16 in our application is the fact that we are going to
17 use our chemical control program to ensure that we
18 have control over those parts of chemicals. And there
19 could be a case by case basis for special operations
20 on site that you would want to use such agents, but in
21 general we made a commitment here that we would not as
22 a general rule use those.

23 So just again pointing out the use of the
24 left hand margin there. So that is actually address
25 in our chapter 11.

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1 So the next slide is just a sample
2 statement for how - to show the IBR, the ESP and the
3 application itself. So again it's very similar to how
4 we show we've incorporated by reference the DCD.

5 And that concludes our opening remarks.
6 Again, we look forward to assistant with the
7 individual chapters with you.

8 CHAIRMAN RAY: Okay. I'm always I guess
9 I don't know I'll use the word skeptical. But I am
10 curious about statements such as our here, I realize
11 it's just an example, it's not the point of your
12 presentation, but I can't help commenting. In the
13 event chelating agents are required for a specific
14 purpose, an evaluation will be conducted prior to use
15 and specific controls will be implemented to be sure
16 that wastes are segregated, and managed appropriately
17 to prevent commingling of plant's liquid rad waste
18 system. I find myself always wondering, how is that
19 ever going to get translated into reality five or 10
20 years down the road. I mean is this going to be in a
21 plant procedure? For example it would be better for
22 my purposes if it said something like, procedures will
23 require that, and then what you are going to do,
24 rather than just -- you could read this as merely a -
25 and that's what we intend to do, and surely we will,

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1 but I don't really know how it's going to happen.

2 MS. AUGHTMAN: So we as a company culture
3 have a high expectation that all licensing bases are
4 factored into plant procedures and operations. And I
5 don't know if Chuck may want to speak to our
6 commitment management system where we ensure any
7 commitment type statements. I wouldn't characterize
8 this as a commitment. We call it licensing actions or
9 little "c" commitments. But we would ensure that
10 plant procedures for example would capture this.

11 MR. PIERCE: Of course you have programs
12 and you have procedures. But it'd either be part of a
13 chemical program that will have individual procedures,
14 or it'll be a procedure itself. I'm not sure exactly
15 how this one would fall out. But I'm sure it would be
16 a formal process in the plant.

17 CHAIRMAN RAY: Well, of course that's
18 what I'm looking for of course, not just what somebody
19 today thinks we are going to do or intends to do or
20 anything. I think what you said is fine, is what I
21 would expect to happen, that it's something that was
22 picked up and maintained as something that was part of
23 the procedures that you will have to comply with
24 throughout the plant's life. But since it's not said
25 that way naturally it raises a question.

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1 MR. PIERCE: I understand your point.
2 It's a good question.

3 CHAIRMAN RAY: Okay, thank you, we can
4 proceed.

5 MR. JOSHI: Hello, my name is Ravi Joshi.
6 I'm lead project manager for Vogtle applications.
7 And today I'm going to be giving you an overview of
8 those TAPS review of the COL application. One other
9 thing I want to point out that the second iteration
10 was provided to us on August 26 - I'm sorry, October
11 9, 2006 - 2009 as a part of the COL application, and
12 we'll be addressing any questions you may have as we
13 go into the process right now.

14 What I want to present to you is about the
15 certain activities that have already been completed as
16 of today, and certain activities are going to be
17 done in the future. As Amy indicated, Southern
18 Nuclear Operating Company actually provided their
19 application on March 20, 2008, at which time we
20 started our review for acceptance. We completed our
21 acceptance review on May 30, and in that particular
22 ledger on May 30 we actually provided stating that our
23 review is incomplete yet, and we assigned a docket
24 number, two units as 52025, 26.

25 As a side note, as we are going through

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1 this process, at that particular Vogtle was submitted
2 as a subsequent COL application. Because at that time
3 Bellefonte Units #3 and #4 were as the RCOLA from the
4 design center point of view. So therefore from the
5 timeframe from 5/30/2008 to 4/20/2009 we were
6 reviewing Vogtle application and subsequent COL
7 application, rather than RCOLA.

8 On April 28th, 2009, we received a letter
9 from NUSTART indicating that they have decided to
10 change the designated RCOLA from Bellefonte to the
11 Vogtle RCOLA. So at that particular point we started
12 changing our process, or looking at Vogtle as the
13 RCOLA. There are several steps that we have taken,
14 because at that point we were already in the writing
15 process for Bellefonte ASCR open items for standard
16 content also. So if you remember back --

17 CHAIRMAN RAY: I can't forget, it was
18 very confusing.

19 MR. JOSHI: So I just wanted because we
20 have started already doing about halfway through, so
21 rather than shifting it, and start writing the SER,
22 with open items on Vogtle, we decided to continue to
23 write all the chapters on Bellefonte as ACRS open
24 items. And as you remember, I should mention about
25 that, is that from last June until February we

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1 actually presented you all the open items on standard
2 content. So basically what we are trying to do from
3 now on, we will be presenting to you how Vogtle
4 actually responded to those open items, and how they
5 resolved open items. On the top of that also they
6 also provided project-specific information.

7 So the ACR that you are getting as we
8 speak actually consists of basically those things
9 right now. So I just wanted to set the stage on that
10 one.

11 CHAIRMAN RAY: So on that stage setting,
12 you heard my comments about the continued codings, and
13 that we would like to discuss that in our July
14 meeting?

15 MR. JOSHI: I already put down on my
16 agenda for the July 21 meeting.

17 CHAIRMAN RAY: Thank you.

18 MR. JOSHI: So as I mentioned about that
19 in between we also received a second NWA on August 6,
20 2009. So now our entire review for COL application
21 includes the NWA also. Okay, so we are not really
22 pulling separate SER for a second NWA also. It's a
23 part of that. And some sections, like the Section
24 3.7, 3.8, we were actually writing a separate
25 paragraph to identify the review of the second NWA.

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1 So you will see when you get into Chapter 3 in the
2 future.

3 CHAIRMAN RAY: Okay.

4 MR. JOSHI: The remaining items that we
5 are talking about, the milestones basically as we have
6 been submitting the FSAR, which is the advanced final
7 safety analysis report on a chapter basis. And this
8 because they are going to provide you the
9 information on Chapter 4, 10, 11 and 12 right now.
10 And in future meetings we will be submitting more
11 chapters, they are going through the process right
12 now. The goal is to complete everything, to complete
13 all the chapters through October, with the goal to
14 have the last ACRS Subcommittee meeting in November,
15 2010, and then thereafter there would be a full
16 committee on that. So those are the milestones that
17 we are in planning stages right now.

18 Based on that we have also put a milestone
19 to complete the final ACRS issuance in April 2011.
20 And the last two ones are tentative. We are assuming
21 that we will have a mandatory hearing, and probably
22 would be aware of that, that we had just closed out
23 the contested hearing portion, because the ACRS just
24 denied the last contention. So we will hope that we
25 will not have any contested hearing. But at this

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1 point we are assuming that we will have a mandatory
2 hearing. And I don't have any details of when we are
3 going to start, who is going to be doing what. So I
4 just wanted to put a milestone at this point.

5 Just wanted to give you a background of
6 the application. Actually Amy provided information
7 about the content of the application. I just wanted
8 to review very quickly. As Amy said, the Vogtle COL
9 application actually incorporated by reference the
10 DCD, as with ESP cited analysis report, which is SSAR.

11 They are also incorporation by reference a DC
12 amendment that we are going to review at this point.

13 Also I just wanted to make a point that
14 ESP and LWA1 was issued and was granted August 26th,
15 2009, which was a part of the --

16 So now going back to the actually
17 application and stuff. There are three aspects of it
18 I want to talk about. One is the information that is
19 incorporated by reference, and the second one is the
20 standard content material. And the last one is the
21 nonspecific information.

22 The first one actually available, we do an
23 incorporate by reference, the staff review actually
24 looks at the NUREG-1923, which is the ESP/SER, and
25 also we looked at the NUREG-1793, which is DC

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1 rulemaking that was based on. And also so we are
2 looking at the amendments SER that are being prepared
3 also. Those three things, we look at it, and we want
4 to make sure that those are applicable for the IBR
5 portion of the COL, and that is what we concluded.

6 For the standard content material what we
7 have done is that as I mentioned that Bellefonte
8 originally was the RCOLA, and we are putting in the
9 SER for Bellefonte on standard content. And right now
10 Vogtle is providing and addressing all the open items
11 with standard content and we are resolving those and
12 those were reflected in the standard content material
13 of the SER.

14 So that is basically - and just one more
15 point is that when you see someone which will be
16 coming very shortly after Vogtle those two items will
17 not be repeated, will not be reviewed on someone.
18 Only someone we'll be actually looking at Vogtle
19 plant specific information. So I just wanted to set
20 up a standard saying that was going to happen when you
21 see the summary SER. So we are not repeating the
22 first two items that have actually gone through the
23 Vogtle right now.

24 CHAIRMAN RAY: We are very grateful for
25 that too.

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1 MR. JOSHI: This is just a quick
2 statement about the application where the site is
3 located as well as where the existing unit was. And
4 also for the applicants this renewal application. I
5 don't want to go into detail on that.

6 This is the one I want to show you the
7 status about what has been happening and where we are
8 in terms of the RCOLA for the COL. We actually had
9 completed 80 of the 90 SER on the standard content.
10 And those were actually presented since June of 2009
11 to I would say February of 2010. Most of the chapter
12 is presented, but depending upon the standard content
13 we actually presented all those chapters. The things
14 that you are now seeing in the Bellefonte SER on the
15 standard contents are: Chapter 3.7 and 3.8, and
16 chapter 6. Our plan right now not to give you any
17 kind of standard content SER open items for those
18 chapters, but we are having to go directly to the COL,
19 RCOLA, and will bring it to you in future meetings.
20 So you will not see any specific SER with open items
21 for 3.7, 3.8 and Chapter 6. What you will see is the
22 SER with no open items.

23 Also you have not seen anything on
24 cybersecurity and fitness for duty. Those are the
25 items that we will be discussing in Chapter 30.

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1 The loss of large area due to fire
2 explosion. Those also are part of Chapter 19, which
3 was not a part of the previous review. It's a
4 completely new review, so you will see it as part of
5 Chapter 19 SER.

6 And the security also, usually that would
7 be coming as a part of 13.6, but my understand is
8 that generally speaking ACRS does not get involved in
9 a review of the security aspect of the plant. Any
10 question on those?

11 CHAIRMAN RAY: No, I'd proceed for the
12 information. As to whether or not we would have any
13 comment, I want to reserve the opportunity to comment
14 later but not now.

15 MR. JOSHI: Okay, as I said as we had
16 discussed with you in the past, we had decided to go
17 through and issue chapter by chapter of the Vogtle
18 advanced FSAR, and that's why we are doing it. Last
19 time we gave you the chapter 4, 10, 11 and 12. We
20 hope to give you two more chapters in about a day or
21 two. That would be the topic of the July 21 and 22nd
22 meeting that we are looking toward right now.

23 As I said all open items on standard
24 content will be resolved prior to the issuance of the
25 chapter. Also the plant specific issues that you are

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1 now seeing will also be resolved. And you will see in
2 the new chapter that we discuss those plant specific
3 issues that we think are significant issues. And you
4 will see that discussion when we go to specific
5 chapters, you will see those also discussed.

6 And lastly I want to make a point saying
7 that the confirmatory items. What I mean by that is,
8 when we get a response from the applicant to resolve
9 an open item or an RAI response, they also provide
10 with a markup of the FSAR. We actually look at the
11 FSAR markup, and we agree that it is acceptable. The
12 only thing remaining for us to verify, in fact, the
13 actual revision of the FSAR which you are going to get
14 in later time, reflects what they told us. So this is
15 what we call a confirmatory item. However, I usually
16 consider myself as a tracking item for me, not an
17 issue that I need to go back. Unless they make a
18 change beyond what we actually agreed upon.

19 CHAIRMAN RAY: Right, now, we currently
20 have dates set, I'm mindful for example in October,
21 we've got a day that is part of the full committee
22 week, but not any in the third week of October. And
23 it's important for the members' planning purposes that
24 we try and stick with those days that we have, and I
25 think we can do what you are asking us to do, at least

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1 with regards to RCOLA if we do that, okay?

2 MR. JOSHI: Tomorrow's meeting I will be
3 talking about actually choosing interaction, I
4 actually have a couple of slides explaining exactly
5 what our plans are, not just for the RCOLA, but also
6 for the summary. The way we are trying to do is to
7 issue these RCOLA SER within a week or so, some are
8 SER also. So it's kind of for us to get something
9 done, so we want to bring it to your attention that
10 some of the activities that we are working on,
11 specifically the plant specific issue, that we are to
12 bring it to your attention earlier. And I can show
13 you about what particular timeframe that we would like
14 to bring it to you.

15 And also we want to know, in addition to
16 if you want to talk about something, certainly we are
17 open to those suggestions. So I'll be working with
18 Weidong on those topics also.

19 CHAIRMAN RAY: All right, it's getting a
20 little overwhelming.

21 MR. JOSHI: Okay. The next slide
22 actually, what I'd talked to you before about, what
23 exactly you are saying in the SER, and what kind of
24 language or what kind of view that we are performing
25 of a document, the IBR portion of the review, which

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1 basically includes the DCD as regards ESP.

2 So this is the kind of material that we
3 are actually making sure that we have looked at
4 everything that we could, and there is nothing to be
5 added, or nothing has to be done or changed. So this
6 is basically the paragraphs talks about the IBR review
7 of the DCD as well as the ESP.

8 The next one actually when we talk about
9 using a design center review approach, which is
10 basically one issue, one review. And if we agree with
11 that concept, then we want to apply that review to the
12 subsequent COLAs also.

13 In this particular case what happened is
14 that you know we started with the Bellefonte's RCOLA,
15 and then suddenly we used the Vogtle as the RCOLA. So
16 what we tried to do was see if there were any what I
17 call the - whether any item that we had that was
18 reviewed on the Bellefonte, was it applicable? If it
19 was applicable, what kind of criteria, if we are
20 going to use it to make sure that we reviewed those
21 ones, and used it to review that was performed on
22 Bellefonte, and basically copy and pasted for the
23 RCOLA SER.

24 So those are the three items we look at
25 under those two bullets. And as long as those are

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1 applicable, and we really follow that one, we can
2 certainly use the Bellefonte ACR content itself, and
3 use it for Vogtle SER.

4 And what we tried to identify what
5 information we have copied from the Bellefonte SER, we
6 actually tried to itemize, I double -- the formatting.

7 If you look at chapter 4 or chapter 10 or chapter
8 12, you will see the distinction there, that the
9 certain portion has been copied from the Bellefonte
10 ACR for standard content.

11 Just to give you an idea about how the
12 SER has been arranged, so that anybody reading it will
13 have a clear understanding of what we have done.

14 CHAIRMAN RAY: Well, you are providing us
15 a lot of text here to wade through, but so far at
16 least, I don't see any --

17 MR. JOSHI: This particular test you will
18 find in every SER, so I just wanted to give you the
19 background on that one, what has been looked on. Any
20 specific questions?

21 CHAIRMAN RAY: Well, one question I would
22 have, I guess, is one that came up earlier. We're
23 particularly interested in making sure we don't miss
24 in this process what the status of design acceptance
25 criteria area. Usually digital I&C is referred to,

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1 but that is not the only one that exists. And I guess
2 I'm asking myself, how do they get visibility in this
3 process that you are just now describing, as going
4 through the stack that are still outstanding or that
5 have been closed as part of the COL, and you know,
6 we'd just like to keep a running tally so we don't
7 forget about them.

8 MR. JOSHI: I can't answer your question
9 at this point. But what I'll do is, after the break I
10 can give you the information on how we are doing it.

11 Right now, because the DAC is a part of the TR-1 and
12 they are incorporated by reference, certainly as about
13 Chapter 14 SER, we are allowed to come up with a point
14 saying that how we handled not only ITAAC, but how the
15 DAC has also been included as part of the Chapter 14.

16 CHAIRMAN RAY: Right, I know we would
17 like to see, and I know the applicant would too, as
18 few DAC as possible. But the time we get to the COL
19 finalization. And it raises the question: do we
20 really know how we know what that list is, what the
21 status of it is. Otherwise we get distracted by a
22 flurry of SER chapter texts, some of which are
23 relevant to areas that are affected by our standing
24 DAC, and we don't even realize it if we're not very
25 skilled at understanding how we are keeping our books.

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1 Is there any more you have?

2 MR. JOSHI: No, this is all I have at
3 this point.

4 MEMBER BROWN: Yes, I'm still confused,
5 the COL part of it. I don't know if I didn't get
6 something or what. But the VEGP COL FSAR - I've got
7 an FSER - but an actual VEGP COL FSAR, I guess I don't
8 really have those four chapters. I've got the BLN
9 one, Bellefonte. So that is not your problem, but I'm
10 reading your translation. You compared the BLN with
11 the VEGP, so I imagine there is some cross-cutting
12 comparison of this. And so I went off to read the
13 FSAR, an old FSAR, I guess, it was given to me some
14 years ago. I notice under Chapter 4 there were no
15 changes.

16 MR. JOSHI: Correct, if you look at
17 Chapter 11, Chapter 11 could be a good example about
18 the difference between - Chapter 4 happens to be
19 entire IDR standard content. Therefore there is
20 nothing --

21 MEMBER BROWN: You have a 26-page SER.

22 MR. JOSHI: Not from the COL side. We
23 are about 7 - 8 pages for Chapter 4 SER. But if you
24 go to Chapter 11 - so you don't have a copy of the
25 Vogtle FSAR?

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1 MEMBER BROWN: I am looking at your
2 Vogtle Chapter 4 SER right now. That is only seven
3 pages, I'm sorry, I apologize for that. So again,
4 when you started talked about Bellefonte again, I kind
5 of lost the thread as I went forward.

6 MR. JOSHI: When we go to Chapter 11,
7 actually, we will see the SER, what we described,
8 actually we'll see the SER, what we describe, what
9 were the standard content open items that we had from
10 Bellefonte SER, and how we resolved those ones. Then
11 we have a plant specific question on the Vogtle
12 itself, how can we resolve those also. So we'll be
13 discussing the specific aspect of Chapter 11 for
14 Vogtle.

15 The same thing you will find on Chapter
16 12. So there are two or three standard kind of open
17 items. There is one specific on Chapter 12, which is
18 a construction worker dose assessment, that was a
19 plant specific issue, so we resolved that on a plant
20 specific basis.

21 So every time you see the SER you have
22 three things. One will be what I call the
23 incorporated reference, which is basically from DCD or
24 from ESP. The second portion of the SER, you always
25 see the standard content SER open items, which are

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1 common not only to workers, but it will be common to
2 the rest of us also.

3 And the last portion of SER you will see
4 the plant specific issues. Those are unique to Vogtle
5 now, and we will be describing what was the issue; how
6 we got a response from the applicant; and why we
7 accepted the response in that case. So you will see
8 that kind of thing in the SER, as well as the
9 presentation that we have put together for that.

10 CHAIRMAN RAY: All right. I think we
11 understand what you're doing; we are just trying to
12 figure out what we do.

13 Dennis, did you have anything?

14 Okay, thank you.

15 MR. JOSHI: Okay, with that one we can
16 start the Chapter 4, and then 11 and 12. And we will
17 go first and then we will go with that.

18 CHAIRMAN RAY: Yes, that is right. It's
19 11:15, and I think we can get through that.

20 MR. JOSHI: Okay.

21 MR. SPARKMAN: Good morning.

22 CHAIRMAN RAY: Good morning.

23 MR. SPARKMAN: My name is Wes Sparkman.
24 I'm with the local project. I'm a COL project
25 engineer, and I'm going to talk about Chapter 4. As

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1 was discussed earlier when we talked about the DCD of
2 Chapter 4 this morning. And Chapter 4 of the DCD is
3 incorporated by reference into Chapter 4 of the COL.

4 We discussed this morning that there are
5 six portions of Chapter 4: summary description and
6 fuel; system design; nuclear design; thermal
7 hydraulics; reactor materials; and functional design
8 of reactivity control systems.

9 DCD is incorporated by reference in its
10 entirety for Chapter 4; no standard departures have
11 been taken as far as the Vogtle COL. There is one COL
12 information item which was previously discussed with
13 the ACRS. There is no supplemental information added
14 as part of COL. No open items, and no VEGP specific
15 items.

16 And that is chapter 4. Are there any
17 questions?

18 CHAIRMAN RAY: No, none other for me
19 anyway other than what we have already asked, which
20 is are there any DAC that apply to Chapter 4
21 specifically? There aren't, are there?

22 MR. GRANT: We will keep that in mind.

23 CHAIRMAN RAY: So I can keep track of
24 when I've gone past an existing DAC, and remind
25 myself, what the heck it's about.

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1 Okay, anybody have any questions on
2 Chapter 4?

3 (No response)

4 Thank you.

5 MR. JOSHI: I am back again.

6 CHAIRMAN RAY: Please.

7 MR. JOSHI: My name is Ravi Joshi. I am
8 on Chapter 4 right now. I have with me Gene Hsii, he
9 is a technical reviewer, and he is going to be
10 presenting the specific kind of COL item that is a
11 part of Chapter 4. But before we do that, as we
12 discussed last June, there were no open items to begin
13 with for Chapter for to begin with for standard
14 content. So this is really nothing to talk about.
15 But we do have a couple of slides that relates to
16 standard COL items, so if you want to, I can also
17 describe that one. And there was no issue to begin
18 with, but we can just provide you with what we
19 reviewed, and why we accepted the specific information
20 from the applicant.

21 MR. HSII: My name is Gene Hsii. Chapter
22 4 actually is incorporated by reference for AP 1000
23 DCD Chapter 4. There is no open item. The only item
24 that we have is the COL, we mentioned 4.4-2.
25 Essentially it talked about after selection of

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1 instrumentation for the operating parameters, the COL
2 holder will calculate the uncertainties associated
3 with this parameter, and determine the design of the
4 DNBR using the blast thermal design procedure to
5 confirm that it is designed in the DNBR limit
6 specified in DCD 4.4, the steel guide.

7 And the standard COL item 4.4-2
8 essentially complete this COL item. This item will be
9 completed prior to the PLO.

10 CHAIRMAN RAY: Right, you say it's
11 completion of the actions required prior to initial
12 fuel load. Does that translate, does the verification
13 of that translate into ITAAC?

14 MR. HSII: No, it's a license condition.

15 MR. JOSHI: We actually are proposing a
16 license condition SER, so that that will become a part
17 of the license when we issue the CER.

18 CHAIRMAN RAY: Oh yes it says that. So
19 this verification is the responsibility of the
20 applicant. There is no comment about review of that
21 verification, but that's I guess not required. In
22 other words it's not something that has to be
23 submitted and reviewed?

24 MR. HSII: Well, we have to review it and
25 make sure the calculation is correct.

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1 CHAIRMAN RAY: That is not a restraint
2 on the licensee, is it? Your approval? It doesn't
3 prevent them from moving ahead?

4 MR. HSII: We know there is a lot of
5 margin in this design limit DNBR. And our reaction
6 is that the calculated -- the plant specific design in
7 the DNBR will meet the one in DCD 4.4.

8 CHAIRMAN RAY: All right, but as a
9 license condition they simply need to satisfy the
10 license condition. It's not a matter that you guys
11 have to review it and decide it's okay or ask for
12 something else. As long as they comply with the
13 license condition, they are good to go?

14 MR. HSII: Yes.

15 CHAIRMAN RAY: Anything else, my
16 colleagues?

17 All right, we will move ahead then.

18 (Comments off the record)

19 CHAIRMAN RAY: I'm not sure we need to do
20 this dance every time, but we will anyway; otherwise
21 we'd break the routine.

22 All right, Amy.

23 MS. AUGHTMAN: All right, I'll have to
24 change my notes from good afternoon to good morning.

25 CHAIRMAN RAY: Yes, you are not

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1 disappointed, are you?

2 MS. AUGHTMAN: No. (Laughter) Again,
3 Amy Aughtman for Southern, and I'll be presenting both
4 chapters 11 and 12 for the data from the Bechtel COLA.

5 And here with me is William Smith of W. Smith &
6 Associates, and Bob Herman of NuStart, Mike Bronson of
7 Bechtel, and by phone I'm expecting Dan Patton from
8 Bechtel. Additionally some of the Westinghouse
9 support team was kind enough to stay behind just in
10 case we needed them.

11 All right, as a reminder these are the
12 subject areas covered in Chapter 11. And we have not
13 had any changes in departures. Again we primarily
14 incorporate the DCD by reference, and there has not
15 been any changes in departures on this Chapter, so
16 again, we have no standard ore plant specific
17 departures.

18 We previously discussed COL information
19 items with you at the last meeting. For Chapter 11
20 there were no standard open items to address.
21 However, we did end up with some site specific items
22 that required some. Specifically we had two RAIs
23 issued after the Bellefonte SER with open items was
24 issued. And both of those related to roll over waste
25 storage.

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1 The first item asked whether there was
2 any additional need for storage beyond that described
3 in the DCD. We had a statement that indicated that we
4 did not have a need for additional storage. But due
5 to some plant specific issues that were raised on the
6 Vogtle docket, we elected to provide some options for
7 providing additional storage contingencies. And that
8 was how we responded to that item by providing those
9 options.

10 CHAIRMAN RAY: The options briefly are?
11 Storage facility?

12 MR. SMITH: The options are, you know, we
13 would make use of the auxiliary building and store in
14 that area. We would use a vendor service to take
15 class A, B, and C waste and process it and send it
16 to a WCS for storage in Texas. And the third option
17 was if we needed additional capacity we would build an
18 onsite storage facility as a contingency.

19 CHAIRMAN RAY: Those alternatives are,
20 what, part of the COLA now?

21 MR. SMITH: They are in section 11.4.2.43
22 in the COLA under alternative for B and C waste.

23 CHAIRMAN RAY: And is any action,
24 relicensing action, required for you to implement any
25 one of those three things?

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1 MS. AUGHTMAN: Right now our position is
2 still that we believe the DCD storage as it's
3 currently designed will give us enough storage space.

4 And those are only in the event we need additional
5 storage.

6 CHAIRMAN RAY: Right, what I mean is you
7 have to come back in with an application to be able
8 to implement one of those, or do you know?

9 MR. SMITH: No, we actually identify in
10 another section related to long term onsite storage
11 as part of the contingency. We identify what the
12 criteria related to that onsite storage would be, and
13 also what the operational procedures would be related
14 to that. So we covered those areas as contingencies
15 in the FSAR.

16 CHAIRMAN RAY: So it's your understand
17 you can go ahead and do that without amending your
18 license?

19 MS. AUGHTMAN: I believe that to be the
20 case, but the staff might want to comment on it.

21 CHAIRMAN RAY: You know when people
22 talk about contingencies, you are never quite sure.
23 Do they mean they are telling you ahead of time what
24 I will seek your approval to do if I need to, or I'm
25 telling you ahead of time what I'm going to do if I

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1 decide to do it. It's just not clear which of those
2 two things is being said, and that's why I'm asking
3 the question.

4 MR. SMITH: With the additional low level
5 waste storage onsite, if you added that at an
6 operating plant it would be through the 50.59 process
7 of doing performed evaluations. So we would also have
8 that process.

9 CHAIRMAN RAY: Okay, well 50.59 means
10 it's a change, but it's not a change that requires NRC
11 prior approval?

12 MS. AUGHTMAN: No, that means that we
13 review it to determine if it requires prior NRC
14 approval.

15 CHAIRMAN RAY: Did you say something
16 different than I did.

17 MS. AUGHTMAN: If we determined it to
18 require approval, we would then submit that for
19 review.

20 CHAIRMAN RAY: Exactly, that's right.
21 But I mean you have to meet the 50.59 threshold for it
22 to not require NRC approval is what you said.

23 MS. AUGHTMAN: Right.

24 CHAIRMAN RAY: Okay, it's not something
25 that has been preapproved, if you want to do it you

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1 just go do it.

2 MS. AUGHTMAN: I believe that is correct.

3 CHAIRMAN RAY: Sounds like it to me.

4 MR. JOSHI: This is Ravi Joshi. I think
5 what they are saying is correct. The process is a
6 50.59 process. They can decide whether they can do on
7 their own or they need NRC prior approval to make any
8 changes to the FSAR.

9 CHAIRMAN RAY: Okay, but 50.59 is when
10 you make a change that doesn't require NRC approval,
11 but it's nevertheless a change. If you just do
12 something that is already part of the license, you
13 don't need to do 50.59 because it's already been
14 approved as part of the license. It sounds to me like
15 it's the first thing, not the second thing.
16 Otherwise, you wouldn't do a 50.59. You would say,
17 I'm authorized by the license to do this, I'm going
18 to do it.

19 MR. JOSHI: This is Ravi Joshi. I think
20 what they are saying is correct. The process is a
21 50.59 process. They can decide whether they can do on
22 their own or they need NRC prior approve to make any
23 changes to the FSAR.

24 CHAIRMAN RAY: Okay, but 50.59 is when
25 you make a change that doesn't require NRC approval

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1 but it's nevertheless a change. If you just do
2 something that is already part of the license, you
3 don't need to do 50.59, because it's already been
4 approved as part of the license. It sounds to me like
5 you are saying it's the first thing, not the second
6 thing. Otherwise you wouldn't do a 50.59. You'd say
7 I'm authorized by the license to do this, I'm going
8 to do it. That is what I was trying to get at.

9 MS. AUGHTMAN: So I think that's where we
10 are.

11 CHAIRMAN RAY: All right, thank you. It
12 always makes me kind of wonder, why do you describe
13 what you might do if you are not getting approval to
14 do it if you decide to do it. And that's the dilemma
15 I was having, but enough on philosophy. We'll move
16 on.

17 MS. AUGHTMAN: So actually we covered the
18 second sub-bullet here on the long term onsite storage
19 of radioactive waste. That was another question we
20 had from the staff, and we responded with the general
21 design considerations and program elements that we
22 would implement if we chose that option.

23 CHAIRMAN RAY: Okay, thank you. Any
24 questions? As I said before, Mike Ryan was unable to
25 be with us today unfortunately. It's possible that he

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1 would ask us to pursue something further with you
2 later; I hope not, but if so we will give you ample
3 time.

4 MS. AUGHTMAN: Right, so with that, we
5 actually were prepared to address one of the action
6 items that he previously had.

7 CHAIRMAN RAY: That's on the list that we
8 currently planned to address tomorrow, but we can
9 address it now if you wish.

10 MS. AUGHTMAN: If we could do that now?

11 CHAIRMAN RAY: Yes, of course. Just give
12 us a good clear reference so we make sure we get it
13 crossed off.

14 MS. AUGHTMAN: Action Item #26.

15 MR. SMITH: Okay, that action item is
16 related to a waste class. And the class and volume of
17 waste expected to be generated. And the DCD provides
18 an estimate of the expected generation of low level
19 rad waste. And we performed a review of the sources
20 that fed into the wet and dry waste, and from that we
21 made an estimate of the volume of Class A and the
22 volume of Class BC waste expected to be generated.

23 An estimated volume of Class BC waste is
24 approximately three high integrity containers per
25 year. That would be approximately 300 feet.

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1 MEMBER BROWN: Three what?

2 MR. SMITH: Three high-integrity cars.
3 And that will be the class B and C waste, and the
4 estimated volume for class A waste will be
5 approximately six sea-land containers which would be
6 approximately 6,000 cubic feet of class A waste.

7 CHAIRMAN RAY: Okay, the action item was
8 to provide that information?

9 MS. AUGHTMAN: Correct, he asked for a
10 forecast of the low level waste by category and
11 volume.

12 CHAIRMAN RAY: We'll make sure he gets
13 that, and for now we'll consider it closed then.

14 MS. AUGHTMAN: Okay, continuing on to
15 chapter 12, we have the same support team for that as
16 well as potential TetraTech support person back there.

17 CHAIRMAN RAY: Is TetraTech on the line?

18 (No response)

19 CHAIRMAN RAY: Sounds like you're on your
20 own.

21 MS. AUGHTMAN: We should be fine.

22 Okay, a quick reminder of the various
23 subjects that are covered in Chapter 12. Then we
24 incorporated the DCD by reference, and there are no
25 standard departures taken in Chapter 12. There is one

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1 minor point specific departure regarding the location
2 of the OSC, but there's not been any changes in that
3 departure.

4 We've previously covered the COL
5 information items. And we did have a few standard
6 open items to respond to in this chapter. And those
7 primarily dealt with the status and incorporation of
8 the NEI templates for support in Chapter 12.

9 07-08 is the ALARA template which gets
10 incorporated into 12.1, and we did resolve that open
11 item by, after the NEI template was approved by the
12 staff, we reflected any conforming changes necessary
13 into the FSAR.

14 Similarly with open item 12.3-1, we've
15 adopted the approved version of the NEI template 08-
16 08A on minimization of contamination. And I'm going
17 to skip on down to 07-03. We've resolved that item by
18 incorporating the approved version of the NEI template
19 for the radiation protection program, and it's 12AA.

20 So the one item here regarding monitoring
21 program for construction worker dose, that is just
22 simply providing the staff had a question regarding
23 how we were planning to monitor construction worker
24 dose, and we responded that that type of program would
25 be conducted under the operating plant's monitoring

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1 programs.

2 CHAIRMAN RAY: That means if they are
3 outside the area where a badge is required, for
4 example, they're not going to have a badge. If it's
5 under the operating program, it's only --

6 MR. SMITH: The construction workers will
7 not be badged, so they are not required to have a
8 badge for the construction workers. So the areas in
9 the construction area will be monitored by the
10 operating plant's program for reading TLD badges in
11 different site locations.

12 CHAIRMAN RAY: All right.

13 MS. AUGHTMAN: And we did have a couple
14 of Vogtle-specific REIs regarding the estimate on dose
15 to construction workers, and we provided information
16 regarding the - our projected estimates for dose to
17 construction workers using existing TLD data from
18 units #1 and #2, and we also responded to questions
19 regarding assumptions for the estimated doses once
20 unit #3 is also operational.

21 CHAIRMAN RAY: Any questions? All right,
22 seems straightforward enough, thank you. We will now
23 hear from the staff on Chapters 11 and 12, and before
24 we break for lunch, I will update everybody about the
25 outlook for this afternoon and tomorrow. So if you

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1 hang around just a few minutes we will try to
2 reprogram the agenda so that people aren't held here
3 unnecessarily.

4 CHAPTER 11 - 12 - NRC STAFF PRESENTATION

5 MR. HABIB: Good morning.

6 CHAIRMAN RAY: Good morning.

7 MR. HABIB: My name is Don Habib. I'm
8 chapter project manager for Chapter 11, rad waste, and
9 with me today for Chapter 11 on technical staff is
10 Steve Schaffer from the health physics branch.

11 Chapter 11 is one of those chapters that
12 includes all the different types of information. Some
13 of it is standard content. Some is site specific
14 information. In addition there is information that is
15 incorporated by reference from ESP, and what you see
16 on slide #3 are some of the more important items in
17 those three categories.

18 I should also mention that there were no
19 open items in the standard content for Chapter 11.

20 There were three topics of interest we'll
21 talk about today: the cost-benefit of the rad waste
22 system augments; routine doses, coming from an ESP;
23 and the disposal of low level waste. I'll turn it
24 over to Steve Schaffer.

25 MR. SCHAFFER: Thanks.

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1 Part of the Appendix I Part 50 requirement
2 is that we have to do a cost-benefit analysis of the
3 rad waste systems to see if there is any additional
4 augments that would require as part of the ALARA
5 requirements. And so we performed our own
6 independent cost-benefit analysis for both the liquid
7 and the gaseous waste management system following the
8 Reg Guide 1.110 methodology, using the population
9 doses that were calculated both for the gaseous and
10 liquid effluent releases.

11 And the criteria in the Appendix I is
12 \$1,000 per person REM. Anything more expensive than
13 that the applicant wouldn't have to augment the
14 system. And as you can see both the liquid and
15 gaseous systems, the cost-benefit for the least
16 expensive augment is much greater than the \$1,000 per
17 person REM so you conclude that there is no need for
18 any additional augments.

19 Next slide, this is actually just taken
20 from the ESP ACRS presentation.

21 MEMBER BROWN: \$1,000.

22 MR. SCHAFFER: \$1,000 per person.

23 MEMBER BROWN: How long has that been in
24 place?

25 MR. SCHAFFER: '78 dollars.

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1 CHAIRMAN RAY: It's 1978 dollars, so you
2 escalate it?

3 MR. SCHAFFER: No.

4 CHAIRMAN RAY: You don't escalate it?

5 MR. SCHAFFER: No.

6 CHAIRMAN RAY: So nobody ever has to do
7 anything because the number is so low that anything
8 would always come out above that. That's the way I
9 read that number. Am I reading that wrong?

10 MR. SCHAFFER: No, it's not, because the
11 costs of the augments are also in '78 dollars.

12 CHAIRMAN RAY: Okay. So the number here
13 that you are showing which is \$590,000, that's in '78
14 dollars?

15 MR. SCHAFFER: That's in '78 dollars.

16 CHAIRMAN RAY: All right, so it's been
17 deescalated back to the comparison of \$1,000. So it's
18 apples to apples?

19 MR. SCHAFFER: Yes.

20 CHAIRMAN RAY: Okay.

21 MEMBER KRESS: The backfit rule --

22 MR. SCHAFFER: Excuse me?

23 MEMBER KRESS: The backfit rule changes
24 uses \$2,000.

25 MR. SCHAFFER: We are constrained by the

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1 Appendix I number which is different.

2 MEMBER KRESS: That's different?

3 MR. SCHAFFER: Yes. We are in the
4 process of looking at updating Appendix I. We have
5 initiated the information gathering for that, and one
6 of the things we are looking at is updating the cost-
7 benefit ratio.

8 CHAIRMAN RAY: You guys may all
9 understand this, but it would be a good idea to put
10 1978 FY in these slides, because otherwise people will
11 get it and think you are talking about current dollars
12 like Charley did.

13 MR. SCHAFFER: Okay.

14 CHAIRMAN RAY: 1978 dollars.

15 MEMBER BLEY: Do you guys know if there
16 are, besides the two that were just mentioned, any
17 other places that we have cost benefit values that
18 might be different from the two you just talked about?

19 MR. SCHAFFER: The decommissioning NUREG
20 guidance has different values too, because they are
21 more updated than the appendix I values.

22 CHAIRMAN RAY: Yes, but updated is kind
23 of misleading, because if you take the dollars to the
24 same year it shouldn't matter. If you are updating it
25 just because you think the number is wrong, then that

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1 is a different issue than updating it because of the
2 change in value of dollars every time. I don't know
3 what the heck \$590,000 in 1978 dollars is in nominal
4 dollars, but it's a lot, I'll tell you. Okay.

5 MR. SCHAFFER: As I said, this slide that
6 you are looking at now is just a repeat from the ESP
7 to basically show you, to remind you what the
8 magnitude of the doses were that we are familiar with
9 in the gaseous effluents, and how they complied with
10 the Appendix I dose criteria.

11 Next slide. And this was the - maybe to
12 answer some of the questions that you had about why
13 are we even doing this for the low level waste. The
14 AP 1000, sort of the paradigm that they based their
15 design and throughput to, was assuming that we would
16 have disposal, that things wouldn't accumulate and we
17 would have disposal. And because Vogtle doesn't right
18 now have permanent disposal at their - as an option,
19 we viewed that as sort of something that should be
20 addressed, something that is missing. So we asked
21 them to provide the - a plan for if at the time of
22 licensing or at the time they need it, if there is
23 still no permanent disposal available to them, what
24 could they do? And as they mentioned, they provided
25 us with four options.

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1 One of the options that was not discussed
2 was that they also have other SNC facilities that are
3 either in the planning stages or actually operating,
4 low level waste storage that they could also make
5 available to them if they needed it.

6 The last option, which was to build an
7 onsite storage, they provided us with basically saying
8 that it would be a storage, an outdoor storage pad, on
9 the - in the controlled area of the facility. And
10 then they provided us with the design objectives, and
11 the operating objectives from the - for that facility.

12 And then we concluded, based on the
13 different options, that they may never need to go to
14 this additional facility, and that all the options
15 were viable and that they would be able to store any
16 build up of low level waste that might occur.

17 CHAIRMAN RAY: I have done that, so I
18 know it can be done.

19 MR. ROACH: One thing of note, I think -
20 this is Ed Roach - that were they to use other SNC
21 site storage facilities, it could entail a license
22 amendment to that facility. Because most facilities
23 have a license restriction on where the waste comes
24 from.

25 CHAIRMAN RAY: Yes, I understand, but I

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1 was also asking can you - are you asking
2 authorization to do this. And the answer I understood
3 was, they would do it under 50.59, or they'd have to
4 amend the existing license. So that's okay, I
5 understand that.

6 MR. HABIB: For Chapter 12, the technical
7 staff is Mr. Ed Broach, chief of the Health Physics
8 Branch.

9 An overview: there were two open items in
10 the standard content, one dealing with the ALARA
11 program, the other with minimization of contamination.

12 And another topic of interest is the construction
13 worker program for ALARA. And I'll turn it over to Ed
14 Roach to discuss the items.

15 MR. ROACH: Thank you. Good morning,
16 again.

17 Just as a side note, the staff would be
18 glad to meet with Dr. Ryan or discuss Chapter 11 or
19 Chapter 12 questions that he has at his convenience.

20 The standard content open items,
21 specifically the one related to ALARA, as discussed
22 earlier, there were several templates, generic
23 templates, that were developed with NEI so that
24 programs would be standardized as these newer plants
25 were licensed. And they described the programs and

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1 the commitments to the various regulatory commitments,
2 and guidance. In the case of NEI 08-08, we presented
3 that last July to the committee for review. And there
4 was a comment related to it that we later resolved.
5 And so that's the only NEI template that was presented
6 to the committee so far. But there are templates for
7 the ALARA program, the radiation protection program,
8 minimization of contamination; a process control
9 program; and the offsite dose calculation manual. So
10 those five templates address both Chapter 11 and
11 Chapter 12.

12 In the issue the applicant needed to
13 demonstrate with compliance with 10 CFR 20.1406,
14 minimization of contamination. And that is basically
15 for COL applicants to describe design features and
16 procedures for operation to meet that regulation. And
17 the method they chose was to commit to NEI 08-08A,
18 which did describe a program for groundwater
19 monitoring, recognizing risk assessment, risk of those
20 systems having a release, and how to monitor the site
21 to minimize effluents in groundwater, undetected
22 leakage.

23 Additionally there is - was an open item
24 related to one site specific, which described the
25 discharge pipe from the liquid waste system. It's

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1 described in Chapter 11 of the DCD, and the applicant
2 did endorse that. Basically a guard pipe or
3 detection, leak detection on that pipe to ensure that
4 you know if your discharge pipe leaks at any time
5 during the course of the plant's operation.

6 CHAIRMAN RAY: Discharge pipe is to
7 where?

8 MR. ROACH: It's from the discharge pipe
9 from the rad waste building out to the point of
10 discharge.

11 CHAIRMAN RAY: Right, which is?

12 MR. ROACH: Savannah River.

13 CHAIRMAN RAY: Yes. So you are going to
14 monitor for leakage or a guard pipe down to the river?

15 MR. ROACH: Or to where it ties into the
16 existing plant's discharge.

17 CHAIRMAN RAY: Oh. What does monitoring
18 for leakage mean?

19 MR. ROACH: In some cases in the DCD for
20 the AP 1000 condensate transfer pipe, which goes from
21 a condensate storage tank back to the hot well, it's
22 located above ground so that the operators on normal
23 rounds can observe if there are any leaks that
24 develop. In this case if you use a guard pipe
25 typically guard pipes will have a telltale drain.

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1 CHAIRMAN RAY: Yes, no I understand that
2 part. I meant if you don't have a guard pipe, and
3 it's just - I was just wondering if you had some leak
4 detection in mind that I had never thought of.

5 MR. ROACH: There are people who use -
6 there are electronic leak detection devices. There
7 are many options at this point. I don't think the
8 design is finalized to that point. But they have the
9 options, what they are going to do. As we are
10 developing our operational program, inspection
11 procedures, for the reactors, one of the issues is for
12 us to evaluate the program developed in response to
13 this generic template NEI 08-08. We will look at that
14 as part of the inspection.

15 CHAIRMAN RAY: Okay.

16 MR. ROACH: And then the construction
17 worker ALARA program, the commitment is that
18 construction workers will be treated as members of the
19 public, and the regulations of 10 CFR 20.1301 apply to
20 them. Which has a limit of basically 100 millirem per
21 year. The applicant calculated an estimated exposure
22 to the construction workers of around 24 millirem per
23 year in their FSAR, and the question was, since this
24 is located near an operating plant, what actions will
25 you take to ensure that you don't exceed the 100

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1 millirem per year, and they provided that they will
2 use surveys and in situ TLDs to evaluate and make sure
3 that the limits of 1301 aren't exceeded.

