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6 ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

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11 Commission Advisory Committee on Reactor Safeguards,

12 as reported herein, is a record of the discussions

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14

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1 UNITED STATES OF AMERICA

2 NUCLEAR REGULATORY COMMISSION

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4 ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

5 (ACRS)

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7 SUBCOMMITTEE ON PLANT OPERATIONS AND FIRE PROTECTION

8 + + + + +

9 THURSDAY

10 FEBRUARY 24, 2011

11 + + + + +

12 ROCKVILLE, MARYLAND

13 + + + + +

14 The Subcommittee met at the Nuclear

15 Regulatory Commission, Two White Flint North, Room

16 T2B1, 11545 Rockville Pike, at 8:30 a.m., Harold Ray,

17 Chairman, presiding.

18 SUBCOMMITTEE MEMBERS PRESENT:

19 HAROLD RAY, Chair

20 CHARLES H. BROWN, JR.

21 JOHN W. STETKAR

22

23

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25

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2 NRC STAFF PRESENT:

3 GIRIJA S SHUKLA, Designated Federal Official and

4 Cognizant Staff Engineer

5 PATRICK MILANO

6 JOE GIITTER

7 RAGS RAGHAVAN

8 SIMON SHENG

9 GURCHURAN MATHARU

10 MATTHEW McCONNELL

11 ROY MATHEW

12 JAMES BAPTIST

13 VIJAY GOEL

14 ALSO PRESENT:

15 BILL CROUCH

16 STEVE HILMES

17 RICK MENDE

18 ASHOK BHATNAGAR

19 ED FREEMAN

20 FRANK KOONTZ

21 GORDON ARENT

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

2 8:29 p.m.

3 CHAIR RAY: The meeting will now come to

4 order.

5 This is a meeting of the Advisory

6 Committee on Reactor Safeguard Subcommittee Plant

7 Operations and Fire Protection.

8 I'm Harold Ray, Chairman of the

9 Subcommittee.

10 The Subcommittee members in attendance we

11 know shortly will be Member Charles Brown, John

12 Stetkar is here with me also.

13 Mr. Girija Shukla of the ACRS staff is

14 the Designated Federal Official for this meeting.

15 The Subcommittee will hear presentations

16 from the NRC staff and the applicant, Tennessee Valley

17 Authority, regarding the status of construction and

18 inspection and licensing activities related to Watts

19 Bar Nuclear Plant Unit 2.

20 We've received no written comments or

21 requests for time to make oral statements from members

22 of the public regarding today's meeting. This meeting

23 will be open to public attendance.

24 The Subcommittee will gather information,

25 analyze relevant issues and the facts, and formulate

1 proposed positions and actions as appropriate for
2 deliberation by the full Committee.
3 The rules for participation in today's
4 meeting have been announced as part of the notice of
5 this meeting published in the *Federal Register* on
6 February 11, 2011.
7 A transcript of the meeting is being kept
8 and will be made available as stated in the *Federal*
9 *Register* notice. Therefore, we request that the
10 participants in this meeting use the microphones
11 located throughout the meeting room when addressing
12 the Subcommittee. The participants should first
13 identify themselves and speak with a sufficient
14 clarity and volume so that they may be readily heard.
15 We ask that all cell phones be silent.
16 We'll now proceed with the meeting. We
17 have an agenda that's been distributed throughout the
18 room that provides for presentations by staff followed
19 by presentations by the applicant.
20 Pat, it's over to you.
21 MR. MILANO: Good morning.
22 I'm going to let Mr. Giitter, our Division
23 Director provide some opening remarks.
24 MR. GIITTER: Good morning. I'm Joe
25 Giitter. I'm the Director of the NRR Division of

1 Operating Reactor Licensing.

2 We appreciate the opportunity to meet with

3 the Subcommittee today and talk about the Supplemental

4 SER 22, the Watts Bar Nuclear Plant Unit 2.

5 The involvement of the ACRS throughout

6 this review has been more than helpful to the staff;

7 it's been essential. As you'll hear today, staff has

8 made significant progress in its review of the Watts

9 Bar Nuclear Plant Unit 2 application, but we still

10 have considerable work to do.

11 Staff presentations today will be made by

12 Patrick Milano, The Watts Bar 2 Project Manager on my

13 left, and James Baptist from the Region II Office in

14 Atlanta on my right. And then later this morning we

15 have presentations from the Division of Engineering

16 staff.

17 So, with that I'll let Pat kick-off the

18 presentation for the staff.

19 CHAIR RAY: Thank you very much.

20 MR. MILANO: Good morning.

21 CHAIR RAY: Good morning.

22 MR. MILANO: Again, my name is Patrick

23 Milano, I go by Pat. I'm, again, the Senior Project

24 Manager in Mr. Giitter's Division.

25 And along with us today we have our team

1 leader for the Watts Bar Project, Mr. Raghavan and our
2 Branch Chief Stephen Campbell.
3 The Watts Bar Special Projects Branch has
4 overall responsibility for the licensing of Watts Bar
5 Nuclear Plant Unit 2. And as Mr. Giitter indicated,
6 Mr. Baptist who is the Senior Project Engineer in
7 Region II, his branch has the overall responsibility
8 for oversight and management of the Agency's
9 inspections efforts at the unit.
10 Today we're planning to give you a brief
11 overview of the status of licensing and inspection at
12 Watts Bar focusing on what's transpired since our last
13 presentation in October of last year, along with a
14 discussion from the Technical Staff Review of the
15 operating license application and its findings to
16 date.
17 The review and findings were published
18 earlier this month as Supplement 22 to NUREG-0847,
19 which is the Safety Evaluation Report related to the
20 proposed operation of Watts Bar Unit 2.
21 The general topics will center on
22 licensing, construction inspection, oversight of the
23 project by the NRC.
24 In the last several meetings with this
25 Subcommittee we've described the history of the

1 construction and licensing at Watts Bar, including the
2 Commission's Staff Requirements Memorandum directing
3 the staff to use the current license basis of Watts
4 Bar Unit 1 as the reference basis for the licensing of
5 Watts Bar Unit 2.
6 The staff continues to review TVA's
7 operating license application which was submitted in
8 March of 2009 to support Unit 2 licensing. The staff
9 noticed the updated application in the *Federal*
10 *Register* and offered an additional opportunity for
11 hearing. There was a request for hearing, and two
12 contentions were admitted. However, those contentions
13 were related to TVA's Environmental Impact Statement
14 for plant operation. However, one of the contentions
15 was dismissed by mutual agreement between the parties
16 after TVA provided some supplemental information
17 regarding permits.
18 In SER Supplement 1021, which was issued
19 in February of 2009, the staff documented the
20 regulatory framework for the activities remaining to
21 be completed by TVA and reviewed by the staff. The
22 framework generally comprised three areas:
23 The first being review of NRC generic
24 communications issued since the time of docketing the
25 application for the construction permit for the Watts

1 Bar Station;

2 The review of the Corrective Action
3 Program plans initially put into place in the later
4 1980s in response to identified construction
5 deficiencies, and;

6 Third was the review of topics remaining
7 open for resolution at Unit 2 in the SER.

8 The latter also included a number of
9 programs as required by the regulations in 10 CFR Part
10 34 and the Atomic Energy Act.

11 Next slide.

12 TVA had submitted a Unit 2-specific Final
13 Safety Analysis Report, an FSAR, as part of the
14 updated application as FSAR Amendment 92. The FSAR is
15 currently at Amendment 102 with Amendment 103 due in
16 shortly.

17 The first two amendments contained a
18 relatively small amount of work, thus the major
19 workload for the staff actually began with the
20 supplemental by TVA of Amendment 95 through 97 in
21 November of 2009 through January 2010.

22 For reference, the current licensing basis
23 for Watts Bar Unit 2 is supported by the updated
24 Safety Analysis Report, the USAR, which is now at
25 revision 8, which was dated April of 2010.

1 The staff review is fully underway and
2 activities, milestones, resources and schedule
3 constraints are being managed by the NRR staff through
4 the Enterprise Project Management Tool.
5 The overall status of the project is
6 presented in Section 1 of Supplement 22, and Appendix
7 HH to Supplement 22 provides a summary of those open
8 and confirmatory items related to the sections
9 presented in the Supplement which will require either
10 additional information from TVA or confirmation by the
11 technical or the inspection staffs.
12 At the end of the staff's presentation
13 this morning, we'll provide you with a description of
14 the remaining challenges to completing this project.
15 As I've just noted, Supplement 22 was
16 published this month.
17 For the SER chapters and sections
18 presented in Supplement 22, the staff review
19 predominantly centered on addressing the items that
20 are listed on this slide. As directed by the
21 Commission in its SRM, the staff was to use the
22 current licensing basis from Watts Bar Unit 1 as the
23 reference basis for licensing Unit 2. The Unit 1
24 licensing basis includes changes made since Unit 1
25 received its full power operating license in February

1 of 1996.

2 As you're aware, in addition to completing
3 the review topics that were not resolved at the time
4 that the Unit 1 operating license review was underway,
5 the staff is also focusing on changes to the Unit 1
6 licensing basis made through the license amendment
7 process under 10 CFR 50.90 and through changes made
8 without prior NRC approval or review pursuant to the
9 10 CFR 50.59 process.

10 The staff also provided a special emphasis
11 on evaluating system, structures and components, SSCs,
12 for dual unit operation and on TVA's proposed
13 modifications that have not been incorporated into
14 Unit 1. There are some modifications that will
15 ultimately be made to Unit 1, but Unit 2 has the lead
16 for putting them into service.

17 With regard to those programs described in
18 the FSAR, most were changed to upgrade them from a
19 single unit to a station or site-wide approach, you
20 know such as the Emergency Preparedness Program and
21 the site security programs.

22 On this slide we identified the chapters
23 that were reviewed in the development of Supplement
24 22. The remaining chapters, along with the review
25 enclosure of the open and confirmatory items will be

1 discussed in a future SER supplement.

2 In preparing for this presentation to the
3 Subcommittee, the staff characterized the results of
4 the open SER topics from our regulatory framework into
5 three general areas. Those areas where TVA revised
6 the section of the FSAR by incorporation of
7 administrative and editorial changes or to better
8 clarify the information that was being presented.
9 This section was found to generally not change the
10 licensing basis.

11 The second is, is those areas where TVA
12 made changes to the Unit 2 licensing basis to
13 incorporate changes to the Unit 1 licensing basis, but
14 these changes required minimal review by the staff and
15 was only generally to confirm that the regulatory
16 basis continued to be met.

17 And third was those changes made to the
18 Unit 2 licensing basis that required more in depth
19 review by the staff, such as to assess dual unit
20 operation, shared systems, differences from Unit 1 and
21 to ensure the full applicability of the change to Unit
22 2.

23 As you will see from the following
24 discussion slides, much of the staff's review found
25 that TVA did not present significant changes in its

updated FSAR amendments for Unit 2, along with subsequent FSAR amendments in the chapters that we'll discuss today. However, there were some exceptions related to shared systems which we'll discuss in a little bit more detail.

If there are no questions with regard to the general overview of what the staff has done to date in both its overall preparations for the review of Watts Bar Unit 2 or in the development of Supplements 21 and 22, I'll go right into our overall review topics.

CHAIR RAY: Pat, there is still an area that I am not sure where it will fit in the agenda today, but I'd like to ask at least for the staff's view on it. One of the changes that's taken place is who is the designer, who is responsible for the design work, correct? When I say "responsible," I mean responsible for actually doing it from TVA to now an architect-engineer, is that right?

MR. MILANO: That's correct.

CHAIR RAY: Okay. We explored this some in the site visit, and the answers given there were not problematic, particularly, but I'm interested in what the staff's view is of that change. In other words, if you have an organization responsible for design, as

1 TVA was for Unit 1 and Bechtel would be here,
2 recognizing that it's still TVA's license, what
3 responsibility does Bechtel assume for the design, and
4 how is that responsibility discharged relative to how
5 they would do things differently at Unit 2 if it
6 weren't for Unit 1 and the need to republicate Unit 1
7 to the maximum extent that they can do so? Or, taking
8 it a step further, supposing they disagreed with
9 something about Unit 1, but they do it that way anyway
10 because that's for the licensing basis?
11 Can you comment on that and how you guys
12 look at that?
13 MR. MILANO: Well, I'll make some comments
14 on it and maybe TVA would like to supplement these
15 comments.
16 CHAIR RAY: Well, they can talk later on.
17 MR. MILANO: Later on? Okay.
18 With regard to the code areas and stuff,
19 as you indicated, you know TVA is its own architect-
20 engineer early on had an N-stamp. And they conducted
21 a lot of their design inspections under that N-stamp
22 and code reports, you know in particular the N5
23 reports for all the spools and stuff were prepared and
24 that documentation put into place. As we presented, I
25 believe maybe about a year ago to you, we indicated

1 that TVA needed to temporarily recover its N-stamp,
2 it's nuclear N-stamp, so that they could then transfer
3 the design and construction activities over to
4 Bechtel, who is their current architect-engineer.
5 And, indeed, that was done and it was done through a
6 relief request which the staff reviewed.
7 MEMBER BROWN: A relief request?
8 MR. MILANO: Yes, it was. It was a relief
9 request that was made because of the fact that it was
10 done under a code case. The code itself did not have
11 specific information for this and the Code Case N5-20
12 covered this situation. And in particular, that code
13 case looked at topics related to the general
14 maintenance of the Quality Assurance Program through
15 this period of time and the records portion of those
16 records that would then be transferred over to
17 Bechtel.
18 So, in that regard, the documentation for
19 those systems or those spools that were previously
20 completed and the packages prepared and put into
21 archivable record were certified by TVA and then just
22 transferred over to Bechtel. And now Bechtel has
23 their N-stamp. So from the code case standpoint, you
24 know the staff has not had a problem.
25 CHAIR RAY: Right. So there was a formal

1 and specific transfer for that slice of the design
2 results.
3 MR. MILANO: Okay. Mr. Raghavan will
4 continue on with the other aspects.
5 MR. RAGHAVAN: Mr. Chairman, I think your
6 question addresses two issues;
7 (1) With respect to the quality in the
8 design or we stand behind it, and that's what we just
9 explained and what the code case, getting the N-stamp,
10 Code Case N5-20 provides a mechanism for TVA to get an
11 N-stamp temporarily so that they can transfer that to
12 Bechtel, and that's what they just explained.
13 The second aspect that I thought that you
14 asked for with respect to any changes, is Bechtel
15 strictly sticking to the original licensing basis, are
16 they making some improvements, are they making some
17 changes so that we can do, if I can use the word,
18 safer conditions. And the answer to that yes, under
19 the SRM, Staff Requirements Memorandum, the Commission
20 has directed both the TVA and the NRC to look forward
21 to any changes that need to be made to make the unit
22 do -- I mean, if you know something better, you should
23 do those things, and taking into consideration the
24 stages of construction as opposed to being in
25 operation of Unit 1.

1 Both staff and TVA have engaged in that
2 kind of a conversation and TVA is maintaining a
3 database of all the changes that they have made. And
4 their intention is to implement changes in Unit 2 and
5 then into the next five years a Capital Improvement
6 Program on Unit 1 they will be bringing out the
7 changes that are being done in Unit 2 in Unit 1 such
8 that in about five years time both the units will
9 maintain the same fidelity.
10 CHAIR RAY: So, I would take it then that
11 Bechtel isn't required to do things that they would
12 not normally do just because that was the way it was
13 done at Unit 1.
14 MR. RAGHAVAN: That is right.
15 CHAIR RAY: Is that correct?
16 MR. RAGHAVAN: Yes, sir.
17 CHAIR RAY: Okay.
18 MR. RAGHAVAN: I think we need to verify
19 with them to make sure that TVA --
20 CHAIR RAY: Yes, yes. That it's your
21 understanding --
22 MR. RAGHAVAN: That's why --
23 CHAIR RAY: -- that they're not
24 constrained to do it because that's the way we did it
25 at Unit 1, so that's the way you got to do it at Unit

2?

MR. RAGHAVAN: That is right.

CHAIR RAY: All right.

MR. MILANO: Well, as a further elaboration to what Mr. Raghavan just talked about, also the staff had requested that TVA put into place a program that we call the Licensing Basis Preservation Program. And that has been implemented and the staff has verified in reviewing it the basic precepts of that program have been incorporated into the basic Bechtel design specification documentations and procedures that are being utilized by all of the Bechtel design staff. And what that program was meant for was:

(1) To ensure that as Bechtel made changes, that they looked at did those changes undo something that was already approved by the staff or did they make changes which ultimately would contradict the licensing basis on Unit 1 such that something would ultimately need to be done on Unit 1.

CHAIR RAY: Yes. Well, you know, I understand that that's important.

MR. MILANO: Yes.

CHAIR RAY: But surely you're not intending for that reason to do something in Unit 2

1 that would not be a good idea.

2 MR. MILANO: No. No.

3 CHAIR RAY: In other words, as was already

4 explained, if there's an improvement that can be made

5 because that's a standard that Bechtel normally uses

6 and it's a better way; I don't know, terminations,

7 isolation valves, God knows what, that it would be

8 done without being constrained and oh, we got to do it

9 this other way because that's the way we did it

10 before. And that's all I'm asking.

11 MR. MILANO: Yes.

12 MR. RAGHAVAN: Yes.

13 CHAIR RAY: But you need to be aware that

14 you're making the change. I understand that.

15 MR. MILANO: That's correct.

16 MR. RAGHAVAN: That's true.

17 Again, I'm Raghavan.

18 As an example, at the bottom of the vessel

19 to facilitate future inspection they designed the

20 insulation such that you can do some bare metal

21 inspections, so on.

22 So, as we go along we engage TVA, and TVA

23 has tabled along the design to make sure there are any

24 improvements that they can be made, they are in fact

25 being made.

1 CHAIR RAY: Okay. Well, that's the
2 perspective that you guys have, and that's fine.
3 That's what I was asking about.
4 MR. MILANO: Thank you. Okay.
5 If there are no questions, we'll get into
6 a basic discussion of the staff's review and findings
7 in those chapters that were covered under Supplement
8 22.
9 CHAIR RAY: Yes.
10 MR. MILANO: You know, as I had indicated,
11 because TVA has made changes to much of the Unit 2
12 FSAR to correct administrative issues and for
13 editorial clarifications, the NRC staff ended up
14 looking at most of the FSAR chapters. However, the
15 staff found that a more rigorous or in depth review
16 was needed only in a small subset of the topic areas.
17 Those topics where the staff concluded
18 that the previous staff findings did not change from
19 that documented in the prior SER supplements or the
20 changes were of a relatively minor nature and clearly
21 continued to meet the regulatory basis will not be
22 discussed in today's meeting. Rather, we'll point out
23 some of the more substantial changes and where the
24 staff placed greater emphasis in evaluating the topic
25 for compliance with the regulatory and licensing

1 basis.

2 As shown on this slide, TVA provided
3 updated information in support of its description of
4 the site envelope, and in particular in subsection 2.1
5 on geography and demography TVA provided revised
6 population densities and projections for a period of
7 years until the Unit 1 license would end. And the
8 staff reviewed those changes and reviewed them against
9 the exclusionary low population zone and population
10 density centers' distances,a nd they continued to meet
11 the Part 100 criteria.

12 In section 2.2. which deals with nearby
13 industry, transportation and military facilities, TVA
14 again updated the information on potential hazards in
15 the facility. In the staff's review of this, the only
16 significant change, more significant change that the
17 staff found was that the types of materials from the
18 barge traffic had changed, and actually it had changed
19 to the better. There's less barge traffic going down
20 the river and the amount of fuel oils that are being
21 transferred down the river have been reduced and
22 somewhat changed in type.

23 And we also looked at it for the potential
24 impact of a barge accident and the impact on the
25 cooling water intakes. And the staff found that they

1 continued to meet the criteria in GDC 4.

2 Yes.

3 MEMBER STETKAR: And aren't those

4 reductions in river traffic an aberration of the

5 economy for the last decade?

6 MR. MILANO: Yes.

7 MEMBER STETKAR: Are there any indications

8 that they might increase in the future?

9 MR. MILANO: Actually, we've had some

10 discussions and this was also looked at in terms of

11 there was a consultation, a Department of Homeland

12 Security consultation that took place about a year and

13 a half ago. And they also looked at this and looked

14 at the possibility of some of the down-river

15 industries changing and stuff like that. And in

16 reality, it didn't look like there was going to be any

17 reversal in the trend.

18 MEMBER STETKAR: Okay. Okay. Thanks.

19 CHAIR RAY: Increased use of natural gas

20 for one thing and in relation to that, minor results

21 and a lot less fuel oil --

22 MR. MILANO: Okay.

23 CHAIR RAY: -- Shipping.

24 MR. MILANO: In section 2.3 on

25 meteorology, TVA provided more updated information on

1 the regional climatology and the look of meteorology
2 beyond that present in the Unit 1 FSAR. Thus, the
3 staff reviewed the updated climatic information, and
4 that information forms the input assumptions for the
5 engineering design and safety assessments. And also,
6 we looked at along with just general updates to this
7 section.
8 In particular, the staff evaluated the
9 information pursuant to Part 100 in Section 100.20 and
10 for the identification and characterization of the
11 site vicinity, meteorology, climatology necessary for
12 the safety analysis, or that may have an impact on the
13 plant design such as the maximum probable wind speed
14 and precipitation.
15 The staff also looked at Appendix A
16 Criterion 2 for structure systems, components, you
17 know to ensure that related to the design it would
18 stand natural phenomena, tornados, hurricanes, without
19 the loss of capability.
20 And finally, the TVA areas of updates
21 included tornados, strong winds and storms, hail,
22 lighting, snow fall precipitation, temperature,
23 atmospheric water vapor content, et cetera, and stuff
24 like that.
25 So, in general the staff found that the

1 information being provided was more up to date and
2 since the Unit 1 licensing in 1996.
3 TVA also provided up dated information to
4 show the conformance with NRC Regulatory Guide 1.76 on
5 design base tornado and tornado missiles for its
6 nuclear plants. They went to Rev 1. And examples of
7 differences from Rev 0 for the tornado region, which
8 is where TVA Watts Bar plant is located, is that first
9 the maximum wind speed was reduced from 360 miles per
10 hour to 230; the atmospheric pressure drop was reduced
11 from 3 psi to 1.2 psi, and the rate of pressure drop
12 changed from 2 psi per second to a half of psi per
13 second.
14 And Rev 1 to Regulatory Guide 1.76
15 utilized more than 50 years of tornado data and also
16 the enhanced Fujita scale, whereas Rev 1 used a much
17 smaller data set and the original Fujita scale and
18 didn't consider a term to account for the finite
19 dimensions of structures. In general, it was
20 basically TVA did a good update both of the data that
21 was presented and also using what the staff considers
22 to be more up-to-date guidance.
23 And that pretty much covers what was done
24 in Chapter 2.
25 CHAIR RAY: Do you know if this effect

1 that you just described has resulted in any changes to
2 the plant design?
3 MR. MILANO: No, it has not.
4 MR. RAGHAVAN: This is Raghavan.
5 The meteorological data gets used again in
6 Chapter 11 and 12 on the radiological dose
7 calculations. So --
8 CHAIR RAY: Yes. No, I was thinking of
9 physical changes in the plant.
10 MR. RAGHAVAN: Yes. No.
11 MR. MILANO: The staff, as Mr. Raghavan
12 was pointing out, you know the staff has recently
13 found some differences in some of the information as
14 presented in Chapter 2 and as presented in Chapter 11
15 and 12. And it's gotten a little out of sync, but we
16 verified that the Chapter 2 data is correct and we
17 continue to look at Chapters 11 and 12 on those
18 calculations.
19 Going into Chapter 3 on the reactor and
20 materials, the items that I'm going to discuss
21 generally centered around the turbine missiles, as
22 I've indicated before. And the protection against
23 turbine missiles is specified in Appendix A, General
24 Design Criterion 4, which requires the SSCs important
25 to safety to be protected against dynamic effects

1 including effects of missiles that may result from
2 equipment failure.
3 NRC's requirements and acceptance criteria
4 are specified in Regulatory Guide 1.115 1977 and is
5 updated in SRP Section 3.5.1.3 as indicated.
6 The SRP criterion applicable to Watts Bar
7 Unit 2 is for the calculated turbine missile
8 generation frequency P_1 to be less than 1E-4 per year
9 for a plant with a favorably oriented turbine.
10 And on the next slide -- I know you guys
11 all know it. The shaded areas on this point out --
12 you know favorably oriented turbine means that all
13 SSCs important to safety are outside of these shaded
14 areas.
15 And the staff found that the Unit 2
16 turbine meets the requirements and the unit therefore
17 meets the staff acceptance criteria for turbine
18 missile protection.
19 MEMBER STETKAR: That's a pretty small
20 number. Obviously, these analyses kind of predate our
21 review for this issue.
22 I haven't looked at a Siemens overspeed
23 trip analysis in a number of years. The last one I
24 looked at was pretty restricted in terms of the scope
25 of things that they defined that would contribute to

1 turbine overspeed, and particularly they didn't look
2 at turbine stop valve failures, they didn't look at
3 material failures at less than 120 percent of
4 overspeed.
5 Do you happen to know whether this
6 analysis is a full scope analysis?
7 MR. MILANO: I couldn't tell you.
8 MEMBER STETKAR: I mean, the number is
9 pretty small.
10 MR. MILANO: MR. Sheng, would you mind
11 stepping up? He did part of the review.
12 MR. SHENG: This is Simon Sheng from DCI.
13 Can you repeat that last part of your
14 question.
15 MEMBER STETKAR: Okay.
16 MR. SHENG: I didn't hear it clearly.
17 MEMBER STETKAR: I'd preface it by the
18 fact that I've looked at some turbine overspeed
19 analyses performed by Siemens --
20 MR. SHENG: Okay.
21 MEMBER STETKAR: -- but several years ago.
22 MR. SHENG: Right.
23 MEMBER STETKAR: And I have no idea what
24 this analysis looks like. The analyses that I have
25 looked at several years ago very carefully restricted

1 the scope of equipment that they evaluated. They only
2 evaluated the equipment in their scope of supply for
3 the turbine protection system. They didn't evaluate,
4 particularly they didn't include failure in the
5 turbine stop valves, or turbine control valves, and at
6 that time they didn't look at material failures of the
7 rotors at speeds less than something like 120 percent
8 of overspeed.
9 So, I was curious because the number as
10 characterized here is two orders of magnitude lower
11 than ten to the minus four. Ten to the minus six per
12 year is a fairly small number
13 MR. RAGHAVAN: That's correct.
14 MEMBER STETKAR: I was curious whether the
15 scope of the analysis that was performed for Watts Bar
16 was indeed a full scope analysis; whether they had
17 included both the rotor failures at turbine speeds
18 less than, let's say, 110 or 120 percent of design
19 speed and whether the scope of the turbine failure to
20 trip included --
21 MR. RAGHAVAN: Right.
22 MEMBER STETKAR: -- included not only just
23 the turbine overspeed protection but --
24 MR. RAGHAVAN: Right.
25 MEMBER STETKAR: -- hydraulic valves, or

1 however they used to do it plus the actual turbine
2 stop control valves and such?
3 MR. RAGHAVAN: Right. This is a full
4 scope analysis, yes.
5 MEMBER STETKAR: Okay. Okay. That's what
6 I was looking for. Thank you.
7 CHAIR RAY: Well on that point, there's
8 quite a discussion in the SER about valve testing
9 frequencies.
10 MR. MILANO: Yes.
11 CHAIR RAY: And I would assume that was
12 also consistent with this analysis?
13 MR. MILANO: Yes, it was.
14 Next slide.
15 Again, you know there are a large number
16 of SER topics that are discussed. And, you know
17 you'll see we jumped to 3.5 and now we're jumping to
18 3.9. It's not to say that the other sections weren't
19 reviewed, but the staff's results of those other
20 sections ended up being really just confirmational in
21 nature. There was really not much to change and it
22 was generally clarifications, more so, and with what
23 the staff found did not change from the original SER
24 findings and stuff. So we're not going to discuss
25 them today.

1 CHAIR RAY: Yes. Well, we have the SER.
2 It's available to us.
3 MR. MILANO: Yes.
4 CHAIR RAY: And we do expect you to be
5 selective in what you choose to discuss here.
6 MR. MILANO: Okay. Because the issues
7 raised in licensing Unit 1 regarding the analysis of a
8 postulated rapid closure of a feedwater check valve,
9 the staff now focused on the manner in which TVA
10 addressed the same issue for Unit 2. TVA's original
11 analysis for Unit 1 included an assumption that
12 ceratin pipe supports would fail when loads exceeded
13 their calculated capacities. The staff ultimately
14 accepted TVA's analytical approach for Unit 1, thus
15 during the current review for Unit 2 the staff
16 questioned the validity of the prior calculations as
17 they relate to the current Unit 2 analysis. And the
18 staff found that TVA had removed six snubbers that
19 were included in the original Unit 1 analysis. But
20 the staff found that the absence of these snubbers
21 were insignificant. In the end the staff found that
22 the Unit 2 analysis didn't significantly vary from
23 that from Unit 1 and was acceptable.
24 CHAIR RAY: But it had been done, and it
25 had been accurately, is that correct?

1 MR. MILANO: Yes, that is correct.

2 MEMBER BROWN: So the fact that you

3 accepted it was because some of the other analytical

4 results were still satisfactory or because it was a

5 judgment call?

6 MR. MILANO: No, because it was

7 analytically satisfactory.

8 MEMBER BROWN: Okay. Thank you.

9 MR. MILANO: Yes.

10 The staff identified some variations in

11 the Unit 1 and 2 criteria for the maximum deflections

12 of the reactor vessel internals under design basis

13 events found in FSAR Table 3.9-5. The table provides

14 the maximum allowable and the no loss of function

15 limits for the internals under design basis loading

16 conditions, which are based in part on the information

17 in Westinghouse's Report WCAP-5890.

18 In response to the NRC staff questions

19 regarding variation between the deflection units that

20 were used in Unit 1 and in Unit 2, TVA revised the

21 limits for Unit 2 in Amendment 100. Therefore, now

22 the limits for both 1 and 2 are identical for the

23 deflection limits during design basis events. And the

24 staff found that since it previously reviewed and

25 approved those same limits for Unit 1, staff now

1 concluded that the deflection limits are also
2 acceptable for Unit 2.
3 CHAIR RAY: Well, tell us a little bit
4 more about what your understanding is of how this
5 difference existed in the first place. You've
6 mentioned WCAP, but I need some more. How did it come
7 about and why did it go away as it did?
8 MR. MILANO: Again, during the course of
9 it, and maybe TVA can help provide an answer to it
10 also. When the staff did it's review, the staff was
11 relatively thorough and just happened to notice that
12 there were different numbers that were presented and
13 they started questioning why the difference in
14 numbers. And from the staff's standpoint, it turned
15 out to be something just generally editorial in
16 nature. And we do not -- or I do not know why the
17 difference came to be. In the end, TVA indicated that
18 they should have been the same limits for both units.
19 And, Mr. Crouch or anybody, can you --
20 CHAIR RAY: All right. Well, later when
21 the applicant's up we'll ask them to give us --
22 MR. MILANO: Okay.
23 CHAIR RAY: -- whatever insight they have
24 on it. If it's just editorial, we can understand that.
25 But I was trying to understand if there had been an

1 evolution and just went back and took away the
2 evolution or what in fact had occurred.
3 Okay. Go ahead.
4 MR. KOONTZ: This is Frank Koontz, TVA.
5 I believe Mr. Milano is correct on that.
6 When we went back and looked at the tables after they
7 pointed out there was a difference between Unit 1 and
8 Unit 2, that we went back to our original listing of
9 those documents and found that we had made a
10 transcription error, an editorial error and we got
11 that corrected and sent back into the staff.
12 CHAIR RAY: Oh, okay.
13 MR. MILANO: Okay. And that generally
14 takes care of what we'd like to discuss on Chapter 3.
15 Chapter 4 that has to do with reactor
16 fuels is currently review and will be documented in
17 Supplement 23 to the Safety Evaluation Report.
18 CHAIR RAY: And so we'll have a chance to
19 visit that at the October meeting?
20 MR. MILANO: At the next -- yes.
21 CHAIR RAY: Or whenever it is?
22 MR. MILANO: July meeting.
23 CHAIR RAY: Oh, July meeting? Okay.
24 MR. MILANO: Okay. Going to Chapter 5.
25 The staff reviewed the licensee's reactor vessel

1 surveillance program and determined that the proposed
2 surveillance capsule withdrawal schedule meets the
3 requirements of Appendix H to 10 CFR Part 50.
4 Notably, though, the Unit 2 surveillance
5 capsules, they had a relatively high lead factor, but
6 they are not inconsistent with those present in other
7 plants. You know, how lead factors ultimately mean
8 that the capsules will be withdrawn relatively early
9 and stored in a spent fuel pool. The most recent
10 revisions to ASTM Standard E185 recommend that lead
11 factors up to 5 for surveillance capsule. The
12 licensee will prepare their surveillance data with the
13 predictions from Regulatory Guide 1.99 Rev. 2 and data
14 from other reactors.
15 The staff finds that this proposed
16 response acceptable because TVA is comparing the
17 surveillance program results from Unit 2 materials to
18 similar materials rated in other reactors with a wide
19 range of lead factors and this should ensure that the
20 trends and changes in fracture toughness properties
21 for the Unit 2 materials are not radically different
22 than similar materials irradiated in plants with lower
23 lead factors.
24 Another open item was identified related
25 to the determination of the initial nil-ductility

1 transition reference temperature, RT_{NDT} values for
2 Watts Bar Unit 2 surveillance materials. And Branch
3 Technical Position MTEB 5-2 allow the use of a
4 combination of drop weight and Charpy (C_v) tests and
5 provides procedures that may be used if the drop test
6 were not performed. However, the RT_{NDT} is not
7 determined by drop weight tests alone, and drop weight
8 tests are typically only performed for initial RT_{NDT}
9 determination not irradiated RT_{NDT}. And thus, so TVA
10 will need to provide additional information to clarify
11 how the initial and irradiated RT_{NDT} values are
12 determined and the staff holds this as an open item
13 and believes that it probably was due to an
14 inadvertent omission of information about the Charpy
15 tests.
16 Next slide.
17 With regard to issues related to reactor
18 vessel integrity including protection of the Unit 2
19 vessel from failure to depressurize thermal shock,
20 maintenance of adequate reactor vessel material upper
21 shelf energy, USE, for the life of the plant and the
22 establishment of the reactor vessel pressure
23 temperature of the P-T limits, the staff found that no
24 concerns were identified during its review, primarily
25 due to the high initial upper shelf energy values Unit

1 2 vessel materials and also because the relatively low
2 copper and nickel content in the limiting reactor
3 vessel beltline materials, which are .05 percent
4 copper, .78 percent nickel for limiting materials.
5 And that was in lower shelf 1405. This resulted in
6 small projected changes in the material properties due
7 to neutron irradiation through the end of the Unit 2
8 license.
9 Confirmatory calculations found that Unit
10 2 upper shelf energies and the PTS reference
11 temperature values will meet the regulatory
12 requirements and the proposed P-T limits were
13 consistent with the requirements of Appendix G to Part
14 50 and Appendix G to SAME Section 11.
15 With regard to the formulation of the Unit
16 2 pressure temperature limit report, the PTLR, two
17 open items, however, were identified. When developing
18 a PTLR, Generic Letter 96.03 indicates that certain
19 information must be included and including the cold
20 overpressure mitigation system, arming temperature and
21 lift setpoints which were missing from the proposed
22 Unit 2 PTLR. And in response to a staff question, TVA
23 provided this information and stated that it would be
24 incorporated into the next PTLR revision.
25 And when I say this is an open item, this

1 is one that falls into the confirmatory items and the
2 staff will confirm after we get this revised PTLR
3 we'll confirm that it's consistent with the
4 conclusions that we've already made.
5 Regarding the reactor coolant pressure
6 boundary materials. Based on industry experience with
7 zinc addition the staff ha no concerns with the
8 pressure boundary degradation with zinc addition.
9 Industry experience has shown that zinc reduces
10 general corrosion rates and they may have a beneficial
11 effect on reducing primary water stress corrosion
12 cracking initiation. And also, may reduce its growth
13 rates.
14 Industry experience has also demonstrated
15 beneficial effects of zinc on reducing radiation dose.
16 The staff noted because of limited
17 experience with zinc addition in high duty cores, that
18 industry guidelines recommend that plants with high
19 duty cores take additional measures to ensure that
20 there are no adverse effects on the fuel such as
21 excess or uneven crud build-up that can lead crud
22 induced power shift, you know axial offset anomalies.
23 And TVA stated that Unit 2 core would be considered
24 high duty if the bounding values of power flow and
25 outlet temperature listed in the FSAR are used.

1 However, if best estimate values are used in core duty
2 calculations, Unit 2 Cycle 1 is going to be a medium
3 duty core.
4 CHAIR RAY: Do you know what the industry
5 experience has been with these peer, I'll call them,
6 steam generators as they've been in operation, the
7 material to performance?
8 MR. MILANO: Again, Unit 2 will utilize
9 the original Alloy 600 tubes, they're thermally
10 treated Alloy 600s, unlike Unit 1 that's already gong
11 to the 690 and stuff. And there's --
12 CHAIR RAY: So have all of these ones that
13 Unit 2 will start up with been replaced that have been
14 in service?
15 MR. MILANO: All of what ones?
16 CHAIR RAY: Well, all of similar steam
17 generators to the ones that are in Unit 2?
18 MR. MILANO: I couldn't answer that
19 question. We'll get back with you on it.
20 CHAIR RAY: Okay. I'm sure the applicant
21 can. But I just wondered what the experience had been
22 with these team generators since there's been some.
23 MR. MILANO: Yes.
24 TVA also stated that zinc injection at
25 Unit 2 is bounded by the existing experience based in

1 the Westinghouse design reactors, including Unit 1.
2 Therefore, TVA considers a fuel surveillance program
3 specifically for Unit 2 to be unnecessary.
4 Also, that Westinghouse performs for each
5 operating plant site a fuel-crud risk analysis that
6 includes a consideration for zinc addition and
7 provides guidelines to each PDR that adds zinc. And
8 these guidelines describe the chemistry monitoring
9 requirements for zinc addition.
10 So, in this case here, you know we go back
11 that the measurement requirements for a high duty core
12 will be covered.
13 And that pretty much handles the more
14 important areas of Chapter 5 that the staff reviewed.
15 CHAIR RAY: Is there something about
16 reactor coolant system events an open item, what was
17 that about?
18 MR. MILANO: Yes, sir. That has to do
19 with Generic Letter 2008-01. That's the ECCS gas
20 binding. And TVA has not resolved or provided to the
21 staff its proposal for location of events to ensure
22 that gas binding won't occur at Unit 2 in the ECCS
23 system and stuff. So, in that case their bottom line
24 is we don't have TVA's proposal yet. So, that's why
25 it remains as an open item.

1 CHAIR RAY: Any particular reason why you
2 don't have it yet? Is it problematic that you know
3 of?
4 MR. MILANO: There's no indication that it
5 was problematic. What TVA needed was is they were
6 waiting for resolution on Unit 1 to be completed,
7 submitted to the staff before they submitted for Unit
8 2. And the Unit 1 resolution has recently come in, so
9 now we hope that the Unit 2 will shortly follow.
10 On Chapter 6 for the safeguards features.
11 You know, as discussed in the staff's review, the
12 FSAR changes proposed by TVA required a limited effort
13 of review by the staff. Of note, TVA revised its
14 long-term containment cooling analysis for the design
15 basis accident LOCA. And the changes included in the
16 revised analysis included a reduced initial ice
17 inventory and changes in the mass and energy release
18 model and the containment heat sink model.
19 The staff reviewed these inputs and
20 assumptions and the results of the revised analysis
21 which were found to be consistent with a similar
22 reanalysis at Watts Bar Unit 1 in 2001. And the staff
23 found that the Unit 1 reanalysis was acceptable in its
24 Amendment 33 to the operating license that was issued
25 in November of 2001.

1 In the remaining subsections of the FSAR
2 the staff found that the FSAR changes were minor and
3 required a limited review effort by the staff and the
4 changes consisted generally of clarification and
5 editorial changes, and FSAR reverification of changes
6 made to Unit 1 licensing basis for consistency with
7 Unit 2.
8 MEMBER BROWN: Pat, before we leave that
9 slide, I've always been curious about this issue of
10 relief valves as containment isolation valves. I
11 understand requirements and I understand that it's
12 consistent with Unit 1. Perhaps the applicant can
13 provide some elaboration on this.
14 How do those relief valves actually
15 provide the protection that they're allegedly designed
16 to provide? In other words, I understand they
17 discharge back into the containment somewhere.
18 MR. MILANO: Containment.
19 CHAIR RAY: Do they discharge to an area
20 of the containment that's by definition at a lower
21 pressure than the area from which they're relieving?
22 If they don't, then they're not providing any
23 overpressure protection, so they're not really relief
24 valve.
25 MR. MILANO: Yes, they do. For the

1 systems wherein these relief valves are relieving the
2 containment pressure is lower than the pressure of
3 that system that's necessary for maintenance of
4 structural integrity of that system.
5 CHAIR RAY: Okay. Okay. That's what I
6 was looking for. Okay. Thanks.
7 MEMBER STETKAR: What's the open item on
8 containment testing? Containment leakage. Do you
9 know?
10 MR. MILANO: I don't understand.
11 MEMBER STETKAR: 6.2.6.
12 MR. MILANO: 6.2.6? Oh, excuse me. I'm
13 sorry. I don't remember what it is not. We'll get
14 back you.
15 MEMBER STETKAR: All right. I'm going to
16 have to look it up here, but I was just looking --
17 MR. MILANO: I'll have to go back and take
18 a look to refresh myself.
19 MEMBER STETKAR: There was an issue on
20 containment leakage for an open item.
21 MR. MILANO: Yes, there is.
22 MEMBER STETKAR: Okay. When we get to the
23 break, you can take a look and then let me know before
24 we finish.
25 MR. MILANO: Yes.

1 With regard to Chapter 7 on
2 instrumentation, that also is under review and will be
3 presented in Supplement 23.
4 Chapter 8 we're going to skip at this time
5 because Chapter 8, of the sections that were reviewed
6 in preparation of Supplement 22 that was probably the
7 one area where the staff conducted an in depth review
8 in particular because of the fact that the Watts Bar
9 Unit 1 and 2 electrical system is shared between the
10 two units. So the staff did an in depth assessment of
11 that and what we're going to do is the technical staff
12 themselves are going to come up after the break and
13 will present their findings in that area.
14 MEMBER BROWN: Before you leave Chapter 7,
15 has the FSAR been given to us yet for Chapter 7?
16 MR. MILANO: Yes.
17 MEMBER BROWN: I would just ask, and I
18 wasn't clear that we had it already. So --
19 MR. MILANO: Yes.
20 MEMBER BROWN: -- you're saying it has
21 been given to us.
22 MR. MILANO: Yes, you do have it. You
23 have a complete copy of the FSAR.
24 MEMBER STETKAR: That was Rev. 100.
25 MR. MILANO: Actually, you have Rev. 102.

1 MEMBER BROWN: And that includes all --
2 it's a total thing?
3 MR. MILANO: No.
4 MEMBER BROWN: It's not just an except and
5 an add on or something?
6 MR. MILANO: No, it's not. The way we
7 agreed at the start of this project --
8 MEMBER BROWN: That's an FSAR now, not
9 your SER. This is the FSAR.
10 The agreement between the staff and TVA on
11 each one of the amendments was instead of -- the way
12 it was done in the past was each amendment would just
13 have a bunch of replacement pages. For assistance in
14 the staff's evaluation, each amendment is a complete
15 document but was highlighting what changed from, like,
16 Amendment 101 or stuff like that.
17 MEMBER BROWN: And we theoretically have
18 102?
19 MR. MILANO: Yes, you do. We have sent
20 over 92, which was the starting point and each one of
21 the subsequent ones.
22 MR. RAGHAVAN: This is Raghavan.
23 Just as a matter of clarification. What
24 we are presenting is what we are complete in and what
25 we have documented in the FSAR 22. In Chapter 7 a

1 significant amount of work has already been done and
2 it is waiting for us to document it in the future
3 supplements. So, when we say it's 7 we're not going
4 to be presenting, it doesn't mean that we haven't done
5 any work. It's just that we're waiting for all the
6 thing to be completed and --
7 MEMBER BROWN: No, I wasn't trying to --
8 MR. RAGHAVAN: No, I just wanted to make
9 sure --
10 MEMBER BROWN: I just remember the
11 discussions from a couple of years ago about the
12 changes that were anticipated for Chapter 7 and that
13 system, and it's been kind of bare and I haven't asked
14 a question, so now I'm asking the question; that's
15 all. And if we've got it, we'll go search it out. If
16 we don't have it, then we will get back to you.
17 MR. RAGHAVAN: Yes.
18 MR. CROUCH: Pat?
19 MR. MILANO: Yes.
20 MR. CROUCH: You want the open item on
21 6.2.6?
22 MR. MILANO: Yes, please. Why don't you
23 just talk about it yourself.
24 MR. CROUCH: The paragraph out of 6.2.6
25 states "The NRC staff noted that TVA changes to

1 section 6.2.6 in Amendment 97 regarding the
2 implementation of Option Bravo for Appendix J were
3 incomplete because several statements remain regarding
4 performing water sealed valve leakage tests as
5 specified in Appendix J. With the adoption for Option
6 Bravo the specified testing forms are no longer
7 applicable. Option Alpha Appendix J retains the
8 performance. NRC discussed this discrepancy with TVA
9 in a phone conversation in September of 2010. TVA
10 said it would remove the inaccurate reference to
11 Appendix J for consistent water temperature
12 requirements in the future FSAR amendment."
13 So we just got to update the FSAR.
14 MR. MILANO: Yes.
15 MEMBER STETKAR: Just for the record, make
16 sure you --
17 MR. CROUCH: I'm Bill Crouch, TVA
18 MEMBER STETKAR: Thank you.
19 CHAIR RAY: Okay. Thank you.
20 MR. MILANO: Okay. So again, we'll skip
21 over Chapter 7 and 8.
22 Going to Chapter 7 on auxiliary system.
23 For the most part, TVA's changes in Chapter 9 were
24 minor and required a limited review by the staff. TVA
25 added two containment vent air cleanup units to filter

1 the containment air before it's released into the
2 annulus. And also revised both the containment vessel
3 isolation and partial auxiliary building isolation
4 following a fuel handling accident in the aux building
5 or containment during refueling operations. And the
6 staff also reviewed or editorial changes, and also did
7 a reverification of other changes.
8 And then in the end in this area for
9 Section 9.4.6 the staff noted some changes that were
10 made, but the bottom line was is we found them all
11 acceptable.
12 There is one area that we're going to be
13 talking about in the next Subcommittee meeting, and
14 I'm just going to point it out right now to you with
15 regard to Chapter 9. And that has to do with because
16 Chapter 9, besides the electrical systems, the other
17 shared systems that the staff finds important are the
18 essential raw cooling water, which is the nuclear
19 surface water system or what TVA calls its nuclear
20 service water system, and also the component cooling
21 system. And so the staff has been having a number of
22 discussions with TVA in this area. And this area
23 remains open, and albeit that all the rest of Chapter
24 9 is pretty much done, we'll be including a discussion
25 in this area at the next meeting.