4 CHAIRMAN RAY: Okay, I think that is
5 understood. Any questions?

6 If not thank you.

7 MR. ROACH: Thank you.

8 CHAIRMAN RAY: All right. Now there is
9 absolutely no reason I can see why we should have to
10 go beyond noon tomorrow. So let me ask first the
11 applicants if they would like to address resolution of
12 ACRS action items this afternoon rather than tomorrow
13 afternoon, after we get done with the remaining? I'm
14 asking them if they want to bring forward tomorrow
15 action items, discussion, Item #8 on tomorrow agenda.

16 MR. SISK: Mr. Chairman, I think we can
17 do that. But I would want to coordinate with the
18 staff on whatever experts they need. But we are
19 prepared to move forward with the schedule that is
20 acceptable to the rest of the staff.

21 CHAIRMAN RAY: Well, if it's not
22 possible, Rob, we could ask the same question about
23 Chapter 10 and 22, which are also in here in the
24 before noon part, and we can just move up the item
25 eight to the morning after the item two that is on the

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1 agenda here.

2 MR. SISK: We are prepared for maximum
3 flexibility. We can bring 22 or 10 forward as the
4 ACRS prefers.

5 CHAIRMAN RAY: Okay, we are going to do
6 15 first thing after lunch, 15 on today's agenda,
7 which is design change package discussion. I assume
8 you are ready for that. Then I will ask you, Rob, to
9 talk with the staff and decide how you want to handle
10 things tomorrow versus the rest of the day today. But
11 I'd like to make sure and I assume everybody here
12 would agree that we would like to make full use of
13 today and then shorten tomorrow.

14 MR. WANG: Today's staff already told me,
15 all this is COL, and that DCD can be moved to this
16 afternoon's agenda.

17 CHAIRMAN RAY: Okay, well again, let me
18 let these guys talk and see what is best for them,
19 because we don't care, either way you want to do it is
20 okay with us. We are going to break now for lunch.
21 We will resume at 1:00 o'clock, and at that time you
22 let us know how you want to do it, but either way,
23 let's try and get done before noon tomorrow.

24 (Whereupon at 11:50 p.m. the proceeding in
25 the above-entitled matter went off the record to

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1 return on the record at 12:58 p.m.)

2 CHAIRMAN RAY: We'll go back on the
3 record. During the lunch hour we've had an agenda
4 update, or revision, that I trust reflects the
5 consensus of applicants, staff and our ACRS staff.
6 And it provides for us to, as I mentioned before the
7 lunch break, to be complete by noon tomorrow, and for
8 us to proceed this afternoon starting with COL Chapter
9 10. I appreciate the flexibility of everyone in
10 making these adjustments. I trust it will help
11 everyone with their plans as well, and I won't promise
12 that we will be able to do this every time AP 1000
13 subcommittee meets.

14 I think maybe it's a good thing to have a
15 competing subcommittee next door. Things get exciting
16 over there. People tend to go there. We speed up
17 accordingly. (Laughter) So I don't know whether
18 we'll be able to do that every time.

19 Anyway, so we are going to begin with COL
20 Chapter 10, as I said, beginning with the applicant.

21 COL CHAPTER 10 - APPLICANT PRESENTATION

22 MR. SPARKMAN: Thank you, Wes Sparkman
23 again, and I will be covering Chapter 10.

24 Four sections: a summary description,
25 turbine generator, main steam supply system and other

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1 features of steam and power conversion systems.

2 The major topics in Chapter 10: DCD
3 incorporated by reference; no standard or site
4 specific departures were taken. There are five COL
5 information items included in Chapter 10. SER with
6 open items did contain one open item, but it has been
7 resolved. Chapter 10 also includes some supplemental
8 information and some VEGP site-specific information.

9 CHAIRMAN RAY: If you are not going to do
10 it on the next page, I'm going to ask you to tell us
11 about these COL information items briefly, but go over
12 them please.

13 MR. SPARKMAN: All right, I will do that.
14 You want to do that now?

15 CHAIRMAN RAY:

16 MR. SPARKMAN: Okay. The COL items,
17 there are three VEGP items, and two standard items.
18 The two standard items have to do with an erosion
19 corrosion monitoring program, the carbon steel
20 portions of the steam and power conversion systems, so
21 in other words a FAC monitoring program, which we have
22 committed to which is part of the resolution which was
23 incorporated and which I'll talk about in just a
24 minute.

25 CHAIRMAN RAY: Before you move off that

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1 then, is the program one that is referencable to
2 industry standard or something, or is it one of your
3 own?

4 MR. SPARKMAN: It would be similar to
5 what's done in the operating fleet today, in terms of
6 an industry standard, I'd have to get the details on
7 that, I don't know off the top of my head.

8 CHAIRMAN RAY: Well, that is the simplest
9 way to handle it. For our purposes, if there is an
10 NEI or Reg Guide or something that you can give us a
11 reference to, as the basis for your program, or if
12 it's adopted from the existing Vogtle 1 and 2
13 programs, or something. But that is what I'm looking
14 for.

15 MR. SPARKMAN: Right.

16 I would have to go back and look, but I
17 would assume they are the same as Vogtle I and II, and
18 talking with Bob Hirmanpour, which is here assisting
19 me, and he said that EPRI Checkworks program is going
20 to be used.

21 CHAIRMAN RAY: Okay.

22 MR. SPARKMAN: So if that helps. Okay.

23 On the second item, turbine maintenance
24 and inspection program, we do have a license condition
25 to submit that program to the staff prior to fuel

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1 load. And that's how we're addressing that
2 information item.

3 And then there are three additional items,
4 one is the final configuration of the circ water
5 system which is addressed in COLA Sections 104521 and
6 104522 and 104555. Second item is condensate
7 feedwater and auxiliary steam chemical control. It's
8 addressed in Section 10.4.7.2.1. And potable water
9 system chemistry requirements, which are addressed in
10 COLA Section 9.2.5.

11 That will cover the items.

12 CHAIRMAN RAY: Okay.

13 MR. SPARKMAN: And then the open item
14 that has been resolved, on our next slide there, the
15 staff determined that the revised response RAIs
16 address all the staff concerns with the FAC program
17 with the exception of identifying the program
18 implementation schedule, so we have proposed a license
19 condition in license condition six, operational
20 program readiness. The staff reviewed the proposed
21 changes and found that the proposed changes were
22 acceptable, and this condition was incorporated into
23 revision two and so it is not a confirmatory item, it
24 is actually closed.

25 That's all I had, unless you had any other

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1 questions.

2 CHAIRMAN RAY: All right, well let me
3 ask, any questions?

4 MEMBER BROWN: I assume the staff is
5 going to follow up?

6 CHAIRMAN RAY: Yes, yes. All right, we
7 can go to the staff now if you are ready. Very
8 timely, good job.

9 CHAPTER 11 - 12 - NRC STAFF PRESENTATION

10 MR. JOSHI: Give us 30 seconds.

11 CHAIRMAN RAY: Sure. I appreciate your
12 flexibility in schedule changes.

13 MR. JOSHI: Okay, my name is Ravi Joshi,
14 and I will present our review of Chapter 10, and Greg
15 Makar is our technical staff. Actually he is going to
16 provide a presentation.

17 As applicant was saying there was one
18 open, and that open item has been resolved. Maybe I
19 could give you some more information, and Greg can
20 provide that.

21 MR. MAKAR: Well, the applicant's program
22 is based as I said on the EPRI guidelines, and that
23 includes our guidelines look for an overall program of
24 FAC management as well as a computer-based tool to
25 evaluate the results and make projections. So

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1 Checkworks is the name of the computer program that
2 they are using with that EPRI guideline.

3 The open item was not a technical issue;
4 this was - we were interested in how they would - we
5 wanted them to provide the schedule of implementing
6 the FAC program, which they did, in a letter. They
7 had elected to include it as part of a license
8 condition on operational programs, so that is
9 something that we will be developed, schedule will be
10 developed under that license condition and under
11 operational programs, and updated and available to us
12 periodically.

13 CHAIRMAN RAY: All right, well, that
14 seems like a well worn track then that they are going
15 to be following. Any comments, questions?

16 (No response)

17 Hearing none from my colleagues --

18 MEMBER BROWN: I do have one.

19 CHAIRMAN RAY: Yes, please.

20 MEMBER BROWN: Not a question but a
21 request. The discussion of the changes in the turbine
22 overspeed, I think I mentioned I would like to get a
23 copy of the RAI and the responses. It doesn't have to
24 be done today.

25 MR. JOSHI: Yes, that is the one we are

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1 tasking the Westinghouse side. We don't have anything
2 on COSI because we are actually using that as the IBR.

3 So we don't have any specific RAIs on the other side
4 on turbines.

5 MEMBER BROWN: On the COL side.

6 MR. JOSHI: On the COL side.

7 MEMBER BROWN: But you do on the DCD
8 side?

9 MR. JOSHI: On the DCD side, so I asked
10 the DCD people to talk about that in more detail.

11 MR. BUCKBERG: Those presentations are
12 still to come.

13 MR. JOSHI: They will be followed --

14 MR. BUCKBERG: They went out of order.

15 MR. JOSHI: It's just a different order.

16 MEMBER BROWN: Oh, okay, I still want the
17 copy, I still want the RAI and the responses, so I can
18 take a look through them. There's a lot of
19 information as opposed to the summary.

20 MR. JOSHI: You are trying to juggle the
21 staff, because the same members are going to the STP
22 site, so we are trying to move --

23 MEMBER BROWN: I lost the bubble. I
24 apologize for that.

25 CHAIRMAN RAY: All right, I think we are

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1 satisfied with Chapter 10 then.

2 MR. JOSHI: Thank you.

3 CHAIRMAN RAY: All right, now we have on
4 the agenda something called design change package,
5 applicant.

6 DESIGN CHANGE PACKAGE - APPLICANT

7 MR. SISK: Mr. Chairman?

8 CHAIRMAN RAY: Yes.

9 MR. SISK: We do have a design change
10 presentation. We were going to do the Chapter 10 at a
11 later time, when our expert and licensing lead and SME
12 is available. So we are ready to proceed.

13 CHAIRMAN RAY: Like I say, we'll take it
14 in whatever order you are ready for. On the revised
15 agenda this is what it looks like we are intending to
16 do next. So have at it.

17 MR. ZIESING: Good afternoon.

18 CHAIRMAN RAY: Good afternoon.

19 MR. ZIESING: My name is Rolf Ziesing.

20 (Comments off the record)

21 MR. ZIESING: Okay, good afternoon again.

22 My name is Rolf Ziesing. I'm the deputy director for
23 the licensing of Westinghouse. And today, this
24 afternoon, I'm going to tee up what I believe is a new
25 topic, to really just put the topic on the table for

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1 discussion.

2 We are going to brief you on the
3 Westinghouse design control document, Revision 17
4 amendment, design change process for incorporation
5 into the final design certification. So I intend to
6 go through a very brief background, overview of our
7 change process, and the status of where we are in the
8 change notification process for finalization of Rev.
9 18.

10 We didn't get into the details of the
11 actual changes. And there is also proprietary
12 information involved that a closed session would
13 support, but we do anticipate doing that in the
14 future.

15 Very briefly the background, as you are
16 well aware, the NRC issued its original design
17 certification in 2005, it was based on our Revision 15
18 of the DCD. Following that certification of the AP
19 1000 design Westinghouse has continued to work with
20 design finalization, and their utility customers, in
21 constructing AP 1000. As a result of these
22 activities, that's led to some design changes. We
23 submitted Revision 16 in 2007, and Revision 17 in 2008
24 to the DCD.

25 In November of 2009 the NRC issued interim

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1 staff guidance 11, which is intended to provide
2 additional information to support the concept of a
3 design freeze for licensing, recognizing that design
4 finalization is still occurring. So the next slide --

5 CHAIRMAN RAY: Design freeze for
6 licensing, recognizing that design changes are still
7 occurring - that's what you said. That's interesting.
8 All right.

9 MR. ZIESING: So this slide here
10 identifies the two basic pathways for change to
11 Revision 17 that will result in our submittal of
12 Revision 18. If you look in the top left corner you
13 will see that the starting point is Revision 17, and
14 in the course of resolving RAIs and OIs there are
15 changes being made that are reflected in the DCD.
16 Obviously the NRC is notified of those changes, and
17 those changes would be incorporated in, and included
18 in our submittal of revision 18 of the DCD.

19 On the bottom left hand what you see there
20 is emerging changes. These are changes coming out of
21 design finalization, changes coming out of
22 construction activities, with utilities, and these
23 changes may or may not affect the DCD. For those
24 changes that do affect the DCD, we have implemented
25 the ISG-11 guidelines into our internal processes, and

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1 we do an ISG-11 significance determination.

2 Out of that determination if NRC
3 notification is required, and we are obligated to
4 include it in Rev. 18, then we make that notification.

5 And this process has been in place just about since
6 the beginning of this year, and we have active dialog
7 with staff on these changes as they occur, and as we
8 submit them formally.

9 For those changes that have been
10 determined not to be required for inclusion in
11 Revision 18, those changes would be deferred and dealt
12 with via existing processes involving departures or
13 amendments.

14 Next slide. So the status of where we
15 are, as of June 14th we have identified 17 changes that
16 we have determined are being required and included in
17 Revision 18. There are a couple of more in the queue,
18 and we are in the process of finalizing that, and
19 we'll make our notifications to NRC. But as of June
20 14th, the number was 17. We are anticipating, and I
21 believe staff is going to discuss the plan to deal
22 with these changes in an integrated manner by the
23 addition of an additional chapter to the FSAR. And we
24 are just working with the NRC to support the timely
25 completion and identification of final design changes,

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1 and consistent with the recently published rulemaking
2 schedule.

3 MEMBER BLEY: Harold, I have a question.

4 CHAIRMAN RAY: Do you? Not a surprise.

5 MEMBER BLEY: For us. Do you know if we
6 have reviewed ISG-11 when it came out?

7 CHAIRMAN RAY: Took the words right out
8 of my mouth. Interim Staff Guidance 11.

9 MEMBER BLEY: Do you know what it is?

10 (Simultaneous voices)

11 CHAIRMAN RAY: It's that 50.59-like
12 process we were talking about next door yesterday.
13 How do you decide if it's part of Tier 2, then you
14 don't have to have it reviewed?

15 MR. ZIESING: It is not necessarily based
16 on Tier 1 or Tier 2, it's based on the material
17 significance and whether or not the change will affect
18 the SER.

19 CHAIRMAN RAY: You confuse me a little
20 bit. I thought if you made a change to Tier 1
21 information it had to be reviewed. Despite any other
22 criteria.

23 MR. ZIESING: Let me explain my knowledge
24 of ISG-11. And it doesn't really delineate between
25 Tier 1 and Tier 2.

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1 MEMBER BLEY: Maybe when staff comes up
2 they can talk to this.

3 CHAIRMAN RAY: Well, we don't have staff
4 on the agenda to talk about this subject, but the
5 staff is standing right over there. And I'm pondering
6 how to proceed here. Because obviously this is
7 something that we have an interest in.

8 (Comments off the record)

9 MEMBER BLEY: But you are going to talk
10 about it?

11 CHAIRMAN RAY: So we can wait. We will
12 call you up shortly then, thank you. I just didn't -
13 I couldn't recognize quickly enough when I look in the
14 presenter column I find both staff and applicant
15 listed, so that's fine.

16 Well, unlike some other things that we
17 have taken up today, this one I think we are going to
18 have to understand better. To your point, Dennis, I
19 perceive that this flow chart here is what I'll call
20 prior to when the issue of whether it's Tier 1 or Tier
21 2, how the change is treated. This is looking at
22 changes that are taking place, do we put them into the
23 DCD, or do we put them into the COL, and it's the
24 binning of that decision that is depicted here on this
25 flowchart.

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1 But I am like I say, I am having to absorb
2 and try and figure out what on earth is --

3 MEMBER BROWN: I would just use the
4 flowchart. To me - I'll ask him in a minute after I
5 see what I got out of this. But there is a line of
6 stuff that is already RAIs, OIs, and responses, they
7 are notified, they go into the DCD, Rev 18, and people
8 are working on them. Then stuff that is emerging that
9 I'm not quite sure what they're going to do with yet,
10 go down this path of maybe DCD, maybe COL, and that is
11 --

12 CHAIRMAN RAY: Well, that's what it
13 should be.

14 MEMBER BROWN: Is that what you were
15 saying?

16 CHAIRMAN RAY: There are other changes
17 that take place for reasons unrelated to RAIs. And in
18 that case - excuse me?

19 MR. ZIESING: An example?

20 CHAIRMAN RAY: Well, that might do, but
21 just a second. In any event the things that aren't
22 being done in response to NRC RAIs may nonetheless
23 wind up in a DCD Revision 18 or they may wind up in
24 the COL, and that's a timing issue primarily I would
25 expect, although some items have to get into the DCD.

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1 Anyway go ahead with an example; that's fine.

2 MEMBER BROWN: Well, how do they relate
3 to the talk about a freeze, having a freeze on design
4 changes. Didn't he say that a minute ago?

5 CHAIRMAN RAY: But his first comment was
6 the one I picked up on was licensing as if that was
7 different than plant design, and this is post
8 licensing they are talking about.

9 Anyway, give us an example.

10 MR. ZIESING: Well, an example, I believe
11 you were briefed on the gas intrusion subject. So
12 that is an example where through our change review
13 process the details of implementing the system
14 requirements we've identified that there are areas of
15 the DCD that require changing, and so that turns into
16 what we call a design change proposal internally, and
17 results in detailed drawing changes identifying
18 valves, location of the valves, then there is
19 associated DCD text markups. So that would be an
20 example of a detail associated with design
21 finalization that is now being incorporated into
22 Revision 18.

23 CHAIRMAN RAY: Well, okay, but I think
24 the more important question that we are trying to
25 figure out here is what's the difference between what

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1 we review and what gets built. And how is that
2 difference treated. The issue of Tier 1, Tier 2, or
3 50.59 or whatever mechanism exists for licensees to
4 make changes without NRC approval I think we
5 understand. This is different, and I'm just trying to
6 understand why.

7 MR. ZIESING: My understanding, and I'll
8 ask Rob to help me here in a minute if he can amplify,
9 is that the changes will fall into a number of
10 buckets. One of the buckets would be provision 18,
11 another bucket would be the COL. Another bucket would
12 be a departure to the COL formerly identified, but
13 then the means of reconciling that after rulemaking
14 would be a departure or amendment, and that's where we
15 get into the Tier 1 versus Tier 2 star to identify
16 those methods of reconciling the change into the
17 license basis.

18 CHAIRMAN RAY: Well, I don't know, maybe
19 we need to hear from the staff here. I'm just sort of
20 stuck. I can't even figure out how to grapple with
21 this at the moment. So Dennis, do you have any - I'd
22 wait for staff on this one. Don't go too far.

23 MR. CUMMINS: So maybe I could help a
24 little bit, Ed Cummins. So the basic if you just why
25 are we even talking about this is that we the staff

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1 and Westinghouse and everybody recognized that if you
2 keep changing the DCD you never can get it approved.
3 So this freeze that we are talking about is not a
4 freeze to the design; it's a freeze to what design we
5 get licensed. And the staff thinking about this said
6 well there are some changes that you must tell me
7 about, because they are important in my opinion, too,
8 and then there are some criteria. Basically they are
9 important to safety. So if you make changes of that
10 kind of character, then you can't not tell me; you
11 must tell me. And those are ISG-11 changes. So when
12 Westinghouse for whatever reason decides to do a
13 design change not because the staff asked us to, so we
14 are in the bottom part of the flowchart, then we
15 screen it for ISG-11, and if it doesn't screen in,
16 then we say that is a change that we are going to save
17 for the COL for future processes, where they
18 communicate the change to the licensing documents with
19 a departure, an exemption or 50.59, some future
20 process not in the certified design.

21 If it is screened in to ISG-11, then we
22 notify the staff, and then we have a little bit of
23 dialog of whether it's our believe that those changes
24 will be included in revision 18, and will be part of
25 the certified design. Because they meet these

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1 criteria that says they are important. That's the
2 business reason or the - why we are doing all this.

3 CHAIRMAN RAY: I think that is clear
4 enough. The question I would ask you, though, Ed, is
5 we come here, we review something, like it's hard to
6 tell what things are important to various members;
7 that is the nature of the ACRS. But anyway whatever
8 it is, it looks okay, and it goes on, and then it gets
9 changed later. And let's say it's on this upper - it
10 goes into the DCD revision. One question we'll have
11 for the staff is, well, is it going to come back here?

12 How do you decide if it does or it doesn't? Does it
13 never do that? Does it sometimes do it? How do we
14 decide?

15 And your point about you've got to get
16 design set in order to get the licensing done would
17 seem to say, well, that's what presumably revision 18
18 will represent which is the design control document as
19 finally revised, and we will call that one Revision
20 18, and that'll be the basis for the licensing action,
21 and you are going to have to get everything in there
22 that is a change that meets this ISG-11 notification
23 requirement. And so maybe it's an issue that we are
24 just trying to figure out. Does any of that stuff
25 ever come back here? If not, that may be fine. But

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1 do we all agree to that?

2 So that is the kind of thing that we are
3 trying to understand better. Maybe we had better talk
4 to the staff and see what they have to say.

5 MEMBER BLEY: I have one clarification on
6 Westinghouse. If I understood what you told us, we
7 are in this process. The design is effectively frozen
8 at Rev. 17 except as it goes through this process.

9 MR. ZIESING: Correct.

10 MEMBER BLEY: And right now there are a
11 number of things that are on the RAI, OI responses,
12 NRC notified, actually going into DCD 18, and there
13 may be many others going through the ISG-11 process, I
14 don't know. Are there many that are going that way
15 yet? Or have they mostly been the other way?

16 MR. ZIESING: There are some. I don't
17 know if there are many. I think in the big picture
18 there are still relatively few going through the
19 process. But we expect that there will be some
20 changes going through the process, through this year.

21 CHAIRMAN RAY: In the last six days there
22 have been 17 changes.

23 MR. ZIESING: I'm sorry?

24 CHAIRMAN RAY: In the last six days there
25 have been 17 changes.

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1 MEMBER BLEY: So not many might be only a
2 few hundred or something, I don't know. But if I
3 understand it right, one more is if you've had a
4 change going through the bottom half of this chart,
5 and if you did your ISG-11 review and put it in the -
6 save it for COL place, you are just holding those
7 until some time in the future, they haven't been
8 transmitted to NRC.

9 MR. ZIESING: They will be deferred to
10 the COL.

11 MEMBER BLEY: Okay, you have a catalog of
12 those and they'll come up?

13 MR. ZIESING: Yes.

14 MEMBER BLEY: Before we get through the
15 COL process on your RCOLA. Or maybe not.

16 CHAIRMAN RAY: Or there will be another
17 version of this in the COL.

18 MR. ZIESING: I mean the ISG-11 applies
19 to us and the COLAs, and in fact they are integrated
20 into our review so that as we are making ISG-11
21 determinations with the involvement and input from our
22 clients, because what we don't want to have happen is
23 for us to defer a change, and then they determine that
24 it is ISG-11, and so I think in theory if it is
25 working correctly, the change will be deferred, and

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1 because it is not ISG-11 significant, I don't know
2 that it needs to be included in the COLA application.

3 It can be dealt with after rulemaking.

4 MEMBER BLEY: Okay, that's what I
5 understood the first time around, and I'll just say
6 this out loud to you, and maybe staff will comment.
7 My understanding of changes with respect to certified
8 design is that if it's a change to Tier 1 material or
9 to Tier 2 star, it must be reviewed by staff, and if
10 it's a change to Tier 2, as long as it doesn't affect
11 the safety sort of like a 50.59 evaluation, then you
12 just have to keep track of it. They can audit it, but
13 it's not actually submitted. So do I have that right?

14 MR. ZIESING: Yes.

15 MEMBER BLEY: I don't see smiles.

16 CHAIRMAN RAY: But one thing you said,
17 Dennis, that I wanted to come back to you on is when
18 you referred to a freeze, the freeze as I see this
19 applies to Rev. 18. And Rev. 18 consists of whatever
20 exists today plus whatever flows through this
21 flowchart.

22 MR. CUMMINS: That is not correct. This
23 is Ed Cummins. The freeze was at Rev. 17. And then -
24 -

25 CHAIRMAN RAY: Two years ago.

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1 MR. CUMMINS: Yes.

2 CHAIRMAN RAY: And hundreds and hundreds
3 of changes.

4 MR. CUMMINS: There are hundreds of
5 changes. And they have all been screened to this ISG-
6 11, the ISG-11 is a relatively recent six months ago
7 or nine months ago thing from the staff. But they
8 have all been screen for this ISG-11, and those that
9 are - meet the criteria, the staff has been informed.
10 And it doesn't matter whether it's Tier 1, Tier 2
11 star, or Tier 2. There are different mechanisms for
12 the industry to communicate with the NRC, whether it's
13 Tier 1, Tier 2 star, or Tier 2, but the issue is what
14 is the timing of that communication, and it could be
15 that it is now in the design cert; it could be that
16 it's in the COL; or it could be that it's after the
17 COL.

18 CHAIRMAN RAY: That's clear enough. But
19 the freeze term that you are using you are applying to
20 Rev. 17, I stand corrected, all right, you are
21 applying that to Rev. 17, it was filed in September,
22 it'll be two years since it was filed.

23 MR. CUMMINS: Yes.

24 CHAIRMAN RAY: The reality is that we are
25 looking at stuff here that is closer to Rev. 18 than

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1 it is to Rev 17, what we are reviewing.

2 MR. CUMMINS: What you are reviewing is
3 whatever we submit, right. We have not submitted --

4 MR. ZIESING: We are building Revision
5 18.

6 CHAIRMAN RAY: I know, but I'm trying to
7 figure out what we are reviewing as a --

8 MR. CUMMINS: You are reviewing Rev. 17
9 plus those things screened in the ISG-11.

10 CHAIRMAN RAY: Agree, which is - which
11 according to this is as of now what you just said says
12 that we are going to call that Rev. 18.

13 MR. CUMMINS: Yes.

14 CHAIRMAN RAY: Okay, and I guess a
15 question, what I was trying to say before, Ed, was is
16 there a point at which Rev. 18, which is continuing to
17 have stuff put into it, leaves our world and goes on
18 over the horizon someplace else and continues to
19 change, so that when we sit here and write a letter
20 to the Commission, we're saying, well, the last time
21 we saw Rev. 18, this is what we thought of it, but
22 it's still changing. And that's not going to be a
23 very satisfactory situation. So I'm just trying to
24 get it so I can explain to 12 other people what is it
25 that we are reviewing relative to what ultimately you

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1 seek approval of.

2 MR. JAFFE: Perhaps we can try that with
3 the staff's presentation.

4 CHAIRMAN RAY: Well, fair enough, but I'm
5 still asking them. But I will give you a shot at it.

6 MR. AKSTULEWICZ: This is Frank
7 Akstulewicz. I'm the deputy director for licensing.
8 Let me try to answer some of that.

9 CHAIRMAN RAY: Sure, Frank.

10 MR. AKSTULEWICZ: The review that you are
11 doing right now in terms of the design modifications
12 and the change packages that are being presented will
13 be the essence of Rev. 18, and that will be the
14 document that will be complete as of essentially the
15 end of August. So anything - there will be no changes
16 from then through the onset of rulemaking, and that
17 will be the version of this particular design that
18 will go into rulemaking. So after --

19 CHAIRMAN RAY: That's much better. I
20 like what you just said.

21 MR. AKSTULEWICZ: After we close the
22 books in December, which is when the full committee
23 meets on this particular design, all the changes will
24 be known, and they will have been visited to the
25 committee, so there will be nothing new that will be

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1 happening along the way. If there are changes that
2 are of substance during the rulemaking, we will come
3 back during rulemaking and revisit those with the
4 committee.

5 CHAIRMAN RAY: All right, thank you,
6 Frank. I think that helps.

7 Back to this, I'm trying to understand.

8 MR. CUMMINS: So from our view of the
9 same thing, I completely agree. There is only one
10 Rev. 18, and that Rev. 18 will be delivered to the
11 staff and to the ACRS, and the question is, what is in
12 the content of it. And the content includes the top
13 bar, which is all changes to the thing which resulted
14 from staff interaction with Westinghouse plus that
15 subset of changes in the bottom which were initiated
16 by Westinghouse which are screened into ISG-11.

17 CHAIRMAN RAY: I think I understand it,
18 and it sounds sensible to me. What you are saying is
19 that other things, though, that aren't screen into
20 Rev. 18 will show up in the COL.

21 MR. CUMMINS: Perhaps in the COL but
22 perhaps at another time later than that.

23 MR. AKSTULEWICZ: This is Frank again.
24 You are absolutely right, Harold, the changes that are
25 not included in the design cert will be dealt with as

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1 part of the COL process using the criteria that is
2 going to be in the design certification rulemaking,
3 for judging what needs to be reviewed and what
4 doesn't.

5 CHAIRMAN RAY: All right, thank you,
6 Frank, I'm clear for the moment in my own mind. And
7 now I believe we should excuse you guys and let the
8 staff continue. Frank has already helped me at least.
9 Let's go with the staff presentation, please.

10 DESIGN CHANGE PACKAGE - NRC STAFF PRESENTATION

11 MR. JAFFE: My name is Dave Jaffe. I am
12 lead project manager for the design certification
13 amendment. Unfortunately Brian Anderson who is the
14 lead for the DCPs could not be with us today. But
15 certainly Frank Akstulewicz's comments are very
16 germane here.

17 Basically the goal of the office is to
18 issue the final rule relating to the design
19 certification amendment near the end of September,
20 2011. And in order to achieve that goal we have
21 worked back and set various milestones that we
22 informed Westinghouse of in a recent letter. One of
23 those goals is to make sure that by the end of June we
24 basically have the shape of what will be in the design
25 certification amendment, and that includes agreement

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1 on all responses, open items, and in addition the
2 design certification - the design control packages, so
3 that really represents for us the target is to
4 establish what DCPs that meet ISG-11 will be included
5 in Revision 18, and we must do that in order to assure
6 that we have final submittals in July, SER input by
7 the end of August, and so forth through the full
8 committee meeting in December, and then the various
9 rulemaking goals. So that is why we must establish by
10 the end of June exactly which of these DCPs will be
11 contained in Revision 18, and we understand from
12 Westinghouse that Revision 18 will be coming in in
13 December, and that is within our milestones that we
14 have set for the project. As far as --

15 CHAIRMAN RAY: Excuse me, let me
16 interrupt. At that time when Rev. 18 is submitted in
17 December, isn't it just a matter of verifying that it
18 contains everything, and only the things that you
19 reviewed up through July?

20 MR. JAFFE: Exactly right. What we'll be
21 doing is as we close out the confirmatory - excuse me,
22 as we close the open items they become confirmatory.
23 We'll be looking at Rev. 18 to make sure that they are
24 there. We'll be looking to see that the DCPs that we
25 understand will meet ISG-11 are also in Revision 18.

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1 But you are exactly right; these things become
2 confirmatory, and that's why it's important to
3 understand what we are going to be receiving by the
4 end of June.

5 CHAIRMAN RAY: You are going to talk
6 about ISG-11?

7 MR. JAFFE: Unfortunately I'm not expert
8 in ISG-11. I provided a copy, but ISG-11 basically
9 contains the criteria that are used for screening, and
10 that much I am aware of. I've been looking at it, you
11 see the criteria there. I've outlined them.

12 CHAIRMAN RAY: All right, that's fine.

13 MR. JAFFE: So that basically represents
14 what Westinghouse is using to decide which items they
15 must inform us of, and which items they can deal with
16 otherwise. But it's important to recognize that the
17 change process continues through the life of the
18 plant. And getting back to what Frank Akstulewicz
19 said after the freeze point there are various ways
20 that the COL applicants can deal with it. Once they
21 are COL holders, they will probably continue to change
22 the design, and when they are operating the plant they
23 will continue to change the design. In each phase
24 there are various mechanisms to deal with that.

25 But as far as Rev. 18 is concerned, we are

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1 just dealing up to the end of June. And those will be,
2 the subsequent changes will be dispositioned as Mr.
3 Akstulewicz indicated.

4 CHAIRMAN RAY: So on page two you have
5 highlighted the categories of changes --

6 MR. JAFFE: Exactly so.

7 CHAIRMAN RAY: -- that should not be
8 deferred, meaning they need to be included.

9 MR. JAFFE: Right.

10 CHAIRMAN RAY: I see.

11 MR. JAFFE: One of the things that we
12 have done in order to minimize the upset to the
13 staff's review is rather than sprinkle these through
14 the chapters where they would normally appear, we have
15 gathered them together in a single chapter and
16 tentatively called it Chapter 23, but whatever we call
17 it, the important factor is, it will be contained in a
18 separate chapter.

19 CHAIRMAN RAY: And the starting point for
20 including things in Chapter 23 in other words?

21 MR. JAFFE: Basically, let me just run
22 through a very brief history of how we made that
23 decision. Initially we received a rather large
24 collection of changes from Westinghouse, and we were
25 rather dismayed by the extent of --

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1 CHAIRMAN RAY: Trust me, we have been
2 through that matrix. It dismays everybody.

3 MR. JAFFE: Yes, and basically after some
4 discussion with Westinghouse and consideration of what
5 was involved we found that in fact a relatively small
6 population were significant, and a relatively small
7 population meet the criteria of ISG-11. So basically
8 those are the ones that we want to review, and they
9 are those reviews are under way in some cases.

10 CHAIRMAN RAY: Now if I understood you
11 correctly, then everything since Rev. 17, that is, all
12 of the changes that meet these criteria, will appear
13 as design change packages in Chapter 23?

14 MR. JAFFE: No.

15 CHAIRMAN RAY: From what point in time?

16 MR. AKSTULEWICZ: Chairman, the answer is
17 January of this year.

18 CHAIRMAN RAY: I understand now. January
19 of this year? That's okay, I got it. So stuff before
20 January --

21 MR. AKSTULEWICZ: It's sprinkled into the
22 responses, and they were not treated as separate
23 changes but built in as evolution occurred.

24 CHAIRMAN RAY: Well, this was something
25 that we talked about that would be helpful from Day

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1 One, because we were having such a difficult time
2 pulling out the things that we should pay attention
3 to.

4 MR. AKSTULEWICZ: That's right.

5 CHAIRMAN RAY: From the massive changes
6 that were displayed in the matrix. Okay, all right,
7 go ahead.

8 MR. JAFFE: Basically then it was a
9 matter of once we became aware of Westinghouse's
10 process, and the fact that they were properly
11 organized around the principles of ISG-11, they had
12 procedures, at that point we understood what the
13 significance of these changes were. And we organized
14 to review just the ones that met ISG-11, and basically
15 to administratively cut off the review at a certain
16 point.

17 Now we could have continued, I imagine,
18 but for reasons that I already stated we felt that we
19 had to basically limit ourselves in order to move
20 forward on schedule. So --

21 CHAIRMAN RAY: We do sympathize with
22 that; we've done the same thing. This Chapter 23
23 will it be addressed to the ACRS as other chapters
24 are, or is it just a place that we can go find things?

25 MR. AKSTULEWICZ: It will be a wholly

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1 contained discussion of all the changes that will meet
2 the threshold, and it is coming as a separate chapter
3 to the committee for a separate review.

4 CHAIRMAN RAY: Thank you. Okay. Well, I
5 believe that makes sense, Frank. But I need to
6 communicate this to the other members so that they
7 appreciate it.

8 MR. AKSTULEWICZ: Clearly, and we agree,
9 this is going to be an area where in the course of
10 discussion, trying to be topic-focused in terms of our
11 discussions with the committee, this chapter is going
12 to be just that: it will be specific topics that we
13 will be bringing in their entirety, because it will be
14 changes that will be sprinkled throughout the
15 document, but it will be more like the traditional
16 license amendment. We will bring the whole issue to
17 you at one time.

18 CHAIRMAN RAY: All right, thank you. You
19 have gone to page four here, so if you have any
20 further comments, please go ahead.

21 MR. JAFFE: That pretty much concludes my
22 comments.

23 CHAIRMAN RAY: We'll have to take a
24 minute here, leave these slides and see if we have any
25 other comments. There is the January 2010 date that

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1 Frank mentioned, so I understand that part now.

2 Does this term, elective, does that appear
3 somewhere?

4 MR. AKSTULEWICZ: It's a coined phrase,
5 because the view is, those are changes that would not
6 be necessary to proceed forward with the particular
7 certification, but could be economic enhancements that
8 the COLs would like to see, or could be some other
9 economic investment that would like to be made. But
10 they are not critical to the overall certification.

11 MR. JAFFE: May I also add, they are non-
12 ISG-11.

13 MR. AKSTULEWICZ: Yes, but they are
14 really not - they are not a violation of any
15 particular code.

16 CHAIRMAN RAY: It's better to know what's
17 in the design than to only know parts of it, so that's
18 fine.

19 MR. JAFFE: One of the things that was
20 difficult was that in starting in January when we saw
21 that large population - I hope I am not repeating
22 myself - but it included both ISG and non-ISG changes
23 so we started with a rather large population
24 initially, and that was culled down subsequently, with
25 discussions with Westinghouse and --

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1 CHAIRMAN RAY: Well, one question always
2 is, whether or not we and they have applied these
3 criteria correctly. In other words are there changes
4 that we have mischaracterized, and ought to be viewed
5 as triggering one of these criteria. But anyway I
6 don't want to dwell on that any more, but that is one
7 of the questions.

8 MR. AKSTULEWICZ: To answer that
9 question, Chairman, we held a two-day meeting, public
10 meeting with Westinghouse, that went through the
11 changes one by one that were in the January meeting,
12 to explain the implementation of the criteria, so that
13 gave us some confidence that when Westinghouse went
14 back that they'd be screening them correctly.

15 MR. CUMMINS: So this is Ed Cummins. We
16 have a formal process for the board and the records.
17 This is CFR 50 kind of work.

18 CHAIRMAN RAY: But the ACRS brings a
19 different perspective by definition, so it just
20 doesn't necessarily conform with the rules that all of
21 us use when we are in other positions.

22 MEMBER BLEY: I found ISG-11, and I read
23 it, and it would have been helpful if you had had a
24 slide that listed the particular requirements that are
25 in there. I think they are very clear. We would have

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1 understood it better. So it would have helped the
2 presentation. But I think all of us want to make sure
3 the whole committee gets a look at ISG-11. Because
4 now that I read it, I'm sure I never saw it before.

5 MR. JAFFE: I had provided a copy for the
6 chairman.

7 MR. AKSTULEWICZ: Well we'll make sure --

8 MEMBER BLEY: I missed it in the plethora
9 of things.

10 CHAIRMAN RAY: No, no, that was my fault.

11 I thought it had been given to everybody, but anyway
12 it's here. And I did find it.

13 MR. AKSTULEWICZ: We will make sure when
14 we bring the chapter, we will bring a set of the
15 criteria to put up and have it on a separate screen so
16 we can walk through it.

17 MEMBER BLEY: What it is trying to do is
18 a little different.

19 MR. AKSTULEWICZ: It is. It's not your
20 50.59 process.

21 MEMBER BLEY: Not at all; it's very
22 different.

23 (Comments off the record)

24 CHAIRMAN RAY: Yes, we do already have
25 it.

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1 MR. JAFFE: If you go into the staff's
2 electronic library on the home site in the generic
3 communications area, the ISG - (laughter).

4 CHAIRMAN RAY: That's all right, I have
5 it in hard copy which is even better. And it's
6 annotated.

7 MR. JAFFE: And very valuable.

8 CHAIRMAN RAY: Okay, let me just pause
9 and clear my head here a little bit and see if anybody
10 has any questions, any of my colleagues or Tom or
11 anybody.

12 MEMBER BROWN: I guess I have a general
13 question, the stuff that falls into this other - we
14 dealt with by COL. In other words it's after the
15 rulemaking.

16 CHAIRMAN RAY: Well more precisely it
17 doesn't meet the criteria of ISG-11 for inclusion in
18 Rev. 18. It's not just that it's after.

19 MR. AKSTULEWICZ: Nor will that
20 information be certified as part of the process. So
21 if a COL applicant would like to implement that
22 particular provision, they would have a process that
23 they would follow, which is outlined in the
24 certification for departures from Section 8 of the
25 certification in terms of how to deal with that.

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1 CHAIRMAN RAY: It is approved as part of
2 the COL rather than being approved as part of the
3 certified design.

4 MEMBER BROWN: If they ask for it.

5 MR. AKSTULEWICZ: If they ask for it.

6 MEMBER BROWN: I guess my question is, if
7 they ask for none of these other ones that are
8 screened in there.

9 MR. AKSTULEWICZ: Then none of them would
10 be incorporated.

11 MEMBER BROWN: And they can build the
12 plant, they can proceed, and they don't put any of
13 those in; is that correct?

14 MR. AKSTULEWICZ: That would be correct.

15 MEMBER BROWN: So I presume they are not
16 necessary for total functionality and licensed
17 operation of the plant.

18 CHAIRMAN RAY: No, I think that that is -
19 I'm trying to answer your question. I would say it
20 this way. If Westinghouse has made a change that
21 wasn't required to be included in the DCD - these are
22 all Westinghouse changes we are talking about here -
23 if they made a change that wasn't required to be
24 included in the DCD, and the COL applicant chooses not
25 to make it, not to seek it as part of the COL

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1 approval, that is a choice that they can theoretically
2 make, but I'm not sure that as a practical matter it
3 makes any sense. Because they would presumably then
4 be using a design before the change occurred,
5 rejecting the change. Yes, they have that right, but
6 I don't foresee that as being a likely course.

7 MEMBER BLEY: As I read that - you'll
8 want to read the document, Charley, as I read it, and
9 these guys can correct me if I got it wrong, because I
10 read it kind of quickly - they decide on changes.
11 Then they take a look. And they have already frozen
12 the design to get it finished, and they are not going
13 to fiddle with that if they don't have to. But they
14 have decided they are going to make some changes, and
15 if any of those changes meet certain criteria,
16 correction of real errors in the application, changes
17 needed to ensure compliance with NRC regulations, two
18 or three others, then they have to move them forward.

19 If it doesn't meet those they can deal with them at
20 some later point in time. So I think you have to read
21 the whole thing or get them to walk us through the
22 whole thing to get a handle on it.

23 MEMBER BROWN: I deal with this for 35
24 years in terms of delivering hardware to plants.
25 During the actual delivery of equipment they didn't

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1 necessarily have all the stuff in it that we wanted
2 to.

3 MEMBER BLEY: I was on the receiving end
4 of some of that.

5 MEMBER BROWN: Yes, I enjoyed that. But
6 we didn't have a change. It was just hanging out
7 there in la-la land. It was a change that we were
8 going to do post-installation, and we had a process
9 for going and putting that in, whether it be that the
10 ship wasn't commissioned, you could put it in via a
11 fuel change that went to the shipyard, you eventually
12 got it --

13 MEMBER BLEY: I think if you read this
14 you will see they have a process.

15 MEMBER BROWN: I'm just looking for a
16 process. If it's identified as a change by
17 Westinghouse, to me it needs to be in the plant.

18 MEMBER BLEY: It's two pages. It might
19 be better to just read through it.

20 CHAIRMAN RAY: Not if the COL --

21 MEMBER BROWN: I will read it. If you
22 send it to me I'll read it.

23 MEMBER BLEY: I already did.

24 CHAIRMAN RAY: The COL applicant can
25 elect not to process these changes.

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1 MEMBER BLEY: He is not going to sell it
2 to him.

3 MR. CUMMINS: Ed Cummins, I'd say it just
4 a little different than that, just so you can get a
5 sense of it. The COL applicant doesn't - can select
6 the time at which they inform the staff. It's the
7 time and licensing space in which they inform the
8 staff of the changes. It doesn't have to be prior to
9 when they get their COL.

10 MEMBER BLEY: As long as they follow this
11 process.

12 MR. CUMMINS: Well, they are following
13 this process with us. Rolf had a point, if we
14 screened it out of ISG-11 it would be really nasty if
15 they screened it in. So we are working together to
16 screen them, and agree on a - what is important and
17 what's not important, so that we don't have a
18 divergence there.

19 CHAIRMAN RAY: But Ed, wait a minute,
20 stop: the question was, are they obligated by anything
21 to include these changes in the COL? Frank said no,
22 but that is problematic for some reason. I'm not sure
23 what you would say, but I'm not asking you.

24 MR. CUMMINS: They are not obligated.

25 CHAIRMAN RAY: Of course they are not.

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1 MEMBER BROWN: Can they start up without
2 it?

3 MR. AKSTULEWICZ: If I may try to add
4 some light. For example there could be instances
5 where something that is described in the design
6 document may have some difficulty being procured to
7 the specification that was provided, so as an
8 alternative there would be a proposal that said, we
9 would propose that you could use this type of
10 component, which is essentially the same, but it is
11 still not what is outlined in the DCD. Well, they
12 could build a design certification as it's been
13 prescribed, as long as they could procure the
14 information or the instrument as it was identified in
15 the design document. There is nothing that is
16 functionally wrong with the certification. But could
17 they do something differently? The answer would be
18 yes, and that's what makes these elective in that
19 particular capacity.

20 CHAIRMAN RAY: I mean the fact is, this
21 makes a change, it goes into that lower corner bucket
22 in there. It's up to the COL applicant to put it in.