1 Next slide.

2 And what we're going to be talking about
3 next time, not to really to get into it, is the fact
4 that TVA considers that its original position is that
5 the non-accident unit only be shutdown to hot standby
6 condition, that's greater than 360 degrees Fahrenheit.
7 And the current TVA position is that the non-accident
8 unit can be cooled down within 72 hours following the
9 LOCA in the other unit to be within compliance of GDC
10 5. And the staff is evaluating TVA's response in this
11 area.

12 So, what we're looking at is, is we're
13 looking at both calculations that TVA has conducted to
14 show that following the LOCA that the non-accident
15 unit goes to high shutdown and then is maintained in
16 hot shutdown for a period of time, and then ultimately
17 as the accident unit loads go down, that the system
18 now could handle both the continued maintenance of the
19 accident condition and the accident unit and the
20 controlled cool down of the non-accident unit. So
21 we'll discuss those more next time.

22 CHAIR RAY: Okay.

23 MR. MILANO: Okay. Going to Chapter 10.

24 In FSAR Amendment 91, which is the last
25 amendment prior to the licensing of Unit 1, TVA

1 revised the mainsteam isolation valve closing times to
2 six seconds.
3 MEMBER STETKAR: Before you go to 10.3.1--
4 MR. MILANO: Yes.
5 MEMBER STETKAR: -- what was the 10.2.
6 review not complete on turbine disk integrity mean in
7 the context of the question I asked about turbine
8 vessel analysis?
9 MR. MILANO: What has happened is, is TVA
10 has done a turbine rotor upgrade.
11 MEMBER STETKAR: Yes.
12 MR. MILANO: And that rotor upgrade was
13 done predominately for purposes of efficiency. You
14 know, upgrade efficiency --
15 MEMBER STETKAR: It was done for some
16 reason.
17 MR. MILANO: Right. And it's just that
18 the staff hasn't completed it material review of --
19 MEMBER STETKAR: Well, I guess I'll go
20 back to my question: How have you accepted their
21 turbine overspeed and turbine missile analysis when
22 you still have open questions based on material with
23 their current turbine rotor?
24 MEMBER STETKAR: This is Raghavan.
25 I think, Simon, you should address this

1 question with regard to the question that he had asked
2 previously was the scope of the turbine work missile
3 protection. And then if this is open, then the scope
4 was complete or not complete.
5 MEMBER STETKAR: I guess the question is,
6 the answer I had gotten previously was the scope was
7 complete and I was lead to understand that when I
8 think about a complete analysis, they indeed looked at
9 material failures at both speed above 120 percent of
10 overspeed and at speeds lower than 120 percent of
11 overspeed for whatever rotor was in place whenever
12 that analysis was performed. And so the question is,
13 is there a need to redo that turbine overspeed
14 analysis to account for current rotor materials,
15 especially since you say you haven't actually
16 completed your review of those materials?
17 MR. SHENG: Let me explain this, okay.
18 That according to the SRP I think there
19 are three subsections handling the issues related to
20 turbine. Once is turbine missile, and that's the one
21 that Pat just presented before. And there's another
22 issue, it's called the rotor integrity. And the
23 concern is entirely different. It's about structure
24 integrity and the emphasis is not on the missile
25 generation. So it has a different criteria for the

rotor integrity.

MEMBER STETKAR: Well, I'm confused now.

CHAIR RAY: Let me try again for a minute.

MEMBER STETKAR: Okay.

CHAIR RAY: Why does anyone care about rotor integrity other than the generation of a missile?

MR. SHENG: I think the rotor integrity is talking about that it's a -- well --

CHAIR RAY: Okay. Well, look -- I agree that your earlier answer went to the question of the comprehensiveness of the scope, which was the question.

MR. SHENG: Right.

CHAIR RAY: But on the other hand, there was a result produced, and which is how the question first got started being asked, and I think John's asking will that result change with this upgraded, what was referred to as an upgraded rotor?

Then you step up and say "Well, it's got nothing to do with the missile analysis," and that then leads to allowing confusion on our part.

So probably it's best to sort that out. And I would ask it this way: Is the result that we were questioning earlier as to whether it was a

1 comprehensive analysis that was the basis of the
2 result, is that the result affected by this review
3 which is not yet complete, to read it off the slide up
4 there?
5 MR. SHENG: Yes.
6 CHAIR RAY: And just say yes or no. We'll
7 have more questions whichever way we go.
8 MR. SHENG: No, that will not be affected.
9 Probably the missile probability part of it will not
10 be affected.
11 CHAIR RAY: I see. The probability of
12 missile being generated will not be affected by this
13 review?
14 MR. SHENG: Will not be affected, right.
15 CHAIR RAY: Okay. Well, we'll have to
16 ponder that, I guess.
17 MR. SHENG: Yes, because I said I don't
18 recall very clear. Because I did both parts like ten
19 year ago, okay, only different issue. But this one,
20 okay, I didn't do that part. I didn't do the 10.2
21 part. And so it was --
22 CHAIR RAY: Okay. Good enough. Let's
23 stop it right here. Maybe after the break, maybe
24 later, you can fill us in on the question at the end,
25 which is: If this review is not yet complete, is

1 there no implication when it is complete on the
2 turbine missile analysis? If the answer is no, there
3 is no implication it on and if the answer is yes it
4 could be, then we'll probably accept that and wait for
5 the answer.
6 MEMBER BROWN: Can I ask one informational
7 question on the missile --
8 CHAIR RAY: But, first, I'm sorry, I just
9 want to make sure we're settled on this point.
10 MR. SHENG: Yes. I will provide
11 information to you. Because the --
12 CHAIR RAY: Well, give it to Pat and he'll
13 give it to us.
14 MR. SHENG: Yes. Yes. Okay.
15 CHAIR RAY: One more question.
16 MEMBER BROWN: Informational question. I
17 mean, I keep hearing in this discussion about turbine
18 missiles. There's also a generator -- attached to the
19 turbine generator, isn't there? That we don't worry
20 about those?
21 CHAIR RAY: Well, the piece parts are too
22 small and the casing is too robust. In other words,
23 the scatter --
24 MEMBER BROWN: The generator is a robust
25 thing --

1 MR. SHENG: Yes.

2 MEMBER BROWN: The missile is going to go

3 first.

4 CHAIR RAY: The low pressure turbine shell

5 is pretty thin relative to the size of the missiles --

6 all right. And they go right through the shell --

7 MEMBER BROWN: I just used to consider the

8 generators as well when we did our analysis.

9 CHAIR RAY: Yes, I understand. But, no,

10 in this case the stagger will contain any missile that

11 there are --

12 MR. MILANO: Okay. Getting back to the

13 MSIV closing time. In the staff's review of Unit 1,

14 the staff stated that the MSIVs were capable of

15 closing in five second after receipt of a closure

16 signal. The staff reviewed the results of TVA's

17 sensitivity study and concluded that a total time of

18 eight seconds per main steam isolation, which included

19 the generation processing and delay in the isolation

20 signal, that closure was acceptable for all of the

21 related design basis accidents. Therefore, the staff

22 concluded that TVA's revised maximum closure time of

23 six second was within the acceptable limits and, of

24 course, was acceptable.

25 TVA modified the requirements in order to

1 allow for the use of low-alloy seals in the seam and
2 feedwater systems. The use of the low alloy steels
3 provides better resistance to the degradation
4 mechanisms of flow accelerated corrosion, FAC. And
5 FAC has been detected in Unit 1 and in some locations
6 the original carbon steel piping has been replaced
7 with a more corrosion resistent chrome moly low alloy
8 steel.
9 And as you're aware, these material
10 require the application of preheat during welding.
11 And the Unit 2 FSAR was found to be acceptable because
12 the improve corrosion resistance of the low alloy
13 steel piping when used in these systems and because
14 the NRC staff previously accepted these for Unit 1.
15 MEMBER STETKAR: Pat?
16 MR. MILANO: Yes.
17 MEMBER STETKAR: This is probably a better
18 question to the applicant, but I'll just throw it out.
19 Does TVA use CHECWORKS for prediction of low
20 acceleration--
21 MR. CROUCH: This is Bill Crouch.
22 Yes, we use CHECWORKS.
23 MEMBER STETKAR: Thank you.
24 MR. MILANO: Lastly, TVA also removed from
25 the FSAR the requirement for daily steam generator

1 blowdown samples and added a reference to the sampling
2 requirements in accordance with the offsite dose
3 manual, the ODCM. Therefore, the previous staff
4 conclusion that the conclusions that the provisions of
5 sampling of blowdown in conformance with the
6 guidelines Branch Technical Position BTP 5-3 is no
7 longer valid. TVA didn't provide any justification
8 for meeting another standard or criteria for sampling.
9 The staff, therefore, has no basis for determining
10 the acceptability of the steam generator blowdown in
11 this because of this issue or whether it meets the
12 requirements for maintaining acceptable secondary
13 water or chemistry control and stuff. So, this is an
14 open issue that we've had with TVA, and we will again
15 be addressing the open items should they be closed out
16 before the next Subcommittee meeting.
17 With that, other than Chapter 8 and also
18 Subsection 3.11, which is also electrical related with
19 regard to environmental qualification of electrical
20 components, that completes the general overview of the
21 staff's review as documented in Supplement 22.
22 And, Mr. Raghavan.
23 MR. RAGHAVAN: Yes. Raghavan again.
24 I want to answer the question on the
25 turbine disk integrity.

1 CHAIR RAY: Okay.

2 MR. RAGHAVAN: As a part of our review,
3 the Plant Systems Branch looked at it on the system
4 point of view and identified a need to look at the
5 turbine disk integrity. So, to answer your question,
6 sir, we'll have to go back and look at it and make
7 sure that the previous conclusions remain valid. So,
8 that's the open item.

9 CHAIR RAY: Thank you.

10 MR. RAGHAVAN: So that's being done right
11 now.

12 MEMBER STETKAR: Okay. Just as long as we
13 close that for analysis. Thank you.

14 MEMBER STETKAR: Yes, sir.

15 MR. MILANO: Again, we're a little ahead
16 of schedule. We do have the Electrical Branch staff
17 that is here right now. If you would like to go into
18 that section or take the break now --

19 CHAIR RAY: Yes, I think we can take a
20 break now and it would be more convenient for
21 everybody if we do that.

22 MR. MILANO: Okay.

23 CHAIR RAY: And given that we're a half
24 hour or so ahead of schedule. So, we're going to take
25 a 20 minute break until 10 minutes after 10:00.

1 MR. MILANO: Thank you.

2 CHAIR RAY: So we're in recess until 10

3 after 10:00.

4 (Whereupon, at 9:48 a.m. in recess until

5 10:10 a.m.)

6 CHAIR RAY: Back on the record and back to

7 the staff.

8 MR. MILANO: Yes, sir. What I'd like to

9 do is I'd like to introduce for our reviews of Chapter

10 8 the Electrical Power Systems and Subsection 3.11 on

11 Electrical Environmental Qualification I have members

12 of the Electrical Engineering Branch here.

13 And the principal speakers for these

14 sections are Mr. Singh Matharu and Mr. Matt McConnell.

15 And Singh is going to take care of the power systems

16 and Matt will take care of the environmental

17 qualification.

18 And with that, I'll turn it over to them

19 for their presentation.

20 CHAIR RAY: Pat, did our Region II

21 representative escape or having done nothing, or -- we

22 need to hear from him.

23 MR. MILANO: You are going to hear from

24 him.

25 CHAIR RAY: Okay.

1 MR. MILANO: Yes.

2 CHAIR RAY: Having done nothing; nothing

3 that I could see anyway.

4 MR. MILANO: Very good.

5 MR. MATHARU: Okay. Good morning.

6 CHAIR RAY: Good morning.

7 MR. MATHARU: My name is Singh Matharu,

8 and I'm with the Electorial Branch.

9 We tried to teach Matt the electrical

10 system, but he would not do it. So, we got the

11 pleasure of doing this.

12 Essentially that the basic of the

13 electrical system has already been presented. All of

14 you are familiar with and we're going to highlight the

15 areas that we specifically addressed as part of our

16 area.

17 In this criteria that is set up Standard

18 Review Plan Section 8.1 basically it's for electrical

19 power systems. And we have previously reviewed the

20 capability of electrical system, but not for a dual

21 unit operation. So we concentrate on the issues that

22 would be effected as part of a dual unit site.

23 Specifically, GDC 5 which is related to --

24 I'm sorry, let me rephrase that. General Design

25 Criteria 5 which is related to the sharing of

1 structures and General Criteria 17 which is general
2 for electrical systems, GDC 19 which is for testing.
3 And then a couple of Regulatory Guides that are
4 associated with the sharing of electrical power
5 systems, specifically Regulatory Guide 1.81 and 1.75
6 deal with the operation of different trains of
7 electrical systems.
8 CHAIR RAY: Does GDC -- I don't know why
9 I'm looking around here. I've got it in three places.
10 GDC 18 includes start-up testing?
11 MR. MATHARU: Yes.
12 CHAIR RAY: All right. So the unusual
13 configurations established for start-up testing will
14 be considered in terms of what the status of Unit 1--
15 MR. MATHARU: That is correct. In fact,
16 there is an open item that's related to some of the
17 testing that's required.
18 CHAIR RAY: All right.
19 MR. MATHARU: Go on?
20 CHAIR RAY: Yes.
21 MR. MATHARU: Again, looking at the
22 specifics of what we're interested in, we were looking
23 at behavioral trip as a result of an abnormal
24 operation occurrence, and we have found that that's
25 typically the maximum loading on the transformers and

1 the auxiliary systems.

2 We also looked at an accident in one unit

3 and concurrent shutdown on the second unit with and

4 without offsite power. So we were telling in both the

5 onsite and the offsite power sources.

6 And we were looking at an accident on one

7 unit and spurious safety actuation on the other unit.

8 And again, this was with and without the offsite

9 power source available.

10 Looking at the requirements, we have

11 looked at capacity, capability, independence,

12 redundancy and the testability of the systems. And

13 from the offsite power source, we've got four open

14 items. And open item #26, incidentally with the open

15 item that are identified in Appendix HH, the table

16 there that gives all the open items that are

17 associated with electrical review of Unit 2.

18 I can go into details of the open items,

19 if needed.

20 CHAIR RAY: Well, give us a little detail,

21 not a whole lot. I'm sitting here listening and

22 reading at the same time and trying to imagine what

23 the issues are involved. So if you can just give us a

24 few sentences on each of these, the nature of your

25 question.

1 MR. MATHARU: Okay. The first item is,
2 again, this is related to the question that you asked
3 earlier on whether the testability is going to verify
4 some of our assumptions. And item #26 is looking at
5 the response of the emergency diesel generators to
6 load sequencing. And specifically we were looking at
7 for a scenario in which an accident occurs in one unit
8 and a concurrent shutdown of the second unit occurs
9 without offsite power. So effectively you're looking
10 at the diesel generator comparing the loads.
11 We do not have an analysis from TVA that
12 depicts the worst case loading or the emergency diesel
13 generator for this scenario. So, the licensee has
14 committed to giving us this answer as part of their
15 start-up testing when they look at the sequencing the
16 diesels.
17 CHAIR RAY: So you haven't begun the
18 review, obviously, of this item? I mean, this would
19 include for example a sequence in which there was an
20 accident in one unit that led to a trip, which led to
21 a loss of offsite power, which then caused the other
22 unaffected to be shutdown --
23 MR. MATHARU: Yes.
24 CHAIR RAY: -- and have to serve its
25 emergency loads as well because of the loss of offsite

1 power?

2 MR. MATHARU: Correct. With a minor

3 clarification on that, we assumed the loss of offsite

4 power were simultaneous with the accident. So --

5 CHAIR RAY: Yes, sure.

6 MR. MATHARU: -- both would go and then

7 diesel would start, yes.

8 CHAIR RAY: Right, but I mean people would

9 say "Oh, well, that's a low probability event," but

10 it's something that caused one unit to trip due to an

11 accident could then be the cause of the loss of

12 offsite power, even though it wasn't simultaneous?

13 MR. MATHARU: Could.

14 CHAIR RAY: And then you'd put the other

15 unit into, obviously, a standby mode and it rely on

16 emergency diesel generators to remain that way.

17 MR. MATHARU: That is correct.

18 CHAIR RAY: My question actually went to

19 when the start-up testing is being performed, I know

20 the applicant will but I assume the staff also thinks

21 about well what's the status of a potential threat

22 caused to Unit 1 operation, should it be shutdown;

23 that sort of thing.

24 MR. MATHARU: That's part of what we are

25 looking at, what the condition of Unit 1 is going to

1 be, and that's a challenge that the licensee has on
2 when they're going to do this test.
3 CHAIR RAY: Yes, right. Because of
4 particularly when they're sharing systems as they
5 have.
6 MR. MATHARU: Correct.
7 CHAIR RAY: All right. Well, I guess it's
8 just something yet to be addressed.
9 MR. MATHARU: The next open item, #27 is
10 margin in transformer sizing. And again, we are
11 looking at the site has got common service safety
12 transformers Charlie and Delta that supply onsite
13 safety buses and it's got common service transformers
14 Alpha and Bravo that supply non-safety related
15 systems. And the question that we have was we wanted
16 to make sure that the transformer loading or the
17 transformer sizing is adequate for a dual unit trip
18 for all types of scenarios, and specifically in this
19 case we were looking at abnormal operating conditions
20 and a trip, you know to make sure that the start-up
21 transformers or the service transformers have adequate
22 margin. And that is still an open item.
23 CHAIR RAY: Okay.
24 MR. MATHARU: Want to go on to #28?
25 CHAIR RAY: Yes.

1 MR. MATHARU: Item #28 is related to bus
2 voltages and load tap changer. The design of the
3 transformers associated with the offsite source have
4 got load tap changers. And what we wanted to know
5 what the capability of these transformers are when the
6 grid voltages are at extreme and what the normal band
7 for the voltages that you can expect from the grid and
8 what you would get after a contingency. And what we
9 define a contingency would, an outage of a
10 transmission line or a loss of a generation of some
11 sort in the network. And we have not got the bounding
12 voltage drop calculations from the licensee for that
13 specific scenario.
14 CHAIR RAY: And 29?
15 MR. MATHARU: And item #29 is related to
16 grid analyses. What we are doing now is adding
17 another 990 volts for power into the grid system. And
18 you want to know what perturbations could occur and
19 what the consequences would be for allows disturbance,
20 such as a dual unit trip on the grid system. And we
21 don't have that analysis yet.
22 MEMBER STETKAR: They haven't done that
23 analysis?
24 MR. MATHARU: They have not done a dual
25 unit trip. Correct me if I'm wrong,

1 PARTICIPANT: It's true. It's true.

2 CHAIR RAY: All right. And that's because

3 of the interest that we have in the continued supply

4 of offsite power in the event of a unit trip?

5 MR. MATHARU: That is correct.

6 CHAIR RAY: We're not worried about the

7 lights going out in Knoxville or something?

8 MR. MATHARU: No. No. Our interest is

9 that the offsite source should have the capability of

10 shutting the plant down, if needed. And in this case

11 they've got two units hooked up to the grid, and we

12 are challenging whether the offsite source would be

13 adequate for that.

14 CHAIR RAY: Okay.

15 MEMBER BROWN: Move on?

16 CHAIR RAY: Yes, please.

17 MR. MATHARU: As far as the offsite system

18 goes, other than the open items that we just discussed

19 we feel that the licensee has adequately demonstrated

20 that the Unit 2 will meet the design requirements and

21 the offsite source is in compliance with the general

22 design requirements as specified in 17 and 18.

23 And once we get the answers to the open

24 items, we will be able to close the open items.

25 And we move on to the onsite power

1 sources, which is we're expressly looking at the
2 emergency diesel generators, the dc battery system and
3 the uninterruptible power supply system or the UPS
4 system.
5 Again, we were looking at capacity,
6 compatibility, independent, redundancy and the
7 testability of the systems.
8 As far as the diesel generators go, the
9 site has four 4400 kW emergency diesel generators on
10 the two unit site. And from from what we looked at,
11 the loading of diesel, there's about a five percent
12 margin on the diesel between the diesel reading and
13 the maximum expected load under steady state
14 conditions.
15 CHAIR RAY: Under what conditions?
16 MR. MATHARU: Steady state; what we assume
17 is at the onset the event there is a little higher
18 loading than steady state.
19 CHAIR RAY: Yes, okay.
20 MR. MATHARU: So once you get to a steady
21 state two hours down the road, you have some margin.
22 What we also looked at was the frequency
23 and the voltage response during the sequencing of the
24 load on the diesel is very reliable margins. And we
25 found that satisfactory.

1 Basically what happens is when you
2 sequence large loads onto the diesel you get voltage
3 and frequency variations. You want to make sure that
4 the variation is acceptable to the loads that are
5 already occurring.
6 A little bit of background on what the
7 system is. They've got two electrical divisions, we
8 call them Alpha and Bravo. The electrical area
9 entrusted in protection of the equipment and we do
10 that on what we call Loss of Voltage Relays and
11 Degraded Voltage Relays; that's pretty narrowly
12 focused on those.
13 We look, again, the probabilities, we
14 looked at the capacity, capability, independence,
15 redundancy and testability of two divisions.
16 We also looked at the separation criteria.
17 Specifically when there are non-safety varying loads
18 connected to safety vessels then you want to make sure
19 that a fault on a system isolated specific sections of
20 the electrical system and not the whole section.
21 What the licensee is doing is they are
22 using their selective tripping to make sure that the
23 selected devices that are installed in systems are
24 adequate, separate non-safety and safety systems.
25 Question on that?

1 CHAIR RAY: Well, I was just thinking
2 about it. Is there anything here that is different
3 than what we will call the --
4 MR. MATHARU: Conventional?
5 CHAIR RAY: -- average, I don't want to
6 call it the standard design, but what about this
7 selective tripping? I'm trying to think back in my
8 own memory back as to whether or not this the same as
9 or different then what we normally see.
10 MR. MATHARU: This is pretty standard.
11 CHAIR RAY: Okay. So we'll go to your
12 open items.
13 MR. MATHARU: We go to open items. Like I
14 said, we have focused on two specific relates; one is
15 the loss of voltage relay, which typically looks at a
16 complete loss of power. The other one is degraded
17 voltage relay, which we assume the grid maybe go
18 through a ground-out of some sort and you got extended
19 degradation of grid system. And you make sure that
20 your onsite safety related equipment is adequately
21 protected.
22 Item #30 is related to, again, DVR
23 setpoint. And the specifics on this one -- let me see
24 if I can narrow it down.
25 Typically in an electrical system the

1 equipment that operating at low voltage is down to the
2 124 level parts sees the lowest voltage in a system.
3 And what we did not see from the evaluations that we
4 had was a summary of operability of equipment at the
5 lowest voltages during degraded grid conditions. So,
6 this is an open item for the licensee to address.
7 CHAIR RAY: Okay.
8 MR. MATHARU: Okay. Item #31, as we
9 discussed earlier, typically the design is for a
10 simultaneous loss of coolant accident and a loss of
11 offsite power event. And the FSAR has got words to
12 the extent that the logic or sequencing loads is such
13 that there the sequencing can perform a LOCA followed
14 by a delayed LOOP. And we wanted an evaluation from
15 TVS of the consequences of this logic that's present
16 in their design
17 CHAIR RAY: Are you seeking to have the
18 coincident event rather than the followed delay loss
19 of offsite power evaluated, is that what you're asking
20 for?
21 MR. MATHARU: Yes. The design is
22 simultaneous and the existing design can handle
23 simultaneous, but the logic also has the capability of
24 staggering.
25 CHAIR RAY: Yes.

1 MR. MATHARU: And we are questioning what
2 the consequences of that logic is.
3 MR. RAGHAVAN: Just to make sure, you said
4 the existing design can handle simultaneous --
5 MR. MATHARU: That is correct.
6 MEMBER STETKAR: -- as far as the logic
7 understanding what loads it needs to sequence?
8 MR. MATHARU: Yes.
9 MEMBER STETKAR: Okay.
10 MR. MATHARU: Yes. Am I right on that,
11 Ken?
12 PARTICIPANT: Yes.
13 CHAIR RAY: You have to go to a mic.
14 MR. MATHARU: That's really fine. The
15 answer is yes.
16 Okay?
17 CHAIR RAY: Yes, I'm just mulling it
18 because it seems as though this would be a condition
19 that is normally addressed, they've addressed it here
20 and asking what's the consequences of doing so, as I
21 understand it.
22 MR. MATHARU: That's correct.
23 CHAIR RAY: Okay.
24 MR. MATHARU: We go over it later on if
25 you want to.

1 CHAIR RAY: No. I'm just wondering why we
2 don't always look at it from that perspective.
3 MR. MATHARU: Typically the licensing
4 basis for US plants is a simultaneous loss of coolant
5 accident and --
6 CHAIR RAY: Maybe that's part of the role
7 we have around here is trying to decide if we should
8 change things like that if they don't make sense. And
9 normally people would think "Well, that must be the
10 most severe circumstance, right, simultaneous?" But
11 you're questioning here what the affect is of being
12 sequential and that's probably a good thing to do, but
13 you know I'm sort of puzzled why we don't always do
14 that.
15 MR. MATHARU: That's a good question. And
16 we don't have an answer to that, but technically did
17 you want me to explain --
18 CHAIR RAY: Yes. Other staff members may
19 want --
20 MR. MATHEW: Yes, this is Roy Mathew. I'm
21 the Acting Branch Chief Electrical Branch.
22 CHAIR RAY: Yes.
23 MR. MATHEW: The open item refers to a
24 statement that TVA made on FSAR. So the staff, since
25 TVA said in the FSAR that delay LOOP and the LOCA we

1 can handle that particular design, that the design was
2 describing. So staff is asking question to give more
3 details how that design is designed for that
4 particular sequence.
5 CHAIR RAY: All right. But the
6 implication of all that you've said is that other
7 licensees have -- I don't know what would happen if we
8 had a delayed loss of offsite power following an
9 accident. That's why I would --
10 MR. MATHEW: Right. That's what I said--
11 CHAIR RAY: We don't have a clue and, you
12 know we basically don't care. And that, obviously,
13 isn't a satisfactory situation to be in.
14 MR. MATHEW: Right. So the part of the
15 open item that TVA has to review to see whether that
16 is in terms of design or is that a mistake they put in
17 the FSAR. So, this open item for TVA to get back to
18 us to clarify the design.
19 CHAIR RAY: Okay. I'm sorry, but it seems
20 to me like I may not understand what's going on here.
21 But the idea that there would be any question about
22 what would occur in sequential DBA and loss of offsite
23 power as opposed to simultaneous is just taking a
24 while to soak in, I guess. I'm not sure what we're
25 saying here.

1 MR. MATHARU: Well, to answer your
2 question, generically there is an industry initiative
3 to address this issue.
4 CHAIR RAY: Is there?
5 MR. MATHARU: And we've been talking to --
6 at least in the past we've been talking to to owners'
7 groups how address this generic issue, specifically
8 from the perspective you end up double sequencing.
9 CHAIR RAY: Yes.
10 MR. MATHARU: And from the systems
11 perspective you may start getting water hammers, the
12 pumps may not be able to deliver, the motors may not
13 start. So there's a lot of consequences of staggering
14 LOCA and LOOP, and that's an open item for the
15 industry to resolve.
16 MEMBER BROWN: I would have thought that
17 that would be a fairly severe approach doing it this
18 way because you'd get out of sequence while you're
19 starting --
20 CHAIR RAY: Yes. Well, that's what he
21 just pointed out.
22 MEMBER BROWN: And I mean, I know the
23 programs we used to do, we used to dump the normal
24 power and just go right to the diesels and not depend
25 on it at all.

1 MR. MATHEW: Maybe I can clarify this.
2 CHAIR RAY: Just a second. Yes?
3 MR. MATHEW: TVA has some clarification.
4 CHAIR RAY: Okay. We're just trying to
5 point to this side over here, to John and everybody
6 else. Go ahead.
7 MR. HILMES: Let me clarify. Steve
8 Hilmes, TVA Electrical.
9 The design basis from a mechanical
10 hydraulic standpoint for Watts Bar is a loss of
11 offsite power followed by a LOCA. And as he stated,
12 that's a pretty standard simultaneous that people
13 analyze this. The logic itself at TVA as far as the
14 diesel sequencing, however has features in it which
15 will handle the reverse sequence. And in other words,
16 in allows you to re-sequence loads that haven't stared
17 yet. But as far as from an hydraulic analysis
18 standpoint, the plant is designed for simultaneous lot
19 LOCA.
20 CHAIR RAY: Yes, and I never doubted that.
21 The whole discussion here has to do with actually the
22 words on the slide says that the existing auto-
23 sequence logic designed for LOCA followed by loss of
24 offsite power. Well, I looked at that and thought
25 well that means what it say, "followed by," that

1 you're designed to do that. And I think that that's
2 what you just said.
3 MR. HILMES: The logic is designed to
4 handle that.
5 CHAIR RAY: Yes, that's fine. So that
6 seems like a good thing, a reasonable thing, a correct
7 thing to do. But now I'm learning we don't do that.
8 We hope and pray that when a LOCA occurs you have a
9 loss of off site power, if you're going to have one at
10 all, immediately, simultaneously. And we don't have a
11 clue what happens if it takes 20 seconds to get a loss
12 of offsite power, and then the industry is addressing
13 it. Okay. Everybody seems to agree with that.
14 I'm just learning that fact. It's an
15 interesting piece of information, and one that I
16 wouldn't have anticipated, but I can understand that
17 it's a greater challenge in some respects to do it
18 with this delayed loss of offsite power than it would
19 be with a simultaneous loss of offsite power. That's
20 been pointed out.
21 And so, okay. You guys, I guess, are going
22 to provide some more information to the issue in
23 response to this open item. You're going to give them
24 whatever information they're asking for. But it
25 doesn't really resolve what to me is a question at

1 this point in time, and that is why haven't we always
2 assumed a loss offsite power at some time during the
3 auto-sequencing?
4 MR. CROUCH: Can I address it.
5 CHAIR RAY: Yes.
6 MR. CROUCH: This is Bill Crouch, TVA.
7 You made a good point that this is a
8 generic type issue, this is not a Watts Bar Unit 2
9 specific issue.
10 CHAIR RAY: I got it.
11 MR. CROUCH: And our basic response is
12 going to be our licensing basis is a LOCA coincident
13 with a loss of offsite power and the proper way to
14 address this is a generic issue, not through a
15 licensing,
16 CHAIR RAY: Well, okay. But now does that
17 mean you're not even going to provide the information
18 they're asking for?
19 MR. CROUCH: No. We can provide
20 information about how we are designed. As far as the
21 overall resolution of this, this is not a Unit 2
22 licensing issue, per se.
23 CHAIR RAY: I do understand. But it is an
24 open item. And I suppose you could say we're not
25 going to give you the information because we're not

1 obliged to, you could do that. But if you're going to
2 give the information, as I said, it will simply add, I
3 guess, to the body of information is apparently going
4 to have to be processed as we try and decide what are
5 we going to do about a subsequent loss of offsite
6 power following or during an auto-sequencing in the
7 wake of a loss of coolant accident.
8 All right. Well good. I've learned
9 something as a result of this open item.
10 MR. MATHARU: Again, the reason for us
11 asking the question was because it was information
12 that was supplied to us through their responses or
13 through the FSAR.
14 CHAIR RAY: Yes.
15 MR. MATHARU: So, that was the logic for
16 us asking the question.
17 And if I may, I missed lead you slightly
18 by saying that's the design basis, that's just the
19 open item that's existing out there.
20 CHAIR RAY: Right.
21 MR. MATHARU: The design basis is
22 simultaneous LOCA and LOOP. Just a clarification.
23 CHAIR RAY: Well, as it's been reinforced
24 to me, although I knew it already, this is not a Watts
25 Bar specific issue. But nevertheless, I am puzzling

1 over the implications of us not really knowing what
2 the effect would be of a loss of offsite power during
3 this post-LOCA sequencing that takes place.
4 Okay. Let's go on.
5 MR. McCONNELL: If I could follow-up to
6 that?
7 My name is Matthew McConnell.
8 Basically, we issued a Generic Letter
9 2006-02 on the grid back in 2006. And part of the
10 staff's questioning was requesting information from
11 the licensees on they deal with the effects of double
12 sequencing. And essentially all the responses came
13 back with the exception of maybe two or three saying
14 that, just as TVA stated, their licensing basis is the
15 simultaneous loss of offsite power in a LOCA.
16 However, they did mention, almost every one of them, I
17 think it had to be the high 90 percent, that they have
18 evaluated and determined that they could tolerate that
19 if they had to.
20 So, it's not that, I guess, they want to
21 say it's part of their licensing basis, but they want
22 to say that they have evaluated but they're not trying
23 to take credit for it.
24 CHAIR RAY: Well, it's certainly something
25 that would be very uncomfortable if you didn't have

1 any idea what would happen.

2 MR. McCONNELL: Right. Oh, absolutely.

3 CHAIR RAY: And because it's certainly not

4 something that you can exclude, particularly given how

5 grids operate. They aren't instantly responsive to a

6 unit trip. There's a sequence that takes place, and

7 sometimes other resources on the grid will wind up

8 tripping off and then the grid itself will go down.

9 So you can't really insist unless you do it like

10 Charlie said, deliberately, that you're going to have

11 a loss of offsite power consequent with a LOCA

12 actuation.

13 MR. MATHARU: Well, that is very true.

14 And, in fact, if you look at this site it's got two

15 units. And if you do have accident in one unit, by

16 the time the generator trips it's a few seconds after

17 the accident has happened. And potentially the loss

18 of generation could lead to a degradation on the grid

19 which would eventually give you a loss of offsite

20 power so there you got a sequence that's out of step.

21 CHAIR RAY: I've run a multi-unit site, I

22 know that works. And I've run a grid, too. And so,

23 anyway, it's interesting.

24 Let's just take note of it and move on

25 then.

1 MR. MATHARU: Okay. Item #32, this is
2 related to the allowable voltage and frequency that we
3 have for the diesel generators. And what we were
4 interested in was the consequences on the load if the
5 diesel generator operates at the extreme voltage or
6 frequency.
7 To give you an example, let's assume it's
8 normally running at 60 hertz and allowable frequency
9 is 59½ to 60 point something. If the diesel runs at
10 the lower end of the allowable frequency, the motors
11 would be running slightly slower and the pumps may not
12 have the GTM that they're designed for. So we asked
13 the licensee to give us some details on that. And the
14 quick review that TVA said, they said it's going to be
15 negligible, but we don't have the exact numbers. So
16 the question is outstanding.
17 MEMBER BROWN: Well, just a question.
18 They said they had administrative limits such that the
19 -- and I'm reading it right out of FSAR. "TVA has
20 added administrative limits to the plant operating
21 procedures for both the voltage and speed. The limits
22 are so tight that there would be negligible impact."
23 That's what they say. So not that it would be no
24 impact at 59½ or 60, but I guess I would read this to
25 say that your limits are tighter than 59½ to 60, or

1 whatever your normal control bands are?

2 MR. HILMES: Steve Hilmes, TVA.

3 Yes, that's correct. We hold it at a

4 minimum of 60 and a maximum of 60.1. We check that

5 every 18 months.

6 MEMBER BROWN: Okay. So that's not an

7 operator issue? I mean, I'm reading the rest of this

8 and it said one of the questions was how do the

9 administrative limits in this apply to tech spec

10 surveillance. I imagine that's the calibration of

11 your governor and voltage regulators?

12 MR. HILMES: That is correct.

13 MEMBER BROWN: In this case, governor?

14 Point one is pretty tight, so I mean I just -- very

15 tight.

16 MR. HILMES: We have actually gone back

17 and looked at the data historically and we have not

18 had any issues meeting that.

19 MEMBER BROWN: So this is your normal

20 monitoring of the bus frequency?

21 MR. HILMES: Yes. Yes.

22 MEMBER BROWN: Okay. All right. Thanks.

23 MR. MATHARU: Yes. We will delve into it

24 more and we will look at the instrument uncertainties

25 and the calibration errors and everything else.

1 MEMBER BROWN: Well, I was just thinking;
2 you can calibrate but I don't know what type of
3 governors they have --
4 MR. MATHARU: That's true.
5 MEMBER BROWN: -- and if they're new, and
6 the digital type of stuff, then you've got a little
7 bit more control and you have a tighter thing. If
8 they're the older analogue style you get more
9 variation. That's all. So it's interesting. Point
10 one is pretty tight; but if they can do it, fine. It
11 works for me.
12 MR. MATHARU: Yes, you're right. The
13 physical limits may be different, so we can question
14 all that.
15 MEMBER STETKAR: Before you go to -- I see
16 you turning the page, so before you get the dc stuff.
17 MR. MATHARU: Sure.
18 MEMBER STETKAR: I'll stop you in a moment
19 here.
20 MR. MATHARU: Yes.
21 MEMBER STETKAR: A couple of questions
22 about cables only because they're sort of discussed in
23 the onsite ac part of the SSER.
24 My first concern is underground cables.
25 MR. MATHARU: Sure.

1 MEMBER STETKAR: The discussion in the
2 SSER contains kind of what I call a traditional review
3 of medium voltage energized cables buried underground,
4 the inspection testing, you know drainage capabilities
5 and so forth.
6 Of late, in the last several months in the
7 license renewal arena and, indeed, in the update to
8 NUREG=1801 that covers license renewal, the staff has
9 extended the scope of protection drainage monitoring
10 of underground cables to include both voltages down to
11 and including 400 volts ac above and excluded the
12 requirement that the cables normally be energized such
13 that now the scope is any in scope, whatever that
14 means, cable with a nominal voltage of 400 volts and
15 above regardless of it's normal duty cycle, if you
16 normally follow that.
17 How does that apply to the licensing of
18 Watts Bar Unit 2, or how is that handled?
19 MR. MATHARU: Okay. I'm going to defer
20 that question to Matt here. He's been involved in
21 that.
22 Specifically the background to that issue
23 is what we found is cables that have been submerged in
24 water for extended duration. And initially the issue
25 was only energized cables were suffering degradation.

1 But we've subsequently found out that even the de-
2 energized cables are susceptible to degradation. So
3 we've been getting proactive on that and pursing the
4 issue generically --
5 MEMBER STETKAR: Now my question is how
6 does that generic issue now feed into the licensing
7 decisions on Unit 2?
8 MR. MATHARU: Correct. And Matt
9 specifically looked at that on site and on design.
10 MR. McCONNELL: This is Matt McConnell
11 again.
12 Essentially for everything else we're
13 doing with industry, it would be applicable to Watts
14 Bar Unit 2. We have, obviously, issued a NUREG.
15 We're in the processing of issuing a Regulatory Guide
16 which should be out, probably I'd say by the
17 summertime of this year if everything goes well.
18 We also have inspections that are ongoing.
19 And we've updated our inspection procedures on
20 flooding to ensure that cables that are inaccessible
21 or underground that they are not subjected to
22 conditions that they would not be expected to, like
23 submerged in water.
24 So, all of those and including the
25 Maintenance Rule that we believe is covering

1 everything from all 104 nuclear power plants in the
2 country to Watts Bar Unit 2.
3 MEMBER STETKAR: Do you have any sense,
4 and probably the applicants probably better suited to
5 answer this, if the scope of the monitoring both for
6 water intrusion and also testing of the cables
7 themselves, is expanded to include cables down to 400
8 volts, does it substantially affect the scope of both
9 the underground cable ducts and the number of cables
10 that's included at Watts Bar?
11 MR. McCONNELL: Right.
12 MR. RAGHAVAN: Some plants don't have all
13 that many, you know 40 volt four kV cables so that the
14 additional scope is relatively minimal and they're
15 routed through the same ducts. Other plants, it's a
16 substantial increase. So I'm trying to get a sense
17 of--
18 MR. McCONNELL: I'm trying to recollect
19 TVA's response to Generic Letter 2007=01 where they
20 provided essentially their program and talked about
21 how they have established their program. So I would
22 have to defer to TVA --
23 MEMBER STETKAR: Well, but in those days
24 the programs were all medium cables. I'm asking about
25 expansion of the program to include cables down to--

1 MR. McCONNELL: Right.

2 MR. RAGHAVAN: -- 400 volts.

3 MR. MILANO: Right.

4 MEMBER STETKAR: So their response 2007-

5 01--

6 MR. McCONNELL: Well, some licensees did

7 expound --

8 MEMBER STETKAR: Yes.

9 MR. McCONNELL: But I can't recall what

10 the specifics were, so I would have to defer to TVA on

11 that if they have that answer.

12 MR. HILMES: Yes. Steve Hilmes with TVA.

13 The manholes at TVA have sump pumps in

14 them with alarms, okay. So except for possibly early

15 in construction they've always been maintained dry.

16 Our testing is basically consists of VLF

17 testing on the medium voltage cables. The 480 at this

18 time it's more along the lines of inspections. They

19 are all in the same --

20 MEMBER STETKAR: They are? Okay.

21 MR. HILMES: But we have not-- we have --

22 at this point where we're at with testing we haven't

23 seen any degradation in heating voltage cables, and we

24 haven't identified anything as far as issues with

25 connections at any point on 400 volt cable.

1 MEMBER STETKAR: They stated that the
2 lower voltage, the 40 volt cables are basically routed
3 in the same duct banks, so they --
4 MR. HILMES: They are.
5 MEMBER STETKAR: -- are subject to the
6 same inspections for water accumulations? Okay.
7 That's good. Thanks. Thank you.
8 The other question I had about cables, and
9 this is more of an information than anything else,
10 because it really wasn't --
11 MEMBER BROWN: John, before you go on,
12 because the staff response to the cable thing or the
13 SSER talks about that only the medium voltage cables
14 are evaluated by the testing program. And yet I get
15 the impression from the answer that also the low
16 voltage cables. Is that -- so they are not --
17 MR. HILMES: We only do the VLF testing on
18 medium.
19 MEMBER BROWN: Okay.
20 MR. HILMES: The technical issues --
21 MEMBER BROWN: No, that's fine. I just
22 want to make sure I understood on your answer. So
23 they're just inspection and the sumps are kept dry --
24 MR. HILMES: Yes.
25 MEMBER BROWN: -- and therefore your ducts

1 are okay also from that standpoint?

2 MR. HILMES: Yes.

3 MEMBER BROWN: Okay.

4 MEMBER STETKAR: Do you do hi-pot Megger

5 testing on 40 volt cables?

6 MR. HILMES: We do Megger testing on the

7 40.

8 MEMBER BROWN: Sorry to interrupt you,

9 John. I just wanted to make sure.

10 MEMBER STETKAR: It's all right.

11 As I said, this is more of a personal

12 education because I didn't have enough time to go back

13 and do homework and read everything.

14 Back in the -- I can't recall, I'll say

15 late 1980s time frame, Watts Bar had a substantial

16 issue with electrical cable pull-by damage. And I

17 know that at least Unit 1 spent a substantial effort

18 to examine cable runs and make corrections, if

19 necessary, to replace cables. Was that effort

20 extended to Unit 2 also?

21 MR. MATHARU: You're asking a man --

22 MR. McCONNELL: Matthew McConnell again.

23 Yes. The staff did evaluate that with the

24 impact on Watts Bar Unit 2. Specifically we have

25 prepared a safety evaluation for the Corrective Action

1 Program for cables and cable pull-by is addressed in
2 that.
3 MEMBER STETKAR: Okay.
4 MR. McCONNELL: And it's actually --
5 that's probably the most extensive section in the
6 safety evaluation --
7 MEMBER STETKAR: Okay.
8 MR. McCONNELL: -- that talks about how
9 they're going to go about to verify that everything
10 that was addressed in Unit 1 is also going to be
11 addressed in Unit 2.
12 MEMBER STETKAR: I guess I didn't get to
13 that section, so I apologize.
14 MR. McCONNELL: That's fine. It's
15 actually referenced as -- in the open item, Appendix
16 HH.
17 MEMBER STETKAR: Okay.
18 MR. McCONNELL: If you look at the
19 accession number for item #1 and 3.
20 MEMBER STETKAR: Okay. I didn't start at
21 the backend.
22 MR. McCONNELL: That's fine.
23 MEMBER STETKAR: As long as it's
24 addressed, thanks. I apologize for the out of place
25 misinformed question.