23 MEMBER BROWN: My only point being is
24 it's going to get to the point where somebody wants to
25 turn the switch and start the plant up. So there

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1 ought to be somebody that is in the process that has
2 something in the queue that says, okay, we are going
3 to accept this or not based on the outstanding
4 changes. If there are outstanding changes it raises a
5 question. It's the COL's applicant's job to put it
6 in the COL.

7 MR. AKSTULEWICZ: Right, the COLs may
8 notify the Commission what departures - and these are
9 categorized as departures - would be incorporated into
10 the respective applications at the time we are
11 visiting with the COLs.

12 MEMBER BROWN: Or not incorporated.

13 MR. AKSTULEWICZ: I think we'd go with
14 the affirmative, which is, they are going to tell us
15 which ones they will put in.

16 CHAIRMAN RAY: All right, okay, anything
17 else that anybody wants to say on this subject. It's
18 been a very interesting discussion. I think I've got
19 it clear in my mind now, so I don't know if I'll be
20 able to keep it there. But we are now at the point
21 where according to this schedule, it would - that I
22 was given - we would take a break, but for the fact
23 that it is too soon for that, so we will continue on
24 if we have the attendants to do so. What's shown here
25 is COL Chapter 22, and a staff presentation. Are we

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1 prepared for that?

2 (Comments off the record)

3 COL CHAPTER 22 - NRC STAFF PRESENTATION

4 MR. JAFFE: Okay, very good, Chapter 22.

5 CHAIRMAN RAY: Oh boy, regulatory
6 treatment of nonsafety systems. Favorite subject.

7 CHAIRMAN RAY: I've looked through this
8 presentation, and I don't see RTNSS written on here
9 anywhere, and I always have a hard time remembering
10 that acronym.

11 MR. JAFFE: Regulatory Treatment of Non
12 Safety Systems.

13 CHAIRMAN RAY: It sure is.

14 We are going to try to rustle up people
15 from next door. If we can we will, if we can't we
16 won't, and we'll go on without them.

17 (Comments off the record)

18 CHAIRMAN RAY: We are doing our best to
19 avoid these overlapping subcommittee meetings, but
20 unfortunately we are not our own masters.

21 MR. SISK: It is basically an SER chapter
22 with no open items.

23 CHAIRMAN RAY: An SER chapter with no
24 open items.

25 (Comments off the record)

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1 CHAIRMAN RAY: Well, unfortunately, I
2 guess we'll have to go ahead without him. There is an
3 unresolved conflict next door I guess.

4 Let me ask one question though before we
5 do that just in case. Is Chapter 10 ready,
6 Westinghouse?

7 MR. SISK: Westinghouse is prepared to
8 support Chapter 10.

9 CHAIRMAN RAY: And how about staff? Is
10 staff ready with Chapter 10? DCD Chapter 10?

11 MR. JAFFE: We lost Perry Buckberg.
12 Until Perry comes back - we are?

13 CHAIRMAN RAY: All right, I apologize
14 once again. But do understand we are trying to make
15 maximum use of everybody's time, and I think if we
16 could ask you guys to stand down on this RTNSS
17 subject, may I do that without offending you too much.

18 We will go with 10, and hopefully get our ACRS member
19 who is most interested in RTNSS treatment, and you
20 will have a better discussion if we are able to do
21 that.

22 So we will go with Chapter 10, beginning
23 with the applicant, DCD Chapter 10.

24 MR. SISK: Mr. Chairman, if I may, I'd
25 just like to confirm that the phone line is open and

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1 Mr. Keith Schwab is online.

2 MEMBER BLEY: It is probably silenced.
3 Weidong, could you check in the booth and see if the
4 people are on the phone line, if you can let them
5 talk. I think he blocks it so they can't talk during
6 a meeting unless we want them to.

7 (Pause)

8 CHAIRMAN RAY: Okay, it looks like I've
9 got here, and I'm going to pass out, since we sent
10 Weidong to do another chore.

11 (Comments off the record)

12 CHAIRMAN RAY: Is somebody on the phone
13 line?

14 MR. SCHWAB: Keith Schwab, Westinghouse.

15 CHAIRMAN RAY: All right. Now we are
16 getting the right hard copy. The floor is yours, Bob.

17 DCD CHAPTER 10 - APPLICANT PRESENTATION

18 MR. SISK: Thank you, Mr. Chairman. I'm
19 going to introduce Mr. Paul Loza as the licensing lead
20 for Chapter 10, and to accommodate the schedule
21 changes around and what have you, one of our subject
22 matter experts is actually still in Pittsburgh so we
23 had him call in.

24 CHAIRMAN RAY: Saved you a trip.

25 MR. SCHWAB: Thank you.

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1 MR. SISK: We'll have a little
2 interaction with him depending on questions and where
3 we go. But with that being said, let me turn it over
4 to Mr. Paul Loza.

5 CHAIRMAN RAY: That's fine, thank you.

6 MR. LOZA: Thank you, good afternoon,
7 everyone, happy to be flexible for the scheduling.
8 We'd like to cover the DCD amended design review of
9 Chapter 10, ASER with no open items. We have two
10 parts to the presentation. The first one deals with
11 the ASER, the second deals with closing any open ACRS
12 questions we have from previous meetings.

13 If you will bear with me we will get
14 through the first one and we will deal with the
15 questions on the second one.

16 Chapter 10 describes the main steam supply
17 turbine generator supporting equipment. In this
18 chapter the staff had five open items which were
19 identified and subsequently closed, and we'll go
20 through one at a time.

21 The first dealt with the low trajectory
22 turbine missile analysis we had performed. The
23 turbine missile analysis, the probably of generating a
24 missile due to a burst turbine rotor became a question
25 with the wording that we used in the report, can this

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1 be used for both a high and a low trajectory missile.

2 The question was resolved. We were speaking of dual
3 unit sites. The question was resolved. The analysis
4 results can be used for both high and low, and the AP
5 1000 does meet the unfavorable turbine orientation
6 criterion defined in the SRP.

7 COLONEL CAMPBELL: I put down what I was
8 given and I am trying to pay attention up here. Hold
9 on a second.

10 MR. LOZA: Let's confirm you have the
11 right one.

12 (Comments off the record)

13 CHAIRMAN RAY: Okay, proceed.

14 MR. LOZA: Okay, thanks. Open item
15 10.2.3-2, the issue was an order of magnitude
16 discrepancy. We generated a technical report. It had
17 a typographical error in it. The conclusions and the
18 results of the report were based on the correct value,
19 but we reissued the report to remove the error. The
20 corrected value in table 6.5 in revision 1 is now
21 consistent with the calculated value for the annual
22 probability of the turbine missile used to support the
23 six-month test interval.

24 Next open item, the staff had a question
25 on does the overspeed protection system design meet

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1 the single failure criteria. This issue was resolved.

2 We've made a change to the DCD to indicate the
3 overspeed protection system will function for all
4 abnormal conditions including a single failure of any
5 component or subsystem, and this is a confirmatory
6 item to be closed after 18 is issued.

7 CHAIRMAN RAY: Okay, now, let me just ask
8 a question here. When you say it's a confirmatory
9 item, this is a functional requirement by definition.

10 Overspeed protection system will function for all
11 abnormal conditions, single failure of any component
12 or subsystem. That sounds like DAC to me somehow.
13 How can it be a confirmatory item?

14 MR. CUMMINS: This is Ed Cummins. The
15 word, confirmatory, is the staff term, so it's a
16 regulatory, not a process, term. And what it means is
17 we sent them a letter saying this is what we are going
18 to write in the DCD, and they classify it as
19 confirmatory because it isn't in the DCD yet, and when
20 they get the Revision18 and they read that, then it's
21 no longer confirmatory, it's confirmed.

22 CHAIRMAN RAY: All right, it's the
23 language inclusion that is confirmed. How is the - my
24 reference to DAC made it sound like it's a design
25 criterion for the overspeed protection.

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1 MR. CUMMINS: We'd call it a functional
2 requirement, but yes, that's exactly right.

3 . CHAIRMAN RAY: And I guess I'm asking
4 myself, Ed, whether or not how it's going to be
5 satisfied wouldn't normally be part of the review
6 rather than simply reviewing it as a commitment.

7 MR. CUMMINS: I think whether the staff
8 pursues how you accomplish this or not depends on the
9 topic, and in this case, we provide more information
10 than this about different vendors supplying different
11 overspeed packages, and Keith can talk about that part
12 of it.

13 MR. SISK: One other comment I'll make,
14 and I would certainly defer to the staff in more
15 detail, but in many of the cases, with regard to some
16 of the requirements of the DCD, there are subsequent
17 staff inspections, evaluations, design verification
18 programs, to identify and ensure that the design
19 certification is being properly translated and
20 implemented into specifications.

21 . CHAIRMAN RAY: I understand at some
22 point you get the requirement becomes self evident
23 enough that it can simply be verified to have been met
24 afterward, but my first impression on this is that
25 this falls short of that. It isn't an inspectable

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1 attribute that it will function under all abnormal
2 conditions including single failure. Dennis, am I
3 wrong here?

4 MEMBER BLEY: No, I came to the same
5 conclusion.

6 CHAIRMAN RAY: It's not an inspectable
7 attribute. It's something you have to review the
8 design, right? This has the word, all abnormal
9 conditions. Excuse me, Terry.

10 MEMBER BROWN: No, I was just saying.

11 CHAIRMAN RAY: Well, I guess I have to
12 ponder this some.

13 MEMBER BROWN: The original DCD, correct
14 me if I'm wrong, specified an Ovation designed
15 microprocessor-based overspeed trip which did not have
16 redundancy in it or something; I remember there was an
17 issue with it. So that is what raised the question
18 when we were back talking about this some time ago,
19 and then there were RAIs issued on it, and there was
20 responses where they had changed that designed. I
21 would have expected that to get reflected in the
22 responses to the RAI in this case to be reflected in
23 the DCD section relative to the turbine overspeed
24 trip, not to be a vague statement of this sort where
25 you would see what the concept was, DCD independency,

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1 a separate venture so that that would be very very
2 clear subsequently. It's kind of like the I&C system,
3 we will look at that, it's just a big black box, and
4 then you all elucidated with considerably more
5 details.

6 CHAIRMAN RAY: All right, I think we --

7 MEMBER BLEY: Other presentations, they
8 get into answering the question.

9 MEMBER BROWN: Yes, but it doesn't go
10 into - it's just an answer. It doesn't put it into
11 the - to be anything.

12 MR. CUMMINS: Ed Cummins again. I think
13 what you are getting at is the level of detail that
14 belongs in the DCD. And most often the level of
15 detail in the DCD is commitment to functional
16 requirements. And you talked about Ovation. In the
17 web we were looking for, what you and the staff was
18 looking for, was diversity in the trip. And so we
19 have Ovation as one of the trips, and then we bought
20 another product, another overspeed product, to be
21 diverse from that in order to accomplish redundancy
22 and diversity in overspeed trip. But that is I'll say
23 at the level of detail of the design that could or
24 could not be in the DCD. It's not typically in the
25 DCD.

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1 CHAIRMAN RAY: Well, we'll have to simply
2 note that we are not resolved whether this is a
3 generic issue in our mind or specifically limited to
4 the overspeed protection system, or maybe it's just
5 fine the way it is. But it's not obvious that it's
6 okay for all the reasons that you've heard us say.
7 And it really comes down to a question of, is this
8 something that is sufficient in the design
9 certification as a functional commitment, or does it
10 need to be demonstrated that in fact that is the case.

11 And we will deliberate on that among ourselves and
12 decide.

13 MR. CUMMINS: So one more comment: we
14 have submitted more information than this sentence in
15 the DCD. There is a technical report #86 that talks
16 about this diversity and explains it in some detail.

17 CHAIRMAN RAY: That's what I'm looking
18 for, Ed. Is that technical report referenced in the
19 DCD?

20 MR. CUMMINS: I don't know.

21 MEMBER BROWN: You did that for the I&C.
22 You referenced W tab blah blah blah which specified
23 and showed, and then you amplified what that looked
24 like, and that is the difficulty here.

25 MR. CUMMINS: TR-86.

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1 CHAIRMAN RAY: TR-86. Okay, well, I
2 don't want to get - I mean I think we have
3 sufficiently defined what our initial reaction to
4 this, and it's we need to think about this some more.

5 Maybe it's just a matter of what is here on this
6 slide is less than what is in the design
7 certification, and if we could understand that, maybe
8 that will make the issue go away.

9 MR. SCHWAB: This is Keith Schwab. If I
10 could, we did add an item to an existing ITAAC for the
11 turbine control system in Section 2.4.2 of Tier 1 DCD.

12 It makes reference to a report that will be
13 developed and written, and inspection of that report
14 will show that the system does have a diverse trip
15 system, separate circuitry, separate hardware,
16 firmware, software, and that is in the second
17 presentation coming up.

18 CHAIRMAN RAY: Okay.

19 MR. BUCKBERG: This is Perry Buckberg.
20 That is also in response to a different open item.

21 CHAIRMAN RAY: Better pull a microphone
22 up there so it gets transcribed.

23 MR. BUCKBERG: One more time, this is
24 Perry Buckberg, and that ITAAC is in response to a
25 different open item I believe, 10.2.02A, so it'll come

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1 up in our presentation. If not, then Westinghouse's
2 in a moment. The 10.20 open items are all very
3 related; there are three of them. So we might just be
4 getting ahead of ourselves a bit.

5 CHAIRMAN RAY: Well, it may be, but
6 sometimes we don't have the choice, because if we
7 defer things until later, then we forget about them
8 and we lose track of them totally. But this statement
9 by itself doesn't represent a sufficient final
10 resolution is my first reaction.

11 MR. LOZA: Thank you, sir. Paul Loza
12 continuing.

13 Next open item, 10.2-2A dealt with the
14 staff required an ITAAC showing diverse hardware,
15 firmware or software between the two overspeed trips.

16 This item is resolved. The ITAAC which was inserted
17 now verifies we have diverse hardware and software or
18 firmware via the review of the design, testing of the
19 system, and the documentation which Keith had just
20 mentioned.

21 Other mentions of this to support were DCD
22 Section 10.2.2.5.3 was updated to state that diverse
23 hardware and software or firmware eliminates common
24 cause failures from rendering the trip functions
25 inoperable. We added an additional figure, emergency

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1 trip system functional diagram. It's the final page
2 of your - of the second attachment. And we - this is
3 now established as a confirmatory item for the NRC to
4 make sure that it is in Revision 18.

5 CHAIRMAN RAY: Okay, getting much closer
6 now.

7 MR. LOZA: All right, the final open item
8 dealt with the question on which specific type of
9 backup turbine speed sensors were used. They are
10 magnetic. We have added that to the DCD, and it's a
11 confirmatory item to be checked.

12 This wraps up the review of Chapter 10
13 ASER with no open items. And if you will switch to
14 the other handout, please, I took the time to go
15 through the previous meetings transcripts to make sure
16 that we clearly understood what it was the ACRS
17 members were not completely sure, were not satisfied
18 with. I put them together into five topics: turbine
19 missile technical reports, reduction in turbine valve
20 test frequency, the ITAAC that we will speak about the
21 testing method, the overall DCD changes for overspeed
22 protection diversity, and to confirm the separate
23 overspeed protection power supplies.

24 MEMBER BROWN: Before you go on, somebody
25 said something about technical report 86.

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1 CHAIRMAN RAY: TR?

2 MEMBER BROWN: Whatever, somebody threw
3 that out a minute ago.

4 CHAIRMAN RAY: It's on the next page.

5 MEMBER BROWN: Oh, we get that?

6 MR. LOZA: We'll go through a brief
7 history of the turbine missile technical reports. DCD
8 Rev. 15 was based on a Mitsubishi turbine generator
9 system. Westinghouse switched to a Toshiba brand
10 turbine generator, DCP-216, incorporated that, and we
11 provided TR-86 to describe the DCD changes proposed by
12 this DCP.

13 There --

14 MR. SISK: Just to confirm, as noted on
15 the slide the staff does have that, it is available.

16 MEMBER BROWN: They just said they'd get
17 it for me; that's fine. Thank you.

18 MR. LOZA: There were WCAP technical
19 reports which applied to - we'll discuss them further
20 in a moment, but they were based on Mitsubishi data.
21 We have revised them to use Toshiba data. And they
22 use Toshiba operating experience as well. And I've
23 got the numbers in the table here, so if we refer to
24 them by 16650 or 651, an ACRS member had a question on
25 the use of the available operating experience data,

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1 and that is now included.

2 All right, moving on, the turbine valve
3 testing frequency, we went from three months to six
4 months as a requirement, and we showed it in the
5 technical reports of the DCD. We had committed to
6 perform it every three months based on the test
7 frequency analysis. In DCD Rev 16 we had switched to
8 every six months based on a revised report.

9 I want to go through the technical basis
10 for the reduction in frequency, and discuss the
11 operating experience. In WCAP I'll just say 650, we
12 evaluated the four missile generating turbine rotor
13 failure modes. First one, ductile burst from
14 destructive overspeed, that was covered in - we wrote
15 an entirely separate report to cover just that one
16 item, 651, and it concludes that the missile
17 probabilities due to design overspeed and intermediate
18 overspeed were negligibly small compared to the
19 destructive overspeed probability; that was a member
20 question that we were using all the missile
21 probabilities and not just the destructive overspeed
22 one. It just appeared the destructive overspeed one
23 is overridingly larger.

24 MEMBER BLEY: I assume that calculation
25 is both the chance that you reach that speed, and that

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1 it comes apart when you reach that speed?

2 MR. LOZA: Keith, can you help us with
3 that?

4 MR. SCHWAB: Can you repeat the question,
5 please.

6 MEMBER BLEY: Assuming that calculation
7 includes the probability or the frequency with which
8 you reach the three different overspeed conditions,
9 combined with the probability that the rotor burst
10 given you reached that speed.

11 MR. SCHWAB: That is correct. The WCAP
12 651 is the total sum of all the missile ejection
13 possibilities whether it's from the overspeed,
14 intermediate overspeed and the destructive overspeed.

15 Overspeed is 120 percent; intermediate overspeed is
16 130 percent; and a destructive overspeed is 185
17 percent. To reach a destructive overspeed you would
18 have to have a valve control failure, which is why we
19 generated a separate report for the valve testing
20 frequency. So the 651 report really addresses the
21 valve testing, and analyses the Toshiba operating data
22 as input to determine the probability of generating a
23 missile, based on the six-month valve testing
24 frequency. And that probability of generating that
25 missile is within the standard review plan guidelines

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1 for the unfavorable turbine orientation, one times 10
2 to the minus fifth per year.

3 MR. LOZA: Okay, we're good with that.
4 Moving on to the next page, turbine valve testing
5 frequency continued the remaining three missile
6 generating turbine rotor failure modes. There is a
7 cracking due to high cycle fatigue, low cycle fatigue,
8 or from stress corrosion cracking. These are bounded
9 by the probability of the stress corrosion cracking
10 case.

11 Just to make a note here, in past meetings
12 we have referred to the turbine disks, and we don't
13 use disks. We just want to clarify: each rotor is an
14 integral monoblock rotor machine from a single ingot.

15 So there is no insertion of the blades and higher
16 potential for the stress corrosion cracking.

17 MEMBER BLEY: I'm sorry, say the last
18 phrase again.

19 MR. LOZA: We minimize the potential
20 stress corrosion cracking locations by having a single
21 piece without the blades being inserted.

22 MEMBER BLEY: Do we have enough
23 experience --

24 CHAIRMAN RAY: It is the disk that isn't
25 shrunk on the shaft; that's what you are telling us.

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1 The blades are inserted in the disk, or in
2 the shaft.

3 MEMBER BROWN: They are not cast along
4 with the --

5 MR. LOZA: No.

6 CHAIRMAN RAY: But what you are saying is
7 that the disk and the shaft are a single forging that
8 is machined, as opposed to a shaft with a disk shrunk
9 on; correct?

10 MR. LOZA: I believe what you are saying
11 is true. Keith, do you concur?

12 MR. SCHWAB: This is Keith Schwab. That
13 is correct. The disks are there if you will, but
14 there is no key ways or sharp edge corners, and we
15 have radiuses to minimize high stress areas, where
16 stress corrosion cracking can develop. Although there
17 is still a potential but it's greatly minimized with
18 the solid forging made of a single ingot.

19 MEMBER BLEY: We will look at the report
20 when we get to see it, but we don't have a lot of
21 experience with these new ones. If we using the
22 Toshiba data it probably comes from the older type
23 rotors rather than the new uniblock ones; is that
24 right, or did you do some correction to try to account
25 for the lower likelihood of stress corrosion cracking?

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1 MR. SCHWAB: No, the forged monoblock
2 rotors have been use since the `90s. And the data for
3 evaluating the potential for a crack to develop is not
4 so much based on operating experience as it is a
5 technical analysis. The valve testing frequency is
6 highly dependent on operating experience. But the
7 evaluation of cracking and the potential for adverse
8 rotor due to cracking is an engineering evaluation.
9 So what you do to also ensure you don't get cracks
10 that develop to a point where you could have a ductile
11 burst from an overspeed condition is, you commit to
12 doing volumetric inspections of the rotor on a regular
13 frequency, and that is a conclusion of the WCAP 650,
14 how frequently those inspections should be performed.

15 MEMBER BLEY:

16 CHAIRMAN RAY: 24.7 years.

17 MR. LOZA: Correct. Thank you, Keith,
18 for your help. And its says on the bottom, Report 650
19 does justify the minimum rotor inspection interval.
20 We commit to 10 years. It's only needed once every
21 24.7 to meet the SRPs missile generation probability.

22 All right. Turbine valve testing
23 frequency continued, just to wrap it up. Report 650
24 considers the possibility of missile generation from
25 stress corrosion cracking damage to establish

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1 acceptable inspection frequencies, whereas 651
2 considers the probability of missile generation due to
3 destructive overspeed to establish the valve testing
4 frequencies.

5 To move on to talk about the experience,
6 Westinghouse generated a report, WCAP-11525, back in
7 June '87. We evaluated increasing turbine valve test
8 intervals to six months for numerous operating United
9 States units, and a survey here in 2010 of several
10 operating nuclear units showed pretty much half and
11 half, test intervals of three months or six months,
12 and one plant had longer - up to 18 months for the
13 reheat, stop and intercept valves at one unit.

14 The next page has a list of the units
15 surveyed. We found that one nuclear unit over the
16 past 20 years progressively increased their turbine
17 valve test interval. It started out as monthly back
18 in '87, ten years later they increased it to three
19 months, and within the past several years they are up
20 to six months.

21 In the next slide, the DCD Tier 2 section,
22 10.2.3.6 we do state that turbine valve testing is
23 performed at six months intervals. This was put in
24 back in Rev. 16. The semiannual testing frequency is
25 based on industry experience, that turbine related

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1 tests are the most common causes of plant trips of
2 power. These may lead to challenges of the safety
3 related systems. Evaluations show the probability of
4 turbine missile generation with the semiannual valve
5 test is less than the evaluation criteria.

6 MEMBER BLEY: I've got a question for you
7 while I'm still thinking about that last answer.
8 Since the uniblocks have been around since the '90s,
9 and some in nuclear applications, and some in other
10 applications, do you know if there have been any
11 actual rotor burst failures in any of them?

12 MR. LOZA: Keith, can you help us with
13 that?

14 MR. SCHWAB: I don't know the answer to
15 that. I do know - I'm aware of the Salem incident
16 where they oversped during testing of the overspeed
17 trip system. I think they had a mechanical device. I
18 don't recall if that included a burst rotor or not. I
19 don't believe so, but I'd have to go back and do some
20 research on that.

21 MEMBER BLEY: I'd be interested in that.
22 I certainly like engineering analysis, but if there
23 have been some failures, I'd like to understand them
24 and see how they align with the engineering analysis.

25 CHAIRMAN RAY: All right, so we will have

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1 a narrowly defined open item, which is simply to ask
2 the question, have there been any monoblock rotor disk
3 failures that anybody knows of. I want to try to
4 narrow it down to just that question.

5 MR. LOZA: All right, next slide. To
6 close this item out the staff concludes that this
7 change in timing frequency is acceptable. They stated
8 so in the FSAR, Section 10.2.10. Keith, do you have
9 anything else to add on turbine valve testing
10 frequency?

11 MR. SCHWAB: I would just add that when
12 we talk about turbine valve testing, we are talking
13 about the steam valves, which also includes the
14 intercept valves and reheat stop valves. It's not
15 just the main stop and control valves.

16 CHAIRMAN RAY: Yes, well, it's the
17 intercept valves that are the biggest.

18 MR. SCHWAB: We don't really say that in
19 our presentations, but that includes all four types.

20 CHAIRMAN RAY: Yes. Okay.

21 MR. LOZA: Next topic we wanted to speak
22 on is the ITAAC on the turbine valve testing method.
23 Again, as part of the staff's request. And the latest
24 ITAAC does indicate a full system test. We simulate
25 the speed sensor input, and it goes all the way to the

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1 closing of the valve through all the parts of the
2 system. We will be using simulated signals, from the
3 turbine speed sensors, and we will show that the main
4 turbine generator will trip after overspeed signals
5 are received from the speed sensors of the 110 percent
6 emergency electrical overspeed trip system, as well as
7 the 111 percent system. Both the 110 and 111 percent
8 trip systems will also be tested after each outage.

9 We have an open question from the ACRS on
10 the valve test frequency, and a method for testing for
11 overspeed. So I wanted to spell out that.

12 CHAIRMAN RAY: You've done a very
13 thorough job of going through and answering our
14 questions, thank you.

15 MR. LOZA: Thank you. Okay, next slide,
16 we want to summarize the DCD changes. The ACRS was
17 not clear on whether or not we were diverse in Tier 1,
18 in both the words and the table. We've inserted the
19 ITAAC we spoke of which confirms diversity, and Tier
20 2, Section 10.2.2.5.3, the overspeed trip functions
21 and mechanisms, we've added the word separate to point
22 out the 111 percent backup trip is in a separate
23 operator automatic controller. And a statement that
24 indicates that the two overspeed protection systems
25 provide a level of redundancy and diversity at least

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1 equivalent to the recommendations for turbine
2 overspeed protection found in 3.2 of SRP Section 10.2.

3 These changes continue on the next page,
4 Section 10.2.2.5.3. We did point out that the 110 and
5 111 percent trip systems have diverse hardware and
6 software or firmware to eliminate common cause
7 failures from rendering the trip functions inoperable,
8 and the last page of your handout has a new DCD
9 figure, 10.2-2, emergency trip system functional
10 diagram. It visually indicates the two overspeed
11 protection systems having the diverse hardware and
12 software or firmware.

13 Keith, do you have anything to add on the
14 diversity of DCD changes?

15 MR. SCHWAB: You mentioned in the
16 functional diagram we did not count on a single speed
17 wheel, but we incorporated two speed wheels into the
18 design. I think that is something that is above and
19 beyond what is normally done. And the sets of probes
20 are of different types. One is an active type probe,
21 and the other ones are passive types.

22 MEMBER BROWN: What do you mean by active
23 versus passive?

24 MR. SCHWAB: Active type probes are
25 powered, whereas you don't have power from my

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1 understanding with the passive.

2 MEMBER BROWN: In other words, the
3 passive is the self generated.

4 MR. SCHWAB: Pulse, yes.

5 MEMBER BROWN: But the other ones have to
6 have a power supply feeding them in order to generate
7 the required signals?

8 MR. SCHWAB: Yes.

9 MR. LOZA: All right.

10 (Comments off the record)

11 MEMBER BROWN: You add another dimension
12 by having the power go the wire and iron. So you have
13 another mode of failure.

14 MEMBER BLEY: Especially if it's the same
15 kind of sensor.

16 CHAIRMAN RAY: Well, we are about to talk
17 about power supplies here.

18 MEMBER BROWN: Well, power supplies, they
19 are talking separate from what the power goes; that is
20 a separate question.

21 MEMBER BLEY: In those two systems, are
22 the sensors different in how they work?

23 MR. SCHWAB: I am not an expert on the
24 sensors, other than I know they are different for
25 diversity reasons. Ovation uses a different type of

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1 sensor that our diverse trip system. I don't know if
2 that is - we specify that we wanted separate types of
3 sensors to be sure we don't have common cause type
4 failures.

5 MR. LOZA: We can find that out.

6 MEMBER BLEY: I'd be curious about that.

7 I just don't know. I kind of know how the passive
8 one has to work, the other one I'm not quite sure.

9 MEMBER BROWN: I agree.

10 MEMBER BLEY: So if we could find out how
11 the active one works, if there is a tech report or
12 tech manual on it.

13 MR. SCHWAB: Sure, we've used those quite
14 a bit in the past, so we can get information on that.

15 MEMBER BLEY: Okay.

16 MR. LOZA: Our final slide, the ACRS had
17 a question on are the power supplies separate to the
18 two overhead trip systems. They are providing
19 separate power supplies A and B I understand for the
20 two overspeed trip systems.

21 MEMBER BROWN: It doesn't show that.

22 MR. LOZA: I understand.

23 MEMBER BROWN: If you are going to put
24 the figure in the DCD, you might as well show separate
25 power supplies.

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1 MR. PETERSEN: We show separate power
2 supplies for the two overspeed trip systems, but not a
3 picture.

4 MR. SCHWAB: Acknowledged.

5 MEMBER BROWN: I am sorry, I didn't hear
6 that.

7 MR. SCHWAB: Acknowledge.

8 MEMBER BROWN: The one other comment you
9 made relative to this is that the figure illustrates
10 that you have - or let me get the right words here -
11 one illustrates diverse hardware and the other one in
12 software/firmware, and that is illustrated in the
13 figures, and all you have is different looking little
14 cabinets. It doesn't say what it is. If you can say,
15 if you are going to allow one to be software based and
16 the other one is hardware based, analog, then you
17 ought to say so.

18 MR. SCHWAB: Well, they are both software
19 and hardware based; it's just that it's completely
20 different hardware and software and processors. As an
21 example one uses Intel processors, the other will use
22 a Motorola processor. This is about as different of
23 an electronic trip system that you can get, having the
24 diverse system, choosing to use a different
25 manufacturer trip system.

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1 MEMBER BROWN: Well, you could use FPGAs
2 and it would be - that is an analog-digital system.
3 Combinational logic by software driven logic that is
4 truly diverse.

5 MR. CUMMINS: So we do use FPGAs in both
6 the PMS and the DAS.

7 MEMBER BROWN: Yes, I remember that. You
8 can use two different microprocessors. You ought to
9 illustrate that you want something different. Do you
10 have that written down? I guess you said you did. Is
11 that stated under the 102253? You say the section is
12 being revised. I just wonder how much detail is in
13 that revised section relative to firmware and
14 hardware/software, et cetera. Is that actually
15 written down also as part of the test?

16 MR. CUMMINS: This is Ed Cummins. I
17 think that the ITAAC wins all contests, actually,
18 because it says you have to be diverse.

19 MEMBER BLEY: Unless somebody reading the
20 transcript decides ACRS has recommended identical
21 passive over diverse.

22 MEMBER BROWN: No, I'm not doing that.

23 MEMBER BLEY: I just want to say that
24 even if a diverse system is less reliable than the
25 other one, I've seen enough common maintenance errors

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1 to believe the combined reliability of diverse systems
2 is probably better.

3 MEMBER BROWN: Wire and iron just doesn't
4 break. Anyway, let me go on, I don't see a statement
5 in the ITAAC that it says diverse. So if it's in
6 there, that's fine. If your statement in slide #14,
7 is that what you are saying, that says ITAAC confirms
8 diversity.

9 MR. LOZA: Would you like to see the
10 wording in the ITAAC?

11 MEMBER BROWN: Somewhere you ought to say
12 they should be diverse; that's all. If it's the ITAAC
13 or the Tier 2 text.

14 MR. LOZA: The text of the ITAAC
15 indicates inspection of the system will show
16 diversity.

17 MEMBER BROWN: If it's there, that's
18 fine.

19 MR. LOZA: Yes.

20 MEMBER BROWN: That's all, just providing
21 some clarification.

22 CHAIRMAN RAY: Okay, so there were two
23 items I think coming out of this. I again want to say
24 we appreciate your diligence in ferreting out all the
25 issues and addressing them. The two narrow issues

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1 have to do with any known experience with the failure
2 of monoblock turbine rotor disks due to overspeed -
3 well, due to any cause. And secondly, the - a little
4 more information on these sensors. Was it just the
5 passive or the active sensors?

6 MEMBER BROWN: The active ones, not the
7 passive ones.

8 CHAIRMAN RAY: A little more detail on
9 that. Again, I want to try and narrow these things
10 down. More open items than we can possibly hope to
11 manage between now and November. And aside from that
12 I think you have addressed all the things that we have
13 identified. Now we have yet to hear from the staff on
14 Chapter 10. So we will see what they have to say to
15 us, and then we will, after having done that, we will
16 take a break and come back and do RTNSS.

17 Is the staff ready on 10?

18 All right, DCD Chapter 10, staff.

19 DCD CHAPTER 10 - NRC STAFF PRESENTATION

20 MR. BUCKBERG: Good afternoon. My name
21 is Perry Buckberg again from the AP1000 licensing
22 branch of the NRC. Joining me to present Chapter 10
23 of the staff's DCD are Davender Reddy, Ken Mott, and
24 John Honcharik.

25 Chapter 10 of the NRC with open items was

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1 presented in July of 2009 to the ACRS. At that time
2 there were five open items. Westinghouse described
3 all five in detail. Similarly we are going to discuss
4 two significant open items that we just heard some
5 lengthy discussion about. It may seem a bit
6 redundant, but we'll give our point of view on those
7 same open items.

8 And we will start with 10.2028, Davender.

9 MR. REDDY: This is Davender Reddy. And
10 to give a brief background, we had an ACRS meeting in
11 July of last year. And at that time we had three open
12 items that you have discussed previously with the
13 applicant. Two were closed and was open. The one
14 open item is regarding the turbine overspeed system.

15 And as you heard from the applicant we
16 asked about the sequence - we issued a sequence of
17 RAIs in that regard. They provided information with
18 markup to the FSAR, and we reviewed those markups,
19 and based on that we determined that they made the SRP
20 conform to criteria with regard to the redundancy of
21 the overspeed systems. So based on that we determined
22 that it was acceptable, so we closed.

23 And particularly, Mr. Brown, you asked a
24 question about whether there is any documentation of
25 the diversity. Actually they did do a markup on this

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1 ITAAC which does say that in the acceptance criteria,
2 they say that a report exists, and concludes that the
3 two electrical overspeed protection systems had
4 diverse hardware and software slash firmware. So they
5 do have that.

6 MEMBER BROWN: Who inspects that?

7 MR. REDDY: NRC inspectors.

8 MEMBER BROWN: Is that an inspector at
9 the site when it arrives?

10 MR. REDDY: Yes, that is the intention of
11 this ITAAC.

12 MR. CUMMINS: This is Ed Cummins. The
13 process of closing ITAACs is by the applicant. So the
14 applicant assembles a package of documentation that
15 says we've met the ITAAC, and they submit it to the
16 staff, and the staff has a sampling program to
17 determine what fraction of those ITAACs they
18 independently confirm.

19 MEMBER BROWN: My only point - yes, it's
20 still the same general concern that we have expressed
21 at other times. I mean if you are looking at a bunch
22 of pipes on some wire, where wire goes in wireways,
23 the dimensions of those, where it's placed, et cetera,
24 that's inspectable, then you can sample those. But
25 when you are looking at a design basis, of how

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1 something is designed, the type of software, that is
2 not satisfactory in my own particular opinion of
3 inspectors at the site. It requires an engineering
4 design evaluation. There is not a subject to be
5 resolved here; it's just my particular thought process
6 right now. Of course we don't have to work on DAC
7 right now. That's not part of this meeting.

8 MR. REDDY: Thank you.

9 (Laughter)

10 MEMBER BROWN: I thought you'd be happy.
11 If I didn't say that Harold would have.

12 MR. MOTT: How are you doing? Ken Mott,
13 I've been working on DAC for 2-1/2 years. But trip,
14 yes --

15 MEMBER BROWN: You don't want to work on
16 it any more, do you?

17 MR. MOTT: But just a brief history. I
18 saw the applicant trying to discuss this issue. At
19 the base of the issue the SRP guidance states that
20 overspeed protection system at 110 percent and 111
21 percent, a dual design, one of the overprotection
22 systems is mechanical, and one of the overprotection
23 systems is electrical. That guarantees that your
24 common cause failure, single failure analysis of these
25 two systems be - just could not postulate that, that

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1 both would fail the same way. When the applicant
2 decided to make both of them electrical, digital
3 software based, there is no guidance in this area in
4 tandem BOP on how do we see sufficient diversity that
5 would underlie what the staff has suggested and making
6 one mechanical and one electrical. To your point if
7 you went out to the plant and made a visual inspection
8 on a mechanical system in an I&C cabinet, yes, we
9 would come to the conclusion that they are
10 sufficiently diverse and move forward. If you are
11 looking at two cabinets and they both have the same
12 cards in them, there is no way possible for you to
13 determine that the little chip on there, one is AMD
14 and one is Motorola. So at the end of that day all
15 you are going to have for your ITAAC is, this one here
16 is not a DAC. I don't know if it's a FATT test that
17 we are going to used. I don't know if there is some
18 description. But the industry and NRC has a set
19 program that they are looking at, how do we go about
20 getting the information into the program so that the
21 person going to close an ITAAC can ensure that what we
22 certify and design is actually built out here in the
23 plant, in the design, the commitment from the
24 applicant to ensure sufficient diversity that would
25 underlie a mechanical and electrical system is

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1 different diverse software, different diverse
2 hardware, different diverse firmware to use. You also
3 have a commitment that we are going to have different
4 manufacturers. One is Ovation, one is something else.

5 We also have a commitment for the speed probes: one
6 will be active; one will be passive. We also have a
7 commitment in the design that there will be
8 independent power supplies.

9 So when you are postulating failure modes,
10 this is a Part 52 design. This isn't a Part 50
11 design. We go out and look at it, say it's okay.
12 Part 52 is all on paper. Look at the - I think they
13 have four modes, four modes to provide for, for
14 protection of the system and the turbine. One is your
15 normal protective system, and that is independent.
16 And I think that is 101 percent. Then the next one
17 goes off at 110 percent. That's one of the
18 overprotective systems, digital software based, which
19 is independent from the first. And then we have the
20 111 percent, which is independent and diverse from the
21 first two.

22 So if I just look at those three, if they
23 are independent they can't be failed by the same power
24 supply. If they are different hardware, different
25 software, different firmware --

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1 MEMBER BROWN: You said three systems?

2 MR. MOTT: Yes, three systems. The first
3 system is the normal mode system, that is just the
4 overprotection system.

5 MEMBER BROWN: Oh, you're talking about
6 the control system? I'm trying to figure out, the
7 picture shows two systems, and you are saying there's
8 three?

9 MR. MOTT: The design itself has four
10 means. What's shown in the picture is specific to the
11 overspeed protection system; that is two systems. But
12 there are four different, meaning one is the normal
13 mode for shutdown, which is not what we are talking
14 about.

15 MEMBER BROWN: That's not part of those
16 cabinets?

17 MR. MOTT: That's not, that's just the
18 normal means. But in addition to that, to ensure that
19 we meet TDC4 we also have 110 percent trip and a 111
20 percent trip.

21 MEMBER BROWN: Where do they reside? In
22 that system you show in those pictures?

23 MR. MOTT: Those two, that's correct.

24 MEMBER BROWN: Let me step back, the
25 normal control system.

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1 MR. MOTT: That's correct.

2 MEMBER BROWN: Which keeps it at constant
3 speed theoretically.

4 MR. MOTT: That's correct.

5 MEMBER BROWN: Also has an overspeed trip
6 system in it.

7 MR. MOTT: Right.

8 MEMBER BROWN: At what level?

9 MR. MOTT: 101 percent.

10 MEMBER BROWN: Okay, so that is one of
11 your systems?

12 MR. MOTT: That's right.

13 MEMBER BROWN: Then the other two are
14 your backup emergency systems?

15 MR. MOTT: That's correct.

16 MEMBER BROWN: And that's the three
17 systems you are talking about?

18 MR. MOTT: That is correct.

19 MR. REDDY: As we discussed yesterday,
20 the normal control system actually is for 103 percent.

21 MR. MOTT: I'm sorry, 103 percent.

22 MR. REDDY: The overspeed systems they
23 have primary and emergency. That is what the figure
24 shows.

25 MR. MOTT: So the space that we are in as

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1 well, this is not a safety-related system. This isn't
2 a system that is going to insert negative reactivity
3 into the core. It's not a system that is going to
4 remove --

5 CHAIRMAN RAY: Wait a second. We
6 understand all of that. I think the real question is
7 simply, how are you going to provide - you said it
8 yourself - a guidance to the inspectors that will
9 allow them to ensure that we have achieved what we
10 intended.

11 MR. MOTT: Okay, well, we have a design
12 commitment. And on paper I believe the design is --

13 CHAIRMAN RAY: That was the question.
14 I'm going to now frame a question to try and pursue.
15 You said that the staff was in the process of working
16 on the ITAAC.

17 MR. MOTT: Yes.

18 CHAIRMAN RAY: Tell us about where that
19 ITAAC inspection guidance --

20 MR. MOTT: I can't comment on that. I'm
21 not in that particular branch.

22 CHAIRMAN RAY: I think that's what I'm
23 interested in.

24 MR. MOTT: To me, I'm not part of that
25 program, but somewhere in here they are going to have

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1 the requirements, and they are going to have a
2 package, everybody has a package, and they receive it
3 before you go and install the plant, and you look at
4 it and ensure that what you purchase, what you order,
5 actually is --

6 CHAIRMAN RAY: But wait, you still - I
7 think you are addressing things that aren't at issue
8 here. Our only question really is, how do we assure
9 through the ITAAC that we are achieving the diversity
10 and independence that we seek? It may not be yours to
11 answer, but that is the only question we are trying to
12 get at.

13 MR. MOTT: But I can provide an answer
14 from an I&C standpoint. This particular ITAAC is
15 diversity, and the diversity description is different
16 hardware, different software, and different firmware.

17 MEMBER BROWN: How does an inspector in
18 the field do that? This thing is delivered, and he
19 goes down there, and what is he supposed to do, pull
20 out a thing and say, here is a chip? What software is
21 on it? How does he know it's diverse?

22 MR. MOTT: The applicant is going to have
23 designs and details stating that this is what this is.

24 MEMBER BROWN: How does the NRC know if
25 it meets your diversity requirements?

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1 MR. MOTT: To your point am I going to go
2 and crack open a cabinet, pull out a card, and see if
3 this is a chip, no, I'm not going to do that.

4 MEMBER BROWN: Who is going to look at
5 the design, if it's a design issue? It's not a
6 measurement of a pipe or a placement of something.
7 It's a design issue. It's embedded in the design.
8 How does it communicate? How do the sensors -- if
9 you look at two sensors, how do you know one works one
10 way, one works the other? These are little things
11 that are stuck down in a probe. Three sensors here,
12 three sensors over there. That looks good; I'm happy.
13 They are separate. And you have no idea what's
14 inside. I don't think we ought to belabor this right
15 now.

16 CHAIRMAN RAY: Unfortunately, we are
17 belaboring it. But in any event, that is the issue.
18 I thought you said early on in your discussion that
19 the staff was trying to develop the criteria for the
20 inspection that we are talking about.

21 MR. MOTT: Yes, they have a program.

22 CHAIRMAN RAY: Stop right now. Can you
23 just tell me when and where those criteria will be --

24 MR. MOTT: I guess I'm saying no, I
25 can't, since I'm not on that branch.

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1 CHAIRMAN RAY: Is there anybody who can
2 at the table here?

3 MR. MOTT: That's the DCIP program. DCIP
4 branch.

5 CHAIRMAN RAY: Well, you guys are the
6 ones that agree to the criteria that are reflected
7 here in the DCD, and I guess we are trying to figure
8 out who made sure that what you agreed to is what
9 exists in the plant.

10 MR. REDDY: Yes, Mr. Chairman, I think
11 what you are referring to is ITAAC closures.

12 CHAIRMAN RAY: Yes.

13 MR. REDDY: We are not actually equipped
14 to respond to your question.

15 CHAIRMAN RAY: All right. We understand
16 that we have gone from one mechanical and one
17 electrical to two electrical and that there are
18 requirements that say they need to be independent and
19 diverse; we understand that. Furthermore, we
20 understand it's not a safety-related system. But the
21 performance of the system does have a safety function.

22 Now the only thing we are trying to figure out is how
23 do you make sure that what we say should exist in fact
24 does exist? The independence is probably easy enough
25 to do, but diversity is a little more difficult. And

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1 we are just trying to figure out how that gets done;
2 that's all.

3 MEMBER BLEY: We seem a little stuck.
4 Let me ask the same question but a little bit
5 differently. The way you do it is you said through
6 ITAAC. But the ITAAC are specified as you approved
7 the design. So what do you look for in the ITAAC to
8 convince you that that will ensure you're getting the
9 diversity that you expect to be in the design?