1 MR. MILANO: Excuse me, sir. Pat Milano
2 again.
3 Just to give you a little reason why --
4 why it wasn't addressed in the SER it's because in
5 talking with our legal staff the SER is to handle
6 licensing basis, whereas those issues that you're
7 talking about with regard to cables are part of a
8 Corrective Action Program to restore it back to the --
9 or to ensure that it remains within the licensing
10 basis. So that's why we didn't -- the staff issued a
11 Safety Evaluation Report with regard to that
12 Corrective Action Program. And we just reference it
13 in the SER.
14 MEMBER STETKAR: Okay. Thanks. That
15 helps. That helps. Thank you.
16 MR. MATHARU: We move on to the dc system?
17 CHAIR RAY: Yes.
18 MR. MATHARU: Okay. The site 125-volt dc
19 system for the two units. They call them channels
20 one, two, three, four sequentially. Each channel has
21 a battery charger which supplies all the dc power and
22 the batteries also supply power to the UPS system or
23 the uninterruptible power supply system.
24 It's pretty standard design as far as the
25 chargers, the batteries and the UPS system. There's

1 physical independence, separation and sizing. We
2 looked at the capacity and capability, independency.
3 And we also looked at the performance capabilities of
4 the dc system, assuming a signal failure on one of the
5 channels. There's no problems there.
6 As far as conclusions, we felt that the
7 Unit 1 and Unit 2 dc systems, independence is
8 maintained such that a single failure does not prevent
9 early shutdown of either unit.
10 And we looked at the loading calculations
11 on the dc system. It was satisfactory. And
12 specifically we looked at lag shutdown capability
13 considering an accident on one unit and spurious
14 accident signal on the other unit.
15 We concluded that there are common loads
16 that are shared on the dc system, but they do not
17 impact the station on capability. And the dc system
18 design meets the General Design Criteria for GDC 5 and
19 17.
20 And there's one open item that we're
21 looking at, specifically it's related to station
22 blackout. The station blackout analysis assumes
23 there's some load sharing associated with the
24 batteries to ensure that the batteries last for four
25 hours, which is GDC that the plant is licensed to.

1 And to do that, there have been some modifications to
2 the plant making sure that loads can be stripped,
3 that's an open item for dc system.
4 CHAIR RAY: I've followed you all up to
5 the last couple of sentences. Say again. Because I
6 don't understand what are we going to do to close the
7 open item?
8 MR. MATHARU: Okay. The plant is
9 implementing a design change to ensure that there is
10 some loads that can be shared upon a station blackout.
11 CHAIR RAY: Yes.
12 MR. MATHARU: And from what I recall,
13 they're still in the stages of implementing that
14 design changes. Help me, TVA, if there's any
15 difference in what I said.
16 MR. HILMES: Steve Hilmes, TVA.
17 What he's referring to is due to the two
18 units coming on, there's additional load shedding that
19 has to be done. And that's for a station-wide panel.
20 That's handled procedural. It's in guidance. And
21 the guidance is in Numark documents and we have to
22 issue a design output to ensure that the procedures
23 are updated accordingly.
24 MEMBER STETKAR: Let me ask a few
25 questions about that. So, the load shedding is

1 strictly manual, is that correct?

2 MR. HILMES: On the batteries --

3 MEMBER STETKAR: It's my understanding

4 that the loads have to be shed within 30 minutes for

5 you to achieve the four hour coping duration, is that

6 correct?

7 MR. HILMES: That's correct.

8 MEMBER STETKAR: I also recall reading

9 that in addition to shedding loads the operators have

10 to run around and open up the doors to a bunch of

11 cabinets in addition to shedding loads so the cabinets

12 don't overheat. So it sounds like the operators are

13 going to be pretty doggone busy doing a lot of things

14 after a station blackout, in addition to trying to get

15 all ac power back connected to buses.

16 What sort of analyses have you done to

17 have any confidence that the operators can, in fact,

18 perform these actions reliably within 30 minutes? And

19 i don't care if they're written in procedures or not.

20 I mean, human beings under realistic conditions can

21 indeed perform all of these things that you're

22 requiring of them under rather challenging conditions.

23 So I'm curious what analyses have been done to give

24 us confidence that these are achievable?

25 MR. MENDE: Rick Mende with TVA.

1 The load shedding functions are prescribed
2 in abnormal operating instructions. And they have to
3 be validated, field validated by Operations. And they
4 were done on Unit 1 prior to start-up. For Unit 2, as
5 they said, when the design output documents are
6 updated, the procedures will be developed and we will
7 validate those procedures.
8 MEMBER STETKAR: Those procedures also
9 include the instructions to the operators to
10 simultaneously open up doors on electrical cabinets
11 and which specific cabinets thy have to open up?
12 MR. MENDE: I believe that's sequentially.
13 But, yes, they direct them to ensure that they don't
14 get overheating in the cabinets.
15 MEMBER STETKAR: Okay. I assume this
16 comes under, since it for -- it also applies to Unit 1
17 since this a fully integrated plant, there's a way or
18 our silent Region II guy to get up, but does
19 confirmation of the ability of the operators to
20 achieve those functions within a 30 minute time frame
21 reliability fall on the purview of the regional
22 inspectors now?
23 MR. MENDE: Depending on --
24 MEMBER STETKAR: What I'm trying to find
25 out is this a unique Unit 2 issue that we should sort

1 of pursue in this venue or is it an issue that falls
2 under in the inspection program.
3 MR. BAPTIST: James Baptist from the
4 Region.
5 I can't speak for what program covered it
6 under Unit 1, but I would imagine that it's been
7 validated and assumed to have been validated by
8 Region.
9 It is covered by the Region.
10 MEMBER STETKAR: Okay.
11 MR. BAPTIST: That's the sort answer to
12 your question.
13 MEMBER STETKAR: Okay.
14 MR. BAPTIST: How it will be captured
15 under Unit 2 will be identical to Unit 1.
16 MEMBER STETKAR: It sounds like the
17 operators are going to be rather challenged under
18 these conditions, and I always get worried a bit about
19 that.
20 MR. MATHARU: I think just to couch your
21 question, what you're saying is there's a number of
22 manual actions that are required within a 30 minute
23 period and sometimes the manual actions can be
24 overwhelming. Is there a way of demonstrating that
25 those manual actions can be performed in the time

1 period that we are questioning here?

2 MEMBER STETKAR: Exactly correct. And, in

3 the context of the integrated assessment of human

4 performance not can they shed the battery loads within

5 30 minutes --

6 MR. MATHARU: Correct.

7 MEMBER STETKAR: -- and separately can you

8 demonstrate that they can open up the cabinets, and

9 separately demonstrate that they can manually connect

10 any alternate ac power supplies, because those also

11 come in under the same 30 minute purview, typically

12 manual.

13 So my question is basically what assure do

14 we have that all of the operator actions that are

15 required under a station blackout condition can be

16 performed with a compliment of operators within the

17 assumed time frame, you know under realistic human

18 factors conditions, if you will.

19 MR. MATHARU: I think that will be under

20 the inspection program.

21 MEMBER STETKAR: That's kind of what I was

22 asking.

23 MR. MATHARU: From previous experience at

24 an operating plant, we used to have that part of

25 operator training in the simulator. And you would go

1 through the procedure and go through the simulator and
2 make sure that you met the time frames.
3 MEMBER STETKAR: It depends on how many
4 loads where you have to go --
5 MR. MATHARU: Absolutely, yes.
6 MEMBER STETKAR: -- and where they are,
7 and that sort of thing. But I just wanted to gain
8 some confidence that indeed there is assurance that
9 people can do that.
10 A question --
11 MEMBER BROWN: Before you leave that, you
12 were following the same trend or --
13 MEMBER STETKAR: Yes.
14 MEMBER BROWN: Okay. Go ahead. I'm
15 sorry.
16 MEMBER STETKAR: Yes. This one might be a
17 short one, or not.
18 I understand that if the operators shed
19 some compliment of loads, you can then achieve the
20 four hour coping duration. Suppose they don't shed
21 those loads, what then is the nominal battery life?
22 MR. MATHARU: I'm going to have to defer
23 that question to TVA.
24 MR. HILMES: Steve Hilmes with TVA.
25 I have to go back and evaluate that in the

1 calculation. I can't tell you right off --

2 MEMBER STETKAR: Okay. You don't --okay.

3 Thanks.

4 MEMBER BROWN: Do you have to do that for

5 Watts Bar 1 right now? Do you have to shed loads in

6 order to get the four hour life for Watts Bar 1?

7 MR. HILMES: Yes. Yes.

8 MEMBER BROWN: So this, it just makes it

9 more critical to shed the loads equivalently on Watts

10 Bar 2 in order to achieve -- but you've got double the

11 loads even if you shed. I mean, you've still got more

12 stuff?

13 MR. HILMES: That's correct. But keep in

14 mind in the design the batteries are primarily

15 unitized, so --

16 MEMBER BROWN: Okay. So you got a

17 separate set of battery systems for --

18 MR. HILMES: They have some common loads

19 that are shared, but from an ECCS standpoint and so

20 forth, they are more unitized. So it's more like

21 you're doing more activity on another set of

22 batteries.

23 MEMBER BROWN: Okay. The other question I

24 had before we talk about this was going to be

25 validated and it sounds in terms of the manual

1 actions, but it sounds like it was going to be done
2 after licensing, in other words when you --
3 MR. MATHARU: At the end of the inspection
4 program, yes.
5 MEMBER BROWN: And it just seems to me
6 that what if you don't validate them and now it's
7 after the license is granted, you know what happens if
8 they run their procedural validation or whatever it is
9 and find out, well, geez, the guy is hauling from here
10 to here and here and can't quite make it, it really
11 takes 45 minutes to do it, now what do you do? You've
12 already granted the license and you don't have any
13 information relative to its validation.
14 CHAIR RAY: Well, I think it's no
15 different than any other requirement that you don't
16 fail to meet at the time that you're describing.
17 There's a whole slew of things, of course. They
18 either have to modify the requirements or modify the
19 resources that are available to meet to meet the
20 requirements.
21 I mean, you can imagine things like would
22 you ever add another operator so -- but probably it
23 would be something more straightforward like
24 installation of automatic load shedding or some kind
25 of feature. But in any case, it's certainly not

1 unique to have a requirement that is going to create a
2 problem if it's not met at the time -- you'd better
3 anticipate meeting it and make sure you can is the
4 answer.
5 MEMBER BROWN: Okay. I would have taken a
6 slightly different bent on that that there are
7 certain areas that you would like to have wrapped up
8 before you actually grant the license. I mean, I
9 would like to know that the I&C that's installed
10 actually performs its functions before it's actually
11 installed. I mean, that's kind of a nice idea.
12 CHAIR RAY: Well, I'm sure that the
13 license would like to have that assurance too. The
14 problem is that --
15 MR. MILANO: This is Pat Milano again.
16 With regard to the operating license
17 issuance, even though the staff will have completed it
18 program and technical reviews we hold off on issuance
19 of the license until after the Region provides us with
20 a verification and TVA provides us with verification
21 that the plant has been built as designed and tested
22 that it meets the design requirements and stuff.
23 So, in this case here part of that is also
24 the verification that all these Human Factors-related
25 activities, you know that they have assurances that

1 they're meeting what they indicated in their
2 procedures. And we hold off on issuance of the
3 operating license until after we get these, the formal
4 verification from both TVA and from the Regional
5 Administrator.
6 MEMBER BROWN: Okay. So you're
7 effectively doing what I thought ought out to be done?
8 MR. MILANO: Yes.
9 MEMBER BROWN: Okay.
10 CHAIR RAY: Yes, well that's what I said:
11 They can't get the license until they show --
12 MEMBER BROWN: Well, I thought once they
13 completed the -- you know, it's just my lack of
14 familiarity with all of the nuances of how and when
15 you actually issue it under these circumstances. So,
16 that's fine. Go ahead. I didn't understand your
17 answer in that context.
18 MEMBER STETKAR: A couple of other
19 questions, one is just curiosity, and this again is
20 probably mostly TVA probably. I understand that
21 nominally dc trains 1 and 2 are Unit 1 trains and 3
22 and 4 are Unit 2 trains. There's a statement in the
23 SER that leads me to believe that the dc supplies for
24 the Unit 1 turbine driven aux feedwater pump come from
25 Unit 1 and the supplies for Unit 2 come from Unit 1.

1 Is that actually correct?

2 MR. HILMES: Steve Hilmes, TVA.

3 That is correct.

4 MEMBER STETKAR: That is, okay. So that

5 was an accurate decision, it wasn't a -= I don't need

6 to know why. I was just curious.

7 There's also -- oh God, we're okay on

8 time, so I can pursue this.

9 There's a curious statement, and I'll

10 point both of you to a section of the SER. It's

11 Section 8.3.2.3. And it's in fact the last paragraph

12 of that section, and it's discussed within the context

13 of dual unit events, I think.

14 There's a statement that says TVA stated

15 that the normal alignments for the switchgear dc

16 control feeders ensure that only the ESF loads for one

17 unit are applied to one vital battery. I can

18 understand that.

19 TVA further stated that only one train

20 would be aligned to alternate feeders such that the

21 minimum required ESF loads of the other train would

22 remain independent and would remain available in the

23 event of single failure including the effects of a

24 simultaneous spurious accident signal in a non-

25 accident unit. What does all of that mean in terms of

1 --

2 MR. McCONNELL: Well, essentially in a

3 nutshell -- this is Matthew McConnell again.

4 That is just essentially trying to get the

5 point across that everything is going to remain

6 independent and separate and that an impact on one

7 battery is not going to impact another battery's

8 capability to perform its function. So all that's

9 saying is is it's capable of meeting its design of the

10 simultaneous LOOP LOCA or simultaneous event, and it

11 still perform its function.

12 MEMBER STETKAR: I kind of got that as a

13 conclusion. The thing that --

14 MR. McCONNELL: It's a wordy way of saying

15 it.

16 MEMBER STETKAR: Well, the thing that hung

17 me up is this notion that only one train would be

18 aligned to alternate feeders. The one sentence tells

19 me that on on divisionalized four divisions.

20 MR. McCONNELL: Yes.

21 MEMBER STETKAR: And fine, I can handle

22 that. I can look at the left at the one line diagram

23 and see that.

24 What I don't know is this qualification

25 that says "only one train would be aligned alternate

1 feeders." Does that mean that procedurally the tech
2 specs allow you to take, for example, a division one
3 dc power supply and cross-tie it to -- I don't know,
4 division 3 for some period of time such that --
5 MR. HILMES: Steve Hilmes, TVA.
6 Keep in mind again that the batteries are
7 primarily unitified, okay?
8 MEMBER STETKAR: Yes.
9 MR. HILMES: But I have a train A for Unit
10 1 and a train A for Unit 2.
11 MEMBER STETKAR: Yes.
12 MR. HILMES: As far as alternate feeders
13 go what they do is they cross the units but stay in
14 the same train. They don't jump between the trains
15 either which way. Okay?
16 You know, the tech specs means we've done
17 that analysis to show that the batteries are capable
18 of handling that if I do move one of those loads to
19 the alternate on the other unit, okay?
20 MEMBER STETKAR: No. I lost you there
21 somewhere, Steve.
22 MR. HILMES: Okay.
23 MEMBER STETKAR: Back me up.
24 MR. HILMES: Say I have a shutdown board
25 that is a Unit 1 shutdown board.

1 MEMBER STETKAR: Yes.

2 MR. HILMES: And for some reason, say

3 breaker testing, I move that load to the Unit 2 of the

4 same train.

5 MEMBER STETKAR: Okay.

6 MR. HILMES: Okay?

7 MEMBER STETKAR: The dc?

8 MR. HILMES: Yes.

9 MEMBER STETKAR: Okay.

10 MR. HILMES: I've taken -- what I've done

11 in my analysis is to assume that as an additional load

12 on that particular battery is shown that it's capable

13 of handling that added load.

14 MEMBER STETKAR: Okay.

15 MR. HILMES: And if you look at the

16 requirements for spurious accident, the one you have

17 with a normalized at the other, it essentially states

18 that that spurious accident is considered the single

19 failure.

20 MEMBER STETKAR: Yes.

21 MR. HILMES: So what he's trying to tell

22 you in a statement that you can't effect more than one

23 train in a unit either which way, so you won't impact

24 the ability to meet that spurious accident

25 requirement.

1 MEMBER STETKAR: Yes. I think I understand
2 that.
3 MR. HILMES: Because the opposite train of
4 both units is fully impacted --
5 MEMBER STETKAR: In the example you give
6 that you would have at least train B on both units --
7 MR. HILMES: Yes.
8 MEMBER STETKAR: -- even if you lost the
9 train A --
10 MR. HILMES: Yes.
11 MEMBER STETKAR: -- if they were crossed
12 tied. Okay. Got it. Thanks. Thank you.
13 CHAIR RAY: Got it?
14 MEMBER STETKAR: Got it. Thank you.
15 CHAIR RAY: All right. Onsite power
16 system conclusion under blackout analysis.
17 MR. MATHARU: Yes. Just before I go
18 there, I'm not sure whether we specifically answered
19 your question, Mr. Ray, which started up on this train
20 of thought as to open item #32 leading to the load
21 shedding of the batteries. Did we satisfy your
22 curiosity on that?
23 CHAIR RAY: Yes, I am.
24 MR. MATHARU: Okay.
25 CHAIR RAY: Thank you.

1 MR. MATHARU: Again, the final thing that
2 we looked at were the station blackout analysis. And
3 like we discussed, Unit 2 was a four hour coding
4 plant. And the first thing was the battery capacity is
5 one of the issue which is -- I'm sorry I said item #32
6 last time. It's item #33.
7 CHAIR RAY: Yes, I was going to say it
8 didn't sound quite right to me, but yes you got it
9 anyway. We're done. #33.
10 MR. MATHARU: That's the design change or
11 the procedural changes that are being implemented to
12 supplement load shedding.
13 We looked at condensate inventory, we
14 looked at room temperatures, RCS leakage and
15 compressed air for valve operation, and basically
16 Watts Bar Unit 2 will meet the SBO requirement that
17 were dictated in the procedure that Numark had. So we
18 are okay with that.
19 MEMBER STETKAR: This is under the
20 environmental qualifications which I basically talked
21 for a moment, but there were a couple of areas, I
22 looked at the room temperatures and I can't find them
23 in my notes right now, but I seem to recall one of the
24 steam tunnels is it that gets pretty doggone warm
25 under--

1 MR. MATHARU: Yes.

2 MEMBER STETKAR: -- at least the nominal

3 heat up analyses. And that tunnel contains some

4 safety-related instrumentation.

5 As I understand it, they redid the room

6 heat-up analyses assuming that you lost 50 percent of

7 the electrical loads. And under those conditions,

8 with the exception of still needing to open up

9 cabinets you were then okay. Does that also apply for

10 that one steam tunnel that was up around 175 degrees,

11 if I remember?

12 MR. MATHARU: Yes. The table that you're

13 looking at is 8-40. In section, I believe it's

14 Section 8. And using the peak room temperatures and

15 more specifically you're looking at the --

16 MEMBER STETKAR: South Main Seam Valve

17 Room, yes.

18 MR. MATHARU: South Main Steam Valve Room,

19 temperature 177. And maybe I'll defer to TVA to give

20 the specifics on that.

21 MEMBER STETKAR: Okay. The only reason I

22 ask is that the discussion and the follow-on in the

23 SSER talks about reductions in electrical loads, which

24 I understand can handle, you know switchboard rooms

25 and battery rooms and control cabinet rooms. It's not

1 at all clear to me why that's at all relevant to this
2 steam valve room, which probably doesn't have a lot of
3 electrical load in it.
4 MR. HILMES: It doesn't.
5 MEMBER STETKAR: So I'm curious, how did
6 we dispose of the high temperature effects on whatever
7 equipment is in there? I seem to recall some sort of
8 instrumentation? And I can't read things quickly
9 enough here, and I didn't make enough notes to
10 actually identify it.
11 How did the high temperature in that area
12 get resolved to the staff's satisfaction for the SSER?
13 MR. McCONNELL: This is Matthew McConnell.
14 Are you referring to the load, or you are
15 you referring to the actual qualification of
16 equipment?
17 MEMBER STETKAR: Well, I'm --
18 MR. McCONNELL: It's operability in
19 general?
20 MEMBER STETKAR: Operability of the
21 equipment. If I --
22 MR. McCONNELL: Well, in my --
23 MEMBER STETKAR: Here we go. "The South
24 Main Steam Valve Room, which contains the turbine
25 driven aux speedwater pump level control valves is the

1 only dominant area of concern for this room heat-up
2 analyses." So, it's the question how do we have
3 assurance that those level control valves are going to
4 operate under whatever final temperature exists in
5 that room with TVA's updated heat-up analyses, which I
6 understand had reduced the electrical loads for
7 electrical areas by 50 percent, but doesn't do
8 anything about steam piping and, you know those aerial
9 conditions.
10 MR. MATHARU: I will have to get back to
11 you on that specific question.
12 MR. HILMES: Steve Hilmes, TVA.
13 As I recall the Numark guidance on
14 temperatures for station blackout, essentially the way
15 this is addressed is to essentially take the
16 qualification testing and elevated aging testing and
17 so forth --
18 MEMBER STETKAR: Yes.
19 MR. HILMES: -- and essentially take that
20 for the duration of a blackout, which is a much
21 shorter period, and that substantiates that the
22 equipment will operate in a short time period of the
23 elevated temperature.
24 MEMBER STETKAR: Okay. I mean, I hear
25 that. Okay. That didn't quite come across, at least

1 in the SSER because --

2 MR. HILMES: It's pretty spelled out in

3 the Numark guidance for the blackout.

4 MEMBER STETKAR: Okay. It mentions that

5 the full control valves themselves are there. I don't

6 know how aux speedwater is controlled on this plant,

7 whether it's a flow control or a level control system.

8 If it's a flow control system are the flow

9 transmitters located in that area, or is strictly off

10 steam generator level?

11 MR. HILMES: It's off of level.

12 MEMBER STETKAR: It's level?

13 MR. HILMES: Level.

14 MEMBER STETKAR: Level transmitters are

15 not located in this area?

16 MR. HILMES: No.

17 MEMBER STETKAR: Okay. Thank you.

18 MR. HILMES: Also, Watts Bar does have a

19 MEQ program so MEQ looked at things like diaphragms

20 and so forth on valves.

21 MEMBER STETKAR: Okay. Thank you.

22 MR. MATHARU: And that concludes my

23 presentation of Section 8. And if there are no

24 questions, I'll defer to Matt McConnell for Section

25 3.11.

1 CHAIR RAY: Nothing more. Go ahead.

2 MR. McCONNELL: Okay. Good morning.

3 CHAIR RAY: Good morning.

4 MR. McCONNELL: Section 3.11 is on
5 environmental qualification of electrical equipment.
6 Myself and another EB staff member was involved in
7 that review. And essentially one of the highlights to
8 overview our review is that it was very specifically
9 notes in the original staff Safety Evaluation Report
10 that the EQ evaluation that was performed was only
11 applicable for Unit 1. And that kind of gets us to
12 where we're going forward here during the presentation
13 of the open items that precede. And essentially the
14 staff did a review to ensure, you know basically
15 consistency with Standard Review Plan Section 3.11 and
16 the guidance provided in Regulatory Guides 1.89 and
17 NUREG-0588 and ultimately to ensure compliance with 10
18 CFR 50.49.

19 We have identified --

20 MEMBER STETKAR: Sorry, before you get --

21 MR. McCONNELL: Sorry.

22 MEMBER STETKAR: I didn't ask this under
23 Section 8 because I wasn't sure whether it was an
24 environmental qualification or a Section 8 question.
25 It's actually brought up in Section 8.3.3.1.1 of the

1 SSER, "Providing submerged electrical equipment as a
2 result --" Should I ask Singh about this, or should I
3 ask you.
4 MR. McCONNELL: Go ahead and ask.
5 MEMBER STETKAR: Okay. The question is
6 apparently there is some electrical equipment inside
7 the containment that is not qualified for LOCA
8 conditions. And it is my understanding, it says in
9 Section 8A and 8B TVA summarized the analysis of
10 submerged post-LOCA electrical equipment powered from
11 APS and from the I&C System. The analyses concluded
12 that submerged electrical equipment will not degrade
13 6.9 kV Class 1E -- power sources or Class 1E
14 instrument internal control systems. It says: "The
15 listed equipment is either automatically de-energized
16 or it is not required to function after a LOCA."
17 Now, I understand the automatically de-
18 energized sense of that. But my question is what
19 equipment can be submerged that is both not qualified
20 to be submerged and is not required to function after
21 a LOCA, and what happens to that equipment when it is
22 submerged?
23 MR. McCONNELL: And that's a good
24 question. I think the fact that we are going to be
25 performing, or we need to establish an inspection

1 program to actually look at the overall EQ that is
2 occurring at Watts Bar Unit 2 will open up that to
3 further discussion. Because we will be looking at the
4 EQ files, we've been looking at the non-safety-related
5 equipment or safety-related equipment that will be
6 called upon. And depending on what environment it is
7 subjected to, we will verify that that's included in
8 any type of EQ report or whatever justification
9 they're using to --
10 MEMBER STETKAR: Well --
11 MR. McCONNELL: Go ahead.
12 MEMBER STETKAR: But it's my understanding
13 is that we already know that this stuff is not
14 qualified for the LOCA environment, so it doesn't
15 sound like it's an EQ question.
16 My question from an electrical perspective
17 is what happens when that equipment. whatever it is, I
18 don't even know what it is, is submerged. And does
19 the analysis -- the staff has concluded that this
20 issue has been resolved in the SSER. So it's not an
21 open item. My question is does the resolution of that
22 issue assume that the unqualified equipment will
23 electrically open up? In other words, circuit
24 breakers will function because the motors or
25 electrical circuits, or whatever because I don't know

1 what the equipment is, are shorted out and circuit
2 protection devices will open up? If that's the case,
3 then the question is well do we have assurance that
4 there's proper breaker coordination or fuse
5 coordination, if it's dc, to make sure that indeed
6 under fault condition those load fuses or protection
7 devices open up beforehand without taking out a higher
8 voltage power supplies, so the coordination study type
9 things?
10 So I was kind of left hanging and I didn't
11 know whether to raise it --
12 MR. McCONNELL: Yes, because it's actually
13 out --
14 MEMBER STETKAR: It's outside the
15 environmental qualifications.
16 MR. McCONNELL: Right. Right.
17 MEMBER STETKAR: It's kind of an
18 electrical question. So I guess I'm searching for
19 what is the story behind this electrical equipment and
20 how do I have assurance that whatever happens does not
21 degrade plant performance?
22 MR. HILMES: Steve Hilmes, Electrical,
23 TVA.
24 As far as the submerged equipment that has
25 to operate during a LOCA, for example our sump

1 transmitters, those are designed for submergence.
2 MEMBER STETKAR: Yes.
3 MR. HILMES: And the cabling is actually
4 in a sealed pipe to ensure that it doesn't short out.
5 As far as what they're talking about --
6 well, I think where you're leading to is yes, we
7 ensure that we have proper coordination and we
8 actually look at it for if the leakage current is
9 below a certain value where we won't trip, that that
10 won't impact the board's ability.
11 MEMBER STETKAR: Okay. So you have done
12 the analysis on whatever those loads are --
13 MR. HILMES: Yes.
14 MEMBER STETKAR: -- that you characterize
15 as not required to function, but still could be --
16 MR. HILMES: Yes, we have. Yes. We have
17 a submergence calc that evaluates that.
18 MEMBER STETKAR: Thanks. And the staff
19 has looked at that?
20 MR. McCONNELL: That I can't answer. This
21 8.3.3.1 was not area of review. I can ask if the
22 reviewer, Vijay, did you review 8.3.3.1? Can you step
23 to a microphone?
24 MR. GOEL: This is Vijay Goel.
25 I just -- with whatever was stated in the

1 SSER. I did not, like, verify all the calc -- but if
2 it is stated in the FSAR, I did the calc and proper
3 coordination was done.
4 MEMBER STETKAR: Okay. Well, thank you.
5 MR. MATHARU: John, I'll take that as an
6 open item for us to follow through with you.
7 MEMBER STETKAR: I'm just looking for
8 that. I'm glad to hear there is a calc because a lot
9 of times --
10 MR. MATHARU: You had a lot of questions
11 on coordination of electrical systems, specifically
12 from a non-safety/safety perspective. And --
13 MEMBER STETKAR: I read that, and that's
14 kind of a separate part of the Safety Evaluation
15 Report.
16 MR. MATHARU: Right. You're right.
17 MEMBER STETKAR: And these were hanging
18 out there alone.
19 MR. MATHARU: Absolutely right.
20 MEMBER STETKAR: So, thanks.
21 MR. MATHARU: Needs the same conclusion.
22 But we will verify that for you.
23 MEMBER STETKAR: Okay. Thanks.
24 Sorry, Matt.
25 MR. McCONNELL: That's fine.

1 MEMBER STETKAR: As I said, I wasn't quite
2 sure whether it was in your purview or the other.
3 MR. McCONNELL: No, we're talking about EQ
4 specifically as it's required by 10 CFR 50.49. So
5 typically, that's obviously the subject of a LOCA
6 event or a held event.
7 MEMBER STETKAR: Back to your role.
8 MR. McCONNELL: Back to role. I got to
9 try to get started here. Okay.
10 Looking at the open items, like I
11 mentioned, we had nine open items and I'll just go
12 through them bullet-by-bullet here.
13 Essentially we identified that we need to
14 perform a detailed inspection and evaluation prior to
15 fuel load to determine how the Watts Bar Unit 2 EQ
16 program complies with the requirements of 10 CFR
17 50.49. This is consistent with how we have licensed
18 every plant post-EQ Rule. So this is nothing
19 different that wouldn't be expected.
20 MEMBER BROWN: Is that just you look at
21 their EQ program is what you when you say complies
22 with the requirements of 10 CFR 50.49, that means you
23 just see that they have a procedure in place that will
24 run a test or do you likely look at the test results
25 themselves?

1 MR. McCONNELL: Much more detailed than
2 that.
3 MEMBER BROWN: Okay.
4 MR. McCONNELL: It's actually, you know I
5 had some bullets in the safety evaluation role that
6 says examine electrical equipment on site, complete an
7 audit of TVA's qualification documentation,
8 environmental qualification documentation monitors and
9 review the acceptability components qualification
10 methods and accident environments.
11 MEMBER BROWN: Okay.
12 MR. McCONNELL: So it's very detailed.
13 MEMBER BROWN: And it includes the actual
14 tests results themselves?
15 MR. McCONNELL: Absolutely. Absolutely.
16 MEMBER BROWN: Okay. All right. That's
17 all I wanted to know. Thank you.
18 MR. McCONNELL: The second bullet, we had
19 to verify the accuracy of the Watts Bar Unit 2 EQ list
20 prior to fuel load. Essentially every plant's
21 required to have an EQ Master List where it just lists
22 all the components that are actually under an EQ. So
23 that list has not yet been established for Watts Bar
24 Unit 2, so that's why that's an open item.
25 The third bullet here, based on the

1 extensive layup period of equipment within Watts Bar
2 Unit 2, the staff must review, prior to fuel load, the
3 assumptions used by TVA to re-establish a baseline for
4 the qualified life of equipment. And this is directly
5 applicable to EQ qualified.
6 Next slide.
7 CHAIR RAY: Yes, just still reading.
8 Sorry.
9 MR. McCONNELL: If you need to me to slow
10 down, I will.
11 CHAIR RAY: No, no.
12 MR. McCONNELL: The next open item review
13 of TVA's EQ program procedures for Watts Bar Unit 2
14 prior to fuel load.
15 And some of these items may be either
16 performed just by Headquarter staff or by the Region,
17 but our review is still ongoing and we're trying to
18 determine who is going to perform each one. It may be
19 a combination effort.
20 The second bullet, we're saying review EQ
21 of the 6.8 kV motors to Category 1 requirements in
22 accordance with 10 CFR 50.49. 10 CFR 50.49 basically
23 says if you do any modifications to equipment and you
24 happen to be either a Category 2 or a DOR plant, which
25 DOR stands for Division of Operating Reactors is the

1 old guidelines before the EQ Rule existed and they had
2 a very set guidelines limited EQ qualifications for
3 equipment or Category 2, which had a little bit more
4 stringent requirements. But the thought was that
5 whenever you went to modify or replace equipment, you
6 had to essentially upgrade the equipment to Category
7 1, which would be the most stringent requirement. And
8 right now we're reviewing TVA's response they
9 submitted in a December 17, 2010 letter to determine
10 whether or not this item still needs to be open or
11 not.
12 The next bullet or open item is confirm
13 electrical penetration assemblies are installed in the
14 tested configuration, and that the feedthrough module
15 is manufactured by the same company and is consistent
16 with the EQ test report for the electrical penetration
17 assembly.
18 Basically this is going on experience and
19 the electrical penetration assembly is an assembly
20 that includes feedthrough, junction boxes, terminal
21 blocks as a complete assembly and splices. And we
22 just want assurance that if there were any
23 modifications to that assembly, that it's still in the
24 installed configuration.
25 I think this open item is something that

1 would probably confirmed in open #1 where we actually
2 do the full audit.
3 Next slide.
4 This open item here is a review of TVA's
5 use of the term "equivalent" regarding the replacement
6 terminal blocks to the NRC staff. The staff reviewed
7 the additional information provided by TVA and
8 considers this item closed.
9 TVA provided the information in that
10 December 17th, 2010 letter, and based on what they had
11 submitted we understand what they are referring by
12 "equivalent," and we are okay, we find it acceptable.
13 So this item is actually no longer open.
14 The next open item, review TVA's reasoning
15 for not operating MSIV solenoid valves to Category 1,
16 as specified in 10 CFR 50.49. This is similar to the
17 6.9 kV motor issue. And we received TVA's response to
18 our RAI, and the response dated December 17, 2010.
19 And we're still going to look at that and decide
20 whether it needs to be open or not.
21 The other open item here is review TVA's
22 supporting documentation to justify its establishment
23 of a mild environment threshold for total integrated
24 dose of less than 1 times ten to the 3 rads for
25 electronic components such as semiconductors or

1 electronic components containing organic material.
2 This the staff basically needs
3 clarification because the way, I guess, and the
4 response in December 17th, 2010 letter it was a little
5 confusing to the staff on how they're actually
6 applying this. So, we were just trying to get some
7 consistency between what the recommendations were and
8 the guidance, the Regulatory Guide 1.89 and NUREG-0588
9 and how they're actually applying the overall
10 threshold that they're using.
11 MEMBER BROWN: Semiconductors with organic
12 material?
13 MR. McCONNELL: Or electronic components
14 containing organic materials.
15 CHAIR RAY: I read that just the organic
16 material are in electrical components.
17 MEMBER BROWN: Yes. I'm trying to present
18 beeswax capacitors or --
19 MR. McCONNELL: No.
20 MEMBER BROWN: I'm trying to connect the
21 two.
22 MR. McCONNELL: I think we're essentially
23 looking at, you know, obviously non-metallic parts
24 here and not unlike semiconductors. So --
25 MEMBER BROWN: Can you enlighten me as to

1 what type of organic materials we're dealing with here
2 for the electronic components?
3 MR. HILMES: Steve Hilmes, TVA.
4 Generally what the concern is with
5 electronics at above ten to the third is modified
6 components or pin diodes, and it's more than a
7 sensitivity effect than anything else. But some older
8 components, yes, you could have some organic materials
9 like paper in capacitors and so on like that.
10 MEMBER BROWN: Yes.
11 MR. HILMES: Those are generally not
12 sensitive.
13 MEMBER BROWN: Yes. I just was talking
14 about the organic. I understand the CMOS, and the
15 other type electronic stuff, yes, there's various
16 levels of integrated threshold doses they can still
17 operate satisfactorily. And if you had a period after
18 components, I would not have asked the question.
19 That's fine. Okay. Go ahead.
20 MR. McCONNELL: Okay. I go a conclusion.
21 Essentially our conclusion is that we have
22 insufficient information at this time to conclude that
23 TVA's EQ program conforms to the requirements 10 CFR
24 50.49 and the relevant parts of GDCs 1, 2, 4 and 23,
25 Criterion 3, 11 and 17 of Appendix B to 10 CFR Part 50

1 and the criteria specified in NUREG-0588. There were
2 obviously a significant number of open items for the
3 EQ section and there are a lot of things that I think
4 that need to be done on both sides to actually to show
5 that TVA's EQ program is in conformance. Essentially,
6 we will update the SSER upon satisfactory closure of
7 the open items.
8 Any questions?
9 CHAIR RAY: I don't believe any more.
10 Going on then to status of program
11 reviews, that's Pat's job again.
12 MR. MILANO: That's right.
13 MR. McCONNELL: Thank you very much.
14 CHAIR RAY: Thank you.
15 MR. MILANO: As I indicated earlier this
16 morning, there are a number of programs that are
17 required by the regulations, and especially those
18 regulations that relate to what's required to be part
19 of an operating licensing application in 10 CFR 50.34.
20 And what I'm laying out here is these are the four
21 predominant programs that need to be reviewed and the
22 staff make its determination on prior to us being able
23 to make a final conclusion about the operating license
24 application.
25 And in Section 13.3 in emergency planning

1 of the Watts Bar Unit 2 FSAR, TVA states that TVA's
2 radiological emergency plan commonly referred to as
3 the REP provides protected measures for TVA personnel
4 and for the health and safety of the public in the
5 event of a radiological emergency resulting from an
6 accident at Watts Bar. And the TVA REP contains site-
7 specific appendices for each plant.
8 The REP itself is a TVA-wide program that
9 covers all its station and each one of the stations
10 has its own appendices, but in this case here Appendix
11 C of the REP applies to Watts Bar Unit 2.
12 And in 1993 TVA withdraw the Watts Bar
13 specific portions of the REP and resubmitted them only
14 for Unit 1. Plus, in Supplement 20 to the SER just
15 prior to the licensing of Unit 1, the staff concluded
16 both its findings and those of FEMA as it relates only
17 to Unit 1.
18 In the March 4, 2009 update to the
19 operating license TVA provided a template for the
20 Watts Bar Appendix Charlie and stated that the Unit 2
21 specific data and references were preliminary, and
22 that the final verification would be part of the
23 construction completion of Watts Bar Unit 2. And in
24 particular, all those actions have now been completed
25 for Watts Bar Unit 2, and in particular as you're well

1 aware of, the staff reviews the onsite portion
2 processing. FEMA under a Memorandum of Understanding
3 with the NRC reviews the offsite and provides its
4 recommendation in the form of a final finding. In
5 both of those cases, both FEMA has provided its final
6 findings saying that the offsite emergency
7 preparedness can be implemented and the staff has
8 reviewed the onsite portion and has, likewise, made
9 its determination.
10 There are several confirmatory items.
11 They're not open. The staff has made its conclusion.
12 There are a couple of things that TVA will need to
13 provide to the staff, and some will be done just by
14 verification review on the part of the EP staff.
15 Other items will be done i the course of inspection.
16 But basically Supplement 22 you've got the full
17 documentation of what the staff and FEMA have
18 concluded on the emergency preparedness program.
19 Going on, with regard to the physical
20 security program, the staff has likewise done a
21 review. With regard to the security program at Watts
22 Bar, unlike what was done with the EP where it was
23 withdraw at Unit 1, the security for the security
24 program has always been a station security program.
25 It has currently been implemented for the station.

1 However, if you would have gone back and looked at the
2 review of the site security program as it was
3 described in the SER for Watts Bar Unit 1, you would
4 have found that it consisted of basically about six
5 pages of documentation.
6 In post-2001, you know 9/11 issues and the
7 revisions to 10 CFR Part 73 that were done
8 subsequently the requirements for what's in the site
9 security program and the staff's review of it now have
10 dramatically changed. And i this case here what the
11 staff has elected to do is we did a complete re-review
12 of the site security program.
13 We looked at all of the changes to the
14 program that were done under 10 CFR 50.54. You know,
15 those changes that TVA is allowed to do to its plan
16 without NRC approval as long as they don't decrease
17 the effectiveness of the program. So we re-evaluated
18 all those changed. And indeed, we looked at the site
19 security plan through its current Revision 11. And
20 we found it adequate.
21 The only thing that remains open, it's not
22 an open issue as it relates to the security program
23 itself, the general security program. What it relates
24 to is cyber security. And in this case here the cyber
25 security is currently both in development by TVA and

1 in review by the staff. And because of the near-term
2 need to support the Unit 1 operating license, Unit 2
3 is going to become the pilot for the review of cyber
4 security. And in that case there, just to give you an
5 understanding of the current schedule for doing things
6 with regards to cyber security, we're going to be
7 conducting an audit of the cyber security program in
8 the April/May. A pilot audit.
9 And also, the staff is in the process of
10 developing kind of a generic safety evaluation of
11 cyber security which then will be looked at along with
12 this audit to make sure if there needs to be program
13 adjustments and stuff like that.
14 And then TVA expects to be fully
15 implemented in the area of cyber security in the late
16 fall, early winter, some October/November time frame.
17 And in that case there we will conduct a cyber
18 security inspection at the station. And based on all
19 of that, then we will issue an additional section to
20 the security program in Section 13.6 just to cover
21 that area.
22 MEMBER BROWN: That's interesting.
23 That's the first I've heard of Watts Bar
24 being a pilot program for the cyber security thrust
25 and efforts that you're making.

1 You didn't hear that yesterday, did you?
2 MEMBER STETKAR: No.
3 CHAIR RAY: I did hear the tern pilot
4 plant.
5 MEMBER BROWN: Yes. No, he said pilot for
6 cyber security.
7 CHAIR RAY: I heard him say pilot for Unit
8 1.
9 MR. MILANO: No. If I misstated it, it is
10 a pilot plant for cyber security for all the stations.
11 CHAIR RAY: Okay. I heard you say it
12 differently, but that's fine.
13 MR. MILANO: Sorry about that.
14 But that was something that was based on
15 the fact that in our discussions with the legal staff,
16 the regulation says basically that you have to have a
17 schedule for implementation. However, because Unit 2
18 doesn't have an operating license, they have to be in
19 compliance with cyber security before we could issue
20 the license; they have to be in compliance with the
21 regulation.
22 So, TVA's originally proposed
23 implementation schedule was not accepted by both the
24 technical and the legal staffs. And because of that,
25 TVA has been working pretty feverishly to try to get

1 everything done for cyber security. And the Office of
2 Nuclear Security and Incident Response, NSIR, has
3 recognized that as it relates to the 104 other plants
4 that Watts Bar needs to be looked at before they would
5 be looking at anybody else. So their original plan
6 for who they would possibly look at as a pilot has
7 recently changed. And, yes, they are going to look at
8 Watts Bar Unit 2 as the pilot.
9 MEMBER BROWN: Well, that's interesting.
10 Because NSIR was sitting in our meeting yesterday.
11 MEMBER STETKAR: That we didn't ask.
12 MEMBER BROWN: And we didn't ask them,
13 okay, what pilot they were going to do.
14 MR. MILANO: They may be doing another
15 pilot, but I know that there's going to be a pilot at
16 Watts Bar Unit 2.
17 MEMBER BROWN: I would suggest that we
18 might want to hear about this in some sort in some
19 detail before -- I mean, we're trying to sort out the
20 Regulatory Guide in 1.152 and the changes to that and
21 the Regulatory Guide 5.71 and how that applies.
22 They've got different, they don't have of the same
23 digital-based equipment within the plant, or at least
24 within the protection systems and the types of stuff,
25 safeguards that we're dealing with on some of the new

1 design certifications.

2 I'd be interested to see how we take those

3 analogue upgrade -- well, it' not really an upgrade.

4 It's the same as in Watts Bar Unit 1, and then see how

5 that's translated and in terms of the communications

6 and how the stuff gets out to support facilities, and

7 internal use in the control rooms, et cetera, et

8 cetera, et cetera.

9 So I guess --

10 MR. MILANO: We have a stretch goal, and

11 the staff's in the process of issuing generic RAIs,

12 request for additional information, with regards to

13 cyber security. TVA will be in receipt of those

14 shortly.