10 MR. MOTT: Well, the wording in the SRP
11 1435 states that the word, exist, using an ITAAC,
12 confirms to the design description. So the design
13 descriptions are in Tier 2, so the design description
14 in Tier 2 states that diverse hardware, diverse
15 software, and independence. So we would go and look
16 at the electrical hookups and make sure that they are
17 independent. Something simple I could pull apart and
18 see that this chip is AMD, and I could pull another
19 card out and see that the chip is Intel, and it would
20 be different equipment, and I would check that off and
21 say they have met this particular ITAAC. I would be
22 done.

23 MEMBER BROWN: What if they used the same
24 software?

25 MR. MOTT: The one there, that's the

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1 report.

2 MEMBER BROWN: You can program either one
3 of those with the same software. They can be compiled
4 with the same compilers? That's the point.

5 CHAIRMAN RAY: Well, I think we have
6 established we are not asking the question to the
7 right people. So I will have to simply say, like so
8 many other things, somebody somewhere will devise
9 somewhat of figuring out that we did it, but we don't
10 know who they are or what they will do, and that is
11 where we stand right now.

12 Okay.

13 Well, you had another slide here, five,
14 didn't you

15 MR. HONCHARIK: My name is John
16 Honcharik. I work in the component integrity branch.
17 I'll talk about the open item related to the dual-
18 unit sites. Westinghouse already discussed this, and
19 I can just summarize a bit.

20 I guess previously the AP 1000 DCD implied
21 that the bounding turbine missile probability analysis
22 was only applicable to the high trajectory missiles.
23 But therefore the staff identified this as an open
24 item, that analysis for the load trajectory turbine
25 missile would be carried for an unfavorable oriented

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1 turbine. For a co-located AP 1000 units, because as
2 you know most of the COLs are all co-located units,
3 and the DCD only addressed it as a single unit.

4 CHAIRMAN RAY: Yes.

5 MR. HONCHARIK: So basically this open
6 item has since been resolved, and we have previously
7 discussed this in February 2010 ACRS meeting for the
8 expanded COL items. The staff found the open item
9 resolved since Westinghouse clarified that although
10 the AP 1000 DCD is for a single unit, which is
11 favorably oriented with respect to the turbine
12 generated safety related equipment, the turbine
13 missile analysis is applicable to both high and low
14 trajectory missiles.

15 So basically the analysis determines the
16 probability of generating missiles due to an adverse
17 rotor regardless of the angle of the trajectory.

18 So basically the staff clarified this and
19 noted that the standard supplemental information in
20 the COL applications also address this item. So
21 therefore this item was resolved.

22 CHAIRMAN RAY: Okay, any questions?

23 MEMBER BROWN: Well, they addressed it.
24 But did they address it - means it doesn't have any
25 impact? It doesn't cause a problem?

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1 MR. HONCHARIK: It doesn't cause a
2 problem.

3 MEMBER BROWN: Okay.

4 CHAIRMAN RAY: It doesn't cause an
5 unacceptable problem, I guess is the way to put it.

6 MEMBER BROWN: Yes, it's always a problem
7 if you tear stuff up. Thank you.

8 MEMBER BLEY: But then if you put this
9 dual unit at a site that already has existing units at
10 the COL stage, you will have to look for the same
11 question with respect to the existing --

12 MR. HONCHARIK: With existing, correct.
13 And each COL would do that to a site specific,
14 depending on whether or not there are other ones
15 nearby.

16 MEMBER BROWN: But for Vogtle, it's not
17 the site specific analysis, and it's not --

18 CHAIRMAN RAY: This is a DCD.

19 MEMBER BROWN: I'm sorry, I apologize,
20 thank you. Thank you. Sorry about that.

21 CHAIRMAN RAY: Okay, anything else you
22 guys have?

23 MR. REDDY: That's it.

24 CHAIRMAN RAY: All right, well we will
25 take as an - and I'm not sure whether this is ever

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1 going to get resolved. But we are going to note that
2 the means by which ITAAC will be used to verify the
3 implementation of overspeed protection commitments is
4 something we still haven't found out how it's going to
5 be done. Merely saying it's part of ITAAC, I guess
6 moves the ball along, but it doesn't really answer the
7 question adequately. So we will have to try and
8 pursue that further later.

9 Thank you.

10 MR. REDDY: Thank you, Chairman.

11 CHAIRMAN RAY: Okay, now with that we are
12 going to take a break, and then we will finish the day
13 with the discussion of RTNSS.

14 Weidong reminds me that we may have some
15 time to discuss some open items as well. But in any
16 event, then tomorrow after receiving public comments
17 we will resume discussion of any ACRS open items that
18 we don't finish here today at 10:00 o'clock. But the
19 first thing we are going to do is talk about RTNSS,
20 then we will see if there are any other open items
21 people want to discuss. Then we will recess for the
22 day. We are in recess.

23 (Whereupon at 3:06 p.m. the proceeding in
24 the above-entitled matter went off the record to
25 return on the record at 3:20 p.m.)

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1 CHAIRMAN RAY: All right, back in session
2 please for the last session of the day, and it's to
3 the staff on Chapter 22.

4 CHAPTER 22 - NRC STAFF PRESENTATION

5 MR. JAFFE: My name is Dave Jaffe. I'm
6 lead project manager for the design certification
7 method of AP 1000. This is the staff's presentation
8 of the advanced FSAR for Chapter 22, the regulatory
9 treatment of nonsafety systems.

10 I have with me today Malcolm Patterson
11 from the PRA branch, and he will be assisting in what
12 is certainly going to be a short presentation.

13 Chapter 22 is different in one important
14 respect, in that the other chapters basically
15 presented the staff's evaluation of changes proposed
16 by Westinghouse. In this case there were no proposed
17 changes to Chapter 22. However, the staff felt it
18 necessary to address a few key items. So we produced
19 a rather short supplement to the previous chapter 22
20 that was rather limited in scope, and Malcolm
21 Patterson will now address that scope.

22 MR. PATTERSON: Right, the area we
23 addressed is the ancillary equipment, after 72 hours
24 after an accident, this is to maintain core cooling
25 and inventory containment cooling, main control room

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1 has an ability to do post-accident monitoring and
2 spent fuel pool cooling.

3 The equipment is located in the annex
4 building, and although the annex building is a non-
5 safety related building, there is a portion of it that
6 is seismic category two, going to withstand high winds
7 and the missiles they might generate.

8 After 72 hours the 1E DC system is
9 expected to have used up the power stored in the
10 batteries. To continue the safety functions those
11 batteries need to be recharged. There are small
12 ancillary diesel generators, and fuel for four days
13 for those generators. In addition to recharging the
14 batteries, there is also power to ventilate the main
15 control room, the I&C room, and the DC equipment room.

16 There is power to replenish the passive containment
17 cooling water system, water storage tank. Small motor
18 driven pump is sufficient, and the water to replenish
19 that tank comes from the passive containment cooling
20 ancillary water storage tank, which is also a seismic
21 category two to withstand winds and missiles.

22 One new concern we had was the
23 accessibility of this non-safety related structure in
24 the event that the parts that were seismically
25 qualified collapsed, and the need for operators to get

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1 to the ancillary equipment, refuel the tank, or to get
2 some sort of conductor to the distribution panel from
3 which the power is sent to the various loads in the
4 system. This part of the annex building is directly
5 adjacent to an auxiliary building, and so there is
6 seismic category one structure through which the
7 operators can reach the area. There are also non-
8 safety related connectors so that water can be pumped
9 by an externally provided pump that can be brought
10 onsite, presumably within another -- well seven days
11 after the initial event.

12 And we just made sure that the updated
13 safety evaluation report aligned with the DCD didn't
14 involve any change to the description of the system in
15 the DCD, so Westinghouse wouldn't have anything to
16 present today.

17 MR. JAFFE: I think in summary what we
18 found was that in fact there was adequate access in
19 the event that parts of the building did collapse, and
20 that in fact that those post-72 hour facilities could
21 be resupplied.

22 CHAIRMAN RAY: I'm puzzled by what's said
23 on a different score which is the availability of this
24 equipment. At one point it seems like this is to be
25 addressed by procedures that the COL applicant will

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1 prepare. And in another place it seems to clearly
2 state there are no short term availability controls.
3 I guess there are no limiting conditions for
4 operation. Let's take these in two pieces. The 72
5 hours and later piece, the short term.

6 There are no availability requirements on
7 these? Or there are, but they are going to be
8 specified by the COL applicant? What is the story as
9 far as availability of this equipment?

10 MR. PATTERSON: Well, it's not required
11 for three days. And the function can be provided by
12 the installed equipment, or by equipment that is
13 brought from offsite.

14 MR. JAFFE: This is all post-72 hours,
15 and it's not credited, prior to 72 hours.

16 CHAIRMAN RAY: Correct.

17 MR. JAFFE: So there is no need for
18 access prior to 72 hours.

19 MEMBER STETKAR: Harold, can I ask the
20 staff a question, because I have to apologize I've
21 come in late.

22 CHAIRMAN RAY: Yes, of course. I'm still
23 trying to puzzle this out.

24 MEMBER STETKAR: Has - I'm not normally
25 a member of this subcommittee, so I'm not quite sure

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1 what presentations the subcommittee has had, either in
2 this meeting or in previous meetings, is Chapter 22
3 the only place that discusses RTNSS?

4 MR. PATTERSON: It is the only place
5 RTNSS is discussed generically.

6 MEMBER STETKAR: Does Chapter 17 of -
7 where is the RTNSS list and the population of that
8 list?

9 MR. PATTERSON: The DRAP list is in
10 Chapter 17.

11 MEMBER STETKAR: DRAP is in Chapter 17.

12 MR. PATTERSON: And that comprises both
13 RTNSS and safety related.

14 MEMBER STETKAR: Correct, yes. But the
15 selection - the identification of RTNSS equipment is
16 strictly Chapter 22?

17 MR. PATTERSON: A little bit is
18 identified in Chapter 17 on the basis of Chapter 19
19 results.

20 MEMBER STETKAR: Okay. Where I'm leading
21 to is that in other design samples we've seen five
22 criteria for identifying RTNSS equipment. And you
23 have to excuse me, because I don't remember all five
24 of them. But for example, this is one, equipment that
25 is required - non-safety equipment that is required to

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1 support post-72 hour operation; that is one of the
2 five. Another criterion is equipment that - non-
3 safety related equipment that if you did not include
4 credit for it you don't need the commission's safety
5 goals in terms of core damage frequency at least.
6 Another criterion is, non-safety equipment, if you
7 don't take credit for it, you don't need the goal of
8 conditional containment failure probability of less
9 than 0.1. And there are two others, and I can't
10 remember what the other two are. Now, the slide that
11 you have here addresses the greater than 72 hour
12 response time aspect of this. Where are the other -
13 if there are four other, where are the other four
14 criteria for populating the RNSS list addressed in the
15 applicant's submittal?

16 MR. PATTERSON: That is addressed in the
17 SER in Chapter 22. This was focused only on the part
18 that we needed to change on the certified design
19 today. And that is why it is such a limited scope.

20 MEMBER STETKAR: I just wanted to get my
21 hands around scope. Now the availability controls is
22 a separate issue.

23 CHAIRMAN RAY: Well it is. Twenty two
24 has post-72 hour actions and equipment in it, and it's
25 got what is called 2259, short term availability

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1 controls. Both of those are addressed in the FSAR.
2 And I guess my question was in artful because I was
3 trying to recall the prior review that I had done of
4 this. Let's go back again on the post-72, 2256, which
5 is post-72 hour actions and equipment. And it talks
6 about what the functions are that is required to
7 perform and so on here.

8 The question I'm still grappling with is,
9 is the position that we have taken that because these
10 are 72 hours and beyond there is no availability
11 requirement that needs to exist for them, because they
12 are three days and beyond; availability is taken for
13 granted?

14 MR. PATTERSON: I'm sorry, I really can't
15 address that, because it was an issue that was
16 resolved in a certified design back in Rev. 15.

17 CHAIRMAN RAY: All right, then, let me
18 take your time to read you what is in this FSAR on
19 this subject, at least I think it is. Let me find it.

20 Westinghouse stated that combined license
21 applicants referencing the AP 1000 will develop a
22 procedure to control the operability of investment
23 protection SSCs. Now that is a new term introduced at
24 this point in the paragraph, so I'm not sure exactly
25 for sure how it aligns with the heading of this

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1 section, which is post-72 hour actions and equipment.

2 I don't know if that is the same thing or not. In
3 accordance with DCD Tier 2 Table 16.32 dah dah dah
4 plant procedures, the applicant described a commitment
5 to address operational and maintenance program issues.

6 Okay. So I'm still - does this mean that
7 availability or operability as it's used here, to
8 control the operability, that's the exact words used -
9 is to be specified by the COL applicant, but there are
10 no other requirements than that they be specified? Is
11 that what this means?

12 MR. PATTERSON: If I heard correctly, I
13 would interpret that as saying that the applicant is
14 required to have operational programs that will
15 address this equipment. They need to have procedures
16 for bringing it online 72 hours after the accident.
17 It has to be available to that extent.

18 CHAIRMAN RAY: Is this the same thing as
19 investment protection equipment? Is that what we are
20 talking about? Or is there some different --

21 MR. PATTERSON: Westinghouse doesn't use
22 the term, RTNSS. They refer to investment protection
23 equipment as the equipment that protects the
24 investment by being available to not need - that are
25 safety related equipment.

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1 CHAIRMAN RAY: All right, well anyway, I
2 do read this to say that the COL applicant has to have
3 a procedure to control inoperability of this stuff,
4 and that is something we wrote in the SER, you wrote,
5 somebody wrote. And I am struggling to find it in the
6 updated SER.

7 MR. JAFFE: Mr. Chairman, is there any
8 chance that we could take this as an action item? We
9 can take it back and study it, because we want to give
10 this some attention? Would that be acceptable?
11 Because I don't think we were prepared.

12 MEMBER STETKAR: I think having come in
13 here stone cold, been dragged in here kicking and
14 screaming, I want to make sure that we are clear on
15 the meaning of the word, availability. Because I
16 think I hear the staff perhaps saying, availability in
17 the sense of what I would term accessibility, and the
18 ability to actually connect and start and operate that
19 equipment considering the fact that it is not needed
20 until 72 hours. That is different from availability
21 to make sure that indeed it is there such that when I
22 need it it is actually possible to operate the
23 equipment, that it is not apart in pieces on the
24 floor. Now availability in the sense of availability
25 controls program, is the second of those two, not the

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1 first of the two.

2 MR. PATTERSON: We didn't confuse
3 accessibility with availability. To us availability
4 means that some percentage of the time this system is
5 ready to go.

6 CHAIRMAN RAY: The word here is actually
7 operability.

8 MEMBER STETKAR: Okay, then operability
9 has a - does the - is there something like an
10 availability controls manual for - since the term is
11 plant investment protection equipment gear.

12 MR. PATTERSON: That's what they call it.

13 MEMBER STETKAR: For plant investment
14 protection equipment that is somewhere between in
15 terms of requirement space somewhere between the
16 technical specifications and the maintenance rule?

17 MR. PATTERSON: I would say that that is
18 an accurate characterization of 16.3.

19 MEMBER STETKAR: There is something in
20 that section? Okay.

21 MR. PATTERSON: The availability target
22 is 90 percent for these investment protection systems.

23 MEMBER STETKAR: And there is a specified
24 document that says, you should meet this, and if you
25 don't meet this something happens?

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1 MR. CUMMINS: This is Ed Cummins, 16.3,
2 Chapter 16 is tech specs. And so in the old days
3 there was a huge reluctance by the industry to put
4 non-safety things in the tech specs. And so - and
5 there was a - this is AP 600 at the time - and there
6 was some desire by the staff to try to deal with those
7 things that had some value to safety that was non-
8 safety, like these post-72 hours, but other things,
9 for example, in certain modes like middle LOOP, we
10 wanted to say, don't go into mid-LOOP unless you have
11 everything working, everything that could mitigate
12 mid-LOOP. And so what we ultimately agreed to was to
13 make a tech spec looking like thing, written exactly
14 like tech specs, that says, when you are in mid-loop
15 you must have two RNS and two component cooling and
16 two diesels, and if you don't then you have to notify
17 your chief nuclear officer in 10 hours or five hours.

18 It's just like a tech spec; if you don't, then you
19 have to - but you don't have to shut down. It's a
20 different sort of consequence. And this does deal
21 also, at least I was - I couldn't remember whether it
22 had post-72 hour stuff in it or not, but at least for
23 one thing where it says that the level of the water in
24 the ancillary storage tank will be sufficient to go
25 for seven days.

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1 MEMBER STETKAR: So the availability
2 controls --

3 MR. CUMMINS: There is availability of
4 this stuff.

5 MEMBER STETKAR: -- of this stuff.
6 That's a good way to put it. (Laughter) Of this
7 stuff are indeed specified in that --

8 MR. CUMMINS: In 16.3.

9 MEMBER STETKAR: Okay. I was struggling,
10 because different design centers have kind of
11 addressed that differently. And I think it's evolved
12 over time.

13 CHAIRMAN RAY: Well, did that answer my
14 question?

15 MEMBER STETKAR: I don't know. I think I
16 understand what they are doing.

17 CHAIRMAN RAY: Is what you were talking
18 about applicable to this stuff that is described here?

19 MR. CUMMINS: Yes, it is. It goes in to
20 some degree with post-72 hour availability. In fact
21 I think what you read had 16.3 in the test.

22 CHAIRMAN RAY: Yes, it does, that is
23 right, and it's combined license information. That's
24 why I asked the question, is this something that is
25 required to be proceduralized by the combined license

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1 applicant, but that is the only requirement that
2 exists for it. Is there some other guidelines that
3 exist somewhere as to what should be provided?

4 MR. CUMMINS: If there was a COL in
5 there, philosophically it would have been along the
6 lines of, some of our philosophy were that these
7 diesels were - you could find on the back of a fire
8 truck, they were small available diesels, and it could
9 be that we left it - there is, Rob can help me here
10 with the DCD, there is a COL item that's in 16.3, and
11 it says, license applicant, referring to the AP 1000,
12 will develop the procedures to control the operability
13 of investment protection systems structures and
14 components in accordance with Table 16.3-2.

15 CHAIRMAN RAY: All right, that lines up
16 with what the FSAR says. So.

17 MR. CUMMINS: That 16.3-2 table is the
18 thing that looks like the tech specs, and it has at
19 least I don't know if it has all investment post-72
20 hour equipment in it, but I found at least some of the
21 post-72 hour equipment with a quick look here.

22 MEMBER STETKAR: You found that in the
23 DCD?

24 MR. CUMMINS: Yes, in 16.3.

25 MR. PATTERSON: Not every SSE important

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1 to investment protection is controlled in 16.3-2. It
2 was determined that this was an acceptable set.

3 CHAIRMAN RAY: Okay. Well, I'm really
4 struggling to figure out what in the heck happened
5 here. I understand that we can't go back and raise
6 questions about what is already certified. But I
7 don't want to take up people's time at this hour.

8 MR. PATTERSON: I think the issue though
9 with this equipment is that if you are going to be
10 getting it from offsite that requires a certain amount
11 of knowledge about what's available offsite, who has
12 it, who can bring it to you. And there area other
13 areas where there is a lot of focus on that kind of
14 thing.

15 CHAIRMAN RAY: Well, the thing that
16 triggers the thought is, the phrase starts off, the AP
17 1000 design relies on the following safety functions
18 72 hours after the accident, and it lists those safety
19 functions. And then it talks about, to support these
20 functions the design includes non-safety related
21 ancillary equipment. So you think I'm talking about
22 safety functions, it's the world that I am in here, so
23 how do I make sure that these functions can be met?
24 And that's why I was asking the question. I'm not
25 sure how it turned out, but I'll give up at this

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1 point.

2 Let me ask a different question. There is
3 an additional four-day supply - this is from 2256 - an
4 additional four-day supply of water stored in the
5 passive containment cooling slurry water storage tank
6 which is seismic category two structure. Okay, now,
7 elsewhere it appears that this post-72 hour period
8 though is supposed to be to include the possibility of
9 a seismic event, and therefore I immediately think,
10 well, okay, for that event at least this water would
11 presumably not be available, because it was only a
12 seismic category two structure. What is the
13 alternative to this tank and how do you make sure
14 there is an alternative? Or is that again an area
15 where we say, well, because it's three days out,
16 whatever happened to the tank we can fix it in that
17 three-day period?

18 MR. PATTERSON: No, in this case I think
19 that seismic category two tank implies that this tank
20 is designed to withstand the seismic event, in fact
21 the same seismic event as a category one.

22 CHAIRMAN RAY: Oh, is that right?

23 MR. CUMMINS: That's what we interpret
24 also.

25 CHAIRMAN RAY: Okay, well, I've made a

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1 mistake myself then. I thought category two was not
2 for an SSE.

3 MR. PATTERSON: Right, but the idea of a
4 Seismic Category 2 is usually if this structure falls
5 down it's not going to prevent safety-related
6 equipment from performing its function. So you are
7 making something Seismic Category 2 because it is over
8 Seismic Category 1, but --

9 MR. CUMMINS: I think that - Ed Cummins
10 again - I think that we were desperately looking for
11 ways to make it non-safety, this is collectively with
12 the staff - but functional. And so there was no thing
13 that you could call it seismic category X, which was
14 non-safety but functional after an earthquake. And so
15 we really intend for this water tank to be functional
16 after the earthquake, and the same with the fuel oil
17 tank for the diesels, and same for the diesels
18 themselves and their protected by a Seismic Category 2
19 building. We expect them to be there. So this is a
20 strange use of Seismic Category 2, but it's one that I
21 think the staff and Westinghouse interpret the same
22 way.

23 CHAIRMAN RAY: It is, either that or I've
24 gotten myself confused somehow. But I thought Seismic
25 Category 2 was not required to be operable followed an

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1 SSE.

2 MR. CUMMINS: Yes, but in fact when you
3 go to the structural branch and say, what do I have to
4 do for a Seismic Category 2, they say, design it for
5 Seismic Category 1. And so it's pretty darn good.

6 MEMBER STETKAR: That's a good practice.
7 That's what I've seen people do.

8 MEMBER BROWN: That's because you don't
9 want it to fall apart and damage Seismic Category 1
10 stuff?

11 MR. CUMMINS: Yes, the normal Seismic
12 Category 2s don't fall down and hurt something Seismic
13 Category 1. It doesn't have to function, but it can't
14 damage something else; that is the normal.

15 MEMBER STETKAR: And the only way you can
16 do that is to make it -

17 (Simultaneous voices and laughter)

18 CHAIRMAN RAY: Well, I will accept that,
19 but I guess it wasn't as strange a conclusion as I
20 thought it was.

21 And then 2259 gets out of the 72-hour
22 part. I'm still in the FSER, and we refer to table
23 16.32, investment protection short term availability
24 controls. Other people I gather might call this stuff
25 RTNSS. Identify short-term availability controls for

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1 non-safety related structures and systems and
2 components that are subject to regulatory treatment.
3 There are no limiting conditions for operation. It's
4 the completion times for required actions are not met,
5 i.e. there is no requirement to bring the plant to
6 safe shutdown condition when the operability
7 requirements are not fulfilled. The staff finds this
8 acceptable since these non-safety related systems do
9 not meet any of the four criteria specified in 10 CFR
10 15.36 that would require limiting condition for
11 operation.

12 Could you put that in some other words and
13 tell me how I should read that?

14 MR. PATTERSON: Because it's not safety
15 related you don't have to have an LCO.

16 CHAIRMAN RAY: Yes.

17 MR. PATTERSON: The fact that it is not
18 available right now doesn't mean you're going to have
19 to change the operating state of the plant, but it
20 should alert you to a condition of heightened concern.

21 CHAIRMAN RAY: And if it hasn't been
22 available for the past year? What consequence does
23 that have?

24 MR. PATTERSON: There actually are
25 different non-LCOs for longer periods of time.

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1 CHAIRMAN RAY: Is that what we were
2 talking about before?

3 MR. CUMMINS: Yes. Ed Cummins again.
4 Yes it was. That 16.3 is written like a tech spec,
5 and it says usually most of it is quite sensitive to
6 high risk modes, like mid-loop. Basically it says you
7 can't go into mid-loop unless you have all this stuff
8 available, and if you lose something while you're in
9 there, then you have a time limit before you have to
10 talk to the chief nuclear officer. And that - it
11 doesn't say you have to shut down, but of course if
12 you're in mid-loop you are already shut down.

13 CHAIRMAN RAY: John, I guess I thought
14 you were searching for some way of understanding this
15 availability that he is talking about. He's talking
16 about what the consequences are of unavailability, but
17 the real question for you and I would be what are the
18 requirements for availability.

19 MEMBER STETKAR: Well, what I was going
20 to ask is --

21 MR. CUMMINS: The intention of this is
22 requirements for availability. That is the intention.
23 We all know that. And we, Westinghouse and our
24 customers know that. So you can't go into mid-loop
25 unless you have this stuff available.

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1 MEMBER STETKAR: What happens - I plead
2 ignorance here - in 16.3 if you are power operation
3 and you have one of these post-72 hour pieces of stuff
4 unavailable for longer than X. I don't know how it's
5 specified; I haven't looked at 16.3 at all. I don't'
6 even know how other people address this sort of issue.

7 Other people have said, well, if it's unavailable for
8 longer than X you don't shut down but you have to do
9 something.

10 MR. CUMMINS: Yes.

11 MEMBER STETKAR: Does your 16.3 --

12 MR. CUMMINS: We are trying to read that.

13 (Simultaneous voices)

14 MR. CUMMINS: There is something on the
15 tank, the PCCAWAST tank, that says if the level is not
16 sufficient you must act in so many days. That's
17 independent of mode. So that is saying, I want you to
18 be available for some future event.

19 MEMBER STETKAR: And if you don't within
20 that amount of time, is there anything that says you
21 have to do something else?

22 MR. CUMMINS: No, I think the limit is
23 notify the chief nuclear officer.

24 MEMBER STETKAR: Other people, Harold, in
25 response to your question, other people have a hook in

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1 there that says, if you exceed whatever that X is,
2 whether it's a time or whatever, that you effectively
3 invoke the requirements of the maintenance rule. You
4 must do a risk assessment at least and evaluate the
5 risk of the plant. It doesn't say what you need to do
6 about that. But there is at least a requirement that
7 you need to do something, other than just notifying
8 somebody. It's still not a strong - shut the plant
9 down type of thing, but that is not the purpose of
10 this. It all falls back on maintenance rules.

11 MR. CUMMINS: Well, I believe that we and
12 our customers think this is stronger than you say it
13 is. (Laughter) Because there is still the NRC
14 around, right? And it's not even that. It's because
15 we have a knowledge that says, we have this
16 requirement to provide safety post-72 hours, and we
17 know what is required and so forth.

18 MEMBER STETKAR: Ultimately all of this,
19 using the term stuff, is indeed on the DRAP list; is
20 that correct? And anything on the DRAP list comes
21 under the purview of the maintenance rule, whether
22 it's safety related or non-safety related. So that is
23 the ultimate fall back is you invoke the requirements
24 of the maintenance rule that says, given a set of
25 equipment being unavailable, you have to evaluate the

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1 risk in that plant configuration. That is my
2 understanding of the philosophy, and it seems to be --

3 CHAIRMAN RAY: Well, if you are satisfied
4 with this discussion --

5 MEMBER STETKAR: I understand how it's
6 supposed to work. And as long as this design center
7 has that in there, whatever they call the things, and
8 wherever --

9 CHAIRMAN RAY: Well, I just read the
10 words the way I parse them out here, and I'm left with
11 a question which I had sent Weidong, but now I can
12 relieve him of having to answer it, because I think
13 I've gotten as much answer as I need at this point.

14 Anybody else have any questions of our
15 presenters? Anything more you guys want to say?

16 (No response)

17 Okay, well, thank you for adjusting your
18 schedules and coming and attending to us now. Thanks
19 a lot.

20 All right, now we will have what probably
21 will be a fairly short committee discussion. Charley,
22 Dennis and I were the ones who were here mostly today,
23 just to see that we have captured what is necessary.
24 Others may or may not want to hang around for that.
25 But let me say that we will start again tomorrow

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1 morning at 8:30. There will be a time when we will
2 receive public comment. We will then address - Rob,
3 do you have anything that you need to discuss with me
4 now on action items with the committee? Did you need
5 to take up an action item now?

6 MR. SISK: No, sir, we're fine.

7 CHAIRMAN RAY: Because I don't want
8 everybody to have to stay tonight, that we could deal
9 with their issues today. Amy, do you have anything
10 you need to get done now because you want to send
11 somebody home?

12 MS. AUGHTMAN: No.

13 (Laughter)

14 CHAIRMAN RAY: Okay, then we will resume
15 as I said tomorrow morning at 8:30. We will have a
16 period that has been set aside for some public
17 comment. It's like any other public comment, but it
18 happens to have been scheduled in. We may or may not
19 have a break after that, but we will then take up just
20 the remaining agenda item which is any action items
21 that we want to clear that either of the applicants
22 want to or the staff want to bring back to the ACRS
23 for the purpose of closing it out if we can, and
24 following that we will then have a final review of
25 where we stand, and we will at that time adjourn the

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1 meeting.

2 And I expect that will happen before noon.

3 Yes, sir?

4 MEMBER BANERJEE: When do we have to
5 write a letter?

6 CHAIRMAN RAY: December.

7 MEMBER BANERJEE: And what will that
8 letter cover?

9 CHAIRMAN RAY: The DCD Amendment 18. Now
10 I've got something to share with you all. You weren't
11 here today, but we've gotten some insight into how the
12 most recent changes since January of this year are
13 going to be handled and presented to us. And I'll put
14 that in a note to everybody so they will be able to
15 understand that. But unlike up until January when
16 design changes, given a design change package, would
17 result in a number of changes to the DCD, and then
18 we'd try and reaggregate them to figure out what was
19 happening and what was significant, from January of
20 this year on, design changes are being kept as design
21 change packages, and aggregated in a chapter 23, a new
22 chapter just as a place to put them. And we will go
23 through all of them since January as part of a wrap up
24 of our review of Chapter 18 - I mean Revision 18 of
25 the DCD. That will be scheduled, and will happen my

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1 guess is September.

2 MEMBER BANERJEE: When is the FSER?

3 CHAIRMAN RAY: The complete version,
4 we've been looking at, we were just talking about.

5 MEMBER BANERJEE: Oh, this is?

6 MEMBER BROWN: We did five chapters
7 today.

8 MEMBER BANERJEE: Of those?

9 CHAIRMAN RAY: Well, I asked Weidong to
10 put together a roadmap from here on out, so we will
11 shortly be able to see that. I specifically asked for
12 example given where we are on the Shield building, for
13 example, does that fit neatly into one single chapter.

14 I mentioned GSI-191, is that going to be --

15 MEMBER BANERJEE: Are we going to deal
16 with that?

17 CHAIRMAN RAY: Well, we ask that question
18 every time that topic comes up. And last time I asked
19 Ed what was going to happen in his opinion. We were
20 either going to resolve it for AP 1000 or it was going
21 to be resolved as part of the generic resolution that
22 would take place. And we don't know the answer to
23 that question.

24 Do you have any new outlook you want to
25 share with us, Ed?

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1 MR. CUMMINS: I think the staff should
2 answer this. And I think they answered it before, and
3 I think we intend to resolve GSI-191. But that is for
4 the staff to say, rather than --

5 CHAIRMAN RAY: That's what you think?

6 MR. CUMMINS: That's what I think the
7 staff will say.

8 CHAIRMAN RAY: Well, the staff may not be
9 prepared to speak to it. I will invite them to
10 comment if they want.

11 MR. JOSHI: I can't comment on it at this
12 point. The last time we talked about it, we had an
13 unresolved issue on AP 1000 only, that is my
14 recollection. I can go back and verify that.

15 CHAIRMAN RAY: That is what we said last
16 time, but it's some time ago. And Dr. Banerjee is
17 asking me to tell him if that is still what is going
18 to happen, and I can't do that.

19 MR. JOSHI: I can bring that issue back
20 tomorrow at 10:00 o'clock, and can give you the
21 information on that.

22 CHAIRMAN RAY: Well, we always appreciate
23 an update, sure, that's obviously something that needs
24 to happen or there needs to be some new course set for
25 it for us.

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1 So anyway, Sanjoy, the current outlook is
2 a full committee meeting and letter in December, or a
3 full committee meeting in December at least; whether
4 the letter will be in December or in February, I can't
5 tell you. But two issues that I'm trying to make sure
6 we know exactly where they fit into the scheme of
7 things, are GSI-191 and the shield building, both of
8 which are currently still under staff review.

9 Anything else that is on your mind,
10 checklist?

11 MEMBER BROWN: Help me, why is the shield
12 building something other than AP 1000? I thought that
13 was AP 1000.

14 CHAIRMAN RAY: It is, I didn't mean to
15 say otherwise.

16 MEMBER BANERJEE: I just said they were
17 under review.

18 MEMBER BROWN: I got the flavor that
19 maybe it wouldn't be.

20 CHAIRMAN RAY: No, that's GSI-191.

21 MEMBER BROWN: Oh, I'm sorry, I missed
22 that.

23 CHAIRMAN RAY: Okay.

24 MEMBER BANERJEE: So because GSI-191, it
25 may be difficult to close in time for the letter.

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1 That is really the issue.

2 CHAIRMAN RAY: I think everybody
3 appreciates that, yes. We are still getting the same
4 story that we have gotten in the past, which is, it
5 should be resolved as part of this DCD amendment. And
6 I reported that to you. And that's all I can do.

7 MEMBER BANERJEE: I'm just saying,
8 perhaps the staff should discuss this with us.
9 Because in some ways we are in continuous discussions
10 with the staff with regard to GSI-191 for existing
11 BWRs. We seem to be much closer in touch with them on
12 that than we are on this. I don't even know how they
13 intend to get close to resolution in that time.

14 CHAIRMAN RAY: Well, I would guess that
15 tomorrow it's unlikely that we can get more than there
16 is no change in what we told you last time, or there
17 is a change. But Dr. Banerjee is saying, listen, the
18 time has come when we need to talk more about how we
19 are going to get this done, not just what is our
20 objective. And I don't think that we can do that
21 tomorrow. But if we can we'll be happy to do it.

22 MEMBER BANERJEE: We have to be realistic
23 within this timeframe too. It's not just saying we
24 are going to resolve it. Please, if you don't have
25 the data, if you don't have the stuff, you are not

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1 going to resolve it.

2 CHAIRMAN RAY: Yes, and I think
3 Westinghouse would appreciate it, it's in their
4 interest too for us to have some discussion of how
5 this is going to get done, now that we are looking
6 down the barrel of a specific deadline, or if not
7 deadline, a specific schedule. And so I'm as anxious
8 to do that as anyone. I don't know that it can be
9 done tomorrow, but if it can if we have time we should
10 discuss it and have whoever --

11 MEMBER BANERJEE: Even for something like
12 the ABWR, it's going to be left to the commission.

13 CHAIRMAN RAY: Yes, I understand.

14 MEMBER BANERJEE: Subject to testing, 24
15 months before the fuel loading. So I really would
16 like to know how you are going to do it.

17 CHAIRMAN RAY: Okay, fair enough. We
18 will also review the action items tomorrow, we should
19 have time for that and still get done at noon. I have
20 mentioned the - there were two items on the turbine
21 that we added to the action items, one a request for
22 information - well, both a request for information.
23 And what else do you have, Weidong?

24 MR. HOPPER: Mainly for the turbine
25 overspeed, and ITAAC, to make sure this overspeed --

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1 CHAIRMAN RAY: Yes, well, it's more a
2 matter of how is ITAAC going to work when it comes to
3 things like a functional requirement that there be
4 diversity in two independent electronic overspeed
5 trips. That is an example, but it's hard for some of
6 us to imagine how the heck the ITAAC is actually
7 implemented for that. It's a sufficient requirement;
8 I don't know what more we can ask for really. But
9 still whether or not it's achieved is an ITAAC
10 function, and I think people would like to know more
11 about how this is supposed to get done. Their folks
12 who were sitting here talking to us today said, well,
13 don't know. It's not their - sufficient for them that
14 there is a requirement that it be independent and
15 diverse. And that is where their visibility ends. So
16 we need to follow up on that.

17 Anything else?

18 MR. HOPPER: ISG-11, something we also,
19 the committee needs to take a look.

20 CHAIRMAN RAY: That is something that
21 like I said has to do with the note I'm going to send,
22 because there are so many of our members not here. It
23 has to do with what goes into Amendment 18, Revision
24 18 excuse me, and what doesn't basically. And
25 thankfully Frank was here today to give some

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1 concise crisp statements that at least I could
2 understand about what we get to see, which is the
3 Revision 18 certification, full stop, not just the
4 present version of it.

5 Okay. All right, well anyway then if
6 there is nothing more we will recess for the day.
7 Anybody have anything else they need to bring up?

8 Okay, please do appear timely tomorrow.
9 We will have the scheduled discussions, and then any
10 other members of the public.

11 I should ask if there is any member of the
12 public here now that would like to comment that might
13 not be here tomorrow, to provide any input.

14 No one on the bridge line I will assume
15 unless I hear otherwise.

16 (No response)

17 Hearing nothing we will recess for the
18 day.

19 (Whereupon at 4:07 p.m. the proceeding in
20 the above-entitled matter was adjourned)

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NUCLEAR REGULATORY COMMISSION

Title: Advisory Committee on Reactor Safeguards
Subcommittee on Westinghouse AP1000 DCD
and Vogtle Units 3 and 4 COL

Docket Number: (n/a)

Location: Rockville, Maryland

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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION
+ + + + +
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
(ACRS)
SUBCOMMITTEE ON THE WESTINGHOUSE AP1000 DCD AND
VOGTLE UNITS 3 AND 4 COL

+ + + + +

FRIDAY

JUNE 25, 2010

+ + + + +

ROCKVILLE, MARYLAND

+ + + + +

The Subcommittee met at the Nuclear
Regulatory Commission, Two White Flint North, Room
T2B3, 11545 Rockville Pike, at 8:30 a.m., Harold B.
Ray, Chairman, presiding.

SUBCOMMITTEE MEMBERS:

HAROLD B. RAY, Chairman

SANJOY BANERJEE, Member

DENNIS C. BLEY, Member

CHARLES H. BROWN, Member

SAID ABDEL-KHALIK, Member

DESIGNATED FEDERAL OFFICIAL:

WEIDONG WANG

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CONSULTANT :

THOMAS S. KRESS

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

8:28 a.m.

CHAIRMAN RAY: Meeting will now come to order.

This is the second day of a meeting of the AP1000 Reactor Subcommittee, a standing Subcommittee of the Advisory Committee on Reactor Safeguards. I'm Harold Ray, the Chairman of this Subcommittee.

ACRS members in attendance are Charles Brown, Dennis Bley, Sanjoy Banerjee and Said Abdel-Khalik.

ACRS Consultant Tom Kress is also present.

Weidong Wang is the Designated Federal Official for this meeting.

This meeting is part of the ongoing review of two licensing actions: A propose amendment to the AP1000 pressurized water reactor design control document and review of the associated referenced combined operating license application.

In the past, we had five AP1000 Subcommittee in July, October and November of 2009, February and April of 2010. This June AP1000 Subcommittee meeting will involve the review of the

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1 ongoing of advanced final Safety Evaluation Reports
2 on Revision 17 of the AP1000 DCD amendment and the
3 Vogtle AP1000 referenced combined license
4 application.

5 The review is focusing on open item
6 closing and new proposed design changes.

7 Presentations include Chapters 4, 10, 11, 12, 14 and
8 22 of the AP1000 DCD and Chapters 4, 10, 11 and 12 of
9 the Vogtle AP1000 referenced combined license
10 application.

11 And finally, action items from past
12 AP1000 Subcommittee meetings.

13 Today time has been provided in the
14 agenda for a member of the public to discuss
15 information provided in a letter to the ACRS Chairman
16 Dr. Said Abdel-Khalik, dated April 21, 2010. We will
17 hear presentations from the applicant as well.

18 The Subcommittee in this process will
19 gather information, analyze relevant issues and facts
20 and formulate proposed positions and actions as
21 appropriate for deliberation by the full Committee.

22 Rules for participation in today's
23 meeting have been announced as part of the notice of
24 this meeting in the previously published *Federal*
25 *Register*.

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

9 An open telephone line has been
10 established for persons wishing to monitor the
11 meeting over the telephone. We ask that they put
12 their instruments in the mute mood in order to avoid
13 disrupting the meeting in progress.

14 At this point, our Chairman will make
15 some comments.

16 MEMBER ABDEL-KHALIK: Thank you, Mr.
17 Chairman.

18 I have a conflict with the COL applicant,
19 and therefore I will not participant in any
20 discussions related to the COL.

21 CHAIRMAN RAY: Thank you.

22 We'll now proceed with the meeting. The
23 agenda has been placed around the room and is
24 available for us. I expect the meeting today to
25 conclude by noon.

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1 With that, we'll turn to our public
2 presentation scheduled here this morning on the
3 agenda. And Messrs. Runkle and Gundersen are here
4 with us to make this presentation.

5 And the floor is yours, gentlemen.

6 MR. RUNKLE: Thank you, Chairman.

7 My name is John Runkle. I'm the counsel
8 for the AP1000 Oversight Group.

9 And for those of you on the phone bridge,
10 the PowerPoint presentation is available on the
11 fairewinds.com website. That's F-A-I-R-E-W-I-N-D-
12 S.com. So if you want to download that, you can
13 follow along when Mr. Gundersen makes his
14 presentation.

15 The Oversight Group is an association of
16 local groups, primarily in the Southeast where the
17 utilities have applied for license in the
18 Westinghouse AP1000 reactors, along with several
19 regional and national organizations, some local
20 governments and other corporations.

21 Our position is that if the AP1000 design
22 is not safe, the NRC should not be issuing an
23 operating license until all issues with that design
24 are safely resolved.

25 Let me remind you of Commissioner

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1 Bradford's statement back in 1982. "If a Secretary
2 of Agriculture endorsed better meat inspection, you
3 want to have a debate of near religious fervor about
4 whether that person was pro or anti-meat, whether he
5 had sold out to the vegetarians. You'd debate
6 whether the stricter regulations made sense. It's
7 somehow unique to nuclear power that when one refuses
8 to have nuclear power on the industry's terms, one
9 gets chucked into a bin labeled 'anti-nuclear.'"

10 Now the Oversight Group firmly believes
11 in the protection of public health and safety, and
12 that's why we're here today. This should be the
13 overarching mandate for all of us.

14 Last year there were several instances of
15 corrosion in containment structure in operating
16 nuclear reactors. Mr. Gundersen, who I have worked
17 with before on other nuclear plant safety issues
18 brought these incidents to us. We then commissioned
19 Fairewinds to do an analysis for us on what similar
20 corrosion would mean if one of the AP1000 reactors
21 were operating.

22 We appreciate the opportunity to present
23 to you the results of the Fairewinds study. We sent
24 the study to the NRC and the ACRS on April 21, 2010
25 requesting a special investigation on what we see as

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1 a fundamental design flaw.

2 Just a week ago, the NRC issued
3 Information Notice 2010-12 on the Containment Liner
4 and Corrosion. I've supplied copies of that also to
5 you. And it looked at significant corrosion problems
6 at Beaver Valley, Brunswick and Salem Nuclear Power
7 Plants corroborating, in large part, the findings of
8 the Fairewinds study.

9 And again for those people on the bridge
10 the PowerPoint presentation is available on the
11 fairewoods.com website.

12 And I'm sure, gentlemen, you all don't
13 want to hear more from an attorney, so I'm going to
14 turn it over to Mr. Arnie Gundersen, Chief Engineer
15 at Fairewinds.

16 MR. GUNDERSEN: Thank you very much for
17 having me, and having us.

18 My background, just briefly.
19 Commissioner Bradford and I served together on the
20 Vermont Yankee Oversight Panel. And last year we
21 signed a consensus report that suggested Vermont
22 Yankee should be allowed to continue to operate for
23 20 more years with some suggestions. And Commissioner
24 Bradford and I are working together again on another
25 report that will be due out next month on a similar

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1 vein.

2 So, he's a smart guy.

3 In my career I've worked on -- I guess I
4 got involved on this way back with Millstone 1 in
5 '72, main steam isolation valve leakage which was a
6 significant problem. And that then rolled into a
7 unit called Montague if there's anybody in here that
8 remembers that one. That's one that Sam Lovejoy
9 toppled the met. tower back in the '70s also. But
10 the integrated leak rate problems we had on Montague
11 were significant and I briefed the staff on
12 integrated leak rate issues. And actually was
13 fundamental in working with the staff on mapping out
14 leakage into both vented and filtered areas versus
15 areas that were unfiltered. In the '80s I had 70
16 structural engineers working on containment analysis
17 at Millstone 3.

18 And now my concern revolves around net
19 positive suction head on boiling water reactors,
20 which of course if the containment were to fail,
21 would cause the problems to cavitate, and that's how
22 basically I've been following containment issues
23 since '03 when net positive suction head became a
24 problem in uprates.