15 We have a stretch goal that if TVA gets us

16 back that information relatively quickly, within 30

17 days, we may be able to get our safety evaluation, the

18 safety evaluation of the program of TVA's proposed

19 cyber security program done by the end of April. If

20 so, the program side of it will be discussed in the

21 July Subcommittee meeting.

22 If that cannot be obtained, which I say

23 it's a 50/50 shot because it's aggressive -- if not,

24 we'll do it in the October one. And we'll come in, we

25 always plan to talk about cyber security, you know as

1 open as we can. And the NSIR staff will give you a
2 discussion as to what has transpired at Watts Bar.
3 So, we've always planned to do that, and we will do
4 that in July or October. And then the rest will be
5 documented in terms of inspections and inspection
6 space.
7 MEMBER BROWN: Has there been agreement
8 with TVA as to what are the specific requirements?
9 Are they going to be doing this in accordance with
10 Regulatory Guide 1.152 Rev. 2, or is the new
11 transition to the Rev. 3 and 5.71 or do you know?
12 MR. MILANO: I can't speak to that. I
13 don't know.
14 MEMBER STETKAR: It can't be 3, because 3
15 is not issued.
16 MEMBER BROWN: You're right. Three is not
17 issued yet. So it's got to be a combination or some
18 subset because 5.71 has been out now for a year and a
19 half, or something like that.
20 MR. MILANO: Again, we'll be discussing
21 what we did.
22 MEMBER BROWN: All right.
23 MR. MILANO: And sorry about that.
24 Actually, it was as of yesterday is hen we had an
25 inter-office discussion in this area with NSIR, you

1 know in terms of trying to choreograph the completion
2 of the cyber security rules.
3 TVA initially had thought that there would
4 be some aspects of cyber security where because of the
5 two unit, dual unit aspects, but they were able to
6 separate the two such that Unit 2 will be fully
7 implemented even though Unit 1 will still be on a
8 schedule to implement.
9 CHAIR RAY: Well, you make an interesting
10 point, which is this is at least one occasion where
11 there are requirements that are being developed. And
12 if one were to ask the question well who is going to
13 have to demonstrate how these requirements are going
14 to be met first, it turns out that Watts Bar is the
15 one that gets an operating license before anybody else
16 does. Now it's a Part 50 operating license, but I
17 don't think it matters when it comes to cyber security
18 whether it's Part 50 or COLA --
19 MEMBER BROWN: In 73.54 the new rule
20 applies across the board.
21 CHAIR RAY: Yes. So, that's an
22 interesting observation.
23 As far as pursuing Charlie's interest here
24 further, it seems to me like probably there isn't
25 anything, obviously, we can pursue with the applicant

1 on the subject, we ought to with this observation
2 having been made, we ought to say to one and all,
3 well, we'll have to talk with you further to see if
4 it's July or October, and whichever it is, what the
5 content is going to be and to what extent it will
6 allow us to see a implementation that does have
7 generic implications, obviously, for the industry as a
8 whole and so on. Because we've been pursuing that,
9 and it came up in Vogtle but of course, Vogtle's
10 implementation is far enough out that there really
11 isn't much to talk about now except hypotheticals.
12 And so, anyway, I think that's probably as
13 far as we can take it right now.
14 MEMBER BROWN: Yes. I just think we need
15 to look at it with respect to Watts Bar.
16 CHAIR RAY: Yes.
17 MEMBER BROWN: Because it's an interesting
18 nuance because a lot of the other wrinkles that go
19 with this are in the digital, the computer system
20 stuff and this is different. But the rule applies
21 regardless it's an old plant, regardless of their
22 status.
23 And I just want to make sure there's some
24 consistency relative to our approach and what we're
25 getting presented from the staff for the various

1 plants.

2 CHAIR RAY: Well, I'm sure the staff wants

3 that, too.

4 So anyway.

5 MR. MILANO: TVA wanted to say something.

6 MR. HILMES: Right, respond to this whole

7 thing.

8 CHAIR RAY: You sure you wanted? Be

9 careful.

10 MR. HILMES: Steve Hilmes, TVA.

11 The way that Watts Bar Unit 2 has

12 designed, it does have a Eagle-21 system, which its

13 trip unit system. It's the same as, you know, one it

14 is a digital piece of actuation logic --

15 MEMBER BROWN: I was just told that was

16 different --

17 MR. MILANO: I'm sorry.

18 MEMBER BROWN: Is it computer-based

19 digital?

20 MR. HILMES: It is --

21 MEMBER BROWN: That's what I thought, and

22 I was just told a little while ago it wasn't. Okay.

23 So that's interesting to know.

24 MR. MILANO: I misled them.

25 MR. HILMES: On the safety or PAM side we

1 have the Eagle-21. And our high range containment
2 monitors are digital. And our core thermocouple
3 saturation monitor and ribless system are digital.
4 MEMBER STETKAR: Nuclear instrumentation
5 also?
6 MR. HILMES: NIs, we have an invented
7 processor in the IRMs, which is the same as Unit 1
8 does. But it's pretty simple.
9 And so then on the control side we have
10 replaced most of our analogue controls with a DCS
11 system. And we are putting all the firewalls and data
12 diodes and everything else in that are required to
13 meet the cyber rules.
14 MEMBER STETKAR: And secondary side,
15 turbine, feedwater control, et cetera?
16 MR. HILMES: Turbine is analogue, but the
17 feedwater control is digital.
18 CHAIR RAY: There was quite a discussion
19 of this, in fact a member of the public got quite
20 engaged in the discussion a couple of years ago with
21 Ralph at a site visit.
22 MEMBER BROWN: Yes.
23 CHAIR RAY: And things may have changed
24 since then, but in any event be that as it may, I
25 don't think it changes the point which is compliance

1 with what Pat's talking about will first be seen on
2 Watts Bar Unit 2, I guess.
3 MR. MILANO: Yes.
4 CHAIR RAY: Okay.
5 MEMBER BROWN: So I presume from your
6 comments, that we'll be hearing something from them in
7 terms of getting some --
8 MR. MILANO: That is correct.
9 CHAIR RAY: Well, yes. I think we need to
10 talk further about when, whether it's in July or
11 October and what, and is it truly going to be
12 something that's representative of the industry, or is
13 there something more. I mean, the people aren't here
14 to tell us what --
15 MEMBER BROWN: No, I understand that.
16 CHAIR RAY: -- they're going to do and
17 provide some illumination on that which makes it --
18 MEMBER BROWN: Right.
19 CHAIR RAY: Yes. We'll definitely keep it
20 on the radar screen and ask questions, and get more
21 update on it. But having been noted, let's go ahead
22 and move on.
23 MR. MILANO: Okay. Right.
24 The next program, the fire protection
25 program. In December of last year, December of 2010,

1 TVA provided its as-designed final fire protection
2 report, which is currently under review by the staff.
3 The final as-constructed report will be
4 completed sometime during the fall of this year. And,
5 hopefully, the staff's review of that will be more of
6 a confirmatory nature or if any of the as-constructed
7 information would cause a change from the as-designed,
8 we'll focus only on those. However, as you'll see
9 shortly, this is the critical path for the safety
10 review. And the staff has been working relatively
11 closely with TVA, and we're holding periodic meetings
12 with them in terms of getting our review completed in
13 this area. And you should through your staff will see
14 a number of meetings showing up on the public website
15 for our review in this area, as well as TVA's been
16 providing -- in order to speed up a review because of
17 the fact it's on the critical path, we're approaching
18 this generally by sections and stuff. And there are
19 eleven parts to the fire protection report. And we've
20 met with TVA on several meetings to discuss certain
21 parts. We've issued some RAIs in those areas. And
22 we're trying to provide RAIs as we go along through
23 the review rather than wait until the end of this
24 review just to try to expedite the review process and
25 not to have anymore serious impact on the overall

1 safety evaluation review schedule than already has
2 occurred.
3 CHAIR RAY: So you say this is a critical
4 path?
5 MR. MILANO: This is the critical path for
6 the safety review, that's correct.
7 And finally, the startup test program. In
8 this area here TVA has made a presentation and has
9 also provided us further information with regard to
10 the integrated safeguards test. In some of the
11 previous discussions with this Subcommittee, I know
12 you've had comments and questions with regard to the
13 Unit 1 impacts and stuff like that.
14 Basically because of what had been
15 previously done and tested at Unit 1, TVA has been
16 able to divorce the integrated safeguards test or the
17 remaining portions that need to be done from the Unit
18 1 outage, which the exception of flow-balancing of the
19 ERCW system. And that'll have to be done during the
20 Unit 1 outage.
21 CHAIR RAY: You know, the last meeting we
22 had, at that time they had moved stuff to the
23 subsequent reviewing outage, I thought as I recall off
24 the top of my head, anyway which gave a much more
25 realistic schedule. Is it still that subsequent later

1 reviewing outage?

2 MR. MILANO: No. The spring reviewing

3 outage next year is the Unit 1 refueling outage.

4 CHAIR RAY: Yes.

5 MR. MILANO: And that's one where they'll

6 be doing the ERCW flow-balancing. The rest of the

7 testing can be done while Unit 1 is online. If --

8 CHAIR RAY: Okay. So that is a change

9 then from the last review?

10 MR. MILANO: That's correct. From what

11 was explained last time.

12 MR. CROUCH: This is Bill Crouch.

13 CHAIR RAY: Can we talk about that when

14 you guys are up?

15 MR. CROUCH: Yes. One small

16 clarification.

17 CHAIR RAY: Okay.

18 MR. CROUCH: Pat said it was next year.

19 It's the refuel outage this year --

20 MR. MILANO: Oh, yes, this year.

21 CHAIR RAY: 2011?

22 MR. MILANO: Yes, It is 2011. I'm sorry.

23 CHAIR RAY: Okay.

24 MR. MILANO: Forgot about. I'm still in

25 2010.

1 CHAIR RAY: Yes, all right. Since this
2 was a change, we've gone through this in some length
3 before, and now apparently there's been an update that
4 occurred.
5 MR. MILANO: Yes.
6 CHAIR RAY: And I just didn't want to get
7 diverted off given the time until the applicant's up
8 to talk.
9 MR. MILANO: No. And the rest of the
10 start of test program, TVA is preparing startup test
11 procedures and the preoperational test procedures
12 which are being submitted through the regional staff,
13 and the regional staff is redoing those for the
14 Agency.
15 CHAIR RAY: Yes. Okay. And, obviously,
16 the concern is whether or not this now modified
17 program creates any threat or safety concern with
18 regard to Unit 1 being in operation. And, obviously,
19 everyone's going to be looking at that.
20 MR. MILANO: That's correct. And the
21 staff has completed its review of that. And a revision
22 to Chapter 14 of the staff's safety evaluation has
23 been prepared and stuff. And we can go into that in
24 more detail next time if you want an understanding--
25 CHAIR RAY: Yes. Absolutely. It should be

1 a very complete discussion in July.

2 Now the outage is in when did you say?

3 MR. CROUCH: April 4th of this year.

4 CHAIR RAY: April 4th of this year? So,

5 it'll be over and done with by the time of the July

6 meeting. Well, that's an interesting development, I

7 guess I would say.

8 MR. MILANO: However, and TVA can clarify

9 this too, but the remainder of the testing for the

10 load testing and the load validations and stuff like

11 that will be done through the remainder of the year.

12 And so it's not like everything will be done. During

13 the spring outage the flow-balancing will be done,

14 some of the other stuff --

15 MEMBER STETKAR: Yes, like rated

16 simultaneous loads on the ERCW and CCW.

17 CHAIR RAY: Yes.

18 MR. MILANO: Yes.

19 CHAIR RAY: Well, I mean it isn't what's

20 done during the outage that's the issue, it's what

21 done for the plant in operation that's an issue.

22 MR. MILANO: That's correct.

23 CHAIR RAY: And so I still think in July

24 we ought to have a very thorough review of that

25 because it presumably that will be back in service for

1 the summer peak and it'll be as a matter of ongoing
2 issues from them until the work is done.
3 So anyway, we should plan to do that.
4 MR. MILANO: Okay.
5 CHAIR RAY: Okay? And I don't think the
6 conduct of a flow-balancing and during the outage in
7 April is an issue, but it certainly was a matter of
8 concern and discussion in the past that now with this
9 change in strategy or change in plan we should review.
10 MR. MILANO: Okay.
11 CHAIR RAY: Okay?
12 MR. MILANO: Yes, sir.
13 Okay. Getting pretty close to the end of
14 the NRR staff's presentations that again, the critical
15 path items, although the fire protection is the long
16 pole in the tent and stuff, we do have several other
17 areas that are getting close also.
18 With regard to instrumentation, we talked
19 about that early this morning. And most of the review
20 of Chapter 7 of the FSAR has been completed, however
21 there's some aspects related to the post-accident
22 monitoring the system, the Westinghouse Common Q
23 platform that's still going on. And the goal right
24 now is, is to complete the remaining two sections that
25 need to be done for Chapter 7, the staff will be

1 complete by the end of April and such that we can
2 discuss those in our July meeting.
3 Regarding accident transient analysis,
4 there were a couple recent RAIs, one of which TVA has
5 recently provided its response to.
6 Actually, the staff had three concerns.
7 One had to do with the overpressure transient analysis
8 that is required by SAME where you do the analysis
9 assuming that the safety grade trip doesn't function.
10 And the analysis that was done assumed that the trip
11 that was assumed to not function was the turbine
12 first-stage pressure trip. And so that was rerun,
13 because that's not safety grade. It went rerun with
14 that not functioning along with the first safety grade
15 trip. And that we received an answer on that one.
16 The staff also had some concerns with the
17 stated results of main steamline break accident
18 analysis and had some issues with regard to the
19 validity of it. And in the interim Westinghouse and
20 TVA have reconducted that analysis and provided it to
21 us in the past couple of weeks.
22 And the last is the mass-addition
23 transients. And in this one the central one in that
24 one being the inadvertent ECCS actuation. And the
25 staff's concern in that area, and we're going to be

1 talking about this again in the future when Chapter 15
2 is completed; the staff's basic issue with that one is
3 is that the analysis as presented assumed that the
4 pressurizer PORVs were not there, and it was to assess
5 whether or not the safety relief valves would be
6 challenged and pass water and not be able to reseat or
7 would be damaged such that you would continue to pass
8 water.
9 One of the acceptance criteria for this
10 transient is that it doesn't go from a condition 2 to
11 a condition 3. Basically it doesn't progress to a
12 small break LOCA. And the staff had concerns about
13 the fact that it stopped there and didn't look at the
14 more likely scenario where the PORVs would open and
15 stuff. And TVA has provided it response, and it just
16 came in and its currently under evaluation. And we're
17 going to be discussing whether that meets our needs.
18 The last thing, we already talked about
19 fire protection and why it is the critical path. And
20 lastly, the supplement to the Final Environmental
21 Statement for Operation. In this case here, the SAMA
22 review, the Severe Accident Mitigation Alternatives,
23 is one of the two driving factors on why this has been
24 delayed.
25 We initially hope to issue the draft

1 supplement to the FES the last year for public
2 comment. But it still has not gone out. And what had
3 happened is is TVA originally did the SAMA analysis
4 using the results of the original RISKMAN PRA.
5 Subsequent to that, TVA did a Regulatory Guide 1.200
6 compliant PRA using CAFTA. And the belief was is that
7 things would come out the same or better such that you
8 could say that the original SAMA analysis was bounded
9 this. Well, it turns out it didn't actually. The
10 LERF frequencies went up some, and also the initiator
11 distribution changed. And we ended up into an RAI
12 dialogue and that ultimately ended up with late last
13 year TVA providing a revised or a replacement SAMA
14 analysis based on the new PRA. And with that, that's
15 currently review and TVA's provided us responses to
16 that. The staff feels it's got pretty much everything
17 we need in order to complete it. And right now we're
18 hoping to have the complete SAMA safety evaluation in
19 put done by April.
20 And also in there is TVA on its more
21 parochial environmental side, TVA's doing some aquatic
22 studies. They've already submitted to us a mussel
23 study. They're submitted to us the thermal hydraulic
24 effects from the supplemental condenser cooling system
25 on the river, and the river life. And there's two

1 more. There's an impingement and entrainment study
2 that are coming in in mid-March that the staff will
3 have to review. All these are going towards the staff
4 to be able to issue by the end of June the supplement
5 to the environment statement for the comment. And so
6 it'll be a 45 day comment period after that.
7 Because TVA's a federal agency and done
8 its own EIS, one of the wrinkles in this thing, and
9 not belabor this too much longer, is is we don't
10 notice this for public comment. We ship it to EPA and
11 EPA notices it for public comment. And it's because
12 of the fact that TVA is government also.
13 So that's going to cause us -- and we're
14 looking at the final, as with comment resolution, in
15 the October, possibly November. But if it's November,
16 then fire protection and environmental are neck-and-
17 neck. And in this case here I'd say we're probably --
18 I've got a little bit more convinced in completing
19 with environmental because of the fact that we issue a
20 draft first.
21 So that takes care of the open items. If
22 there's no other comments, I'll just give you a couple
23 of sentences where we currently are with the schedule
24 and with regard to this Committee.
25 As is indicated again, we've got some

1 planned Subcommittee meetings. Actually, there's one
2 that's missing in here, and that was the October. So
3 we've got one for July. We do have one for early
4 October. We've got one for November also.
5 DESIGNATED FEDERAL OFFICIAL SHUKLA: There
6 is no meeting in November.
7 MR. MILANO: Oh, there's no meeting in
8 November? Okay. So then the November is the October.
9 Okay.
10 CHAIR RAY: Well, naturally you need to
11 tell us if you need more. But the July 12th meeting
12 on our schedule right now shows as a half day. And
13 with this discussion, I don't know. We'll see what
14 the applicant says about the testing program. It's
15 hard to say. That's a change from what we reviewed
16 previously.
17 MR. MILANO: Yes.
18 CHAIR RAY: But I'm thinking if you bring
19 in cyber security, for example, it looks to me like a
20 half day might not be enough, we may need a full day
21 in July.
22 MR. MILANO: Okay.
23 CHAIR RAY: And we hopefully agreed to
24 October 5th, but it'll be that or something else that
25 we can negotiate. And if you need another meeting

1 after that before we go to the full Committee, then
2 you need to tell us that.
3 MR. MILANO: Okay.
4 CHAIR RAY: And we'll have to work it in.
5 MR. MILANO: Right.
6 DESIGNATED FEDERAL OFFICIAL SHUKLA: This
7 is a good place. The ACRS there are some changes that
8 SSER might go to -- in that case we might need a
9 meeting in November.
10 CHAIR RAY: Okay. Anything else, Pat?
11 MR. MILANO: And then the final. You know
12 is, is to be able to go to the full Committee in
13 December.
14 CHAIR RAY: Right.
15 MR. MILANO: You know, we've got a lot on
16 our plate between now and December, there's no doubt
17 about it.
18 CHAIR RAY: Yes. Well, seems like
19 December is always my time. I had Vogtle and a DCD
20 and a GSI-191 letter all in December. So we can do
21 that again next December, I guess.
22 Okay. With that, we're going to break.
23 And I guess I'm debating with myself about whether we
24 should come back at 1:15 or 1:00. How do you feel
25 about that.

1 MEMBER STETKAR: You're the boss.

2 CHAIR RAY: I know that. But how do you

3 feel?

4 MEMBER STETKAR: I'm a little tired.

5 CHAIR RAY: Do you need an hour break for

6 other things you got to do?

7 MEMBER STETKAR: No, I don't.

8 CHAIR RAY: Okay. And Charlie, can you

9 get back at 1:00.

10 MEMBER BROWN: Yes. I'll just stuff the

11 food down -- no, I'm just kidding. It's perfectly

12 okay.

13 CHAIR RAY: Well, let's see if we can make

14 up time. Anyway, we'll get back, let me make it five

15 minutes after 1:00, which is 45 minutes.

16 (Whereupon, at 12:17 p.m. the Subcommittee

17 meeting was adjourned, to reconvene this same day at

18 1:05 p.m.)

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1 A-F-T-E-R-N-O-O-N S-E-S-S-I-O-N

2 1:05 p.m.

3 CHAIR RAY: So we're back on the record

4 and resume.

5 Pat?

6 MR. MILANO: Okay. Thank you.

7 This afternoon one of the last things the

8 staff's going to talk about, or the last two items for

9 the staff to talk about are:

10 (1) Is presentation of the current status

11 of inspection activities, and that'll be done by Mr.

12 Baptist, and;

13 (2) Then finally, I'll just summarize

14 some of the things from an oversight function as to

15 what's been going on with our Watts Bar Reactivation

16 Assessment Group, and;

17 (3) Lastly, we'll have a little dialogue

18 about expectations for the next meeting.

19 And with that, I'll turn it over to Mr.

20 Baptist.

21 MR. BAPTIST: Thank you, Pat.

22 Again, James Baptist out of Region II as a

23 Senior Construction Project Inspector on the Watts Bar

24 Unit 2 project.

25 And, I have the privilege of sharing with

1 you what we've done over the calendar year 2010 as
2 well as where we're headed for 2011.
3 As you can see from the slide, we've got
4 some values up there as far as our violations that we
5 issued and then what we have encountered as part of
6 our 2010 end-of-cycle we completed earlier this month.
7 Just as a point of reference, the 14
8 violations that were identified in 2010, you know as a
9 stand alone don't mean a lot. But there were two in
10 2009, so there's been an increase and I guess it
11 wouldn't be not unexplainable due to the fact that
12 because of TVA's efforts have ramped up, our
13 inspection efforts have ramped up as well and they
14 seem to be going hand-in-hand along with that.
15 Regarding the bullet on substantive cross-
16 cutting issue, that's just a mechanism in our policy
17 to go through. And it's a mirror of the operating
18 plants. It's a mechanism for us to look at a number
19 of findings to see if we feel there's a trends that
20 exists that maybe needs further review.
21 As of the end-of-cycle we reviewed it with
22 regional management and we haven't come to a
23 conclusion as of yet, but as far as the policy goes,
24 mainly Chapter 305 requires us to look at, answer
25 certain questions, and that's what w did.