25 I was commissioned by some folks down in

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1 Connecticut to write a letter to the ACRS, in I think
2 '06 or '07 about the Millstone 3 containment, which
3 was a sub-atmospheric four loop Westinghouse. It was
4 incredibly small and the position I took was that the
5 power of the value ratios on that reactor compared to
6 all the other four loop Westinghouse's merited more
7 evaluation.

8 I was hired by Citizens Power to work on
9 Beaver Valley after the crack was detected, the hole
10 was detected in the containment liner, and wrote to
11 the ACRS on that.

12 And now, of course, there's the AP1000
13 that we're here for today.

14 I think the other piece of my background
15 that's important is I was a Senior VP of an
16 inspection division. I had about 300 inspectors, ASME
17 11 inspectors, working for me at the peak. As you
18 know, it's a peak and valley business. We'd dropped
19 down to 40, and then hit 300, 40 and 300 as the
20 outage cycles occurred. So I know the capabilities
21 and the limitations of visual inspections and
22 inspectors in general.

23 This picture, it's a great one, it's from
24 Millstone 3 when my team of 70 engineers completed
25 the containment structural issues we were involved

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1 in. And it's taken from up on the bridge, up on the
2 crane looking down. You can actually see the
3 individual fuel rods. It's a great photograph.

4 But now on to the presentation. There is
5 no single industry database on containment issues.
6 And I'll call it containment system. Because we've
7 the liner, the metallics thing, but you've also got
8 the concrete. And there's been problems in both.

9 One of the areas I was able to find a lot
10 of information was a report by Naus and Graves. They
11 seem to be the go-to source on containment
12 degradation. And between 1970 and 1999, according to
13 Naus and Graves, there were 66 occurrences of
14 degradation in operating containments and 32 of them
15 were due to corrosion in the steel, either the
16 containment or the liner. The 34 were concrete
17 issues. So about half were metallic and half were
18 concrete issues according to Naus and Graves.

19 CHAIRMAN RAY: Excuse me.

20 MR. GUNDERSEN: Yes.

21 CHAIRMAN RAY: By the way, it's the
22 nature of ACRS, as you probably know, to interrupt
23 speakers and ask questions as you go along.

24 None of these 66 involved isolation valve
25 leakage or anything of that kind?

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1 MR. GUNDERSEN: No.

2 CHAIRMAN RAY: It sounded like you were
3 putting them in these two buckets.

4 MR. GUNDERSEN: You're absolutely right.
5 It didn't involve integrated leak rate testing or
6 failure of an isolation valve to meet a leak rate
7 criteria. No, that was not in the database.

8 There were two instances before 2000
9 where the liners were completely penetrated and there
10 were four more instances before 2000 where liner
11 thicknesses were reduced by half or more. So about
12 six out of the 66, or 10 percent involved liner
13 issues that were more than half through-wall, and two
14 cases were completely through-wall.

15 This presentation is footnoted when the
16 material is not in the report that I've provided to
17 the ACRS two months ago. So there's a couple of new
18 items, like the Information Notice that came out this
19 week that are footnoted. But if it's not footnoted,
20 it's because it's been provided. The footnotes are
21 in the original report.

22 CHAIRMAN RAY: Understood.

23 MR. GUNDERSEN: Okay. So Naus and Graves
24 have a pretty analysis up until around 1999. I don't
25 know if it's complete. I did find some overlap, but

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1 I also found some holes. But it's pretty close.
2 There were 66 problems in the initial three decades
3 of nuclear power.

4 CHAIRMAN RAY: And as I recall, that's
5 just U.S. or not?

6 MR. GUNDERSEN: Yes. That was just the
7 U.S., correct.

8 The next source I found that was a
9 significant collection of information was Information
10 Notice 04-09, 2004-09. And of course this one, 2010-
11 12 is sort of the next one in the line, as far as I
12 could tell.

13 But according 2004-09 there were eight
14 additional episodes of containment degradation in the
15 period from 2000 to 2004. And there was a through-
16 wall hole at DC Cook in '01, there were three
17 through-wall holes in the liner in Brunswick in '99.

18 And there were 60 pits at DC Cook that were below
19 minimum design but didn't go through-wall in '98.
20 Those are the ones of significance.

21 In addition, Hatch had two through-wall
22 cracks not in a liner, but in a containment.
23 Apparently there was a nitrogen line that was cold,
24 and I say inerted portions of that containment.
25 Repeatedly there was thermal stresses that caused a

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1 through-wall crack in Hatch 2 and then a through-wall
2 crack in Hatch 1 as well.

3 Other industry experience, and I guess
4 taken individually each one of these is not evidence
5 in and of itself, but there's a significant volume
6 when you look at all of it.

7 Dr. Gianni Petrangeli at the University
8 of Pisa wrote a book called *Nuclear Safety* and he has
9 a section in the book on containment. He's got a
10 chapter on containment. These are his quotes from
11 his book.

12 "The picture that emerge is not very
13 reassuring." He estimates that the probability of
14 overcoming speculation values is 46 percent for PWRs.

15 And as I read it, and it's written in English but he
16 is Italian so some of the words are not exactly the
17 same. I think what he means by "specification
18 values" is the probability of exceeding tech specs,
19 the tech spec leakage rate for a PWR in a real
20 accident situation is 46 percent.

21 MEMBER BROWN: How does that correlate
22 with the results of the testing that's done
23 periodically, do you know?

24 MR. GUNDERSEN: Well, that's a great
25 question. Having done a couple of them, the

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1 integrated leak rates test done periodically are done
2 awfully gingerly. And, you know for instances, the
3 MSIDs are lapped and all of the individual
4 penetrations have had their individual leakage
5 confirmed --

6 MEMBER BROWN: So it's not an as-found
7 test then?

8 MR. GUNDERSEN: Right. Right. It's not
9 as-found and it's also, you know in an accident you
10 get a very rapid pressure rise, and physically you
11 can't pressurize the containment that way. So it's a
12 slow pressure rise so it's not the shock.

13 And I think what Petrangeli was talking
14 about, is that combination, is we can't when we do an
15 integrated leak rate test simulate the rapid pressure
16 stresses on it and it's not as-found conditions on
17 the valve. So it's twofold

18 MEMBER BROWN: Let me --

19 MR. GUNDERSEN: Yes?

20 MEMBER BROWN: My background is Naval
21 nuclear program. So I'm looking a little bit at this
22 as education for me.

23 What I get out of your statement about
24 how they run the test is they prep the containment
25 prior to performing it?

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1 MR. GUNDERSEN: Yes.

2 MEMBER BROWN: I'm phrasing it slightly
3 differently, but you go through and you look at all
4 the potential leak paths and you kind of clean them
5 up and seal them and do whatever you need to do, so
6 you kind of prep the system.

7 MR. GUNDERSEN: Yes, that's correct.

8 MEMBER BROWN: Okay. I just wanted to
9 understand that point, make it clear at least in my
10 mind.

11 MR. GUNDERSEN: Right. And it sort of
12 makes sense because in a lot of the examples is like
13 the containment access door will be removed and, you
14 know various things will come in and out during the
15 outages. And then access door will be put back in
16 place. And you wouldn't want to test the containment
17 before you removed the access door and then screw it
18 up. So it does make sense to do it. It's almost the
19 last thing in an outage is the integrated test.

20 MEMBER BROWN: Yes.

21 MR. GUNDERSEN: But, yes, you're right.

22 MEMBER BROWN: That's a clarification.

23 Thank you.

24 MR. GUNDERSEN: And then Petrangelis
25 recommends for new systems going forward a double

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1 containment and filtering of the effluents for the
2 annulus between the containments.

3 This slide is not in the presentation I
4 provided you guys two months. This is from the
5 Inspector General's report on the licensee renewal
6 application process. And the photo is also from that
7 report, page 21 to 23 in that report.

8 This happens to be the liner out of
9 Ocone and the condition existed for ten years,
10 according other OIG report.

11 Two things. First is in the license
12 renewal the NRC, the licensee told them that they had
13 an effective liner monitoring program, but yet this
14 condition existed while the licensee was making
15 statements --

16 MEMBER BROWN: How do they document that?
17 Is there a series of pictures that show this over
18 the ten year period that show peeling and spalling of
19 coatings, or is that just --

20 MR. GUNDERSEN: I don't know.

21 MEMBER BROWN: There's no data to back
22 that up other than the statement of --

23 MR. GUNDERSEN: It's the OIG report.

24 MEMBER BROWN: Okay. Thank you.

25 MR. GUNDERSEN: I got that from the OIG

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1 report.

2 MR. RUNKLE: Yes. In the OIG report they
3 documented how the ten years and what the actual
4 system was at the time. So there's a lot more
5 details in the report.

6 MEMBER BROWN: Okay. So they do have
7 details to back up the statement.

8 DR. FORD: Oh, yes. Yes. It's not an
9 oh, it's been there for ten years, but they've
10 documented inspections and those kinds of things.

11 MR. GUNDERSEN: And this OIG report was
12 not aimed at liners or containments. It was aimed at
13 the LRA process. And in this case they happened to
14 look at statements made by Duke at Oconee relating to
15 the liner. One, the statements were inaccurate, and;
16 (2) the second bullet is just as important, the staff
17 didn't conduct any indication -- provided no
18 indication of having conducted an independent look at
19 the coating operating experience. So they accepted
20 what Oconee told them and then moved on. And again,
21 that's not in my report, but is available.

22 The next one, and it begins to get us
23 into the NRC Information Notice, is that this is a
24 photograph of the hole in Beaver Valley. It's about
25 an inch by 3/8th of an inch, the hole itself. But I

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1 think what's also interesting if I can get them out,
2 is that is the rust patch around the whole, which
3 tells me that the paint actually blistered and held
4 the water in behind it. So for the rust to develop
5 outside the hole on the visible side before the paint
6 was peeled, I think the paint was actually acting as
7 a barrier allowing the moisture to work its way into
8 the surrounding seal.

9 So the actual hole itself was an inch by
10 3/8ths. The portion of the liner that was degraded
11 was ten square inches.

12 I went back and I went to the LRAs, and
13 this is what Beaver Valley told the NRC in their
14 LRAs. Again, I'm referencing here because they were
15 not in my 35 page report to you a couple of months
16 ago.

17 In the LRA, Beaver Valley said "Loss of
18 material due to corrosion is not significant for
19 inaccessible areas." So a year before this hole,
20 Beaver Valley's position was that the hole couldn't
21 happen.

22 They go on to say "Identification of
23 deficiencies and subsequent corrective actions," and
24 I think the next line is "along with engineering
25 evaluation of inspection results, provide reasonable

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1 assurances that the program be effective for managing
2 loss of material." Clearly that didn't happen
3 because about a year later the hole occurred. And
4 again, in the LRA the "conclusion was that if they
5 implemented ASME XI...provides reasonable assurance
6 that..structures...will continue to perform their
7 intended function."

8 So the position of the applicant at the
9 time of this hole was that it basically couldn't
10 happen because the visual inspection program was more
11 than adequate.

12 Then I went back and I looked at the SER.

13 CHAIRMAN RAY: Excuse me a second.

14 MR. GUNDERSEN: Yes, sir.

15 CHAIRMAN RAY: Maybe I missed something.

16 Can you back that up a second?

17 MR. GUNDERSEN: I'm trying.

18 CHAIRMAN RAY: Never mind. Don't.

19 MR. GUNDERSEN: Okay.

20 CHAIRMAN RAY: Okay. You referred to
21 Section XI and then you referred to visual
22 inspection. Section XI is more than just visual
23 inspection, right?

24 MR. GUNDERSEN: Yes.

25 CHAIRMAN RAY: You didn't mean to make

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1 that a coincident --

2 MR. GUNDERSEN: That's correct.

3 CHAIRMAN RAY: Okay.

4 MR. GUNDERSEN: Although it's
5 interesting, and in my Beaver Valley letter I talk
6 about it pretty extensively.

7 CHAIRMAN RAY: Okay.

8 MR. GUNDERSEN: The liners are not
9 volumetrically examined very often. Beaver Valley
10 committed to a volumetric inspection of 70 square
11 feet -- a 71 square foot panels. In part because
12 it's awfully hard to find a pit using UT. You know,
13 UT can -- if you know you've got a wall, you can
14 check the weld seam and you can be very accurate. But
15 the odds of finding a pit with UT are not good. And
16 so the liner inspection seemed to be more visual,
17 although it appears, and perhaps from the NRC, it's
18 suggesting we do something more in the future.

19 CHAIRMAN RAY: Well, that's right. I
20 don't want to interrupt your presentation too much,
21 although maybe I have already. But I'd like to
22 explore with you a little bit more this Section XI
23 versus visual inspection as the means by which
24 integrity is affirmed, you know.

25 MR. GUNDERSEN: Yes. The example, there

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1 is -- UT takes time, and I think part of the issue is
2 you preferred the visual because you can keep your
3 outages short.

4 There are ultrasonic techniques which are
5 pretty terrific at detecting racks. An example is
6 with MIC microbiologically induced corrosion, which
7 are little tiny pits that work their way through the
8 backside of a carbon seal pipes. There are
9 ultrasonic techniques out there that will find it,
10 but they're slow and --

11 CHAIRMAN RAY: Well, these are means that
12 are available. But Section XI, in and of itself,
13 requires what exactly?

14 MR. GUNDERSEN: Containment is
15 predominantly -- on containments after they're built,
16 predominately visual.

17 CHAIRMAN RAY: Okay.

18 MR. GUNDERSEN: Okay. Now I went to the
19 SER, and in January of '09, so four months before the
20 hole developed, this is what the NRC had to say about
21 Beaver Valley's program. The applicant's assurance
22 that the use of the Section XI ensures that you'll be
23 consistent with GALL and the staff finds that the
24 applicant's exceptions are acceptable.

25 CHAIRMAN RAY: That's why I'm asking is

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1 there is so much explicit reference to Section XI and
2 I just wanted to your take on what it does and does
3 not do.

4 MR. GUNDERSEN: Well, since you were
5 saying, before I came I should also mentioned that
6 this was peer reviewed by Dr. Rudy Hausler. And Rudy
7 and I spoke before I came here. And he believes there
8 are much better volumetric techniques available,
9 including remote techniques that -- you know, rollers
10 that could be attached to walls that could do this
11 job when it's off-outage. They are not being used.
12 And, yes, it is predominately visual for containment
13 liners.

14 Am I answering your question?

15 CHAIRMAN RAY: Yes, you are.

16 When you say "predominately," it infers
17 that under certain circumstances you would use other
18 inspection techniques.

19 MR. GUNDERSEN: Yes.

20 CHAIRMAN RAY: And I'm just trying to get
21 you to elaborate on that a little bit.

22 MR. GUNDERSEN: It's mainly at the welds
23 is where the volumetric inspections are: (1) best
24 suited and applied. Because those large sheets, I'm
25 not aware of volumetric exams being required once a

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1 containment is up and running.

2 CHAIRMAN RAY: So it would be just the
3 integrated leak rate test that would find it?

4 MR. GUNDERSEN: And the visual.

5 CHAIRMAN RAY: Right.

6 MR. GUNDERSEN: And it's interesting,
7 too, because Beaver Valley passed this integrated
8 leak rate test. They removed their steam generators
9 in '06 and when you cut the containment and patch it
10 back up, you have to do an integrated leak rate test.

11 And Beaver Valley passed its integrated leak rate
12 test in '06, and yet in 2009 they have a through-wall
13 hole. So, again, they gingerly test is probably why
14 it passed.

15 But in any event, again the staff said
16 that the applicant further stated these additional
17 examination requirements provide reasonable assurance
18 that potential corrosion on the concrete side of the
19 liner plate will be identified and addressed. Well,
20 this was corrosion on the concrete side that works its
21 way through and it was not identified, nor was it
22 addressed.

23 And finally, the staff finds that the
24 applicant's inspections in accordance with the ASME
25 code will manage the loss of material due to general

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1 pitting and crevice corrosion. Again, this is three
2 months before the leak occurred.

3 MR. RUNKLE: And the Information Notice
4 2010-12 also has some more details on the Beaver
5 Valley and the other problems, and cites back to
6 other documents, licensee incident reports and those
7 kind of things.

8 CHAIRMAN RAY: Yes. We have had the
9 opportunity to review Beaver Valley as well.

10 MR. GUNDERSEN: Oh, okay.

11 Okay. Before I move on to some of the
12 general border issues that effect the AP1000, there
13 are a couple more in a historical perspective what's
14 happened before today. Operating reactors that I did
15 want to talk about.

16 Last year the failure of the metal in
17 Beaver Valley, but we also had the Crystal River
18 delamination. I don't believe that's really an
19 operating problem. I believe there was when they cut
20 the rebar, it has allowed the delamination to grow.

21 But another interesting one was
22 Bellefonte. Bellefonte blew several of the tension
23 cables. And Bellefonte has not run yet. It's been
24 40 years old but hasn't run. And the containment has
25 been tensioned for 40 years. And workers were inside

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1 Bellefonte and they heard what they thought were
2 shotgun blasts. And it turns out that several of the
3 cables disconnected from their anchor on the ground
4 side, apparently.

5 So one thing, I'm glad to hear the NRC is
6 doing, is trying to get all the stuff into one
7 database. But it appears from the Information Notice
8 that they're just looking at liner issues, when in
9 fact there's also concrete issues.

10 And I think, you know the key here up
11 until today, it's been a containment system. You've
12 got the liner and you've got the concrete and they
13 work together. And the difference with the AP1000
14 is that there's one thing. It's thick, a little less
15 than two inches. But it is one thing whereas before
16 we've always had two.

17 CHAIRMAN RAY: Well, I think you do point
18 out in your report that there's a lot of freestanding
19 steel containments in operation today.

20 MR. GUNDERSEN: Yes.

21 CHAIRMAN RAY: So in that sense, at
22 least, it's not a new event or new circumstances.
23 There are other things that make it unique.

24 MR. GUNDERSEN: Yes.

25 CHAIRMAN RAY: But just the mere fact

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1 that it's a freestanding steel pressure vessel is not
2 the thing that makes it different?

3 MR. GUNDERSEN: That's correct.

4 CHAIRMAN RAY: All right.

5 MR. GUNDERSEN: Okay. I'm touching on
6 the Information Notice just briefly.

7 In addition to Beaver Valley, the
8 Information Notice talks about Brunswick. And there
9 where the access door came into the containment there
10 was a false fitting allowing for expansion and
11 contraction. Apparently the felt got wet and over
12 time blistering occurred on the side. It was
13 detected with visual inspection after it had gone on
14 -- Brunswick's an old plant. It had gone for 30 plus
15 years.

16 And then the other one, which is I think
17 the most important on here, is Salem. And this is
18 the most recent, October of '09. And Salem noticed
19 heavy corrosion where the liner meets the floor.

20 And when Dr. Hausler reviewed my report,
21 the portions of my report about where the liner meets
22 the floor are Dr. Hausler's concern.

23 They had an exception from the ASME code
24 because it was inaccessible, it was not looked at and
25 yet there was the severe degradation where the liner

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1 meets the floor at Salem.

2 They have a program in place now to
3 continually monitor it until they figure out a
4 different program. But, in fact, that rust occurred
5 at that point and it was due to water leaking from
6 the service water system. Is a significant problem.

7 And I guess when you look at a lot of
8 these problems in total, there's no -- that the staff
9 would like to believe that it's due to an organic
10 compound behind the liner. And that's true for
11 several of them. But when you look at all of the
12 failures, there is no single thing.

13 You know, DC Cook was a unique
14 containment and there were problems with the ice
15 condenser containment, not just at Cook, but at
16 others that led to severe pitting.

17 There's been several problems with sub-
18 atmospheric containments. I don't know whether
19 they're because they are sub-atmospheric or because
20 of material behind them. But Beaver Valley and North
21 Anna both had through-wall holes because of
22 construction rubble left behind.

23 But there is to my way of thinking there
24 is no common thread here. And I hope that the staff
25 broadens its perspective to look at the potential

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1 that there are many ways that a containment can fail.

2 And if we're just focusing on construction rubble
3 behind the liner, I think we're missing the point.

4 MEMBER BANERJEE: So that 32 reported
5 occurrences of corrosion that you were looking, how
6 many do you think occurred due to some organic
7 material coming in contact and how many didn't? You
8 said that obviously some had not?

9 MR. GUNDERSEN: Yes, that's a real good
10 question.

11 Beaver Valley had the through-wall hole
12 because of organic material behind the liner. But in
13 '06 when they cut the hole and removed the liner,
14 there was pitting behind it that was not associated
15 with organic materials, and in four places. Three
16 were significant enough that to be rewelded and built
17 back up.

18 So I think where it has gone through-wall
19 at North Anna and Beaver Valley and perhaps the
20 Brunswick issue here, have been because of material
21 that's stayed wet for an extended period of time.
22 But the pitting, which is more endemic, I don't
23 believe is related to an organic thing behind it.

24 Yes, certainly they're all due to
25 moisture and they're all do to oxygen. And as I

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1 stated in my letter to you, that the root as I see it
2 are if you have moisture and you have enough oxygen,
3 you'll get a through-wall leak. And a lot of the
4 pitting that's been discovered has been what they
5 call self-limiting because there's not enough
6 moisture or there's not enough oxygen to allow that
7 rust hole to continue. And one of the differences in
8 the AP1000 design is that on the outside there's lots
9 of moisture available and lots of oxygen. So that is
10 the difference.

11 One last bit of experience here. This
12 happened about --

13 MEMBER BANERJEE: Does this mean that you
14 contact ships with steel hulls?

15 MR. GUNDERSEN: You know, you're one
16 slide ahead of me. When the Exxon Valdez hit a rock,
17 the solution was not to make the hull thicker, it was
18 to go to double hull. And when gas stations around
19 the country began to rust their tanks through, the
20 solution was not to get a thicker tank, but it was to
21 go to double hull tanks.

22 And I think we're there as an industry.
23 And the discussion with Member Ray that referenced
24 one slide from now actually discusses that.

25 We have a double hull design right now.

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1 We have a liner and a containment and a secondary
2 containment in many situations. But to me this seems
3 to be going back to a single hull design when in fact
4 experience teaches us, and as well as the gas station
5 down the street, that the solution is to go not to a
6 thicker single container but to a double hull design.
7 And the same with the Exxon Valdez.

8 So, did I answer your question?

9 MEMBER BANERJEE: Yes, partly. But, I
10 mean there are many containments in the chemical
11 industry which are storing all sorts of things with a
12 single wall.

13 MR. GUNDERSEN: Yes.

14 MEMBER BANERJEE: So, should we do away
15 with all steel vessels that contain anything? Like
16 should we make them all double hulled?

17 MR. GUNDERSEN: Like the reactor?

18 MEMBER BANERJEE: Well, I'm talking
19 about, let's say we store butane. Do you think we
20 should make double hulled containers for butane?

21 MR. GUNDERSEN: Well, most of those
22 containers now are double hulled. All the chemical,
23 all the gasoline --

24 MEMBER BANERJEE: Are they?

25 MR. GUNDERSEN: -- containers, everything

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1 has got the --

2 MEMBER BANERJEE: Is that on the record
3 that you say that all these large containers for
4 storage on the petrochemical industry are double
5 hulled?

6 MR. RUNKLE: In my experience in North
7 Carolina all the underground storage tanks are double
8 hulled because you can't inspect them. Some of the
9 ones on the surface, the very large ones, anything
10 under pressure is double hulled these days.

11 Yes, you can store butane in a tank, but if
12 you're going to have it there for a long time under a
13 lot of pressure, you'd better have it double hulled
14 or be able to inspect frequently or a replaceable
15 type thing.

16 MEMBER BANERJEE: Well, inspection is one
17 thing. But are they all double hulled?

18 MR. RUNKLE: I can't say that they're all
19 double hulled. But certainly anything under high
20 pressure or anything under ground it certainly is.

21 MR. GUNDERSEN: And I think the
22 difference is the consequences here are we're dealing
23 with a low probability high consequence thing. And I
24 would argue that the probability is not zero and
25 needs to be factored into a SAMDA, whereas I think

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1 the present AP1000 document assumes that that
2 probability is zero. And my position is that
3 experience indicates it's not zero.

4 This is an event report that's only a
5 couple of weeks old. And if I use the mouse, I can
6 show you down here Millstone 3 had lost its secondary
7 containment for 16 days to a set of valves that were
8 inadvertently left open. And so they basically had
9 no secondary containment for two days.

10 The bottom paragraph says "rendered the
11 secondary containment inoperable." So it's not about
12 a sealed vessel, but it is about this concept of
13 containment system. Now if you've got the primary
14 containment and its working, well it's okay if the
15 secondary system is inoperable. Or if you've got the
16 secondary system inoperable but the primary system is
17 working, that's okay too. But when both are
18 inoperable, of course, you've got essentially no
19 containment or if you don't have one of those two,
20 which is the way the Westinghouse design is going,
21 you're also in a similar situation.

22 And Member Ray you're quoted here. This
23 is a quote from last year's ACRS where basically it's
24 a discussion between you and Member Shack on whether
25 the Beaver Valley hole constituted a containment

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1 breach or not. And as I understand it, you're
2 suggesting that deterministically it did. And then
3 Member Shack talks about, well, yes, but
4 probabilistically it didn't.

5 And actually, while I agree with you that
6 deterministically it's a problem, the real point is
7 that you could have that discussion on the Beaver
8 Valley issue. And the reason you could have it is
9 because there was redundancy built in: If the liner
10 failed, you had concrete behind it. And that issue
11 of redundancy is off the table in the AP1000 design,
12 as I see it.

13 So, it doesn't matter who wins this
14 argument, but that the argument can occur because of
15 the redundancy in the containment I think is the
16 important point that I was trying to bring up.

17 Now I did a real quick, and I'm sure this
18 not a quality assured calculation, but I did a real
19 quick calculation. Over the last 13 months what's
20 the probability of both the primary and the secondary
21 containment breaching? You got a primary breach at
22 Beaver Valley and secondary breach at Millstone 3.

23 At Beaver Valley the hole existed for the
24 entire year, if not two or three. And so therefore,
25 the probability per year of breach in a liner is one

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1 percent based on a 100 reactors.

2 And then Millstone, the breach existed
3 for two weeks. So the probability of secondary
4 containment with breach is two weeks divided by 56,
5 and then also divided by a 100 reactors.

6 If you combine those two together, you
7 get a small number, but not an infinitesimal number.
8 You got the probability of a primary and secondary
9 containment not being effected simultaneously, as one
10 in a -- and that's not zero. And I think the point
11 I'm trying to make is that in the AP1000 design
12 they're assuming that the probability of the
13 containment system, which is just one barrier in
14 their case, is zero whereas experience last year says
15 that it's a non-zero number.

16 Okay. We're over the hump and coming off
17 the presentation here.

18 This is how the AP1000 works, and I don't
19 think I have to brief anybody on that. The passive
20 feature has an 8 million gallon water tank on the
21 roof and the water pours onto the containment. And
22 in the event of an accident, evaporated off and pull
23 a lot of heat out the roof.

24 Interesting, I worked on La Crosse which
25 was an ancient reactor built by Allis-Chalmers which

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1 also had an enormous tank of water, but it was inside
2 the containment for positive suction had issues. And
3 the structural problems with having an enormous mass
4 of water on the roof are impressive, but not part of
5 my presentation today.

6 Okay. During the AP1000 review the staff
7 did express concerns. Back in 2003 the staff did
8 express concerns about corrosion of the liner and
9 Westinghouse did agree to make the liner one-eighth
10 of an inch thicker and they added nuclear grade
11 protective coating. I might add that the Oconee
12 protective coating was also nuclear grade. And then
13 also there are inspection ports that allow for visual
14 inspections of some portions of the outsides of the
15 containment.

16 Before the containment was made one-
17 eighth of an inch thicker the staff noted that there
18 was no margin in the nominal design thickness for
19 corrosion allowance. An eighth of an inch is .125.

20 Dr. Hausler estimates that in ideal
21 conditions a hole could propagate at .15 inches in a
22 year. So the corrosion allowance if that were
23 pitting were to occur would be eaten up in less than
24 12 months.

25 The staff went on to say that is pushed

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1 back to the COL applicant to provide a program to
2 monitor the coatings. And yet if we look at one of
3 the COL applicants, Duke on McGuire, had a program in
4 place to monitor the coatings and the program failed
5 for ten years. So we're not longer relying on a
6 thing, a containment system, a liner and some
7 concrete. We're relying on a thing, a thick
8 containment and visual inspections which have a
9 record of missing thing, and coatings which have a
10 record also inadequacies.

11 CHAIRMAN RAY: Let's stop here for a
12 minute.

13 MR. GUNDERSEN: Yes.

14 CHAIRMAN RAY: Because I am personally
15 more focused on this issue of coatings and their role
16 in this whole business.

17 Are you asserting that because -- and I'm
18 not familiar with McGuire so I'll just accept what
19 you're saying is evidence that coatings in the past
20 have not been inspected thoroughly enough for the
21 sake of the discussion.

22 Is it not possible to have an adequate
23 inspection program for a coating system, do you
24 think, I mean if one realized now with the benefit of
25 experience that that's very important to do, is it

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1 possible?

2 MR. GUNDERSEN: You know, I had as many
3 as 300 inspectors working for me at one time. And
4 during that one time, 295 were really great. But
5 there would be five that would show up with a
6 hangover, or whatever. And so you're relying on
7 people to be perfect. And I have that sooner or
8 later in any foolproof system, eventually you're
9 going to see the proofs. And I think that's my
10 concern here is that the existing designs have a
11 backup so that if one were to fail, we've got some
12 redundancy. In this case we have a thick
13 containment, there's no doubt about that, but that's
14 all we have that we can be sure of.

15 Maybe the next slide will address that.

16 CHAIRMAN RAY: Well, I'm really imposing
17 a question, maybe it isn't a fair question, but
18 nevertheless recognizing that coatings play a very
19 important role here. It's not merely the inside of a
20 liner on a composite structure like you're referring
21 to, but it's the heat transfer surface on the outside
22 of the containment --

23 MR. GUNDERSEN: Right.

24 CHAIRMAN RAY: -- which is exposed to the
25 atmosphere that we're talking about. The question is

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1 do you think it's possible to have an inspection
2 program for a coating system in that application that
3 would provide adequate assurance against --
4 localized, because I think what we're talking about
5 is localized corrosion.

6 MR. GUNDERSEN: Right

7 CHAIRMAN RAY: Or not and if not, why
8 not?

9 MR. GUNDERSEN: Right.

10 CHAIRMAN RAY: You've indicated that the
11 fallibility of the inspectors is one reason. Is
12 there any other reason why?

13 MR. GUNDERSEN: Yes. I think that I
14 don't believe it will be foolproof. You know, zero
15 percent probability. And maybe the issue is what is
16 an allowable level, and I probably can't put a number
17 on that. But there's no areas of concern on this
18 design.

19 And the first on the bulk containment
20 where if you're just looking at this thing as a
21 sheet, I don't believe you're going to get rapid
22 pitting through the sheet. But there are
23 appurtenances that's hung off the outside sheet that
24 form crevices.

25 One, it's very difficult to get paint to

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1 adhere to crevice. You know, nuclear grade or not,
2 it's difficult to get the paint to adhere to the
3 crevice. And of course, the experience is that the
4 coating will actually hide the corrosion until it
5 comes through, which is what happened at Beaver
6 Valley.

7 So in situations where the crevice exists
8 and the paint is over it, you can actually miss it
9 even if you did a visual until significantly late in
10 the process because the coating is actually providing
11 a gap.

12 CHAIRMAN RAY: Okay. I think you're
13 answering the question I'm getting to.

14 MR. GUNDERSEN: Yes.

15 CHAIRMAN RAY: You're just skeptical that
16 an inspection program not matter how diligent could
17 assure the integrity of the coating system over the
18 life of the plant.

19 MR. GUNDERSEN: Right. Now Dr. Hausler's
20 concern was that the -- I was looking up, he was
21 looking down. Westinghouse committed when the staff
22 expressed their concerns to take the protective
23 coating down six inches below the concrete and then
24 so there's be: If this were the wall and here were
25 the concrete, there would be about six inches of

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1 coating down below there. And Dr. Hausler's
2 experience is that -- and it's true on steam
3 generators too, where you never get a perfect
4 connection and you form a crevice which allows
5 moisture to get in and work its way through. And that
6 is absolutely uninspectable because it's below the
7 concrete.

8 Now Salem it's problem is down there, but
9 apparently they only looked above the concrete. It
10 would be fascinating if before the Salem issue is
11 completely resolved if they actually go down and
12 looked below the concrete as well, which is where you
13 can get a corrosion pathway working its way through.

14 CHAIRMAN RAY: Okay. I mean, there are
15 explanations where concrete is in contact with steel,
16 as you know.

17 MR. GUNDERSEN: Yes.

18 CHAIRMAN RAY: That that provides a
19 protective --

20 MR. GUNDERSEN: Right, the pH issues and
21 things like this.

22 CHAIRMAN RAY: -- environment for the
23 steel.

24 MR. GUNDERSEN: Yes.

25 CHAIRMAN RAY: All right. Go on.

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1 MR. GUNDERSEN: Okay. So the staff, the
2 last bullet on this, allowed -- given there's a
3 thicker containment and given that the COL applicants
4 have a proper corrosion protection, the staff allowed
5 the AP1000 to be licensed. Not to be licensed, to
6 move forward in the licensing process.

7 CHAIRMAN RAY: Certified. It's
8 certified.

9 MR. GUNDERSEN: Yes. Yes. But you're
10 still at it.

11 And I think maybe I touched on all these
12 things that I'll be talking about on this slide. But
13 Dr. Hausler and Fairewinds have these concerns:

14 The first is that ASME XI inspection
15 programs have historically missed flaws. And it's
16 interesting because the Beaver Valley flaws were in
17 places where they were easy to see, but the Salem
18 flaws were in essentially what you would consider an
19 inaccessible location, which is exempted by the ASME
20 XI code.

21 So the first thing is there are
22 weaknesses in the ASME XI code that cause flaws to be
23 missed. And there's a lot of history on it.

24 The second is that application of
25 protective coatings has allowed for coating

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1 degradation and the staff and the residents have
2 allowed it to continue in Oconee's case for ten
3 years.

4 The third one is my concern is that wall-
5 brackets will create crevices where moisture can
6 build up. And Dr. Hausler's concern is that the
7 junction with the wall and the floor creates a
8 crevice where moisture can build up.

9 And the last point is, and probably the
10 new point on the slide, that the AP1000 design
11 breathes on the outside, essentially. And that it
12 doesn't take in dry air, it takes in whatever the air
13 is. So at Turkey Point you're going to take in air
14 that has some salt in it. If you're a cooling tower
15 site and the drift is heading toward the containment,
16 you're going to take in air that's got biocides,
17 algicides and moisture in with the oxygen, all of
18 which lies inside that containment and provides a
19 large source of water whereas before we've had small
20 sources of water; a large source of water and a large
21 source of oxygen, which are the two things you need
22 to make a crevice grow.

23 So, in addition the AP1000 has got a
24 large tank of water on the roof and it's hard for me
25 to believe that the sprinklers won't leak some or

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1 there won't be condensation, or there won't be rain
2 that get in and on that containment shell. And in
3 conjunction with the airborne contaminants that are
4 brought in and lie in crevices, that you couldn't get
5 an attack at a crevice.

6 And as I said, Hausler says these cracks,
7 he felt a hole could develop at a rate of about .15
8 inches in a year in the proper conditions.

9 We'll finish at 9:30.

10 My suggestion for an accident sequence,
11 this is the Westinghouse approach is that the
12 containment works and the heat is removed through the
13 containment. If there is a preexisting hole, which
14 is down in the lower left -- this is unanalyzed
15 condition by the way. Which then allows gases,
16 especially of the iodine, but also a hole the size of
17 the Beaver Valley hole is enough to exceed tech specs
18 based on the rules of thumb I used when I was doing
19 MSID testing.

20 So that air would not just go into the
21 gap between what used to be a primary and secondary
22 containment, but now it goes into a gap where it's
23 deliberately designed to --

24 CHAIRMAN RAY: I got to stop you again.

25 For a composite structure, you're

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1 referring to the concrete portion as the secondary
2 containment? I don't mean to repeat the debate I had
3 with Bill Shack. But is that what you're calling the
4 secondary containment?

5 MR. GUNDERSEN: In a lot of cases, it's a
6 tertiary containment. If we called the concrete
7 structure the secondary, then in most cases there's
8 another building behind that which is held at a
9 negative pressure and exhausts it through.

10 CHAIRMAN RAY: Well, perhaps you wouldn't
11 want to say "most cases." In some cases.

12 MR. GUNDERSEN: Yes. Right.

13 In Westinghouse's SAMDA analysis they
14 consider an intact containment to be the design
15 basis. The containment doesn't have any flaw.

16 These are Westinghouse quotes, and
17 they're in my report.

18 The no-failure containment model is
19 termed intact. Whatever leakage leaks out of the
20 Westinghouse analysis goes into the auxiliary
21 building, which is a filtered space.

22 And then in the SAMDA analysis
23 Westinghouse does look at three alternatives: A late
24 containment failure, they call it the CLF, a failure
25 for the containment to isolate and bypass through an

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1 open system. All of those, though, are into filtered
2 locations. The situation I'm proposing is not
3 addressed in the SAMDA analysis by Westinghouse.

4 Westinghouse does propose, and then
5 eliminate an alternative that -- I'm sorry. I'm
6 slide ahead of myself.

7 So they basically say the probability of
8 a pinhole leak is zero. And my experience is that,
9 and especially I think re-enforced by the Information
10 Notice, which was also written to Part 52 licensees
11 as well as Part 50 licensees. I thought that was
12 important. That they're assuming it's a zero
13 probability. And in light of 40 years of liner
14 failures and the Hatch problems, you know I guess
15 there will always be something we didn't anticipate.

16 If you make sure that every glove is accounted for,
17 you won't have the glove issues. If you remove the
18 felt from the door, you won't have the felt issues.
19 But then you wind up like at Hatch where we had a
20 cold pipe going into a warm containment and causing
21 some thermal stresses that caused the crack. I'm not
22 convinced that there won't be an issue that has not
23 been analyzed. And it seems to happen when we change
24 containment designs, like when we went to an ice
25 containment or the sub-atmospheric containments.

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1 Should this exist? There's 50 pounds of
2 pressure behind it and a lot of volume. So the leak
3 would occur for a long period of time for a lot of
4 motive force to push it out into that annular gap.

5 Westinghouse did look at filtering the
6 ventilation, and it was eliminated from consideration
7 in their SAMDA because the probability, as they
8 viewed it, was too low. And you multiple probability
9 time consequences it didn't hit the threshold.

10 They did look at filtered ventilation,
11 but as I read it it was not filtering ventilation
12 into this annular gap. It was filtering ventilation
13 into other places within the plant and any duct work
14 would be applied.

15 So even though what Westinghouse
16 considered and then rejected filtering the
17 ventilation, I don't think that goes far enough and
18 that this event really is not addressed at all in the
19 SAMDA analysis.

20 CHAIRMAN RAY: You're talking
21 about now filtering this natural circulation flow
22 which is inherent in the passive design for the heat
23 removal. That's what you're talking about filtering.

24 MR. GUNDERSEN: Yes.

25 CHAIRMAN RAY: Do you think that would--

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1 MR. GUNDERSEN: No, Westinghouse doesn't
2 propose that.

3 CHAIRMAN RAY: I understand that, but
4 that's what you're talking about?

5 MR. GUNDERSEN: Yes.

6 CHAIRMAN RAY: All right. Do you think
7 that would effect the passive nature of the heat
8 removal to put a filter in the flow path --

9 MR. GUNDERSEN: I don't know what the
10 pressure path would be across the filters. And if
11 the pressure drop was small enough and if the
12 pressure drop was large, I would. And I'm sorry, I
13 don't know what that is.

14 CHAIRMAN RAY: Okay.

15 MR. GUNDERSEN: And the conclusions are
16 there's been a history of containment failures
17 throughout the industry and now we're going basically
18 from a double hull design to a really thick single
19 hull design. The Westinghouse SAMDA analysis never
20 assumes that there's a leak into that annular gap.
21 and I think it should.

22 So we're getting back to carnivores and
23 omnivores and vegetarians here. And did you want to
24 have any time here.

25 MEMBER BLEY: Could I ask you before we

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1 get to your summary --

2 MR. GUNDERSEN: Yes. Sure.

3 MEMBER BLEY: I'm familiar with most of
4 the events that you've described. I'm not familiar
5 with the Salem one, and I intend to find out about
6 that one. Were any of the ones, and I don't recall
7 that anyone you talked about were, but have you found
8 any events where the thick freestanding steel
9 vessels, not liners against concrete, have had
10 anything approaching a through-wall?

11 MR. GUNDERSEN: Hatch 1 and 2 had --

12 MEMBER BLEY: I'm sorry.

13 MR. GUNDERSEN: Hatch 1 and 2 in the
14 analyses report from the '90s had through-wall
15 cracks. And that's a BWR.

16 MEMBER BLEY: Okay.

17 MR. GUNDERSEN: So there's two cases of a
18 through-wall crack in a BWR.

19 MEMBER BLEY: Okay. And that's a
20 containment with in the wet well area, as I
21 understand?

22 MR. GUNDERSEN: Yes. Yes. I think the
23 closest to substantial containment, the example is
24 Hatch 1 and 2.

25 MEMBER BLEY: Okay.

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1 MR. GUNDERSEN: And that was not
2 corrosion, that was a thermal expansion. Had a
3 nitrogen line that was cold and containment that was
4 warm.

5 MR. RUNKLE: What I find troublesome
6 about this whole thing is that the AP1000 design sort
7 of takes a big step backwards from 40 year old
8 technology. We had double hulled containment, now
9 it's a single hulled containment and we're really
10 replacing it with zinc liners and visual inspections.
11 And it seems to be a major step backwards.

12 Now we understand that the NRC sent a
13 letter to Westinghouse giving an aggressive schedule
14 for their rulemaking on the AP1000 certification.
15 The schedule has a big "if" in it. And that is the
16 schedule does not begin until Westinghouse files its
17 review scope and closure strategy for several
18 outstanding technical and safety issues. And we
19 think the containment issue today should be included
20 in that list of issues that have not been safely
21 resolved.

22 CHAIRMAN RAY: Mr. Runkle, you're
23 speaking of the schedule for the amendment which
24 we're considering, is that right?

25 MR. RUNKLE: Yes.

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1 CHAIRMAN RAY: Okay.

2 MR. RUNKLE: And we're on this Revision
3 18 of the AP1000 design control document that we
4 don't see an end in sight. There are still
5 unresolved issues that some material we're plowing
6 through, and I hate to add this to your workload, but
7 we think that the containment issues that Mr.
8 Gundersen brought to you should be included on that
9 list and being considered very seriously in looking
10 at amendments and looking at final approval of the
11 design.

12 So when we brought to the NRC and ACRS,
13 we asked for a special investigation, which of course
14 now this is our information, we brought it to you as
15 soon as we could. We could have waited until there
16 was a rulemaking petitions and we could have brought
17 later on in the process. But we think that it's
18 important enough to bring to you and try to resolve
19 now safely.

20 And while this investigation is going on
21 there should be no operating license issued using
22 this fundamentally flawed design. And even though
23 this design may be certified, it certainly is not
24 final, it certainly has not been completely reviewed
25 and approved.

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1 So we appreciate the opportunity. And Mr.
2 Gundersen and we will available if there's follow-up
3 questions or if you have additional information that
4 we may have that you need, or the NRC staff or
5 consultants need. It's an important issue and really
6 it raises to the level that we think that it needs to
7 be resolved before this AP1000 design continued in
8 its process of being approved.

9 CHAIRMAN RAY: Okay. Well let me try and
10 pick up on a couple of things that you said here so
11 we don't lose the thread.

12 MR. RUNKLE: Sure.

13 CHAIRMAN RAY: As Mr. Gundersen pointed
14 out, the coating system is a part of this picture
15 we're talking about. And as he indicated, it is part
16 of the combined operating license application; the
17 coating system, its application, its monitoring, that
18 sort of thing.

19 And so it's likely that we'll be
20 reviewing that perspective because its not been
21 certified, that's an ongoing current activity and not
22 necessarily all of it, at least that part of it, as
23 part of the DCD, the certified reactor design. So I
24 just want to alert you to the fact that there are
25 these two pieces. And the concern that you're

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1 talking about here may be addressed partly in one
2 piece and partly in another piece. So just bear that
3 in mind, if you would.

4 On the issue of step back, I would just
5 note that it is the way it is because it has the
6 inherent passive advantage of not relying upon a lot
7 of equipment that's in current plants, for example,
8 to remove decay heat following an accident but
9 instead relies on the passive nature of this heat
10 transfer mechanism which at least in this design,
11 depends on the conditions that we've talked about
12 existing: There is a single containment surface
13 exposure to the atmosphere.

14 MR. RUNKLE: But the passive nature of
15 the reactor actually brings in more moisture and more
16 air.

17 CHAIRMAN RAY: Understood.

18 MR. RUNKLE: And even with the best
19 liners --

20 MEMBER BANERJEE: You have to speak in
21 the microphone.

22 CHAIRMAN RAY: He will, I think.

23 MR. RUNKLE: When we're looking at the
24 inspection of the liner doing what the liner's
25 supposed to do, looking at -- you know, there can be

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1 no inspection, no visual inspection on this side.
2 From inside you can look and you can inspect and see
3 if the liner is --

4 CHAIRMAN RAY: Excuse me. Why are you
5 saying you can't inspect on the outside.

6 MR. RUNKLE: Because there's another wall
7 in here. This is almost inaccessible.

8 CHAIRMAN RAY: Well, I think that's an
9 important point. And Mr. Gundersen pointed out
10 himself, the baffle, I'll call it, in there has ports
11 that allow you to gain access to at least a portion
12 of the containment outside surface. And a gap
13 nominally without considering what stuff is in there,
14 is 4½ feet. So one would, at least initially, think
15 that there is access to that surface. But I wanted
16 to give you an opportunity to explain why there
17 wasn't in your opinion.

18 MR. GUNDERSEN: Well, I think the example
19 that's closest is at Salem. I mean you actually walk
20 up to the joint in Salem, but yet it was considered
21 inaccessible for the --

22 CHAIRMAN RAY: Yes. Now let me again, I
23 don't want to do anything other than be clear here.
24 I'm not trying to debate the issue one way or
25 another.

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1 But if you're talking about below the
2 floor level, that is as you say inaccessible unless
3 you do removal of the concrete.

4 MR. GUNDERSEN: I was saying at Salem it
5 was above the floor level.

6 CHAIRMAN RAY: Okay.

7 MR. GUNDERSEN: You could walk up to it.
8 But you still couldn't see it very well.

9 CHAIRMAN RAY: Because?

10 MR. GUNDERSEN: And there is an ASME
11 exclusion because it was considered inaccessible.

12 CHAIRMAN RAY: Why? Just a little bit
13 more, please. Why was it inaccessible?

14 MR. GUNDERSEN: You know, as Member Bley
15 said, I just discovered the Salem flaw.

16 CHAIRMAN RAY: All right. Okay. We'll
17 have to look at that a little more closely. But
18 normally that exclusion applies below the floor
19 level, that's why I thought that was what you were
20 talking about.

21 MR. GUNDERSEN: Right. This applied
22 above the floor. So there are going to be places that
23 are inaccessible above the floor.

24 CHAIRMAN RAY: Okay.

25 MR. GUNDERSEN: On the inside. And where

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1 the hangers meet the -- this baffle plate is hung off
2 the containment by an angle. And where that angle
3 meets, I don't believe it's possible to inspect
4 there. And I also believe that the coating can
5 actually create a void under which you can get
6 corrosion get occur in its absence.

7 CHAIRMAN RAY: Well the coating certainly
8 is an important element of this whole system. And
9 the points that you're making about accessibility for
10 inspection are ones that we have yet to look at. And
11 your input to us is helpful in focusing our attention
12 on that.

13 I just made the point earlier, Mr.
14 Runkle, that that will be taken up as part of the
15 COL. So if you don't see it being discussed in the
16 context of the DCD, it's because its there and not
17 any other place.

18 Other things that you've raised about the
19 offsite dose assumption and so on and so forth, those
20 are more likely part of the DCD scope and have been
21 there in that location.

22 I guess during the course of your
23 presentation I've asked all the questions I have
24 following reading your letter. You can tell that
25 personally I'm more focused on this issue that you

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1 mentioned about the coating inspectability and the
2 integrity of the coating, which is obviously
3 important.

4 Other members? Dennis?

5 MEMBER BLEY: No.

6 CHAIRMAN RAY: Okay. Sanjoy?

7 MEMBER BANERJEE: I just wanted to
8 understand your main concern is that areas which are
9 inaccessible for inspection and weren't the areas you
10 feel might be close to the concrete steel liner
11 interfaced?

12 MR. GUNDERSEN: I am not concerned about
13 bulk corrosion of the liner.

14 MEMBER BANERJEE: The pitting corrosion?

15 MR. GUNDERSEN: But it's pitting
16 corrosion --

17 MEMBER BANERJEE: Right.

18 MR. GUNDERSEN: -- in inaccessible
19 locations. I look up at the hangers and Dr. Hausler
20 looks down at the junction with the floor and the
21 concrete. But it's even when there's been the
22 ability to visually inspect, like at Beaver Valley
23 using ASME approved processes, the flaws were missed.

24 Now it's a one-sided inspection at Beaver
25 Valley, but yet it's an ASME approved process.

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1 It would be possible to do volumetric
2 exams in the area of these hangers, but that's not
3 part of the code.

4 CHAIRMAN RAY: Based on your experience,
5 it cannot be done through this coding that we're
6 talking about here, the volumetric examinations?

7 MR. GUNDERSEN: I think so, yes.

8 CHAIRMAN RAY: I'm sorry, Sanjoy. Go
9 ahead.

10 MEMBER BANERJEE: Okay. I think I got
11 the answer.

12 CHAIRMAN RAY: Okay. Charlie?

13 MEMBER BROWN: I just would like to try
14 to clarify something. There's a 1.75 inch thick
15 containment.

16 MR. GUNDERSEN: I think it's 1.87.

17 MEMBER BROWN: Yes. That's the extra --

18 MR. GUNDERSEN: That's the extra.

19 MEMBER BROWN: The extra one-eighth,
20 okay. And there are many, many, many years, like 50
21 years experience with submarine hulls which are high
22 strength steel in a salt water environment where we
23 have coatings as well to deal with. And yet you talk
24 about a rapid through-hole corrosion occurring within
25 that time frame. Now I guess I'm just relating back

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1 to some experience with some other very critical
2 situations which are under very high pressure type
3 circumstances where the inspection programs also had
4 difficulty of accessibility to certain parts of those
5 hulls. And yet they've been successful over the
6 years. I don't know whether I'm talking apples and
7 oranges. You know, I'm not a --

8 MR. GUNDERSEN: I think you got two of
9 the three -- I've never been a submarine, although I
10 talk to so many submariners I think I qualify for
11 about four years at sea at this time. But --

12 MEMBER BLEY: No.

13 MEMBER BROWN: I'll tell you, once you've
14 gone down about 30 times rapidly, to whatever and
15 then come back up, you want to have some confidence
16 it's not going to break.

17 MR. GUNDERSEN: I think you got two of
18 the three elements that I discuss here. But it's the
19 absence of the third that I don't think makes the
20 analogy just right.

21 You have moisture and salt is clearly a
22 corrosive element. But you don't have oxygen. Now if
23 you'll look at the boats that have been selling, they
24 get down further into water where there's no oxygen,
25 they last a long time whether it's these wooden ships

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1 that are uncovered that are 400 or 500 years old, or
2 that Confederate sub they got pulled out of the water
3 or out of Charleston. It's only when that then gets
4 into contact with the oxygen that the rust really
5 kicks in. So I'm not sure that the hull analogy is
6 perfect, although two of the three elements are
7 always --

8 MEMBER BROWN: Well, submarines aren't
9 always way, way down. You know, they don't operate
10 at 5,000 feet.

11 MR. GUNDERSEN: Right. But if you look at
12 the hull on a ship, you know it's the rust occurs on
13 the waterline.

14 MEMBER BROWN: And they are in port for a
15 significant amount of time also. So that they are
16 exposed about probably a third of the hull at the top
17 of the hull.

18 I'm just trying to relate the two
19 together. I understand the thought process, but I'm
20 trying to --

21 MR. GUNDERSEN: I guess you need three
22 things. You need water, you need something to
23 accelerate the water, although that's not --

24 MEMBER BROWN: And you need oxygen.

25 MR. GUNDERSEN: And you need oxygen.

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1 Right.

2 And at Beaver Valley there wasn't a lot
3 of oxygen behind that crack, there wasn't a lot of
4 moisture whereas in this case you've got a situation
5 where both the oxygen and the moisture replenished.

6 MEMBER BROWN: Okay. Thank you.

7 That's all I had. Thank you.

8 CHAIRMAN RAY: Tom?

9 CONSULTANT KRESS: As part of your view
10 that periodic leak testing will not be sufficient to
11 find such a leak, or you think it would be --

12 MR. GUNDERSEN: I have done a couple of
13 leak rate testing, and you certainly have to have
14 leak rate tests but they're so gingerly done that I
15 guess I understand why you have them every ten years
16 and you should have been, but I don't think they're
17 going to pick up these types of failures because
18 they're not a dynamic process.

19 CONSULTANT KRESS: Right.

20 MR. GUNDERSEN: But I guess in closing, I
21 think clearly there's AP1000 issues I'm here to
22 discuss today. But there's also broad industry
23 issues on containment leak rates, as it effects NPSH
24 for example that I hope you will also keep in mind.

25 CHAIRMAN RAY: Tom, were you done?

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1 CONSULTANT KRESS: Yes.

2 CHAIRMAN RAY: Okay. Thank you,
3 gentlemen.

4 MR. GUNDERSEN: Thank you.

5 MR. RUNKLE: Thank you.

6 CHAIRMAN RAY: Okay. We'll take a -- I'm
7 going to ask given that it's Friday and we aren't
8 exactly what more we're going to need to do today,
9 yet but let me take a two minute break. I'd like
10 everybody to come back by five minutes to the hour
11 and we'll resume.

12 I will recess.

13 (Whereupon, at 9:45 a.m. off the record
14 until 10:00 a.m.)

15 CHAIRMAN RAY: I got permission to use my
16 judgment, which I will now proceed to do. Back on
17 the record.

18 I've asked indulgence of everybody yet
19 again to allow us to have this discussion of ACRS
20 interactions ahead of the discussion ACRS action
21 items because we are anticipating an early end to
22 today's session and I wanted to not shortchange what
23 time we can give Westinghouse by wanting to get to
24 this other item. So if we can get this behind us,
25 we'll then be able to give Westinghouse what time we

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1 have remaining.

2 So, we're talking about interactions now,
3 meaning that we're looking ahead. Are we going to
4 distribute that. Okay. We've got presentation
5 right. Please proceed.

6 MR. JOSHI: Okay. Again, my name is Ravi
7 Joshi. I'm a Senior Project Manager and a lead for
8 the AP1000 COL application for Vogtle.

9 And to my right, is Joseph Sebrosky, he's
10 a leader Project Manager for Summer COL application.

11 He'll be assisting me during the discussion for the
12 upcoming ACRS meeting. Okay?

13 For the near term interaction, let's say
14 for July time frame we're talking about and the slide
15 we are translating that we expect to submit Section
16 2,3.7, 3.8 -- I'm making some changes to the slide as
17 we go along.

18 CHAIRMAN RAY: Yes, I was going to say
19 what happened to 3.8? We'll do that?

20 MR. JOSHI: Yes. We'll do at 3.8 also.

21 CHAIRMAN RAY: Okay.

22 MR. JOSHI: But we are taking it out of
23 Chapter 17 from the CDC chapter. For the Vogtle
24 chapters we'll be submitting Vogtle Chapter 2 and
25 Chapter 16.

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1 So those are the ones that we are
2 planning. In addition, we're also planning to submit
3 Chapter 2 of the Summer application --

4 CHAIRMAN RAY: Now you didn't mention 17
5 just now.

6 MR. JOSHI: No, 17 we're taking it out
7 from the -- will not --

8 CHAIRMAN RAY: I see. So I shouldn't look
9 at this picture then and listen to what you're
10 saying.

11 MR. JOSHI: It's changing as we speak
12 right now.

13 CHAIRMAN RAY: I know. Okay.

14 MR. JOSHI: So going back to summarize,
15 the DCD Chapters are 2, 3.7, 3.8 and when I say 3.7
16 and 3.8 those are without SER. And those will be
17 with open items in the SER. For Chapters 2 and 16
18 will be SER, with advanced FSER with no open items.
19 And for Vogtle, Chapter 2 and Chapter 16, those are
20 advanced FSER with no open item.

21 And for Summer Chapter 2 we will have
22 everything except Section 2.4 and those also will be
23 with no open items.

24 MEMBER BROWN: Summer?

25 MR. JOSHI: Summer.

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1 CHAIRMAN RAY: It will be a final on COL.

2 MR. JOSHI: A final on that.

3 One of the reasons that we're trying to
4 bring the Summer early because we are going to be
5 completing the FSER for Summer a week after he
6 Vogtle. Also, we are planning if you look at the
7 future actions, we're actually going to bring the
8 entire -- the FSER for Summer is the November time
9 frame. Because we want to have a full Committee
10 meeting not only on the Vogtle, but also Summer in
11 December so that we will have the FSER done to
12 support Summer and Vogtle COL issues in September. So
13 that is the reason we are trying to manage this one
14 as we go along right now.

15 MEMBER BLEY: I was just curious. Is
16 there anything really different as we go there
17 besides Chapter 2 stuff?

18 MR. JOSHI: For the Summer he can answer.

19 MR. SEBROSKY: I think I saw Eddie Grant
20 out there. So Eddie Grant helped put together the
21 one design, and he can correct me if I say anything
22 wrong.

23 Chapter 2 and the emergency planning
24 review, 13.3 constitutes the majority of the site-
25 specific information. The rest of the material if

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1 you look outside those chapters, and I'm making broad
2 numbers here and again Eddie can correct me if I'm
3 wrong. If you look outside those chapters about 80
4 percent of the material is standard. There's very
5 little site-specific information.

6 When you look at Chapter 2 for Summer the
7 reason that we're hoping to start those interactions
8 is it's about a 300 page SER. There's a lot of
9 material in there. And if we waited later in the
10 process when you're getting all of the more
11 complicated chapters, we thought we would be hitting
12 these.

13 CHAIRMAN RAY: Thank you.

14 MR. JOSHI: So right now, as we said,
15 also in our July meeting I think we have one more
16 additional item on agenda that we talked about
17 yesterday on the containment coating issue. So we'll
18 review that. Plus, I think we'll be adding
19 continually the ACRS action items that we aren't
20 resolved yet, so we'll be putting that also on the
21 agenda.

22 So based on that, I think my feeling is
23 that we should be able to both the areas for the
24 meeting. So that's my feeling right now.

25 CHAIRMAN RAY: Okay. Well, as we've

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1 discussed also offline, because that's the only
2 Subcommittee meeting that week, we have to be able to
3 fill out the bulk of a two day agenda or we just
4 can't bring people in for a one day meeting from
5 around the country. And presumably we would be light
6 on it.

7 Now you need our agreement that some of
8 this stuff can show up later for review than would
9 normally be acceptable. And you have that agreement.

10 MR. JOSHI: Okay. I appreciate that. Go
11 ahead. Tell him when we can expect --

12 MR. JOSHI: Okay. Let me give you just
13 the current plans as of today. We hope to get the
14 Chapter 2 on DCD as of Vogtle, like I would say July
15 6th just after the holiday. Okay. That's what we're
16 getting right now.

17 MEMBER BLEY: That's like two weeks
18 before the meeting?

19 MR. JOSHI: That's correct. And that's
20 what I was trying to make sure that is appropriate
21 and is okay for you guys. So that's the last date
22 that we can get all --

23 CHAIRMAN RAY: "Okay" is not quite the
24 right word, I think. What we'd like to say is we are
25 prepared in the interest of not creating larger

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1 problems later to accommodate that kind of
2 availability in this instance. But you understand
3 that that's just for this present purpose and not
4 something that we can accept generally?

5 MR. JOSHI: Sure. For 3.7 and 3.8 I hope
6 to get those two sections early part of next week.
7 Okay. So what we're talking about 3.7 -- 3.7 and 3.8
8 with SER with open items will be early part of next
9 week and Chapter 2 and Chapter 16 on July 6th. So
10 that's what we're trying to do that right now.

11 CHAIRMAN RAY: Okay.

12 MR. JOSHI: Okay? And we'll let you know
13 if there's a slippage or something right away. We'll
14 talk and let you know whether there is a problem
15 right now.

16 MEMBER BROWN: What were the two dates in
17 July? I don't have my --

18 CHAIRMAN RAY: The 21st and 22nd.

19 MEMBER BROWN: The 21st and 22nd.

20 MEMBER BLEY: Wednesday/Thursday.

21 MEMBER BANERJEE: Yes. Because then the
22 next week we're in --

23 MR. JOSHI: The 21st and 22nd.

24 MEMBER BROWN: Well, we have a full
25 Committee a week before that.

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1 CHAIRMAN RAY: Right.

2 MEMBER BROWN: Because it's been pushed
3 out a week. Because it's three weeks in a row.

4 MEMBER BANERJEE: Yes. We are the mercy
5 of the ACRS for three weeks.

6 MEMBER BLEY: Well, we don't have one in
7 August.

8 CHAIRMAN RAY: There is a meeting in
9 August, yes. But not a full Committee meeting.

10 All right. Did you have more that you
11 wanted to share with us?

12 MR. JOSHI: Just based on previous
13 understanding that there will not be any Subcommittee
14 for AP1000 in August, therefore I don't have any
15 schedule there. If you have a meeting, certainly we
16 can certainly come up with more chapters during that
17 time frame. But right now there's nothing that's
18 been shown on our agenda right now.

19 MEMBER BLEY: I'm sorry. You said
20 Summer's Chapter 2 and 13 is coming. Is that in this
21 time frame?

22 MR. SEBROSKY: Chapter 2 in July, the
23 emergency planning would be in September. If we go
24 to -- actually if we work through the res of the
25 presentation.

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1 MR. JOSHI: Maybe we just go through
2 quickly and go to the last slide, I can show that.

3 CHAIRMAN RAY: Well you understand Summer
4 too is expected in July. Yes.

5 MR. SEBROSKY: If you look at the third
6 slide.

7 MEMBER BLEY: The schedule?

8 MR. SEBROSKY: I'm sorry. There was some
9 points on this third slide that we wanted to go over
10 real quick.

11 MR. JOSHI: One of the things that we're
12 also actually looking into is the future interaction
13 for the remaining SCOLs for Levy, Lee, Harris,
14 Bellefonte we are going to schedule it right now. I
15 don't have a complete schedule, but it is being
16 developed at this point.

17 The reason that we started talking about
18 Summer because we are looking at ACRS's letter at the
19 same time we happened to receive Vogtle letter also.

20 That's the reason we're trying to get Chapter 2
21 early in July.

22 Also, we were thinking about providing
23 some additional plant-specific topics for Summer,
24 mainly Chapter 13. Now any other topic that staff
25 would like to see, so certainly e can bring those

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1 sometime in December. That's what we are at least
2 right now targeting for that.

3 And lastly, we have started all the
4 meetings beginning July right now. So everything is
5 really set for somewhere in July and complete Summer
6 interactions with the ACRS by December time frame.
7 So that's really we are trying to arrange on that at
8 this point.

9 CHAIRMAN RAY: All right. Well, bear in
10 mind now, however, that we will have follow
11 priorities. That is to say some things are going to
12 have to be given precedence over others as time goes
13 on here. There are issues that are still outstanding
14 that I would say we can't confident of the schedule
15 because we don't know how long they will take to
16 resolve.

17 We've had, for example, on the shield
18 building an information presentation only. We've had
19 no interaction with the staff, as you know.

20 And I'm saying this in the context
21 particularly of Summer. We'll do what we can. It's
22 good that it's available, but I would be cautious
23 about saying that the plan is to do these things by
24 that time because it reality there are some things
25 that are going to have to have a higher priority than

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1 other things do.

2 MR. SEBROSKY: Okay.

3 CHAIRMAN RAY: Okay.

4 MR. JOSHI: Going back o the last --

5 MR. AKSTULEWICZ: I was just going to
6 say, I agree with you Harold. These proposals are
7 just that, they're kind of a structure to layout to
8 try to plan our work for ourselves and for the
9 Committee as well. And clearly, we're going to have
10 to prioritize the work depending on the flow of he
11 issues as we get -- the DC clearly has to have
12 priority. If we can't get that done, the COL
13 schedule don't make any difference.

14 CHAIRMAN RAY: Correct. Thank you,
15 Frank.

16 MR. JOSHI: And the last slide, actually
17 what we did as we go and what would be different
18 schedules and different chapters. So this is
19 basically as we know it today, these are the chapters
20 we are putting it together based on the progress
21 we've made so far. Going from July, we just talk
22 about July, the next one is the Summer the September
23 time frame. And we are lining up about several
24 chapters. And also we also put together a line item
25 that talks about Summer plant specification. And

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1 then October and November and December.

2 Those are the things that we are just
3 trying to put together as a planning tool right now.

4 Of course, these are subject to change because
5 depending on the topic of where we are on a
6 particular chapter.

7 So if you look at it, really looking at
8 September, October and November the three months will
9 require a lot of work from our side to give you all
10 the chapters so that we can finish the Subcommittee
11 meetings in November to be ready for a full Committee
12 meeting in December. So that's really the plan at
13 this point right now.

14 MEMBER BANERJEE: The stars mean the open
15 items?

16 MR. SEBROSKY: If you look, you'll see
17 for example --

18 MR. JOSHI: 3.7 and 3.8 is with open
19 items, that's correct.

20 MR. SEBROSKY: Yes. And the same thing
21 with Chapter 6 in September on the DCD.

22 MR. JOSHI: Six.

23 MR. SEBROSKY: The thought being that we
24 never -- if you go back to the DCD there are some
25 sections that you did not see an SER with open items

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1 on. And e never issued a Chapter 6. We never issued
2 -- we did issue A Chapter 3 but it did not contain
3 3.7 and --

4 MEMBER BROWN: Okay. So 3.7 and 3.8
5 we'll have open items?

6 MR. JOSHI: Correct.

7 MR. SEBROSKY: For July. I think there
8 is some debate about the Chapter 6 product and
9 whether or not we're coming to you twice or just
10 once.

11 MR. AKSTULEWICZ: Yes. And I think right
12 now we're probably going to -- if we come, it'll have
13 maybe two items that are maybe unresolved and then --
14 well, just to get it in front of the Committee so we
15 can work through the issues if there are challenges
16 that we need to go back and do. And then that'll
17 give us some time to resolve that. Because there's
18 only two weeks between the September Subcommittee and
19 the October Subcommittee. So we'd try to get that in
20 front of the Subcommittee as soon as we can.

21 MR. SEBROSKY: That's right.

22 CHAIRMAN RAY: Good.

23 Is there anything to add to the offline
24 discussion we had -- it was offline, maybe it was on
25 the record yesterday about GSI-191 and the outlook

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1 there?

2 MR. AKSTULEWICZ: I was not here, so I
3 mean I've had --

4 CHAIRMAN RAY: Well, the question was do
5 we anticipate to achieve closure on that subject
6 specific to AP1000 during this same time frame
7 looking to the end of the year or is it more likely
8 that we will not be able to do that and it will
9 simply be one of the plants that are just on a
10 generic basis?

11 MR. AKSTULEWICZ: I think the staff is
12 bringing forward the argument along with Westinghouse
13 that the issues as far as we know them and all the
14 issues that are being identified as part of the
15 resolution of that particular GSI have been
16 adequately spoken for and demonstrated that there is
17 a sound design that is going to be in front of you.

18 The staff would expect that we would
19 reach a conclusion of acceptability with respect to
20 this area with respect to this design.

21 CHAIRMAN RAY: Okay.

22 MEMBER BANERJEE: Including the --

23 MR. AKSTULEWICZ: The full range of
24 discussion on all the issues, yes.

25 CHAIRMAN RAY: And where for my

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1 information, where does that fit in this?

2 MR. AKSTULEWICZ: That is you'll see that
3 in September and then any follow-up actions in
4 October.

5 CHAIRMAN RAY: Anything else?

6 MR. JOSHI: That is all I have presently,
7 unless you have anything.

8 CHAIRMAN RAY: All right. Thank you. We
9 will stay on track then. Thank you.

10 All right. Now, it's your turn, Rob.

11 MR. SISK: Thank you, Mr. Chairman. I
12 think Mike Melton and Eddie Grant, we're going to
13 walk through the action items to make sure we keep
14 aligned moving forward to closing out ACRS issues and
15 concerns.

16 CHAIRMAN RAY: Okay. That's fine. I
17 need my actions items list take here to keep the
18 books on that.

19 When we've done that, then will that
20 complete what you guys want to do today?

21 MR. SISK: Yes, sir.

22 CHAIRMAN RAY: All right. Eddie, this
23 thing is getting thicker.

24 MR. MELTON: We had items from yesterday.
25 We'll see if we can shorten in some today.

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1 CHAIRMAN RAY: All right. Please proceed.

2 MR. MELTON: Okay. Mr. Chairman, Mike
3 Melton here. I'm going to action items. You just
4 want to focus on new ones and closed ones?

5 CHAIRMAN RAY: Well, I'll defer to
6 Weidong. Do you want to go through the full list? Do
7 think that's necessary, or do you want to do it and
8 are satisfied that --

9 DESIGNATED FEDERAL OFFICIAL WANG: I
10 think if you specifically know what we have
11 addressed, then we can go specifically. Otherwise,
12 we'll just go through all of them.

13 MR. MELTON: Okay. Why don't we touch
14 base on all of them and make sure we're clear.

15 CHAIRMAN RAY: That's fine.

16 MR. MELTON: On Action Item 2, the
17 noncondensable gases we still you a return visit to
18 discuss gas intrusion. So no update from that at the
19 moment. We are looking at to possibly do that in
20 July.

21 CHAIRMAN RAY: Okay. We'll be happy to
22 do that then.

23 MR. MELTON: No changes to No. 4 on the
24 design. We still have some material questions to come
25 back on.

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1 DESIGNATED FEDERAL OFFICIAL WANG: Yes,
2 this particular problem I think I have provided to
3 Sam and here's some materials from -- and he's still
4 looking at it.

5 CHAIRMAN RAY: All right. Let's try and
6 close it at the next opportunity to do so.

7 MR. MELTON: Action Item 6 the flow
8 distribution. That's still open. We still have
9 action to provide additional information, so that's
10 still open for us to come back to.

11 Number 9 on the turbine overshoe
12 protection. We had a presentation on that this
13 session. I think we addressed pretty much all the
14 questions.

15 CHAIRMAN RAY: Yes. Let's close this
16 item, but there are two small items, the speed
17 sensors and I guess it's means by which ITAAC is
18 going to verify diversity --

19 MEMBER BROWN: I'm willing to close it,
20 but I do want to see -- I mean, I haven't see
21 anything other than the discussions we had. I was
22 supposed to get the RAI and the TR-80 technical
23 report. And I'm willing to close it, but this is one
24 of those ones, I do want to look at that.

25 CHAIRMAN RAY: No, I understand, Charlie.

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1 If these things sort of morph into different things
2 all along, it gets hard to keep the books --

3 MEMBER BROWN: I want to keep going, but
4 I think I want to see --

5 CHAIRMAN RAY: I think they did a good
6 job of addressing the things we had raised.

7 MEMBER BROWN: It was a good discussion.

8 CHAIRMAN RAY: And so we'll now narrow it
9 down to the two items, if I'm correct in my
10 recollection, that emerged from that discussion.

11 MR. MELTON: There was a question on
12 monoblock burst experience.

13 CHAIRMAN RAY: Yes.

14 MR. MELTON: Keith Schwab had a good
15 handle on the experience. We checked the inflow
16 database and ran back to 1995. We had 15 hits on
17 monoblock experience. There was no hits on burst
18 failures. Pretty much every single hit had to do
19 with vibration issues. And we've incorporated the
20 INPO OMNR 421 which captures the vibration issues on
21 startup and shutdown with the monoblocks into the
22 Westinghouse procedures. So we'll be capturing that
23 and learning from it.

24 So no failure experience. Mostly
25 vibration due to startup. Keith calls it the rotor

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1 rub issues, and so we have that incorporated. So, I
2 think it'll work out pretty well. And we went back
3 to '95.

4 CHAIRMAN RAY: That is fine. Basically
5 no failure here.

6 MEMBER BLEY: I'd like to nose around and
7 see what the international experience is; has anybody
8 had one break anywhere.

9 CHAIRMAN RAY: You okay with disclosing
10 it just a tracking standpoint?

11 DESIGNATED FEDERAL OFFICIAL WANG: We can
12 close this one item.

13 MR. MELTON: There's from my materials on
14 metallurgy, I haven't seen something internationally
15 either. We have access to the WANO database.

16 CHAIRMAN RAY: Which one was that,
17 Weidong?

18 DESIGNATED FEDERAL OFFICIAL WANG: Number
19 9.

20 CHAIRMAN RAY: Okay.

21 MR. MELTON: Item No. 10 on the elbow
22 taps, we still owe you a follow-up question to
23 address the uncertainties in core flow. I'm hoping
24 that we can bring that forward in July and we'll
25 confirm that with Perry and Eileen. We had a

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1 discussion on that at our last meeting. So it's still
2 open, so coming back to you.

3 CHAIRMAN RAY: Thank you.

4 MR. MELTON: 11 is aircraft impact.
5 That's with Westinghouse. We are to arrange a closed
6 meeting on that. So that's still open, no status
7 except to get it scheduled.

8 CHAIRMAN RAY: Yes. Thank you. That's
9 one that we're going to look forward to and the
10 review will have some relationship to similar other
11 Subcommittee activities that are taking place now.

12 MR. MELTON: Yes, there's definitely a
13 lot of activity going on there.

14 MR. SISK: Mr. Chairman, if I may? Is
15 there a particular time and in time that with your
16 other activities that you would like for us to
17 schedule that? I think we could bring that forward
18 at a time convenient to the Committee?

19 CHAIRMAN RAY: Thank you, Rob.

20 Not yet. The reason I say that is there's
21 another committee that's even more engaged right now,
22 but they don't have a timeline for when they're going
23 to proceed further.

24 I think it's in our interest to do other
25 things right now and not try and nail this down in

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1 the near term.

2 MR. SISK: That's fine.

3 MR. MELTON: Number 26 on waste
4 management forecasts, we had a discussion on that, or
5 a sort of status on that.

6 MEMBER BROWN: We needed to give it to
7 Dr. Ryan to take a look and vocalize it.

8 CHAIRMAN RAY: Yes. Let's consider it
9 from your standpoint as having satisfied the
10 questions that were asked have been asked. They may
11 produce other questions. But as I said on the turbine
12 missiles, sometimes these things morph into a series
13 of questions and I'd rather keep track of them
14 individually.

15 I believe they provided the information
16 he asked for, correct?

17 DESIGNATED FEDERAL OFFICIAL WANG: Yes.
18 Right.

19 CHAIRMAN RAY: All right. Let's consider
20 it to be closed.

21 MR. MELTON: Very well.

22 No. 27 is a staff action and provides
23 some documents related to the PRA audit results. And
24 I do not know the status of that one.

25 The same goes for the next one. So those

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1 are the off limit data I don't have the status on.

2 Okay. Item No. 32 is the I&C
3 architecture. I understand staff has an action. I
4 think we have enough data on that for you at the
5 moment.

6 CHAIRMAN RAY: Charlie, do you have
7 anything you want to say about it?

8 MEMBER BROWN: Oh, no. There was some
9 subsequent discussion that we had on one of the other
10 projects which helped in some areas. But I still
11 have to go back and look at the Common Q platform
12 again based on that discussion.

13 CHAIRMAN RAY: All right.

14 MEMBER BROWN: Which is what you all are
15 using. And there is still the open question on high
16 speed links, I think. And there's something else that
17 the staff needed to get back to us on. So that's
18 what I'm waiting to see what their resolution is.

19 CHAIRMAN RAY: Thank you.

20 MEMBER BROWN: That may create another
21 if.

22 CHAIRMAN RAY: Understood. This is just
23 bookkeeping now.

24 Go ahead.

25 MR. MELTON: Yes, sir. No. 33 design

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1 changes related to the ASTRUM code. That's under
2 staff action to provide additional information. I
3 don't know the status of that one.

4 No. 34, human factors. DAC closure. We
5 grouped that to discuss both HFE and I&C DAC
6 closures. We still need to schedule those
7 presentations as we reach closure on Chapter 7. So
8 that's coming.

9 CHAIRMAN RAY: All right. Are you
10 satisfied, Dennis? Anything you want to say?

11 MEMBER BLEY: Not unless we hear
12 something.

13 MR. MELTON: All good, right?

14 CHAIRMAN RAY: Now, Dennis, we did hear
15 something. One of the questions we had was in that
16 list of ITAACs which one were the dots. And I think
17 we got an answer. I got an answer, I haven't looked
18 at it because I was doing other stuff. But I mean we
19 did get an answer in terms of which items --

20 MEMBER BLEY: I just saw that. I haven't
21 had a chance to look at it yet.

22 CHAIRMAN RAY: Yes. Just came in a few
23 days ago.

24 MEMBER BLEY: On this one?

25 CHAIRMAN RAY: Just which ones are there.

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1 We couldn't find where phase 1 and phase 2 and phase
2 3 were buried in there. And so I think we got that.

3 We didn't get any other details yet. So I
4 want to go look at those specifically, look at that.

5 MEMBER BLEY: Yes. We'll look forward to
6 it.

7 CHAIRMAN RAY: Let me emphasize one
8 thing. That last comment about what each doc was
9 intended to include, et cetera, et cetera. We're
10 expecting the staff to address that.

11 MR. SISK: If it may be helpful as well,
12 I thought there was a question that came up
13 yesterday, just to kind of help clarify, currently
14 within the DCD for AP1000 DAC exists in Chapter 3, 7
15 and 18. Seven is one I think that Charlie's
16 referring to to clean up on I&C.

17 When we come back with the SER with no
18 open items, we will be clear with the language of how
19 the DAC was deposited and what's DAC and ITAAC.

20 MEMBER BROWN: Okay. That's 3, 7 and 8?

21 MR. SISK: Three, 7 and 18. Eighteen is
22 human factors, 7 I&C and 3 of course is the piping.

23 MEMBER BROWN: Right.

24 MEMBER BLEY: Just one thing to follow-up
25 on what Charlie said. We would like to hear from the

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1 staff what their expectations are on DAC. We
2 understand you might not be in the spot yet to tell
3 us how closure is going, because I know that's a more
4 staff-wide exercise going on right now. But if you
5 can, that would be great.

6 MEMBER BROWN: Just an example to make
7 sure that since it's referred to as being
8 deterministic processing. If you look in the
9 comments rely form it says you got to do a timing
10 analysis, and if you look in the DAC at least what I
11 could find, it doesn't say you have to do that. So
12 one of the questions is how does that carry over into
13 the DAC? How do you make sure that gets done as part
14 of the DAC process? Because the Common Q platform is
15 just a general description topical report of the
16 whole thing. So I'm trying to develop what should
17 the accept criteria look at for some of these
18 specific conditions as they're reflected and how are
19 they specific? Let's try to comply with the
20 methodology without having all the details.

21 CHAIRMAN RAY: Okay. Continuing problem.

22 MEMBER BROWN: Yes.

23 CHAIRMAN RAY: All right. 35 is it?

24 MR. MELTON: And we appreciate that
25 because we need to make sure when we come back for

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1 our part at least, for Westinghouse's part, we hit
2 the mark.

3 MEMBER BROWN: That's the purpose of that
4 last little statement there.

5 MR. MELTON: Yes, sir.

6 MEMBER BROWN: Emphasizing that,
7 hopefully, will get you thinking.

8 MR. MELTON: Ready to move on, Mr.
9 Chairman?

10 CHAIRMAN RAY: Yes.

11 MR. MELTON: Okay. Items 35 and 36 and
12 on to 39 have to do with the GSI-191 and the RAI
13 resolutions. I believe we are looking at something,
14 possibly of an interim status briefing on GSI-191.
15 And we'll look at September potentially. So these
16 were mostly translated into RAIs and Westinghouse is
17 answering.

18 MEMBER BANERJEE: May I suggest
19 something, Mr. Chairman?

20 CHAIRMAN RAY: Sure.

21 MEMBER BANERJEE: With the other
22 activities going on in September related to GSI-191,
23 we are going to be extremely busy with that. And as
24 you know, we appear before the Commission as well.

25 So could I suggest we bring this back to

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1 October, the GSI related?

2 CHAIRMAN RAY: Of course. Any objections
3 from applicant or staff comments on that?

4 MR. AKSTULEWICZ: What was the proposal?
5 I didn't hear it.

6 CHAIRMAN RAY: To address in September
7 AP1000 GSI-191 because the very same people who are
8 most engaged in that --

9 MEMBER BANERJEE: No. I'm saying
10 applicant could do it in October because --

11 CHAIRMAN RAY: Isn't that what I said? I
12 meant to say that.

13 MEMBER BROWN: No, you said September.

14 CHAIRMAN RAY: I said put it back from
15 September to October.

16 MEMBER BANERJEE: Because we are just
17 going to be up to our necks with the fact position
18 paper and our commentary and, you know with the
19 existing PWRs.

20 Also I suggest that if we are going to
21 consider in October that you might do what some of
22 the other Subcommittees are doing, which is have a
23 combined meeting with the Thermal-Hydraulic
24 Subcommittee, which is in charge of GSI-191, to make
25 sure that all the correct people are here.

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1 CHAIRMAN RAY: Okay.

2 MEMBER BANERJEE: So this sort of a
3 significant issue for existing PWRs and we need to
4 look at why you can close it for this when we can't
5 for the others.

6 CHAIRMAN RAY: All right. This is an
7 important thing for applicant and staff both. Let's
8 try and work on what Sanjoy has outlined.

9 There is a joint subcommittee and
10 Thermal-Hydraulics meeting scheduled on another
11 project. What is the other project?

12 MEMBER BANERJEE: ABWR.

13 CHAIRMAN RAY: ABWR.

14
15 MEMBER BANERJEE: Meeting schedule.

16 CHAIRMAN RAY: Yes. This emerged
17 yesterday, Frank, so you may not have heard about it.
18 But in any event, rather than decide on it now, let's
19 just say can you explore that possibility because as
20 Sanjoy says, this is an issue which it's in
21 everybody's interests to have the right people at the
22 right time come together and reach an agreement, if
23 at all possible.

24 The October meeting is a one day meeting,
25 as I recall, at the time of the full Committee. Let

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1 me say, if that become impractical because of other
2 things that are also in that one day meeting, okay,
3 we'll explore other possibilities.

4 So I'm not just saying shoehorn into that
5 one day somehow. But the value gained by what
6 Sanjoy's proposing here I think warrants us giving
7 some special attention to that.

8 MR. AKSTULEWICZ: Yes, I understand the
9 intentions, and I think they're well founded. It's
10 just I agree with you, we need to be sensitive to our
11 ability to calendar the rest of the review that needs
12 to get done in the balance of the year. Because
13 we've already met with the Committee representatives
14 on the calendar. And the reason that the days are
15 what they are is because that's all the days that are
16 available.

17 CHAIRMAN RAY: I understand that totally.
18 I really do.

19 Let's leave it this way. Member's made
20 a suggestion that I think we all understand the
21 merits of it on its own. Let's explore what the
22 options are. We'll communicate by email next week
23 and see what is the best thing we can come up,
24 Sanjoy.

25 MEMBER BANERJEE: Okay.

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1 CHAIRMAN RAY: For my purposes, I really
2 want to try and if we're going to have to close this
3 for AP1000 in this time period, I want to do our best
4 to make that happen successfully and not get hung up
5 some how.

6 Okay. Moving ahead.

7 MR. MELTON: Item 41 the reactor circuit
8 breaker. Are the numbers wrong?

9 CHAIRMAN RAY: Reactor trip circuit
10 breaker is that. is that what we want to call it?

11 MR. MELTON: Reactor trip circuit
12 breaker.

13 CHAIRMAN RAY: Yes.

14 MR. MELTON: No status on that. Open
15 right now. We still have action to discuss that.

16 And the same on 43 on the high speed
17 links. I understand we owe a reference on that.

18 MEMBER BROWN: Well, it says that there
19 was a report sent, and I presume Westinghouse was
20 going to provide some information.

21 MR. MELTON: Yes.

22 MEMBER BROWN: And your deposition states
23 that a report was sent a couple of months ago I
24 presume from Westinghouse to the staff. And I don't
25 recall seeing it or having it sent to me.

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1 MR. MELTON: I will take that action to
2 follow-up on that report for you.

3 MEMBER BROWN: Okay.

4 MR. MELTON: And get it to Eileen and
5 Perry.

6 CHAIRMAN RAY: But if it has come in,
7 then that would mean the ball is n our court.

8 MEMBER BROWN: Yes. I mean, I'm willing
9 to look at it as soon as -- I mean, that's part of
10 the previous open item as well. It was just an extra
11 emphasis.

12 MR. SISK: Yes. Well, I was just going to
13 say I believe the report is in, but we'll make sure
14 on our end and make sure, as Mike indicated, that
15 Eileen and Perry have it. But --

16 MEMBER BROWN: But it indicates that
17 they've still got the status report, so they think
18 something is there.

19 MR. MELTON: We'll track it down.

20 MEMBER BROWN: If it came to me and I
21 lost it, then I'm sorry.

22 MR. MELTON: I'll make sure that person
23 know --

24 CHAIRMAN RAY: That can happen. Not a
25 big deal.

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1 MR. AKSTULEWICZ: Mr. Chairman, if I may
2 interrupt before we move on.

3 CHAIRMAN RAY: Yes.

4 MR. AKSTULEWICZ: Could I have someone
5 from the Committee explain Item 37; what is the
6 expectation there?

7 CHAIRMAN RAY: Yes. Well the somebody
8 that can best do it I think would be Sanjoy. Can you
9 speak to that?

10 MEMBER BANERJEE: Well, it's Sam Armijo's
11 point, but --

12 CHAIRMAN RAY: But you're implicated.
13 You got in first. So how about give it your best
14 shot.

15 MEMBER BANERJEE: Well, if I understand
16 this, and I don't know exactly. I didn't write that
17 remark, Sam did. But I think it might have to do
18 with in vessel effects with seeing great sensitivity
19 to very, very small changes in fuel design in in
20 vessel effects.

21 What we're seeing is a fuel in what
22 appears to be an identical test apparatus which has
23 got slightly different heat spaces, has a completely
24 different pressure loss. So, I mean, Sam might be
25 meaning some sort of analysis needs to be done to

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1 understand, you know there are ongoing tests going
2 on.

3 CHAIRMAN RAY: Okay. That's our best
4 shot.

5 MEMBER BANERJEE: That's the best shot
6 I've got.

7 CHAIRMAN RAY: Frank, what we'll do is,
8 this is our job to explain what the heck the item is.

9 MEMBER BANERJEE: Yes.

10 MR. AKSTULEWICZ: Well I think I
11 understand it from what I've heard from Dr. Banerjee.
12 My concern would be that it expands beyond the scope
13 of the application in front of us if we're asking for
14 some statistical reporting of test results that are
15 outside of this particular design.

16 So I just wanted to try to make sure I
17 understand -- you know, when I see statistical
18 analysis, I have some idea what that is. But my
19 breadth is what I'm questioning.

20 CHAIRMAN RAY: Okay. So that we --

21 MEMBER BANERJEE: You might require
22 clarification from Sam.

23 CHAIRMAN RAY: That's what I'm about to
24 say.

25 MR. AKSTULEWICZ: I just want to make to

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1 bring it back to the Committee, we bring you the
2 answer not something that misses.

3 MEMBER BANERJEE: Yes. I wouldn't say
4 that to deal with this issue some of the other issue
5 like certifications are actually put in the licensed
6 condition which has to do with testing which has to
7 be done. And that becomes then part of the COLA.

8 CHAIRMAN RAY: All right.

9 MEMBER BANERJEE: We need to discuss
10 this.

11 CHAIRMAN RAY: Clarity is essential as we
12 get close to the end here. Here's what I'm going to
13 ask to be done.

14 Okay. Wait a minute, Ed, let me try to
15 ge this nailed down.

16 I'm going to ask Weidong to go to Sam.

17 DESIGNATED FEDERAL OFFICIAL WANG: Sure.

18 CHAIRMAN RAY: Get his input. But before
19 you do anything with it, get Sanjoy's review of his
20 input regarding clarification so that we don't have
21 any later disagreement what all the ramifications of
22 this might be. Also include Frank's point that the
23 concern is with are we properly bounding the scope of
24 this question or inquiry.

25 And when all of that has been done and

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1 only then, then let's say well this is what we
2 intended. Okay?

3 MR. AKSTULEWICZ: Okay.

4 CHAIRMAN RAY: Now, Ed, did you want --

5 MR. CUMMINS: Yes. I'm trying to have
6 some clear communication here so expectations are
7 similar.

8 We have been working with the staff on
9 our test program back and forth and back and forth.
10 And between us we do not believe, and I think the
11 staff would agree, that we need to do anymore testing
12 in order to satisfy the staff of our acceptability.
13 So we have none that are currently planned.

14 MEMBER BANERJEE: Right. So to give you
15 sort of an idea what the sort of issue that's a
16 reminder of, one key one clearly has to do with
17 latent debris and the basis for assuming certain
18 things about the latent debris, and how much of that
19 potentially could be fibrous debris. And clearly
20 there are plots on this case during accidents to the
21 core that don't look at this through the strainers,
22 or whatever. So latent debris is important.

23 The concrete scarring issue, it may be
24 very much less important in plants with castel and
25 stuff become sort of more important where the

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1 particulate matter there might actually constitute a
2 significant part of the regular load, where it's sort
3 of negligible compared to other things.

4 The third aspect, which is sort of tricky
5 here, is that much of the fibrous debris appears to
6 cause blockages which are very, very sensitive to the
7 fuel design. This is some information which I don't
8 know if I can disclose to you the detail of because
9 there's a lot of proprietary stuff here. But clearly
10 even small changes in fuel design seem to make a
11 large difference in the pressure losses.

12 And the final point here which is sort of
13 tricky is what sort of analysis needs to be done to
14 backup the amount of blockage pressure drop that you
15 will get.

16 So all this when you put it all together
17 you may certainly be able to close off this issue.
18 But we need to go over it in great detail.

19 But the first point I think is the most
20 sort of tricky one, which is the latent debris.
21 Because you've got a very, very clean containment.
22 You've got no debrisous isolation that you consult
23 with. So you've done everything possible to take
24 care of the problem. And certainly we don't expect
25 any problems with the strainer head losses. It's

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1 really the in vessel effects.

2 And that probably just gives you enough
3 material to think about.

4 CHAIRMAN RAY: Okay. We'll still go
5 through the exercise with regard to this action item
6 to make sure there isn't something else that isn't
7 left out. But I'll just ask Weidong to undertake
8 that.

9 All right. Let's see, are we on 46?

10 MEMBER BROWN: By my count.

11 MR. MELTON: 46 still open. Changes to
12 that current action.

13 And the same for 47. We still have to
14 address that with --

15 CHAIRMAN RAY: Ah excuse me.

16 MR. MELTON: Okay.

17 CHAIRMAN RAY: My fault.

18 MR. MELTON: 48 is open. We have an
19 action to address the interlocks for the ADS. So
20 that's still an open action for us to come back and
21 address.

22 And 49, I guess related to the ASTRUM,
23 there's any confirmation, clarification on that
24 action as we have it written down?

25 MEMBER BANERJEE: I think you are

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1 supposed to come up with this later, some information
2 on this, right? It was just mainly informational.

3 MR. MELTON: Number 50 certainly in the
4 six feet of water level calculation that is still
5 open. We will be scheduling these.

6 Nos. 51, 52 and 53 were follow-up actions
7 from the shield building. And we will be coming back
8 and addressing these.

9 CHAIRMAN RAY: All right. Let's see, we
10 don't need to go to the closed items, do we, Weidong?

11 DESIGNATED FEDERAL OFFICIAL WANG: No, I
12 think not.

13 CHAIRMAN RAY: You got new items you want
14 to talk about?

15 DESIGNATED FEDERAL OFFICIAL WANG: No. I
16 think all the new items is --

17 CHAIRMAN RAY: They're already in there?

18 DESIGNATED FEDERAL OFFICIAL WANG: Yes.

19 MR. GRANT: We actually did hear a couple
20 items yesterday that we wanted to provide a piece of
21 information.

22 CHAIRMAN RAY: Go ahead, Eddie.

23 MR. GRANT: One of those was a reference
24 to the containment density. And during that
25 discussion there was then a discussion of the spent

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1 fuel bridge and a piece of metal across --

2 CHAIRMAN RAY: Yes, yes. Well take
3 credit for a deliberate shielding function in the
4 bridge?

5 MR. GRANT: Correct. And I think the
6 follow-on question then was how is that controlled in
7 the long term. And that is in the DCD. The
8 specifics on the piece of metal underneath the bridge
9 are not there, but what that does is provide a dose
10 limit for the bridge operator and the individual
11 standing up there. And there is specific discussion
12 in a couple of different places in the DCD about a
13 2.5 millirem dose to an individual on that bridge.

14 So should we begin to do something; thin
15 that piece of metal or remove it, or replace it with
16 grating or something along those lines, it certainly
17 would have an impact on that dose limit and would be
18 controlled then through the 50.59 like process for
19 things that impact the DCD.

20 CHAIRMAN RAY: Okay. You're satisfied
21 that it's reflect in the licensing basis then?

22 MR. GRANT: Absolutely. Yes, sir.

23 CHAIRMAN RAY: Okay. The second item we
24 heard was you're looking for additional information
25 on containment coatings. We're not prepared to

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1 address that today.

2 CHAIRMAN RAY: Right.

3 MR. GRANT: And, in fact, I think we
4 heard some things this morning that probably will
5 give us a little better idea on what you're looking
6 for.

7 And I think I heard the schedule for that
8 was to try to address that in July?

9 CHAIRMAN RAY: It is. And so we look
10 forward to that. And I'd ask you to be robust on the
11 points that you heard discussed today about access
12 and so on.

13 MR. GRANT: Yes, sir.

14 CHAIRMAN RAY: Particularly localized.

15 There is no issue that I'm aware of that
16 has to do with allowances for generalized corrosion
17 or anything of that can. They have to do with access
18 to areas where some people call it pitting, it prefer
19 to call it localized corrosion may effect the
20 integrity of the pressure boundary.

21 MR. GRANT: And then that's really the
22 only things we wanted to talk about.

23 We look forward to whatever else is on
24 the list as it comes out from yesterday.

25 CHAIRMAN RAY: I don't know of anything

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1 else that we haven't talked about here just now.

2 Okay.

3 CONSULTANT KRESS: I would like to add--

4 CHAIRMAN RAY: Yes, Tom?

5 CONSULTANT KRESS: -- just one to the
6 list.

7 CHAIRMAN RAY: All right.

8 CONSULTANT KRESS: They're doing an
9 uncertainty analysis from the departure from nuclear
10 boiling ratio. I'd just like to see that analysis if
11 I could.

12 CHAIRMAN RAY: Uncertainty analysis on
13 DNBR.

14 MR. GRANT: Is that the one with regard
15 to the licensed condition from the Chapter 4
16 discussion yesterday

17 CONSULTANT KRESS: Yes, I think that's
18 where it came up.

19 MR. GRANT: Okay. You realize that is a
20 confirmatory thing and that's probably five to six
21 years away.

22 CONSULTANT KRESS: Oh. No, I didn't know
23 that. In that case, we'll wait.

24 MR. GRANT: Okay. We'll check it off.

25 CHAIRMAN RAY: All right. Thank you,

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1 gentlemen.

2 I'll now ask is there anybody on the
3 bridge line today who would like to make any comments
4 to the AP1000 Subcommittee?

5 Hearing none, you guys have anything more
6 you wanted to present to us.

7 MR. MELTON: Not at this time.

8 CHAIRMAN RAY: Okay. Then I'll go around
9 the table and when that's done, we're coming to
10 adjourn the meeting, I think.

11 Dennis?

12 MEMBER BLEY: I think I have said
13 everything I wanted to already.

14 Thanks to everyone for their
15 presentations and discussion.

16 CHAIRMAN RAY: Sanjoy?

17 MEMBER BANERJEE: I'm done.

18 CHAIRMAN RAY: All right. Charlie?

19 MEMBER BROWN: I'm done.

20 CHAIRMAN RAY: Tom?

21 CONSULTANT KRESS: No.

22 CHAIRMAN RAY: Okay. Well, again let me
23 just comment on the difficulty that I appreciate we
24 are. I'm in the position of trying to keep the train
25 running on time. We've been working with the staff,

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1 as Frank said, to try and look ahead. We make our
2 best shot at it, but it's subject to change.

3 The proposal that Sanjoy made relative to
4 GSI-191, which I view sort of the way he left it,
5 which was how can we solve this for AP1000 when we're
6 not ready yet to solve it for everything else is
7 clearly indicating to me that we need to find someway
8 of trying to reach that consensus, because I'm the
9 one that has to get the letter out of the full
10 Committee ultimately. So I look forward to us finding
11 some way to help get that done successfully.

12 Ed, do you have anything else you want to
13 say?

14 MR. GRANT: No, thank you.

15 CHAIRMAN RAY: All right. We'll consider
16 the meeting then to be adjourned.

17 (Whereupon, at 10:48 p.m. the meeting was
18 adjourned.)

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AP1000 Design Control Document Amended Design

Chapter 4

Chapter 4 Overview

- This chapter describes the mechanical components of the reactor and reactor core, including:
 - Fuel Rods
 - Fuel Assemblies
 - Nuclear Design
 - Thermal-Hydraulic Design
 - Materials
 - Functional Design of Reactivity Control Systems
- Licensing Lead: Thom Ray
- Technical Lead: Bob Fetterman/Rob Morrow/Kris Cummings

Chapter 4 Open Items

Two Open Items were identified and subsequently closed:

- **OI-SRP4.5.1-CIB1-01**

- Need to address the use of Reg Guide 1.44 and CRDM canopy seal welds material

- **OI-SRP9.1.1-SRSB-01**

- Spent fuel storage rack criticality analysis.

Chapter 4 - OI-SRP4.5.1-CIB1-01

- **Issue:**

- More information on CRDM design changes and the use of Reg Guide 1.44 for preventing Stress Corrosion Cracking (SSC).

- **Final Resolution**

- Information was added to the DCD about the use of only one canopy seal weld in the CRDM design and how this design improvement over past control rod drive mechanisms aids in prevention of the occurrence of stress corrosion cracking. Information was also added on how the CRDM materials meet the requirements of Reg Guide 1.44.

Chapter 4 - OI-SRP9.1.1-SRSB-01

- **Issue:**

- Spent fuel storage rack criticality analysis

- **Final Resolution**

- APP-GW-GLR-029, R2 was issued which completed the response to revise the spent fuel storage criticality analysis. The analysis documents the criticality safety evaluation for the storage of PWR spent nuclear fuel in Holtec Region 1 & 2 style high-density spent fuel storage racks (SF SRs) for the AP1000. Chapter 4 was updated to update the criticality design method outside the reactor and the soluble boron credit methodology.

Questions?



United States Nuclear Regulatory Commission

Protecting People and the Environment

Presentation to the ACRS Subcommittee

AFSER Chapter 4 Reactor

Westinghouse AP1000 Design Certification Amendment Application Review

June 24 -25, 2010

Staff Review Team

- Technical Staff
 - Fred Forsaty, Reactor Systems Branch
- Project Management
 - Phyllis Clark

Overview

- Chapter 4 of the Standard Content SER Was Previously Issued as an SER with Open Items and was Previously Presented to the Subcommittee.
- Open Item Being Presented
 - OI-SRP 9.1.1-SRSB-01

OI-SRP 9.1.1-SRSB-01

- Issue:
 - Applicant Needed to Reference a Suitable Methodology for Criticality.
- Resolution:
 - Applicant revised method, and provided “AP1000 Spent Fuel Storage Racks Criticality Analysis” - APP-GW-GLR-029 Revision 2
 - This sufficiently answered the OI
 - OI is now a Confirmatory Item

OI-SRP 9.1.1-SRSB-01

- While the OI is Closed in Chapter 4, APP-GW-GLR-029 Revision 2 will be Evaluated in SER Chapter 9.

AP1000 Design Control Document Amended Design

Chapter 11

Chapter 11 Overview

- Radioactive Waste Management
 - Source Terms
 - Liquid Waste Management System
 - Gaseous Waste Management System
 - Solid Waste Management System
 - Radiation Monitoring
- Licensing Lead: Thom Ray
- Technical Lead: Tim Meneely

Chapter 11 Open Items

One Open Item was identified in the SER and subsequently closed:

- **OI-SRP11.3-CHPB-01**

- Section 11.3.3 needed consequence evaluation of a gaseous system leak or failure.

Chapter 11 - OI-SRP11.3-CHPB-01

- **Issue:**

- Provide consequence evaluation of a gaseous system leak or failure for Section 11.3.3

- **Final Resolution**

- DCD Section 11.3.3.4 was updated with the consequence evaluation of a gaseous system leak or failure and the assumptions used to make that evaluation.

Questions?

AP1000 Design Control Document Amended Design

Chapter 12

Chapter 12 Overview

- Radiation Protection
 - ALARA
 - Radiation Sources
 - Radiation Protection Design Features
 - Dose Assessment
 - Health Physics Facilities Design
- Licensing Lead: Thom Ray
- Technical Lead: Aaron Wilmot

Chapter 12 Open Items

Five Open Items were identified and subsequently closed:

- OI-SRP12.1-CHPB-01 – Information on design features for HVAC systems to prevent or minimize contamination of environment.
- OI-SRP-12.2-CHPB-02 – More detail on airborne radioactivity with expanded fuel pool capacity.
- OI-SRP12.3-CHPB-02 – Dose during refueling due to the change in minimum allowable water depth above active fuel.
- OI-SRP12.3-CHPB-01 – More detail to determine if the containment area radiation zones are affected or if the implementation of the Integrated RV Head Package Design results in an increase or decrease in the refueling dose estimates.
- OI-SRP12.3-CHPB-03 – Density change in the Spent Fuel Transfer Canal and Tube Shielding and the impacts on occupational exposure and effect on radiation zoning.

Chapter 12 - OI-SRP12.1-CHPB-01

- **Issue:**

- Information on design features for HVAC systems to prevent or minimize contamination of environment

- **Final Resolution**

- DCD sections 9.4.3.2.1.1 and 11.4.2.2.1 have been updated to provide clarifying information on the design features that prevent water from entering into HVAC ducting from the liquid radwaste system and the radioactive waste drain system.

Chapter 12 - OI-SRP-12.2-CHPB-02

- **Issue:**

- More detail on airborne radioactivity with expanded fuel pool capacity

- **Final Resolution**

- The response defined the basis and calculations made to assess the maximum airborne activity in the fuel handling area along with changes to the airborne radioactivity concentration values in DCD Table 12.2-25.

Chapter 12 - OI-SRP12.3-CHPB-02

- **Issue:**

- Dose during refueling due to the change in minimum allowable water depth above active fuel

- **Final Resolution**

- The response provided details of how the deck of the SFP bridge would provide adequate shielding during irradiated fuel movement to maintain whole body exposures less than 2.5 mrem per hour.

Chapter 12 - OI-SRP12.3-CHPB-01

- **Issue:**

- More detail to determine if the containment area radiation zones are affected or if the implementation of the Integrated RV Head Package Design results in an increase or decrease in the refueling dose estimates

- **Final Resolution**

- More detail was provided in DCD Chapter 12 on how the design of the Integrated head package lowers original dose estimates and the Tables in Chapter 12 were updated to include decreases to refueling dose estimates and reactor head In-service inspection dose estimates.

Chapter 12 - OI-SRP12.3-CHPB-03

- **Issue:**

- Density change in the Spent Fuel Transfer Canal and Tube Shielding and the impacts on occupational exposure and effect on radiation zoning

- **Final Resolution**

- Dose Calculations were performed that resulted in re-designation of radiation zones and rooms based on conservative estimates of concrete density to account for normal variability in concrete density.

Questions?



United States Nuclear Regulatory Commission

Protecting People and the Environment

Presentation to the ACRS Subcommittee

**AFSER Chapter 11
Radioactive Waste Management**

**Westinghouse AP1000 Design Certification Amendment
Application Review**

June 24 -25, 2010

Staff Review Team

- Technical Staff
 - Steven Schaffer, Health Physics Branch
 - Joshua Wilson, Balance of Plant Branch
- Project Management
 - Christopher Proctor

Overview

- Chapter 11 of the AP1000 DCA SER with Open Items (OIs) issued with one Open Item
 - Open item
 - OI-SRP 11.3-CHPB-01
 - Open item resolved
- One design change package (DCP) change (No. 23) was evaluated in AFSER Chapter 11. The Staff issued an RAI.
 - RAI-SRP 11.3-CHPB-05
 - RAI resolved

OI-SRP 11.3-CHPB-01

- Issue:
 - The applicant needed to incorporate the delayed failure analysis (BTP 11-5) into the DCD.
- Resolution:
 - The applicant provided the description and results of the analysis to be incorporated into next revision of the DCD. NRC Staff confirmed the applicant's analysis followed the method described in BTP 11-5, and independently verified the results.
 - OI is now a Confirmatory Item

RAI-SRP11.3-CHPB-05

- Issue:
 - Change no. 23 removed ITAAC for the seismic design of the carbon delay beds and discharge isolation valves. The affected system components have seismic design criteria specified in RG 1.143
- Resolution:
 - Westinghouse reinstated ITAAC and provided proper design criteria
 - OI is now a Confirmatory Item



United States Nuclear Regulatory Commission

Protecting People and the Environment

Presentation to the ACRS Subcommittee

**AFSER Chapter 12
Radiation Protection**

**Westinghouse AP1000 Design Certification Amendment
Application Review**

June 24-25, 2010

Staff Review Team

- Technical Staff
 - Edward Roach, Health Physics Branch
 - Steven Schaffer, Health Physics Branch
- Project Management
 - Christopher Proctor

Overview

- Chapter 12 of the AP1000 DCA SER with Open Items (OIs) was issued with a total of 5 Open Items and an additional RAI
 - All Open Items are Resolved
 - List of Items to be discussed
 - **OI-SRP 12.1-CHPB-01**
 - **RAI-SRP12.1-CHPB-02**
 - **OI-SRP 12.3-CHPB-01**

OI-SRP 12.1-CHPB-01

- Issue – The applicant needed to provide additional Information concerning the compliance with 10 CFR 10.1406.
- Resolution – Design Features for heating ventilation, and air conditioning were added to Tier 2 in response to RAI-SRP-12.1-SPCV-01 & 02.
 - The features were to prevent and mitigate the spread of contamination through ventilation subsystems.

RAI-SRP 12.1-CHPB-01

- Issue – The applicant needed to provide additional information concerning the compliance with 10 CFR 10.1406
- Resolution – Design features for auxiliary steam, auxiliary boilers, and condensate transfer were added to Tier 2 in response to RAI-SRP 12.1 1-CHPB-01
 - The features were to prevent and mitigate the spread the contamination through the turbine building systems and condensate transfer piping.

OI-SRP 12.3-CHPB-01

- Issue – The applicant needed to provide information concerning the Integrated Head Package on radiation zones and the dose estimates for refueling.
- Resolution – The change resulted in an estimate of a net positive effect on total refueling dose. DCD Table 12.4-12, “Dose Estimate for Refueling Activities,” and Figure 12.3-1, “Radiation Zones, Normal Operation/Shutdown Nuclear Island,” were revised to reflect changes.

AP1000 Design Control Document Amended Design Chapter 14

Chapter 14 Overview

- Initial Plant Test Program
 - Specific Information to be Included Preliminary/Final Safety Analysis
 - Pre-operational Test
 - Certified Design Material
 - Combined Licensee Applicant Responsibilities
- Technical Lead: Mark Williams/Rick Weber
- Licensing Lead: John DeBlasio

Open Items

Three Open Items were identified and subsequently closed:

- **OI-SRP-14.2-CQYP-12**
 - Restore COL information item 14.4.2
- **OI-SRP14.2-CQVP-13**
 - Restore COL information item 14.4.3
- **OI-SRP14.3-NWE2-01**
 - Clarify AP1000 definition of As-Built

Chapter 14 - OI-SRP14.3-NWE2-01

- **Issue:**
 - Clarify AP1000 definition of As-Built
- **Final Resolution**
 - Westinghouse has agreed to use the definition of “As-Built” as agreed to between NRC and the Industry (NEI 08-01 revised) at the Dec 17, 2009 Public Meeting

Questions?



United States Nuclear Regulatory Commission

Protecting People and the Environment

Presentation to the ACRS Subcommittee

Design Certification Amendment

AFSER Chapter 14 Verification Programs

June 24-25, 2010

Staff Review Team

- Technical Staff
 - Nanette Gilles - Rulemaking
- Project Management
 - David Jaffe

Overview

- Chapter 14 of the Standard Content SER with Open Items was issued with a total of 3 Open Items
 - List of Open Items
 - Open Item 1–Definition of “As-built”
 - Open Item 2–Rejection of TR-71A, “Test Specifications and Procedures”
 - Open Item 3–Rejection of TR-71B, “Conduct of Test Program”
 - All Open Items Resolved
- Focus on Open Item 1
 - Reason OI is significant – Determines when and where structure, system, or component ITAAC closure takes place

Definition of “As-built”

- Issue –The original Tier 1 definition of “As-built” was as follows:

As-built means the physical properties of a structure, system, or component (SSC) following the completion of its installation or construction activities at its final location at the plant site.

- Westinghouse proposed modification to allow flexibility for closure of ITAACs prior to final installation of structure, system, or component.

Resolution

- Discussions with Westinghouse and NEI
- Final definition found acceptable by NRC staff:

As-built means the physical properties of a structure, system, or component following completion of its installation or construction activities at its final location at the plant site. In cases where it is technically justifiable, determination of physical properties of the as-built structure, system, or component may be based on measurements, inspections, or tests that occur prior to installation, provided that subsequent fabrication, handling, installation, and testing do not alter the properties.

- Westinghouse reviewed ITAACs and proposed changes to provide consistency with new definition
- This OI is now a CI

**AP1000 Reference
Combined License Application
Opening Remarks to ACRS
Vogtle Electric Generating Plant
Units 3 and 4**

June 24, 2010

VEGP 3&4 Overview



Chuck Pierce, Nuclear Development Licensing Manager

VEGP 3&4 Overview

- COLA submitted March 28, 2008
- EPC Contract signed with Westinghouse and Shaw on April 8, 2008
- ESP/LWA received August 26, 2009
- LWA-B submitted October 6, 2009
- U3 Nuclear Island Excavation began August 10, 2009
- U3 Backfill began marking the beginning of LWA activities on March 8, 2010



Figure 1-2 50-Mile Vicinity

Insert webcam photos of
construction progress

VEGP 3&4 Overview

- Commercial Operation – April 2016



VEGP 3&4 Overview



Amy Aughtman, AP1000 Licensing Lead

VEGP 3&4 Overview

- **COLA submitted March 28, 2008**
 - Incorporated by Reference DCD
 - Incorporated by Reference ESP Application
 - Notification of transition of VEGP as RCOLA April 28, 2009
 - ESP/LWA received August 26, 2009

- **FSAR content primarily Standard information**
 - Most site-specific information addressed in the ESP

Integration of ESP

- Integration of the ESP is noted by
 - IBR statements where appropriate
 - Left-hand Margin Annotations throughout the FSAR
 - VEGP ESP PC#
 - VEGP ESP COL X.Y-#
 - VEGP ESP VAR X.Y-#
- ESP Permit Conditions, Action Items, and Variances identified in Chapter 1
 - Table 1.6-202 provides cross-reference of ESP sections incorporated and indicates any variances
 - Table 1.8-203 provides cross-reference for ESP COL items
 - Table 1.8-204 provides cross-reference for Permit Conditions

**Vogtle Electric Generating Plant, Units 3 & 4
COL Application
Part 2 — FSAR**

Table 1.6-202 (Sheet 1 of 4)
Cross Reference of ESPA SSAR Sections Incorporated by
Reference into FSAR Sections

VEGP SUP 1.6-2

	SSAR Section	SSAR Section Title	Corresponding FSAR Section
	1.1	Introduction	SSAR Section 1.1 provides general information related to the ESP proceeding, and is not applicable to any particular FSAR section.
VEGP ESP VAR 1.2-1	1.2	General Site Description	Section 1.1.1 Plant Location. This ESPA SSAR Section is Incorporated by Reference into FSAR Subsection 1.1.1 with the exception of Figures 1-4 and 1-5. COLA Part 7 requests a variance for this ESPA section.
VEGP ESP VAR 2.3-1	1.3	Site Characteristics, Design Parameters, and Site Interface Values	Section 2.0, Site Characteristics. This ESPA SSAR Section is Incorporated by Reference into FSAR Section 2.0 with the exception of Table 1-1 values for Maximum Normal Dry- and Wet-Bulb temperatures and Minimum Dry Bulb temperature. COLA Part 7 requests a variance for this ESPA table.
	1.4	Identification of Agents and Contractors	Section 1.4, Identification of Agents and Contractors
	1.5	Requirements for Further Technical Information	Section 1.5, Requirements for Further Technical Information
VEGP ESP VAR 1.6-1	1.6	Material Incorporated by Reference	This ESPA SSAR section is not Incorporated by Reference into the FSAR. This section of the ESPA SSAR includes a reference to Revision 15 of the AP1000 DCD. COLA Part 7 requests a variance for this ESPA section.
	1.7	Drawings and Other Detailed Information	Section 1.7, Drawings and Other Detailed Information

Vogtle Electric Generating Plant, Units 3 & 4
COL Application
Part 2 — FSAR

VEGP SUP 1.8-3

Table 1.8-203
ESP COL Action Item/FSAR Section Cross-References

ESP COL ITEM	SUBJECT	FSAR SECTION
2.2-1	Hydrazine Hazard from Onsite Storage Tanks	2.2.3.2.3.1
2.2-2	Other Chemical Hazards from Onsite Storage Tanks	2.2.3.2.3.2
2.3-1	Ultimate Heat Sink Design	2.3.1.4
2.4-1	Chelating Agents	11.2.2.1.6
13.6-1	Access Control Measures to Address Existing Rail Spur	13.6.2

**Vogtle Electric Generating Plant, Units 3 & 4
COL Application
Part 2 — FSAR**

VEGP SUP 1.8-5

Table 1.8-204 (Sheet 1 of 2)
ESP Permit Conditions (PC) Cross References

NO.	ESP PERMIT CONDITION	COLA LOCATION
1	The ESP holder shall either remove and replace, or shall improve, the soils directly above the blue bluff marl for soils under or adjacent to Seismic Category 1 structures, to eliminate any liquefaction potential.	Part 10 Appendix B, Safety-Related Backfill ITAAC
2	An applicant for a combined license (COL) referencing this early site permit shall revise the EALs for Unit 3 to reflect the final revision of NEI 07-01.	FSAR Subsection 13.3.8 Part 10, License Condition 4
3	An applicant for a combined license (COL) referencing this early site permit shall revise the EALs for Unit 4 to reflect the final revision of NEI 07-01.	FSAR Subsection 13.3.8 Part 10, License Condition 4
4	An applicant for a combined license (COL) referencing this early site permit shall submit a fully developed EAL scheme for Unit 3 that reflects the completed AP1000 design details, subject to allowable ITAAC.	FSAR Subsection 13.3.8 Part 10, License Condition 4
5	An applicant for a combined license (COL) referencing this early site permit shall submit a fully developed EAL scheme for Unit 4 that reflects the completed AP1000 design details, subject to allowable ITAAC.	FSAR Subsection 13.3.8 Part 10, License Condition 4
6	An applicant for a combined license (COL) referencing this early site permit shall complete a fully developed set of EALs for Unit 3, which are based on in-plant conditions and instrumentation, including onsite and offsite monitoring, and which have been discussed and agreed on by the applicant or licensee and State and local governmental authorities, and shall include the full set of EALs in the COL application. If the EALs are not fully developed, the COL application shall contain appropriate ITAAC for the fully developed set of EALs for Unit 3.	FSAR Subsection 13.3.8 Part 10, License Condition 4

Integration of ESP

- **Examples from Chapter 11 follow**

- **ESP COL Action Item 2.4-1**

A COL or CP applicant will need to confirm that no chelating agents will be comingled with radioactive waste liquids and that such agents will not be used to mitigate an accidental release. Alternatively, the applicant should repeat the distribution coefficient experiments with chelating agents included, and incorporate these newly determined distribution coefficients into the analysis to demonstrate that 10 CFR Part 20, Appendix B, Table 2 is satisfied.

Vogtle Electric Generating Plant, Units 3 & 4
COL Application
Part 2 — FSAR

- Tank overflows are routed to floor drains.
- Floor drains are confirmed to be functional prior to placing mobile or temporary equipment into operation.

11.2.2.1.6 Prevention of Commingling of Chelating Agents With Radioactive Liquids



VEGP ESP COL 2.4-1 Chelating agents, as defined in 10 CFR 61.2, are not routinely used in liquid radioactive waste processing at VEGP Units 1 and 2, and similarly, they will not be routinely used in liquid radioactive processing at VEGP Units 3 and 4. In the event chelating agents are required for a specific purpose (such as cleaning of steam generators or other plant systems), an evaluation will be conducted prior to use, and specific controls will be implemented to ensure that wastes are segregated and managed appropriately to prevent commingling with plant's normal liquid radwaste system.

11.2.3 RADIOACTIVE RELEASES

Add the following new paragraph at the end of DCD Subsection 11.2.3:

VEGP SUP 11.2-2 The only liquid effluent site interface parameter outside of the Westinghouse scope is the release point to the Savannah River.

11.2.3.3 Dilution Factor

Add the following information at the end of DCD Subsection 11.2.3.3.

VEGP COL 11.2-2 The site-specific dilution factor is addressed in Subsection 11.2.3.5.

11.2.3.5 Estimated Doses

Vogtle Electric Generating Plant, Units 3 & 4
COL Application
Part 2 — FSAR

Replace DCD Subsection 11.2.3.5 with the following.

VEGP COL 11.5-3 **Subsection 11.2.3** of the referenced ESPA SSAR is incorporated by reference with the following variances and/or supplements.

Add the following at the end of **ESPA SSAR Subsection 11.2.3.2**.

VEGP COL 11.2-2 **ESPA SSAR Table 11.2-7** reports a total body population dose from liquid effluents within 50 miles of VEGP Units 3 and 4 of 0.037 person-rem/year or 0.019 person-rem/year per reactor. In addition, the corresponding thyroid dose has been calculated to be 0.0022 person-rem/year per reactor.

11.2.3.5.1 Liquid Radwaste Cost Benefit Analysis Methodology

STD COL 11.2-2 The application of the methodology of Regulatory Guide 1.110 was used to satisfy the cost benefit analysis requirements of 10 CFR Part 50, Appendix I, Section II.D. The parameters used in calculating the Total Annual Cost (TAC) are fixed and are given for each radwaste treatment system augment listed in Regulatory Guide 1.110, including the Annual Operating Cost (AOC) (Table A-2), Annual Maintenance Cost (AMC) (Table A-3), Direct Cost of Equipment and Materials (DCEM) (Table A-1), and Direct Labor Cost (DLC) (Table A-1). The following variable parameters were used:

- Capital Recovery Factor (CRF) -This factor is taken from Table A-6 of Regulatory Guide 1.110 and reflects the cost of money for capital expenditures. A cost-of-money value of 7% per year is assumed in this analysis, consistent with the "Regulatory Analysis Guidelines of the U.S. Nuclear Regulatory Commission" (NUREG/BR-0058). A CRF of 0.0806 was obtained from Table A-6.
- Indirect Cost Factor (ICF) -This factor takes into account whether the radwaste system is unitized or shared (in the case of a multi-unit site) and is taken from Table A-5 of Regulatory Guide 1.110. It is assumed that the radwaste system for this analysis is a unitized system at a 2-unit site, which equals an ICF of 1.625.
- Labor Cost Correction Factor (LCCF) -This factor takes into account the differences in relative labor costs between geographical regions and is taken from Table A-4 of Regulatory Guide 1.110. A LCCF of 1.0 (the lowest value) is assumed in this analysis.

Appendix I to 10 CFR Part 50 prescribes a \$1,000 per person-rem criterion for determining the cost benefit of actions to reduce radiation exposure.



AP1000
DCWG



AP1000





United States Nuclear Regulatory Commission

Protecting People and the Environment

Presentation to the ACRS Subcommittee

Vogtle Units 3 and 4 COL Application Review

Ravi Joshi, Senior Project Manager (AP1000 Projects)

June 24 -June 25, 2010

Purpose

- To provide the ACRS an overview of the staff's safety review and conclusions on:
 1. The Vogtle Electric Generating Plant (VEGP) Combined License (COL) Application
 2. The VEGP Second Limited Work Authorization (LWA) Request
- Address the Subcommittee's question

Milestones

Completed Milestones:

- Received VEGP COL Application-3/28/2008
- Acceptance Review Completed-5/30/2008
- VEGP designated as RCOLA-4/28/2009
- Vogtle ESP/First LWA granted—8/26/09
- Received the Second LWA request-10/6/2009
- Safety Review Phases 1 through 3 are complete

Remaining Milestones (Schedule currently under review):

- Phase 4--Advanced Final Safety Evaluation report (AFSER) are issued on chapter Basis
- ACRS Full Committee Meeting-12/10
- Phase 5—ACRS Review of AFSER-2/11
- Final SER Issuance-4/11
- Mandatory Hearing to start--Assumed-4/11
- Commission Decision Assumed—Fall 2011

Vogtle COL Application

- Vogtle COL application incorporates the ESP site safety analysis report (SSAR) and incorporates by reference the Westinghouse AP1000 Design Certification (DC) and DC amendment.
- Vogtle ESP/LWA1 was granted on August 26, 2009.
- Vogtle Application consists of:
 - Material incorporated by reference (IBR) from portions of the ESP and DCD
 - Staff's safety evaluation for ESP and DC reflected in NUREG-1923 and NUREG-1793 respectively.
 - Staff's safety evaluation of AP1000 DC amendment being developed.
 - Standard content material
 - Vogtle's safety evaluation for standard content generally references Bellefonte safety evaluation report with open items.
 - Vogtle's safety evaluation provides the basis for standard content open item resolution
 - Vogtle plant specific information

Vogtle COL Application

- Proposed Vogtle site located in eastern Burke County, GA (26 miles southeast of Augusta).
- Adjacent to and west of existing VEGP Units 1 and 2.
- Application for COL is for two additional reactors.
- COL applicant, Southern Nuclear Operating Company (SNC), submitted application on behalf of 4 co-owners: Georgia Power Company, Oglethorpe Power Corporation, Municipal Electric authority of Georgia, and the City of Dalton, GA,

ACRS Interactions--RCOL

- AP1000 COL Standard Content Review
 - 18 of 19 SER with open items chapters issued; most presented
- Areas where standard content SER has not yet been provided
 - Chapters 3.7/3.8 and 6
 - Cyber security and fitness for duty
 - Loss of large areas due to fires/explosions
 - Security (outside of ACRS charter)
- The Advanced Final Safety Evaluation Report (AFSER) is being issued on a chapter-by-chapter basis
- All open items on standard content will be resolved prior to chapter issuance. Plant-specific issues will be resolved prior to chapter issuance. Some confirmatory items may remain.
- Multiple meetings are planned with ACRS AP1000 subcommittee through the calendar year

Example Technical Evaluation

- Technical Evaluation

- The Nuclear Regulatory Commission (NRC) staff reviewed Chapter 4 of the VEGP COL FSAR and checked the referenced DCD to ensure that the combination of the DCD and the COL application represents the complete scope of information relating to this review topic. The NRC staff's review confirmed that the information contained in the application and incorporated by reference addresses the required information relating to the reactor internals, control rod drive and core support structural materials, fuel system design (fuel rods and fuel assemblies), the nuclear design, and the thermal-hydraulic design. The results of the NRC staff's evaluation of the information incorporated by reference in the VEGP COL application are documented in NUREG-1793 and its supplements.

Example Technical Evaluation

- Section 1.2.3 of this safety evaluation report (SER) provides a discussion of the strategy used by the NRC to perform one technical review for each standard issue outside the scope of the design certification (DC) and used this review in evaluating subsequent COL applications. To ensure that the staff's findings on standard content that were documented in the SER with open items issued for the Bellefonte Nuclear Plant (BLN), Units 3 and 4 COL application were equally applicable to the VEGP Unit 3 and 4 COL application, the staff undertook the following reviews:
 - The staff compared the BLN COL FSAR, Revision 1 to the VEGP COL FSAR. In performing this comparison, the staff considered changes made to the VEGP COL FSAR (and other parts of the COL application, as applicable) resulting from requests for additional information (RAIs) and open and confirmatory items identified in the BLN SER with open items.
 - The staff confirmed that all responses to RAIs identified in the corresponding standard content (the BLN SER) evaluation were endorsed.
 - The staff verified that the site-specific differences were not relevant.
- The staff has completed its review and found the evaluation performed for the standard content to be directly applicable to the VEGP COL application. This standard content material is identified in this SER by use of italicized, double-indented formatting. There was a confirmatory item (Confirmatory Item 4.4-1) related to the standard content in the BLN SER. Its resolution is addressed in this SER.

AP1000 Reference Combined License Application Presentation to ACRS Chapter 4 Topics

June 24, 2010

R-COLA Chapter 4: Standard Topics

Reactor

- 4.1 Summary Description
- 4.2 Fuel System Design
- 4.3 Nuclear Design
- 4.4 Thermal and Hydraulic Design
- 4.5 Reactor Materials
- 4.6 Functional Design of Reactivity Control Systems

R-COLA Chapter 4: Major Topics

- DCD incorporated by reference
 - No Standard Departures taken
- One COL information item (previously discussed)
- No supplemental information
- No open items
- No VEGP specific items



AP1000
DCWG



AP1000



Bellefonte 3&4

Lee Nuclear 1&2

Summer 2&3

Vogtle 3&4

Harris 2&3

Levy 1&2

Turkey Point 6&7

6/24/2010

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United States Nuclear Regulatory Commission

Protecting People and the Environment

Presentation to the ACRS Subcommittee

Vogtle Units 3 and 4 COL Application Review

**AFSER Chapter 4
Reactor**

June 24-25, 2010

Staff Review Team

- Technical Staff
 - Yi-Hsiung (Gene) Hsui, Reactor Systems Branch
- Project Management
 - Sujata Goetz

Overview

- There were no open Items for Chapter 4 of the Standard Content SER.

Technical topics of Interest:

- STD COL 4.4-2 Confirm assumptions for Safety Analyses DNBR limits

STD COL 4.4-2

- AP1000 COL Information item 4.4-2 Upon selection of the actual instrumentation, the COL Holder shall calculate the instrumentation uncertainties of the operating parameters and confirm the validity of the design-limit DNBR.
- STD COL 4.4-2:
“Following selection of actual plant operating instrumentation and calculation of the instrumentation uncertainties of the operating plant parameters, the design DNBR will be calculated using the RTDP with these instrumentation uncertainties and confirm that the design limit DNBR values as described in DCD Section 4.4 remain valid or that the safety analysis minimum DNBR bounds the new design limit DNBR values plus DNBR penalties, such as rod bow penalty. This will be completed prior to fuel load.”

STD COL 4.4-2 (cont'd)

- Part 10, License Condition 2, Item 4.4-2 Applicant proposed a license condition which will require the completion of the actions described in STD COL 4.4-2 prior to initial fuel load.
- NRC finds the proposed license condition that will require completing analysis prior to fuel load acceptable because the applicant will confirm that either the design limit DNBR values remain valid or the safety analysis minimum DNBR bounds the new design DNBR values plus DNBR penalties, such as rod bow penalty.

AP1000 Reference Combined License Application Presentation to ACRS Chapter 11 Standard Topics

June 24, 2010

R-COLA Chapter 11: Standard Topics

Radioactive Waste Management

- 11.1 SOURCE TERMS
- 11.2 LIQUID WASTE MANAGEMENT SYSTEMS
- 11.3 GASEOUS WASTE MANAGEMENT SYSTEM
- 11.4 SOLID WASTE MANAGEMENT
- 11.5 RADIATION MONITORING

R-COLA Chapter 11: Major Topics

- DCD incorporated by reference
 - No Standard or Plant-Specific Departures taken
- COL information items (previously discussed)
- No Standard open items
- VEGP specific items
 - Alternatives for Class B and C waste
 - Long term onsite storage of radioactive waste



AP1000
DCWG



AP1000



Bellefonte 3&4

Lee Nuclear 1&2

Summer 2&3

Vogtle 3&4

Harris 2&3

Levy 1&2

Turkey Point 6&7

6/24/2010

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AP1000 Reference Combined License Application Presentation to ACRS Chapter 12 Standard Topics

June 24, 2010

R-COLA Chapter 12: Standard Topics

Radiation Protection

- 12.1 ASSURING THAT OCCUPATIONAL RADIATION EXPOSURES ARE AS-LOW-AS-REASONABLY ACHIEVABLE (ALARA)
 - 12.2 RADIATION SOURCES
 - 12.3 RADIATION PROTECTION DESIGN FEATURES
 - 12.4 DOSE ASSESSMENT
 - 12.5 HEALTH PHYSICS FACILITIES DESIGN
- APPENDIX 12AA – RADIATION PROTECTION PROGRAM

R-COLA Chapter 12: Major Topics

- DCD incorporated by reference
 - No standard departures taken
 - One plant-specific departure regarding location of OSC
- COL information items (Previously discussed)
- Standard open items
 - OI 12.1-1 Adopt the approved version of the NEI 07-08A template on ALARA
 - OI 12.3-1 Adopt the approved version of the NEI 08-08A template on Minimization of Contamination
 - OI 12.4-1 Monitoring program for construction worker dose
- Adopt the approved version of the NEI 07-03A template on Radiation Protection

R-COLA Chapter 12: Major Topics

- VEGP specific items
 - Estimated dose to construction workers



AP1000
DCWG



AP1000



Bellefonte 3&4

Lee Nuclear 1&2

Summer 2&3

Vogtle 3&4

Harris 2&3

Levy 1&2

Turkey Point 6&7

6/24/2010

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Presentation to the ACRS Subcommittee

Vogtle Units 3 and 4 COL Application Review

**AFSER Chapter 11
Radioactive Waste Management**

June 24 - 25, 2010

Staff Review Team

- Technical Staff
 - Steven Schaffer, Health Physics Branch
- Project Management
 - Donald Habib

Overview

- Chapter 11 of the FSAR is a combination of information from three sources:
 - Standard content from the AP1000 COL
 - QA commitments
 - Waste processing by mobile equipment
 - Operational programs (Radiological Effluent Monitoring, Radiological Environmental Monitoring, and Process Control programs)
 - There were no open items for the Chapter 11 standard content
 - Site specific information from the Vogtle Early Site Permit (ESP)
 - Individual offsite doses (10 CFR 50 Appendix I and 40 CFR 190)
 - Liquid waste tank failure
 - Additional application specific information
 - Cost-benefit analysis for liquid and gaseous waste management systems
 - Plan for possible long term storage of Class B & C low-level radioactive waste

Technical Topics of Interest

- Cost-Benefit of Radwaste System Augments
- Routine Doses and Comparison to Regulatory Criteria
- Disposal Planning for Class B and C LLW

Cost-Benefit of Radwaste System Augments

- Liquid System Augment
 - About \$590,000 per person-rem (whole body)
 - About \$5 million per person-rem (thyroid)
- Gaseous System Augment
 - About \$8,400 per person-rem (whole body)
 - About \$2,500 per person-rem (thyroid)

Doses from Routine Liquid and Gaseous Releases and Comparison to Regulatory Criteria

Regulation	Type of Effluent	Pathway	Organ	Regulatory Limit (mrem/yr per unit)	Applicant SAR (mrem/yr per unit)	NRC SER (mrem/yr per unit)
10 CFR 50, Appendix I	Liquid	all	total body	3	0.017	0.001
		all	any organ	10	0.021	0.012
	Gaseous	all	total body	5	0.56	0.56
		all	skin	15	2.2	2.2
	Iodine & Particulate	all	any organ	15	5.9	5.9
	Gaseous	γ air dose	n/a	10 mrad	0.67 mrad	0.67 mrad
		β air dose	n/a	20 mrad	2.8 mrad	2.8 mrad
40 CFR 190	all	all	total body	25 per site	2.4 (4 units)	2.4 (4 units)
	all	all	thyroid	75 per site	12 (4 units)	12 (4 units)
	all	all	other organs	25 per site	8.9 (4 units)	8.9 (4 units)

- Dose estimates were incorporated by reference from the Vogtle ESP

Plan for Long Term Storage of Class B & C Low-Level Waste

- Staff requested contingency plan should there be no permanent waste disposal
- Applicant responded with a plan containing 4 options
 - Extend storage capacity of AP1000 by prudently managing waste throughput
 - Use vendor services to process and store waste
 - Gain access to other SNC site storage facilities (Vogtle 1&2, Farley, and Hatch)
 - Build an onsite storage pad meeting the design and operational criteria in SRP 11-4, Appendix A and other industry guidance
- Staff concluded that the applicant demonstrated that it could safely handle and store any waste that might accumulate due to any potential unavailability of permanent disposal



Presentation to the ACRS Subcommittee

Vogtle Units 3 and 4 COL Application Review

**AFSER Chapter 12
Radiation Protection**

June 24-25, 2010

Staff Review Team

- Technical Staff
 - Edward Roach, Health Physics Branch
- Project Management
 - Donald Habib

Overview

- Standard Content Open Items
 - Open Item 12.1-1 – Compliance with 10 CFR 20.1101(b) (ALARA)
 - Open Item 12.3-1 – Compliance with 10 CFR 20.1406 (Minimization of Contamination)
- Site-Specific Topics of Interest
 - Construction worker program to maintain dose ALARA
- Technical Topics of Interest
 - Open Item 12.3-1 (Standard)
 - Construction worker program to maintain dose ALARA

Open Item 12.3 -1

- **Issue:**
 - The applicant needed to demonstrate compliance with 10 CFR 20.1406, Minimization of Contamination.
- **Resolution:**
 - The applicant revised the FSAR to commit to NEI 08-08A, Generic FSAR Template Guidance for Life Cycle Minimization of Contamination. The applicant also provided site-specific information on how the exterior radwaste discharge piping was designed to control the release of radioactivity.
 - Staff review concluded that the applicant has provided acceptable operational programs (as described in NEI 08-08A) and site-specific information for the minimization of contamination to demonstrate compliance with 10 CFR 20.1406.

Construction Worker ALARA Program

- Issue:
 - The applicant needed to describe the program that will ensure the construction workers will be monitored and that exposures will be minimized and maintained ALARA in accordance with 10 CFR 20.1101(b).
- Resolution:
 - The applicant revised the FSAR to include a supplement addressing conduct of surveys in uncontrolled and restricted areas
 - In response to RAIs, the applicant provided additional information and revised the FSAR (Site-Specific)
 - TLD data for direct radiation from existing VEGP Units 1 and 2
 - Estimates of direct radiation exposures resulting from future ISFSI
 - Estimates of direct radiation exposures resulting from future VEGP Units 3 and 4
 - Estimates of exposures resulting from VEGP Units 1, 2, and 3 gaseous and liquid effluents
 - Staff's review concluded that the applicant has estimated the dose to construction workers and provided for the conduct of surveys to demonstrate compliance with 10 CFR 20.1301.



United States Nuclear Regulatory Commission

Protecting People and the Environment

Presentation to the ACRS Subcommittee

AP1000 Design Certification Amendment

**AFSER Chapter 23
Design Change Packages**

June 24-25, 2010

Staff Review Team

Project Management

- Brian Anderson
- David Jaffe

Overview

- During the Design Certification Amendment Review, Westinghouse has Proposed to Include New Design Changes in Revision 18 to The DCD. These New Changes Have Been Organized by Westinghouse Into Design Change Packages (DCPs) Containing Descriptive Information and Proposed Changes to the DCD.
- The DCPs That Meet One or More of the ISG-11 Criteria Must be Submitted to the NRC Staff; Other DCPs are “Elective.”

Overview

- Since January 2010, Westinghouse has Made Several Submittals Containing a Total of 67 DCPs.
 - 17 DCPs Meet One or More of the ISG-11 Criteria
 - The Remaining 50 are “Elective”
 - The NRC Staff has Met with Westinghouse Several Times to Discuss The DCPs
- The NRC Staff has Initiated Reviews of the DCPs. The Final Scope of DCPs that will be Included in DCD Revision 18 will be Determined by June 30, 2010.
- In Order to Allow Closure of SER Chapters Associated with the DCPs, the Completed DCP Evaluations will be Presented in a Single, Separate AFSER Chapter.



United States Nuclear Regulatory Commission

Protecting People and the Environment

Presentation to the ACRS Subcommittee

AP1000 Design Certification Amendment

AFSER Chapter 22

Regulatory Treatment of Non-safety Systems

June 24-25, 2010

Staff Review Team

- Technical Staff
 - Malcolm Patterson – PRA Branch
- Project Management
 - David Jaffe

Overview

- Chapter 22 of the SER was not previously presented to the Subcommittee.

Ancillary Equipment

- In RAI-19.0-SPLA-20, the staff asked for clarification of the characteristics and arrangement of ancillary equipment to assess post-seventy-two-hour access to critical safety-function support equipment.
- The applicant's response included editorial revisions to the DCD.
- No change to AP1000 certified design was involved.
- The staff's supplement to the FSER makes it consistent with the certified design.

**AP1000 Design Control Document
Amended Design
Review of Chapter 10
ASER with No Open Items**

June 24-25th, 2010

Chapter 10 - Steam And Power Conversion

- Chapter 10 describes the following systems:
 - Main Steam Supply
 - Turbine Generator
 - Supporting Equipment

Chapter 10 - Open Items

Five Open Items were identified and subsequently closed:

- OI-SRP10.2.3-CIB1-01
 - Low Trajectory Turbine Missile Analysis
- OI-SRP10.2.3-CIB1-02
 - Resolve Order of Magnitude Discrepancy
- OI-SRP10.2-SBPA-01
 - Overspeed Protection System Design Meets Single-Failure Criterion
- OI-SRP10.2-SBPA-02a
 - ITAAC on diverse hard/firm/software between overspeed trips
- OI-SRP10.2-SBPA-02b
 - Backup Turbine Speed Sensors: Magnetic

Chapter 10 - OI-SRP10.2.3-CIB1-01

- **Issue:**
 - Low Trajectory Turbine Missile Analysis
- **Final Resolution:**
 - WCAP-16650-P determined the probability of generating a missile due to a burst turbine rotor. Therefore, the analysis results can be used as an input for evaluating the strike probabilities for low- as well as high-trajectory missiles. (AP1000 meets the unfavorable turbine orientation criteria defined in SRP 3.5.1.3.)

Chapter 10 - OI-SRP10.2.3-CIB1-02

- **Issue:**
 - Resolve Order of Magnitude Discrepancy
- **Final Resolution:**
 - WCAP-16651-P, Rev. 1 resolved the typographical error. The corrected value in Table 6-5 of Rev. 1 is now consistent with the calculated value of the annual probability of a turbine missile used to support the six-month valve test interval. The conclusions and results of this report were based on the correct value and therefore are unaffected by the revision.

Chapter 10 - OI-SRP10.2-SBPA-01

- **Issue:**
 - Overspeed Protection System Design Meets Single-Failure Criterion

- **Final Resolution:**
 - DCD Tier 2 Section 10.2.2.5.3 will state *“The overspeed protection system will function for all abnormal conditions, including a single failure of any component or subsystem.”*
 - Now Confirmatory Item CI-SRP10.2-SBPA-01

Chapter 10 - OI-SRP10.2-SBPA-02a

- **Issue:**

- ITAAC on diverse hard/firm/software between the two overspeed trips

- **Final Resolution:**

- The ITAAC now verifies diverse hardware and software / firmware via design review, testing, and documentation.
- DCD Section 10.2.2.5.3 now states that diverse hardware and software / firmware eliminate common cause failures (CCFs) from rendering the trip functions inoperable
- Added Fig. 10.2-2 “Emergency Trip System Functional Diagram”
- Now Confirmatory Item CI-SRP10.2-SBPA-02a

Chapter 10 - OI-SRP10.2-SBPA-02b

- **Issue:**
 - Backup Turbine Speed Sensors: Magnetic
- **Final Resolution:**
 - DCD Section 10.2.2.5.3 now states that an independent and redundant backup electrical overspeed trip circuit senses the turbine speed by magnetic pickup.
 - Now Confirmatory Item CI-SRP10.2-SBPA-02b

Questions?

AP1000 DCD
Closure of Chapter 10
ACRS Questions

June 24-25th, 2010

Remaining Issue Topics

- AP1000 Turbine Missile Technical Reports
- Reduction in Turbine Valve Testing Frequency
- Turbine Valve Testing Method per ITAAC
- DCD Changes for Overspeed Protection Diversity
- Separate Overspeed Protection power supplies

AP1000 Turbine Missile Technical Reports

- The DCD R15 AP1000 Design Certification is based on use of a Mitsubishi turbine-generator.
- Westinghouse DCP-216 incorporated the Toshiba turbine-generator into the AP1000 design.
- Technical Report APP-GW-GLN-018 (TR-86) was prepared and submitted to the NRC describing the DCD changes proposed by DCP-216.

AP1000 Turbine Missile Technical Reports (cont.)

- Applicable WCAP reports were revised to replace Mitsubishi turbine-generator data with Toshiba data as input, using the same methodology
- WCAP-16651 uses Toshiba operating experience

MHI (DCD R15)	Toshiba (R16)	Subject
WCAP-15783	WCAP-16650	“Analysis of the Probability of the Generation of Missiles from Fully Integral Nuclear Low Pressure Turbines”
WCAP-15785	WCAP-16651	“Probabilistic Evaluation of Turbine Valve Test Frequency”

Turbine Valve Testing Frequency

- AP1000 DCD Revision 15 committed to performing a Turbine Valve Test every 3 months, based on the test frequency analysis results in WCAP-15785.
- DCD Revision 16 changed the Turbine Valve Test interval to once every 6 months, based on the test frequency analysis results in WCAP-16651.

Turbine Valve Testing Frequency (cont.)

- WCAP-16650 evaluates four missile-generating turbine rotor failure modes (as was done in WCAP-15783 for the Mitsubishi turbine):
 - **1) Ductile burst from destructive overspeed**
 - WCAP-16651 concludes that missile probabilities due to design overspeed $P(A)$ and intermediate overspeed $P(B)$ are negligibly small compared to destructive overspeed $P(C)$.
 - WCAP-16651 justifies a decrease of the minimum turbine valve test frequency to **once every 6 months** while still meeting the missile generation probability of $<1E-05$ per year. This meets the unfavorable turbine orientation criteria defined in SRP 3.5.1.3.

Turbine Valve Testing Frequency (cont.)

- The remaining missile generating turbine rotor failure modes, cracking due to **2) high-cycle fatigue, 3) low-cycle fatigue, or from 4) stress corrosion cracking (SCC)**, are bounded by the probability of the SCC case. (Note – Each rotor is an integral monoblock rotor machined from a single ingot – no disks or keyways are used, significantly minimizing potential SCC locations.)
 - WCAP-16650 justifies the minimum rotor inspection interval required to reduce missile generation probability to $<1E-05$ per year as **once every 24.7 years**. The AP1000 DCD commits to inspections being done **every 10 years**.

Turbine Valve Testing Frequency (cont.)

- In summary:
 - WCAP-16650 considers the probability of missile generation due to SCC damage to establish acceptable turbine inspection frequencies
 - WCAP-16651 considers the probability of missile generation due to destructive overspeed to establish acceptable turbine valve testing frequencies

Turbine Valve Testing Frequency (cont.)

- Furthermore, WCAP-11525 previously done in June 1987 evaluated increasing turbine valve test intervals to 6 months for numerous U.S. nuclear units.
- A 2010 survey of several operating U.S. nuclear units showed various test intervals consisting of:
 - 3 months
 - 6 months
 - Longer (up to 18 months) for the reheat stop and intercept valves at one unit

Turbine Valve Testing Frequency (cont.)

- The units surveyed include Shearon Harris, V.C. Summer, Vogtle, North Anna, Beaver Valley, Farley, Salem, and others. About half of these units test their turbine valves at 6 month intervals; the other half test at 3 month intervals.
- One U.S. nuclear unit over the past 20 years progressively increased their turbine valve test interval as follows:
 - Original (1987) test interval: monthly testing
 - In ~1997 changed to 3 month testing
 - Within the past several years changed to 6 month testing

Turbine Valve Testing Frequency (cont.)

- AP1000 DCD Tier 2 Section 10.2.3.6 states:

Turbine valve testing is performed at six month intervals. The semi-annual testing frequency is based on nuclear industry experience that turbine-related tests are the most common cause of plant trips at power. Plant trips at power may lead to challenges of the safety-related systems. Evaluations show that the probability of turbine missile generation with a semi-annual valve test is less than the evaluation criteria.

- AP1000 customers have advised a 6 month test interval is consistent with the trend in the industry to increase turbine valve testing

Turbine Valve Testing Frequency (cont.)

- In the Chapter 10 FSER, Section 10.2.10, NRC Staff concluded that the DCD changes resulting from the proposed decrease in the frequency of turbine-valve testing from every 3 months to every 6 months are acceptable.

ITAAC on Turbine Valve Testing Method

- The latest ITAAC indicates a full system test - from the simulation of the speed sensor input all the way to the closing of the valve.
 - Testing of the as-built system will be performed using simulated signals from the turbine speed sensors
 - The main turbine-generator trips after overspeed signals are received from the speed sensors of the 110% emergency electrical overspeed trip system
 - The main turbine-generator trips after overspeed signals are received from the speed sensors of the 111% backup electrical overspeed trip system.
- Both 110% and 111% trip systems will also be tested after each outage.

Summarize DCD Changes for Diversity

- DCD Tier 1, Section 2.4.2 & Table 2.4.2-1
 - the ITAAC confirms diversity
- Section 10.2.2.5.3, “Overspeed Trip Functions and Mechanisms”
 - Indicates “111% backup trip in the separate OA controller”
 - indicates that the two overspeed protection systems provide a level of redundancy and diversity at least equivalent to the recommendations for turbine overspeed protection found in III.2 of SRP Section 10.2.

Summarize DCD Changes for Diversity (cont.)

- Section 10.2.2.5.3, “Overspeed Trip Functions and Mechanisms” (Cont.)
 - Also, that the 110% and 111% trip systems have diverse hardware and software/firmware to eliminate common cause failures (CCFs) from rendering the trip functions inoperable.
- New DCD Figure 10.2-2, “Emergency Trip System Functional Diagram” visually indicates the two overspeed protection systems as having diverse hardware and software/firmware

Separate Power Supplies

- Providing separate power supplies is a basic design philosophy.
- Separate power supplies will be provided for the two overspeed trip systems.

Questions?



United States Nuclear Regulatory Commission

Protecting People and the Environment

Presentation to the ACRS Subcommittee

**AFSER Chapter 10
Steam and Power Conversion (SPC) Systems**

**Westinghouse AP1000 Design Certification Amendment
Application Review**

June 24 -25, 2010

Staff Review Team

- Technical Staff
 - Devender Reddy – Balance of Plant
 - Kenneth Mott – Electrical Engineering
 - John Honcharik – Component Integrity
- Project Management
 - Perry Buckberg

Overview

- Chapter 10 of the AP1000 DCA SER with Open Items (OIs) was issued with a total of 5 Open Items
 - All Open Items are Resolved
 - Open Items Being Presented
 - **OI-SRP 10.2-SBPA-2a**
 - **OI-SRP 10.2.3-CIB1-01**

OI-SRP 10.2-SBPA-02a

- Provide a Tier 1 ITAAC and Tier 2 Description to Confirm the Design Acceptance Criteria Requiring Diverse Hardware, Firmware, and Software Between the two (Primary and Emergency) Electrical Overspeed Trip Systems.
 - Applicant's Response:
 - DCD Mark-ups with a Tier 1 ITAAC and Tier 2 Description.
 - Tier 1 ITAAC Includes: Design Commitment, Inspection and Testing, and Acceptance Criteria which States:

A report exists and concludes that the two electrical overspeed protection systems within the PLS have diverse hardware and software/firmware.
 - Staff Evaluation:
 - Staff Reviewed the Applicant's Response, and Finds Acceptable Since it Meets the Regulatory Criteria. This OI is Closed (now a CI).

OI-SRP10.2.3-CIB1-01

- Dual-Unit Sites - Provide a Bounding Turbine-Missile Analysis for Low-Trajectory Missiles
 - Open Item was Resolved Since Westinghouse Clarified that the Bounding Missile Generation Probability Analysis is Applicable to High and Low Trajectory Missiles for Unfavorably Orientated Turbine Generators at Dual-unit Sites.
 - Std Sup 3.5-1 in the Applicable COL Applications also Address this Issue, which the Staff Found Acceptable as Discussed in a Previous ACRS Meeting.

AP1000 Reference Combined License Application Presentation to ACRS Chapter 10 Topics

June 25, 2010

R-COLA Chapter 10: Standard Topics

Steam and Power Conversion

- 10.1 Summary Description
- 10.2 Turbine-Generator
- 10.3 Main Steam Supply System
- 10.4 Other Features of Steam and Power Conversion System

R-COLA Chapter 10: Major Topics

- DCD incorporated by reference
 - No Standard or Site Specific Departures taken
- Five COL information items
- SER w/ Open Items contained one Open Item - resolved
- Chapter 10 includes supplemental information
- Chapter 10 includes VEGP Site Specific Items

R-COLA Chapter 10: Open Items

Open Item 10.1-1

The staff determine that the revised response to RAIs addressed all of the staff concerns with the FAC program, with the exception of identifying the program implementation schedule in the application. This was identified as Open Item 10.1-1

Resolution of Standard Content Open Item 10.1-1

VEGP proposed to include the FAC program as part of License Condition 6, "Operational Program Readiness." The staff reviewed the proposed changes and found the proposed changes acceptable. The revised License Condition was incorporated into Revision 2 of the COL application and verified by the staff. As a result, Open Item 10.1-1 is resolved with no confirmatory item.



AP1000
DCWG



AP1000



Bellefonte 3&4

Lee Nuclear 1&2

Summer 2&3

Vogtle 3&4

Harris 2&3

Levy 1&2

Turkey Point 6&7

6/25/2010

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Presentation to the ACRS Subcommittee

Vogtle Units 3 and 4 COL Application Review

**AFSER Chapter 10
Steam and Power Conversion**

June 24-25, 2010

Staff Review Team

- Technical Staff
 - Greg Makar - Component Integrity Branch
- Project Management
 - Sujata Goetz

Overview

- Chapter 10 of the Standard Content SER with Open Items was issued with one Open Item
 - List of Open Items
 - Open Item 10.1-1– Applicant did not add the Flow Accelerated Corrosion (FAC) Program Implementation Schedule and construction phase activities in the COL application.
 - Open Item 10.1-1 Resolved

Open Item 10.1-1

- Issue:
 - Applicant did not provide the FAC Program Implementation Schedule and construction phase activities with the COL application.
- Resolution:
 - In a letter dated July 16, 2009 proposed including the FAC program as part of License Condition 6, “Operational Program Readiness.” The proposed license condition is consistent with SECY-05-0197 and therefore, it was acceptable to the NRC.
 - The open item 10.1-1 is resolved.

Post Accident AP1000 Containment Leakage

**AP1000 Oversight Group
John Runkle
Fairewinds Associates, Inc
Arnie Gundersen**

Peer reviewed by Dr. Rudolf Hausler

**On March 9, 1982, former NRC Commissioner
Peter A. Bradford said,**

“If a Secretary of Agriculture endorsed better meat inspection, you wouldn't have a debate of near religious fervor about whether that a person was pro- or anti-meat, whether he had sold out to the vegetarians. You'd debate whether the stricter regulations made sense. It's somehow unique to nuclear power that, when one refuses to have nuclear power on the industry's terms, one gets chucked into a bin labeled 'anti-nuclear’.”

Arnie Gundersen

- MP1 MSIV
- Montague LRT briefed NRC
- MP3 Containment structural analysis
- VY NPSH
- Millstone 3 ACRS letter
- Beaver Valley ACRS letter
- AP1000 ACRS Letter
- Sr. V.P. of ASME XI inspection business



Millstone 3

Industry Experience through 2008

Detection of Aging Nuclear Power Plant Structures

Naus& Graves 1970-1999

“...at least 66 separate occurrences of degradation in operating containments...”

“...over 32 reported occurrences of corrosion of steel containments or liners...”

“Two instances ... where corrosion has completely penetrated the liner.”

“... four additional cases where extensive corrosion of the liner reduced the thickness ... by nearly one-half.”

Industry Experience through 2008

USNRC Information Notice 2004-09

Eight additional episodes of containment system degradation.

Through-wall hole in the liner of D.C. Cook, 2001

Three through-wall holes in the liner of Brunswick, 1999

Sixty pits (below minimum design value) D.C. Cook, 1998

Hatch 1 & 2 – Two through-wall cracks in steel containment.

Industry Experience through 2008

Nuclear Safety © 2007

Dr. Gianni Petrangeli, University of Pisa

“The picture that emerges is not very reassuring...the probability of overcoming the specification values...is...46% for PWR's”

“...for plants now under construction and for future ones, the tendency is to restrict the important consequences of severe accidents...”

Petrangeli recommends “...systems with a double containment with filtering of effluents from the annulus between the containments.”

Industry Experience through 2008

OIG -07-A-15

Page 21-23

“OIG’s analysis of this corrective action program indicates that the coatings aging management program had not been implemented consistent with the statements in the Oconee license renewal application.”

“...the staff did not offer any indication of having conducted an independent look at coatings operating experience.”

This condition existed for 10-years.

Example of Coatings Degradation at Oconee



Photo from: OIG-07-A-15



Beaver Valley 1

Industry Experience 2009 - 2010

Beaver Valley Liner Failure, April 2009

Leading up to this failure Beaver Valley told the NRC the following:

LRA 3.5-47 “Loss of material due to corrosion is not significant for inaccessible areas...”

LRA B2.8 & B2.9 “Identification of deficiencies and subsequent corrective actions, along with engineering evaluation of inspection results, provide reasonable assurance that the program will be effective for managing loss of material.”

LRA B2.9 “Conclusion: Continued implementation of the ASME Section XI... provides reasonable assurance that...structures...will continue to perform their intended functions.”

Industry Experience 2009 - 2010

Beaver Valley Liner Failure, April 2009

Leading up to this failure the NRC said the following about Beaver Valley:

SER, January 2009

“The applicant’s assurance of the use of...ASME Section XI...ensures that the applicant’s IWE program will be consistent with GALL...the staff finds the applicant’s exceptions acceptable.” pg. 3-102 to 107

“The applicant further stated that these additional examination requirements...provide reasonable assurance that potential corrosion on the concrete side of the containment liner plate will be identified and addressed.” pg.3-102 to 107

“The staff finds the applicants inspections...in accordance with ASME Section XI...to manage the loss of material due to general pitting and crevice corrosion are adequate because the aging effect has been effectively monitored. ” pg.3-589

Industry Experience 2009 - 2010

MP3 Secondary Containment Inoperable for 16 Days

Power Reactor	Event Number: 45969
Facility: MILLSTONE Region: 1 State: CT Unit: [] [] [3] RX Type: [1] GE-3,[2] CE,[3] W-4-LP NRC Notified By: NORMAN KUZEL HQ OPS Officer: VINCE KLCO	Notification Date: 06/01/2010 Notification Time: 16:57 [ET] Event Date: 06/01/2010 Event Time: 15:50 [EDT] Last Update Date: 06/01/2010
Emergency Class: NON EMERGENCY 10 CFR Section: 50.72(b)(3)(v)(C) - POT UNCNTRL RAD REL	Person (Organization): GLENN DENTEL (R1DO)

POTENTIAL LOSS OF RADIATION RELEASE CONTROLS

"On May 27, 2010, during a control board walkdown, it was discovered that two sets of auxiliary building tunnel exhaust dampers were open at the same time. This configuration created a path way from the secondary containment to the outside. The condition was immediately corrected. Additional investigation determined that this condition existed since May 11, 2010, when Millstone 3 was in Mode 5.

"Technical Specification 3.6.6.2 'Secondary Containment' is applicable in Modes 1, 2, 3, and 4. The condition discovered on May 27, 2010, rendered Secondary Containment inoperable. Further evaluation since the discovery date concludes that the secondary containment structure was in a condition which could prevent the fulfillment of the safety function for controlling the release of radioactive material. [On June 1, at 1550 EDT the licensee determined that the event was potentially reportable].

Industry Experience 2009 - 2010

ACRS Transcript July 9th, 2009 p.88, lines 6-11

Emphasis added

*“MEMBER RAY: At which point the condition of the concrete can't be taken credit for. So I guess I just think that **the idea that the leakage is going to be small from a small hole, from a hole this size, as small as Dan says, in the design-basis conditions isn't logically supportable because the concrete, you can't -- you, yourself said, you can't take credit for the concrete and the reason is because it's condition in the design-basis event can't be predicted, can't be credited. The only thing you can credit is the membrane itself.***

MEMBER SHACK: From a deterministic basis, you're correct. From a probabilistic basis, which is what they use and can take credit based on –

MEMBER RAY: I don't think so.

MEMBER SHACK: Well, that's the way it is.

MEMBER RAY: That's not right.”

Probability of primary/secondary containment breach

For the period between 6/09 to 7/10 there has been a primary containment breach at Beaver Valley and a secondary containment breach at Millstone 3. Fairewinds calculates the approximate probability of a complete containment breach as follows:

The BV primary containment hole existed for at least a year. The probability of primary containment failing would be 1% per year based on 100 reactors.

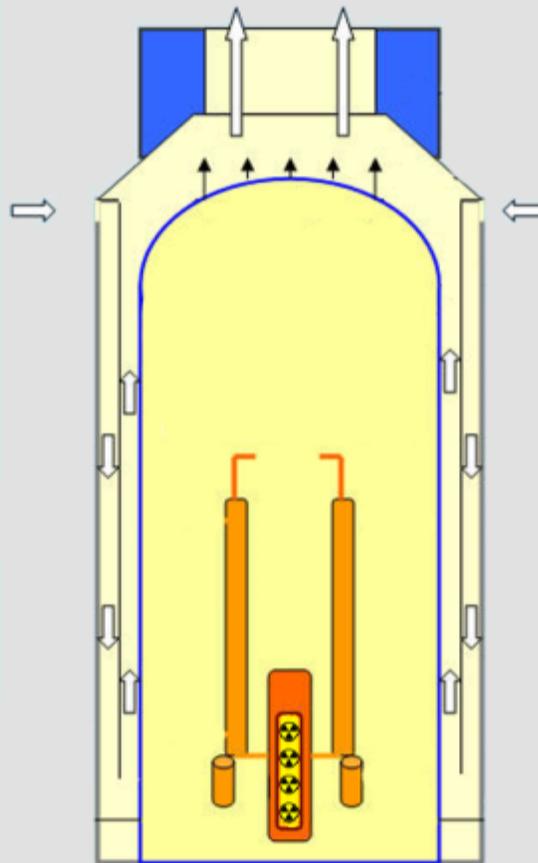
The MP3 breach lasted for two weeks. Therefore the probability of a secondary containment breach .035% of the time (2 weeks/56 weeks * 100 reactors).

The overall probability of the failure of both primary and secondary containment would therefore be .00035% or 1 in 285,000.

This is a significantly large probability that shows that the SAMBDA approach used by the AP1000 is not conservative.

AP1000 Containment

AP1000 Normal Operation



AP1000 Containment

During the AP1000 review, the staff expressed concerns about corrosive attack on the AP1000 containment. In response to concerns from the NRC in 2003, Westinghouse made the containment 1/8th inch thicker and added a nuclear-grade protective coating. The AP1000 has access ports to allow for visual examination of some portions of the outside of the containment.

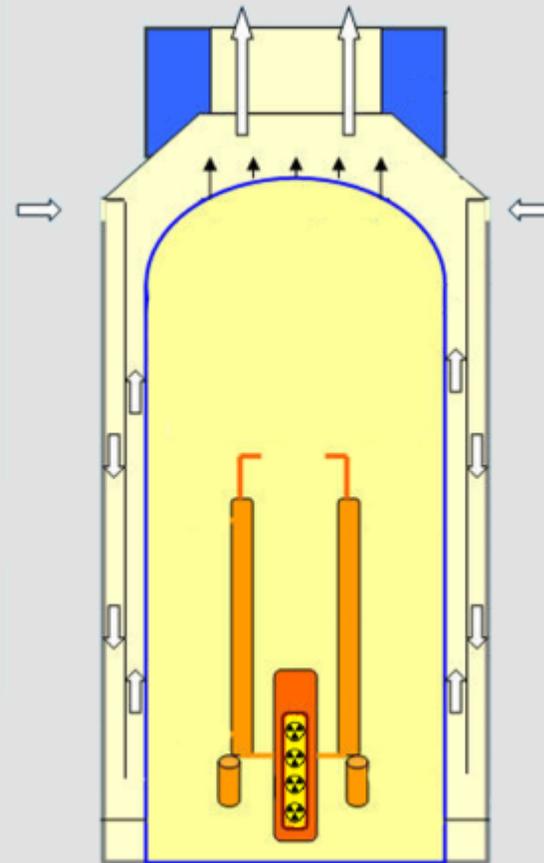
In the 2003 AP1000 SER the NRC stated:

“The staff noted there was no margin in the nominal design thickness for corrosion allowance.”

“The COL applicant will provide a program to monitor the coatings.”

“On the basis that enough corrosion allowance and proper corrosion protection were provided, the staff found the applicant’s response acceptable...”

AP1000 Normal Operation



Fairewinds Associates, Inc. (Adapted from Climateandfuel.com/gifs/ap1000.jpg)

AP1000 Containment

Fairewinds and Hausler have the following concerns with the NRC's analysis:

ASME XI inspection programs have historically missed flaws in the containment.

Application of protective coatings has historically allowed for coating degradation.

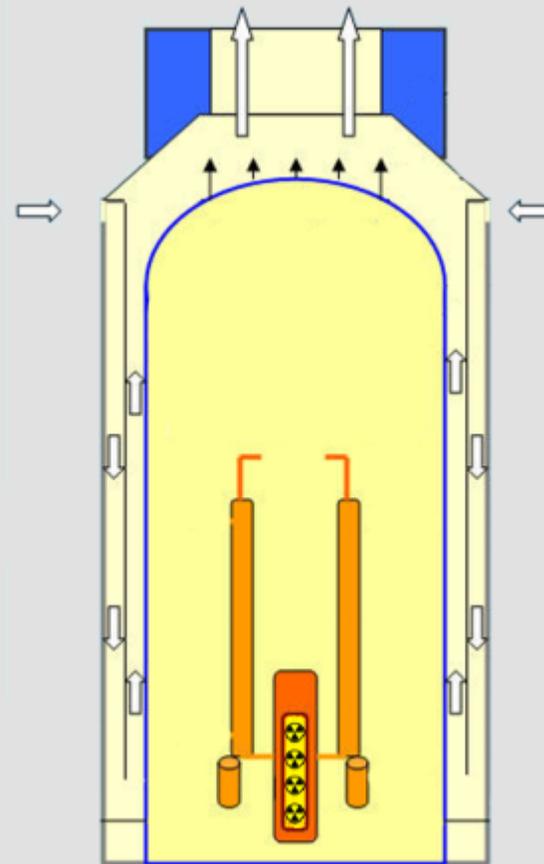
Wall-brackets on the outside of the AP1000 containment create crevices that allow for moisture build-up and creates a corrosive environment.

The junction between the wall and the floor creates a crevice that allows for moisture build-up and creates a corrosive environment.

The shield building breathes in moist outside air containing contaminants that can be deposited in crevices and cause corrosion.

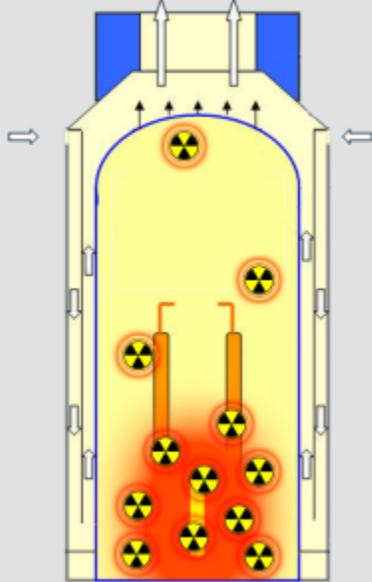
Hausler estimates corrosion rates as fast as 0.15 inches per year.

AP1000 Normal Operation



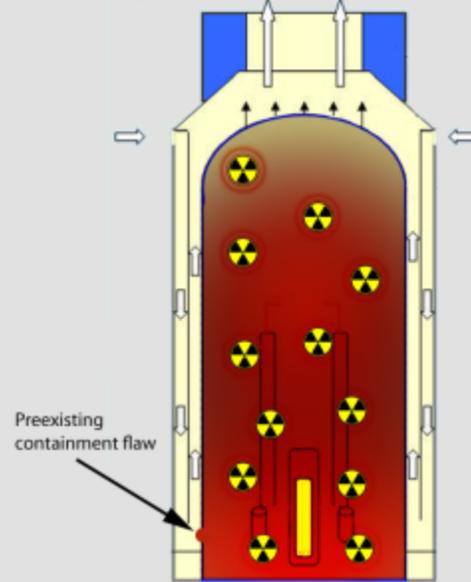
Proposed Accident Sequence

AP1000 Design Basis Accident Begins



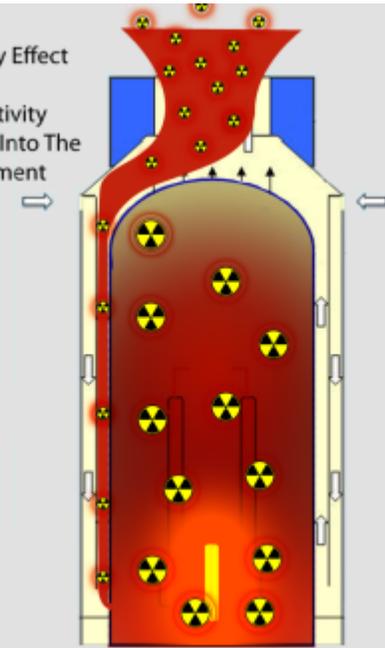
Fairwinds Associates, Inc. Adapted from [Climateandfu.com/gf/np/1000.pdf](http://climateandfu.com/gf/np/1000.pdf)

Containment Fills With Radioactive Gases
AP1000 Design Basis Accident Begins



Fairwinds Associates, Inc. Adapted from [Climateandfu.com/gf/np/1000.pdf](http://climateandfu.com/gf/np/1000.pdf)

AP1000
Chimney Effect
Draws
Radioactivity
Directly Into The
Environment



Fairwinds Associates, Inc. Adapted from [Climateandfu.com/gf/np/1000.pdf](http://climateandfu.com/gf/np/1000.pdf)

SAMDA or Design-Basis Event?

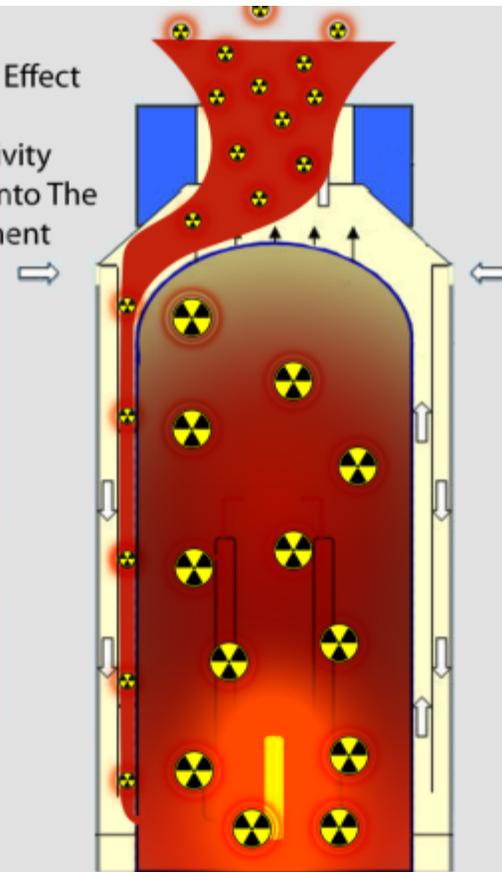
Westinghouse considers an Intact Containment “...to be within the design basis of the containment...”

“This is the ‘no-failure’ containment failure mode and it’s termed intact containment. The main location for fission/product leakage from the containment is penetration leakage into the auxiliary building...”

For its SAMDA analysis, Westinghouse assumes a late containment failure (CLF), a failure of the containment to isolate (CI), and bypass through an open piping system (BP).

For the CLF, CI, and BP scenarios, Westinghouse assumes that containment leakage is into other filtered areas of the plant and is not released directly into the environment.

AP1000
Chimney Effect
Draws
Radioactivity
Directly Into The
Environment



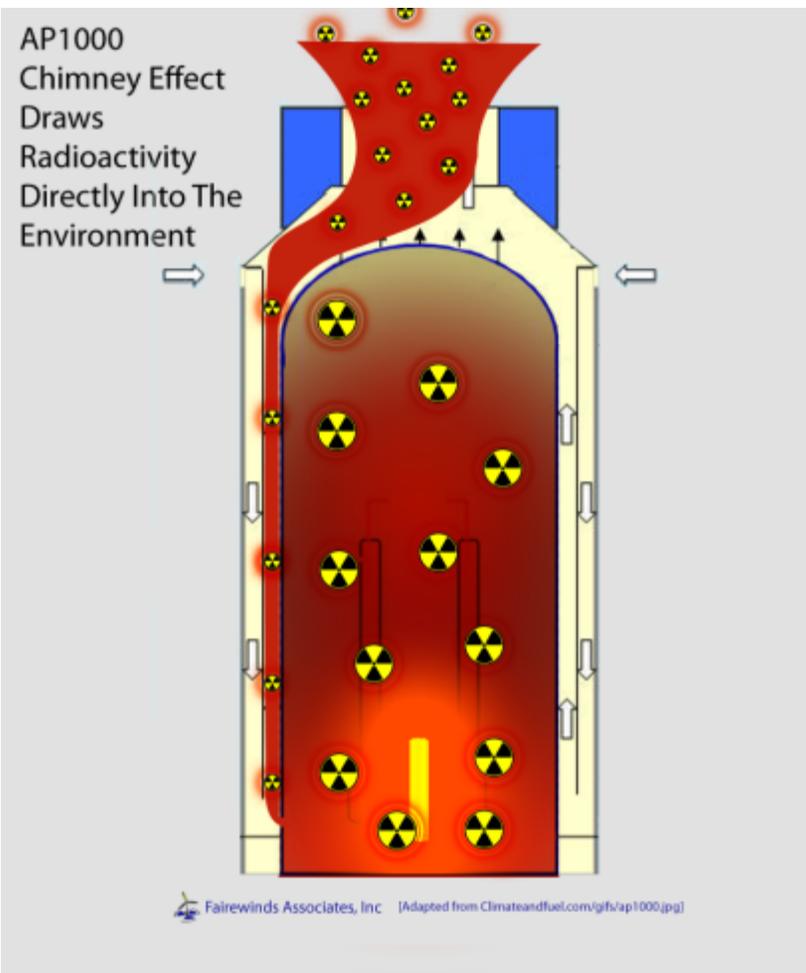
 Fairwinds Associates, Inc. [Adapted from Climateandfuel.com/gifs/ap1000.jpg]

SAMDA or Design-Basis Event?

Both Westinghouse and the NRC assume that ASME XI inspections and protective coatings applied to the outside of the AP1000 containment will reduce the risk of a pinhole leak to **ZERO**.

Fairewinds analysis of 40-years of problems associated with the integrity of containment shows there is a relatively high probability of a pinhole leak in the AP1000 containment.

Should this pinhole leak exist, post accident pressures of 50-psi inside the containment will push radioactive gases into the annular gap causing off-site doses to exceed 10 CFR 100 allowable exposure levels.



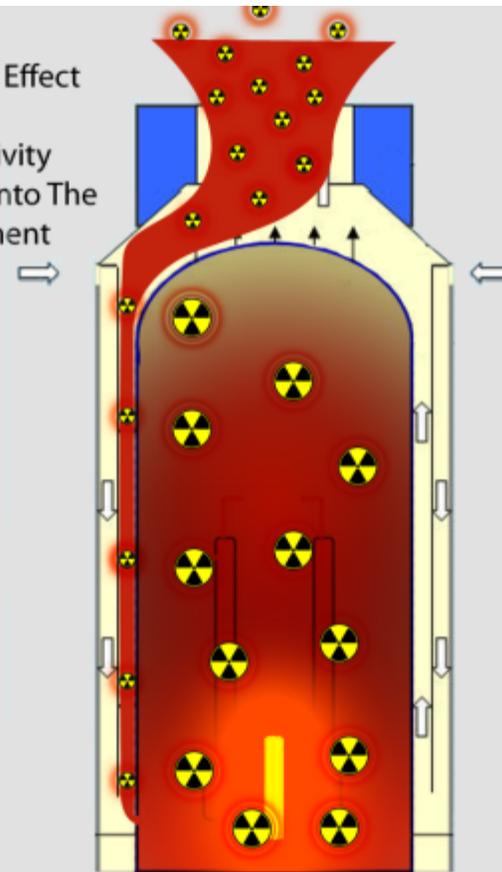
Filtered Ventilation

Westinghouse has already analyzed and then discarded the option of filtered ventilation.

“Secondary Containment Filtered Ventilation... The passive filter system is operated by drawing a partial vacuum on the middle annulus through charcoal and HEPA filters...the secondary containment would then reduce fission product release from any containment penetration.”

Even this proposed option does not completely eliminate Fairewinds’ concerns as leakage into the annular gap through a pinhole leak in the containment wall might not be captured.

AP1000
Chimney Effect
Draws
Radioactivity
Directly Into The
Environment

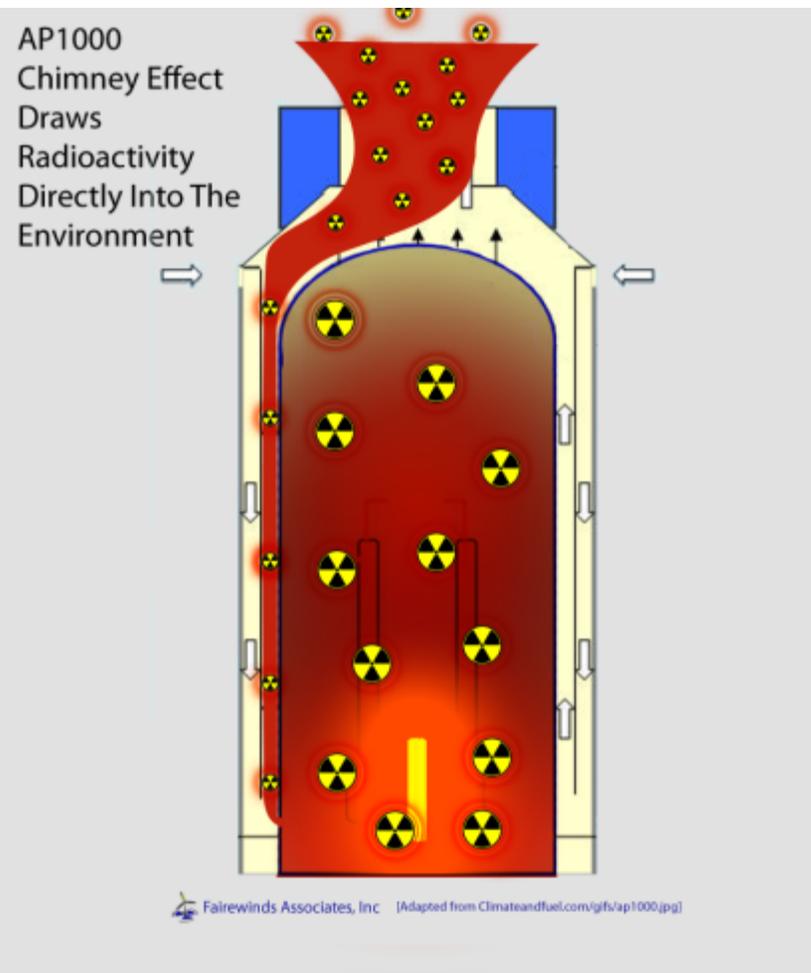


Conclusion

Given the history of containment failures, it is reasonable to assume that a pinhole in the AP1000 containment would be undetected and present at the initiation of a LOCA.

AP1000 SAMDA analysis does not assume a containment breach concurrent with the initiating LOCA.

The AP1000 SAMDA analysis rejected the possibility of filtering some leakage.







United States Nuclear Regulatory Commission

Protecting People and the Environment

Presentation to the ACRS Subcommittee

**Vogtle Units 3 and 4 COL Application Review
Upcoming ACRS Interactions**

Ravi Joshi, Senior Project Manager (AP1000 Projects)

June 24 -June 25, 2010

Upcoming ACRS Meetings

- Nearterm interactions (tentative)
 - July 2010
 - DCD Chapters 2, 3.7, 16, and 17
 - Vogtle Chapters 2, 16, and 17
 - September 2010
 - DCD Chapters 5, 3.8, 6, 7, 8, 9, 13, and 18
 - Vogtle Chapters 5, 6, 7, 8, 9, 14, and 18

ACRS Interactions - SCOLs

- Schedule for ACRS interactions for Levy, Lee, Harris, Bellefonte and Turkey Point to be developed
- Requesting ACRS letter for Summer around the same time as Vogtle
- Presentations on specific topics of interest related to the Summer COL reviews
- Topics from chapters 2 (site characteristics), and 13 (emergency preparedness), and other site-specific topics that may be of interest to the ACRS
- Feedback on review topics of particular interest to ACRS members welcomed
- Beginning July 2010

ACRS Interactions

Date	Topics(s)
June 24 , 2010 June 25, 2010 Advanced FSER presentations	Day 1 AP1000 DCD Chapters 4, 10, 11, 12, 14 , 22 Day 2 Vogtle COL Chapters 4, 10, 11,12
July 21-22, 2010 Advanced FSER Presentations	Day 1 AP1000 DCD Chapters 2, 3.7*,3.8* 16, Day 2 Vogtle COL Chapters 2, 16, (Possible - Summer chapter 2)
September 20-21, 2010 Advanced FSER Presentations	Day 1 AP1000 DCD Chapters 5, 6*, 7, 8, 9, 13, 17, 18 Day 2 Vogtle COL Chapters 5, 7, 8, 9, 13, 14, 17, 18, Summer Plant Specific Issues
October 5, 2010 Advanced FSER Presentations	Day 1 AP1000 DCD Chapters 6, 15 Vogtle Chapters 6, 15
November 18-19, 2010 Advanced FSER Presentations	Day 1 AP1000 DCD All Chapters and 1, 3, 19, 23 Day 2 Vogtle All Chapters and 1, 3, 19 Summer COL Chapters (Plant Specific Portion)
December 2-3, 2010	Days 1 AP1000 DCD All Chapters Day 2 Vogtle COL All Chapters Summer COL All Chapters