1 Let's see, regarding the hours. Again, in
2 parallel with the violations and TVA's efforts the
3 14,700 hours was slightly higher than last year. We
4 were at roughly -- so roughly around 12,000 hours
5 last. So, again inspection efforts have increased.
6 CHAIR RAY: What are you referring in
7 times of last year? You're talking about 2009?
8 MR. BAPTIST: 2009, yes sir.
9 And the last bullet, you know really talk
10 about I guess what we've don with our personnel.
11 And the senior resident that was there
12 from the beginning of the project retired at the end
13 of 2009. He was replaced by a resident at the site.
14 And then we have had some other subsequent movements
15 internally and both laterally with one of our
16 residents from Watts Bar Unit 2 went to Watts Bar Unit
17 1.
18 Ideally, we would have one senior and
19 three additional resident inspectors there. So, to I
20 guess supplement that, currently we have one permanent
21 senior, one permanent resident. We're going to fill
22 those vacancies with some rotations from folks from
23 the Region.
24 The good news is we feel there's some
25 continuity there because the people we're filling

1 these positions with have already been very familiar
2 with the project. They're done inspection at the
3 site. They've visited a number of times. So, we
4 don't feel as if we've lost any knowledge through this
5 process. So, I guess that's the positive note on the
6 turnover that we're experiencing right now.
7 Next slide.
8 Any questions on that.
9 CHAIR RAY: No. It' not our turf.
10 MR. BAPTIST: That's quite all right.
11 I guess the next slide really highlights
12 as to where we've put a -- with the exception of just
13 the open items that we have, there are some specific
14 items where we've dedicated some time to. And a lot
15 of it is resident activities. As they open system to
16 refurbish them, to replace items we're taking every
17 opportunity to look inside the system to see what we
18 think. And we're tracking what TVA is doing with
19 regards to cleanliness for material. And just
20 refurbishment in general. We see that as a really
21 high level critical task that's being performed
22 onsite.
23 We really ramped up our efforts to ensure
24 that Unit 2 construction activities have no impact on
25 the operating unit, as well as TVA has done some very

1 similar work. And in concert with that, we're
2 attending meetings where they also go through any
3 possible interface and interactions from Unit 2
4 construction activities to Unit 1. And it's actually
5 came out in a Regional office notice that was created
6 in concert with our Unit 1 Division of Reactor
7 Projects.
8 Of the 14 violations one of them dealt
9 with seismic qualification on replacement of molded
10 case circuit breakers, as you can see. And resolution
11 is still pending. There's been a lot of interaction
12 between TVA and ourselves, the Agency Headquarter
13 staff. So, I don't have necessarily a final outcome
14 on that, but other then there's still a lot of good
15 dialogue that's going on between all the parties
16 involved.
17 We've recently performed some focused
18 inspections, as you can see. Problem identified and
19 resolution inspection was performed on a specific
20 issue. And high level we're closing some of the
21 bigger items; the Corrective Action Programs, special
22 programs that you see. Those were sort of
23 frontrunners. And we've done a lot of heavy lifting
24 already and we're starting to see some of the fruits
25 of that. As TVA gets close to closing them from an

1 engineering standpoint and a field implementation
2 standpoint we're right there side-by-side ready to
3 close these items as they hit the streets as completed
4 item from TVA.
5 And, you know the challenges exists that
6 we have a large number of items to close. We have
7 roughly 450 items on our punchlist that have to be
8 completed prior to fuel load, and those are
9 construction deficiency reports, bulletins,
10 engineering letters, inspection programs, the CAPs and
11 SPs we talked about. So they're numerous and we're
12 working them off as TVA gets the work complete and has
13 it in an inspectable status for us to close out.
14 CHAIR RAY: Do you do inspection out of
15 the Region anywhere other than at the site?
16 MR. BAPTIST: We have some -- like myself
17 and another project inspection only go to the site.
18 But we do utilize the Division of Construction
19 Inspection which have specialties. And they go
20 everywhere; MOX, LES, Vogtle. You know, so we use
21 them as we can.
22 But what we've done is we've assigned
23 owners to many of these items. So regardless of what
24 your discipline is or what your primary function is,
25 you know that you own a number of Watts Bar Unit 2

1 open items. So, they maze that within their own
2 division. We sit in periodically, every month or
3 every two months, with their Division management as
4 they report their progress internally. And so far, I
5 mean they're making progress, they're making headway.
6 CHAIR RAY: What about at where the
7 engineering, the design work is done?
8 MR. BAPTIST: Well, you mean as far as, I
9 guess, the creation of the engineering and design work
10 as it gets handed off to the field?
11 CHAIR RAY: Yes.
12 MR. BAPTIST: Yes. That's been the bulk
13 of our work to this point because they've been able to
14 complete a lot of that. And the hand-offs are
15 occurring, or most of them have occurred in their -- I
16 won't say infant stages. But, you know, most of the
17 engineering work has been completed and that's been
18 the bulk of what we've looked at to date. As we go
19 out and we validate that what they claim is going to
20 get done is getting done, that's where we are --
21 CHAIR RAY: When you look at it over on a
22 horizon, at the site, or I mean do you go to other
23 locations? That's why I asked about --
24 MR. BAPTIST: Well, we've been more
25 invasive. We've been at Knoxville, we've been in some

1 of the corporate arenas. But mostly it's at the site.
2 CHAIR RAY: Does Bechtel do their design
3 work at Gaithersburg or in Knoxville, or where?
4 MR. BAPTIST: It's in Knoxville.
5 CHAIR RAY: Okay.
6 MR. BAPTIST: We have had focused
7 engineering inspections in the past. So we had two, I
8 believe, over the project. And right, there's one
9 coming up right now, in fact the next slide.
10 CHAIR RAY: Yes.
11 MR. BAPTIST: The Independent Design
12 Verification Program is just that, it's an engineering
13 look. In a nutshell, it's one of our senior
14 inspectors, he's got some contractors that we've hired
15 in that are very familiar with component design basis
16 inspections and operating units. So they're very good
17 at the vertical slice and looking and verifying that
18 what's in FSAR is actually making itself into the
19 documentation into the plant. And that's ongoing as we
20 speak.
21 This is the first week. And --
22 CHAIR RAY: And you say you've done that
23 before?
24 MR. BAPTIST: We have not done that before
25 here. I mean, that is somewhat of a hybrid of what

1 was done historically where it appeared as the NRC
2 have options to either do it independently or to
3 review what the licensee had done. We've actually
4 done a little bit of both. We're both reviewing TVA's
5 internal look at their engineering of the two systems
6 thy chose, and we're also choosing two independent
7 systems and doing a vertical slice of those two also.
8 It'll will be a total of four systems where we looked
9 at both -- you know, between their efforts and ours.
10 CHAIR RAY: Okay.
11 MR. BAPTIST: So more to come on that.
12 Hopefully, in July there's more to tell on that.
13 And then, of course, our system pre-opt
14 testing. That's sort of the large item on the plate
15 as we prepare for that. As we get test programs and
16 procedures from TVA, we're reviewing them and
17 developing our test plans. You know, it's fairly
18 scripted. There are IPs we must accomplish, there are
19 certain things that we must do, certain tests we must
20 evaluate. So, it's fairly prescriptive in what we're
21 required to do, we're just waiting to see how TVA's
22 going to accomplish that and then how we can integrate
23 ourselves into that.
24 And we have an additional inspection,
25 problem identification and resolution inspection, this

1 May. We've done two historically -- 2½. We had one
2 that focused on a smaller effort. But this one is
3 going to actually be led by a member from an operation
4 unit. We plan to have the senior resident from an
5 operating unit come and lead this team in May. And
6 the idea would be that we're going to focus primarily
7 on closure of items, items that either we've
8 identified in the past or items that TVA has
9 identified that are in the Corrective Action Program.
10 And once again with the focus being late in the
11 project, we want to see how they're closing and how
12 successful they are at closing these items out.
13 Because those will need to be addressed towards the
14 end of the project.
15 And again, another large effort is the
16 hanger analysis CAP, which will be occurring next
17 week. Again, it's just a small team effort, but it's
18 definitely on the radar screen as having some
19 importance.
20 CHAIR RAY: Okay.
21 MR. BAPTIST: Now you probably got briefed
22 on refurbishment activities last time, so I won't
23 belabor it too much. I'll just give you a update as
24 the scope of TVA's activities have been looked at and
25 we're now more into the implementation phase of it.

1 We tried to integrate it in every inspection we do.
2 We brief our inspectors and ask them to maintain that
3 perspective that if something is open and if something
4 is being redone on sit, to look at it from not only
5 the lens of the OP that they're necessarily
6 performing, but also from a refurbishment standpoint.
7 Take a look inside the cabinet, take a look inside
8 the pipe, you know take a look inside and see what's
9 happening and what it looks like for a material
10 condition standpoint.
11 And we're being successful with that.
12 Approximately 60 percent complete.
13 So, in conclusion we continue to ramp up
14 our efforts just as TVA increases their work on
15 safety-related components in the plant. And we feel
16 we have the adequate resources there to accomplish all
17 the open items and all the tasks that we've been
18 handed prior to fuel load. And we're getting great
19 support from both NRR and the licensee as well.
20 CHAIR RAY: Well, that all sounds very
21 good. The schedule and resource availability are
22 typically they kind of forces your facts that lead to
23 problems at this stage of the project. There seem to
24 sufficient, adequately qualified craft and so on to do
25 the work and rework and so on that's called for.

1 MR. BAPTIST: That's what we're seeing.
2 Internally or inside the craft?
3 CHAIR RAY: Yes. I'm talking about
4 electricians, welders and --
5 MR. BAPTIST: We haven't seen anything
6 from that standpoint that would indicate otherwise.
7 You know, it's really been -- you know, it's clear
8 that with 450 items to close and us having closed 30,
9 there's a lot of work to be done between now and then.
10 I mean, the curve is pretty steep. However, a lot of
11 the heavy lifting has been done, a lot of behind-the-
12 scenes work has been done, a lot of inspectors have
13 reviewed a lot of the engineering work and are sitting
14 by waiting to see some field work before they can
15 close it out and say "I've see what you claim you're
16 going to do, now I've seen you do a little bit of it.
17 I've sampled it enough to say I'm done."
18 So even though it seems sort of like an
19 insurmountable task to go from 30 to 450 in the time
20 frame that's still set out there in the schedule, we
21 know that there's a lot of work that's already ben
22 done behind-the-scenes that really it's just a matter
23 of getting out in the field, verifying that the work
24 is actually being accomplished as it was planned be,
25 and then just writing it up.

1 CHAIR RAY: Well, talk about the
2 applicant's QA/QC programs.
3 MR. BAPTIST: The safety work environment?
4 CHAIR RAY: No, quality assurance and --
5 MR. BAPTIST: Okay. And talk about it in
6 what sense?
7 CHAIR RAY: In any sense you like, but
8 tell us if you think they've got enough resources,
9 have they issued any stop-work orders, for example?
10 MR. BAPTIST: They have. They've issued
11 some on some items that were purchased that they
12 identified. There were some supports. And they were
13 actually supplying some -- they were creating some
14 onsite and getting some supplied, and they had a stop-
15 work order on that.
16 They've been integral to what we've seen.
17 They've been intrusive and, you know we've been there
18 to second check their quality control and their AQ,
19 the Agency's been. And all those programs were
20 assessed early in the process. And --
21 CHAIR RAY: Yes, but now is when they're
22 really tested.
23 MR. BAPTIST: Right. We haven't seen any
24 examples where they have been lacking the resources
25 they need. You know, there's typically QC waiting.

1 You know, our standpoint on that is are they are, do
2 they have adequate time, do they sense production
3 pressure to go and do that, the things that they've
4 been asked to do? We haven't seen examples of that.
5 CHAIR RAY: Okay.
6 MEMBER BROWN: Have you actually looked
7 at, for instance, welders? The guys down there
8 welding just randomly selected, are his qualifications
9 up-to-date?
10 MR. BAPTIST: Absolutely.
11 MEMBER BROWN: It includes an in place
12 and, you know check of that specific --
13 MR. BAPTIST: Absolutely.
14 MEMBER BROWN: -- for the types of welds
15 he's qualified?
16 MR. BAPTIST: Yes, sir. You know, most of
17 our inspection procedures are three tiered. And
18 there's a little bit of an artificiality to kind of
19 implement them at this stage in the project. But most
20 of them start out with a procedures review, you know
21 as if you were building this plant from the ground up.
22 And then you go into work observation and then
23 records review.
24 Most of the inspection procedures, we've
25 gone back and reconstituted, but most of them were

1 completed during the prior inspection efforts. And
2 our goal was to just validate that the new efforts
3 that are occurring, you know still subscribe to the
4 guidance that was, I guess, laid out in the IPs. And
5 we've really gone back, and even though there's been
6 some difficulties in implementing them from a 90
7 percent standpoint, we've gone through and we've used
8 the guidance that they used when they were initially
9 constructing the plant. And all those still apply.
10 When you go and watch work observations,
11 regardless of whether it's a welder or any kind of
12 craftsman, that is part of the inspection plan: To
13 verify that people are receiving the items properly,
14 storing and handling them, that the people operating
15 them are qualified to use them, qualified procedures.
16 And then tying a bow out at the end that the records
17 are all in order and being properly handled.
18 MEMBER STETKAR: Jim?
19 MR. BAPTIST: Yes, sir.
20 MEMBER STETKAR: Do you have any sense of
21 the number of Corrective Action Program, special
22 programs that need closing out? Do you have any sense
23 of which ones of those might be on your critical path?
24 We've heard a little bit from Pat as far as
25 Headquarters' critical path? Do they line up that

1 way.

2 MR. BAPTIST: Sure. Well, I mean there

3 are some that are -- obviously there are some that are

4 -- we've completed seven.

5 MEMBER STETKAR: Yes.

6 MR. BAPTIST: There were 29, there's

7 actually some sub-issues. So that's not seven out of

8 29, that's really more like seven out of 39 when you

9 count all the sub-issues in. And again, those have

10 been present from day one and there's been a lot of

11 interaction.

12 There is one on environmental

13 qualification that is getting out of the blocks, but I

14 think it's going to work out well because of some of

15 what you've heard already today where there's still

16 some items out there that need to be questioned.

17 We're going to try to integrate that into that CAP,

18 the Corrective Action Programs and work that together.

19 We've already had some discussions from regional

20 folks in Headquarters about what we can do and

21 incorporate it in our plan to help assist closure of

22 some of those items.

23 CHAIR RAY: Anything else?

24 MEMBER BROWN: One of the questions

25 relative to -- because I didn't hear it talked about

1 yet, was supplier base to the plant. In other words,
2 they go out and they buy stuff from the vendor for the
3 new feedwater controller, or whatever it is, and that
4 supplier, that vendor has suppliers. Does anybody
5 ever go into a vendor's plant and look to see that
6 they've got quality suppliers, that the stuff they're
7 buying is in accordance with whatever; they're not
8 buying the stuff from Radio Shack? And I'm not saying
9 Radio Shack's stuff is bad.
10 MR. BAPTIST: We've actually done a vendor
11 inspection at Bechtel, and then in addition to as the
12 Vendors Branch is going out, we've got a list of,
13 obviously, the approved suppliers. And if they're
14 going to a supplier that is on the list, we ask them
15 to sample some items that are destine for, have been
16 ordered by TVA for the Watts Bar Unit 2 project. So,
17 there has been plenty of interaction. That's been
18 kind of spearheaded by the Watts Bar Reactivation
19 Assessment Group and -- I'm sorry.
20 MR. MILANO: We're taking advantage of the
21 fact that New Reactors has a relatively robust vendor
22 inspection program. And most of the vendor
23 inspections of actual commodity suppliers is being
24 done of there. And like James is indicating, when we
25 know that they're going someplace that's also

1 supplying for Watts Bar -- as a matter of fact, we did
2 one for the reactor coolant pumps. Curtiss-Wright,
3 you know the new internals and stuff. The NRO was
4 going to be there and we asked them to look at what
5 was being done for Watts Bar. So, it is taking place.
6 MEMBER BROWN: For electronics as well?
7 MR. MILANO: Well, I can't speak to what
8 has been done. But as for anything that we feel is of
9 a critical nature.
10 MEMBER BROWN: Okay. Well, I'm thinking
11 primarily semiconductor suppliers or major electronic
12 components and stuff like that. I'm not necessarily
13 thinking about terminal boards, but the parts that are
14 the active parts, spot-checking to see that people are
15 using reputable suppliers as opposed to --
16 MR. MILANO: There is a slight offshoot of
17 that, even though this is not a true what you would
18 call a vendor inspection. But the NRR staff with
19 support from the Region did an audit of the Solid
20 State protection system factory acceptance testing.
21 And again this week, actually they're currently on an
22 audit of Westinghouse for the Common Q platform -- or
23 excuse me, next week. I'm sorry. I lost track of the
24 dates here. Starting on the 28th they'll be at
25 Westinghouse to look at the Common Q platform for the

1 Post-X, their monitoring system.

2 So, in part, they're somewhat like a

3 vendor inspection even though --

4 MEMBER BROWN: Well, that's largely

5 looking at test results and how they're coming

6 through. It's not relative to the makeup, the

7 constituents. Like people pay a lot of attention to

8 the materials that go into the bearing brackets, that

9 go into the reactor coolant pumps. And I tend to pay

10 attention to the types of components that go into the

11 reactor protection system and/or other major control

12 systems to ensure that they are quality points.

13 There's going to be a wide variety of stuff and a wide

14 variety of even assembly procedures.

15 I mean, I've had experience where, I hate

16 to say, we always thought we controlled everything in

17 the nuclear program, Naval nuclear program very

18 tightly. But a guy ended up using solder that was not

19 -- it had a particular constituent that we didn't

20 count on, we weren't really aware of it. And when we

21 got it out into the field, actually before the ship

22 left, it ended up damaging the circuit boards on which

23 it was on for the line boards. We got -- little open

24 circuits, got all kinds of spurious. We had to rip

25 them all out and put all new ones in. It's a

1 particular constituent. And then another rule came
2 out, another specification came out to make sure that
3 didn't happen again.
4 So, I mean, it's those types of things. I
5 just wondered how you audited. Not so much the
6 manufacturing, that's a little harder. But at least
7 making sure the parts are quality parts that you get.
8 MR. BAPTIST: Well, I mean --
9 MEMBER BROWN: If you order stuff from
10 Texas Instruments, that's one thing. If you order it
11 through three layers of distributors, you're never --
12 unless you have a nice trail of paperwork; I don't
13 know whether TVA wants to address that or not. And do
14 you all follow up on that in terms of the quality of
15 the parts that you're given.
16 MR. HILMES: Steve Hilmes, again.
17 Generally we rely upon NUPIC-type audits
18 for vendors.
19 MEMBER BROWN: Is that --
20 CHAIR RAY: It's an industry cooperative.
21 MEMBER BROWN: Oh, okay. And in your case
22 it's a suppler-base or is that an inspection thing or
23 what? I have no idea what --
24 MR. HILMES: It's a supplier-based.
25 Generally when I say that, I'm saying about 1E

1 supplier.

2 MEMBER BROWN: Okay. So they're certified

3 to some level is what you're saying?

4 MR. HILMES: Yes. And also Bechtel has

5 its own inspection program where they do source

6 inspections. And in a number of cases, I myself have

7 looked at a lot of the components as the end person.

8 And I don't think we've had any TVA QA audits of

9 vendors.

10 MEMBER BROWN: So you depend on Bechtel

11 and their other connections that they have? Your

12 other process to do that?

13 MR. HILMES: Yes.

14 MEMBER BROWN: Okay.

15 MR. BAPTIST: Now, as I mentioned before,

16 some of our inspection procedures have been

17 reconstituted, meaning that they were satisfied. One

18 of them that we happen to going to be doing in its

19 entirely is the instrumentation and control inspection

20 procedure. So, I mean, and the inspector we've got

21 assigned to that is from the industry. She was a

22 systems engineer and, you know she's been -- the

23 layout is proceed inspection. She's there, she's with

24 TVA looking at the critical care characteristics of

25 components coming in and then, you know how they're

1 being handled, stored. And then ultimately placed in
2 the plant, tested, calibrated, whatnot. And so she's
3 going to be there from the beginning to the end.
4 MEMBER BROWN: All right. I was just
5 trying to get a feel from our perspective.
6 MR. BAPTIST: Sure.
7 MEMBER BROWN: As to what you all do.
8 Thank you.
9 CHAIR RAY: Pat?
10 MR. MILANO: Okay. With regard to our
11 continuing oversight of the Watts Bar project in
12 general, we've talked to you a number of times about
13 the Watts Bar Unit 2 Reactivation Assessment Group?
14 And since that group also, as we have indicated
15 before, you know meets on a periodic basis. The last
16 time was actually two weeks ago on February 14th we
17 met.
18 And the predominant issues that the group
19 has continued to address includes such things as:
20 Actions regarding those items comprising
21 the critical path;
22 Obtaining staff and contractor resources
23 for both the reviews and the inspection activities,
24 and;
25 Then lastly, a focal point for the status

1 of the project and for coordination between the Region
2 and the Headquarters Office.
3 In particular, following the last meeting
4 on February 14th the group met with TVA in a public
5 forum and obtained a presentation from TVA management
6 to help us better assess TVA's status of both its
7 licensing and its construction activities, and its
8 actions in response to identified issues. And again,
9 that took place this past month.
10 Next slide.
11 So in conclusion for our whole project:
12 The staff review is continuing. We've
13 encountered some delays, and we had originally hoped
14 to have been at a stage right now where we'd be
15 focusing just on open issues. And as I've indicated
16 with the critical path items in particular, the staff
17 is still at an earlier stage where we're trying to
18 wrap up the initial review of those areas.
19 With regard to the milestones for 2011:
20 We hope to complete most of the technical
21 review by the third quarter of this calendar year;
22 Supplement 23 and the draft supplement to
23 the Final Environmental Statement for Operations
24 should be issued by June of this year, and;
25 To complete the review of the fire

1 protection report in time for the November
2 Subcommittee meeting, and;
3 Then when I say "Complete the ACRS review
4 by December 2011," meaning our goal right now is to be
5 able to go to a full Committee in December of this
6 year.
7 CHAIR RAY: Okay. I remind you again
8 there is no presently November meeting.
9 MR. MILANO: Yes.
10 MEMBER STETKAR: Which means we're
11 shooting for an October meeting for fire protection,
12 you need to be done with it by early September --
13 CHAIR RAY: My guess is what it means is
14 they got to schedule a meeting in November is what's
15 that going to turn out to be.
16 MEMBER STETKAR: Yes.
17 CHAIR RAY: The reason isn't that I
18 particular crave a meeting in November. It's that --
19 and if you don't need a meeting in October because
20 you're having a meeting in November, that's fine. Just
21 tell us that. We're not insisting on a meeting in
22 October. But the way things go, it's going to be down
23 to the wire in all likelihood.
24 Okay. Go ahead.
25 MR. RAGHAVAN: This is Raghavan.

1 I just want to summarize before we go to
2 these slides as to where we are. As we have been
3 telling you before, there are several components to
4 this analysis.
5 Number one is generally communications.
6 We look at about 1100 generic communications that were
7 issued since 1973. And some that are applicable to
8 TVA and what's-what and some that are not. But right
9 now as it stands there are only two generic letters
10 that's outstanding, which is the ECCS sump which is
11 GSI-191, and then the gas finding, the reactor
12 ventation that you were talking about, Generic Letter
13 2008-01. So only two things remaining on the generic
14 letters. All other items are done from the NRR point
15 of points of view.
16 The second one is the Corrective Action
17 Program and special programs. There were 29 programs
18 in total with some sub-issues in those things. TVA
19 kept many of them based on the Unit 1 approaches, but
20 they did change some of those things, essentially in
21 the electrical arena. And we looked at all of them,
22 all 29 of them, and we have approved them. And so
23 that job is complete. It's for Region to inspect the
24 implementation of what has been approved.
25 The third is the FSAR. We had over 300

1 topics to be reviewed, and we have completed about 250
2 of them, approximately. So that's the remaining
3 portions of the ones that we are working on. In fact,
4 the critical items, that remains to be done.
5 The fourth issue is all the programmatic
6 reports such as the emergency planning or the safe and
7 security issues; those are all essentially done right
8 now.
9 We have issued part of them. The security
10 is almost done.
11 MR. MILANO: Except for cyber security.
12 MR. RAGHAVAN: Except for the cyber
13 security, quality assurance -- is imminent, it's in
14 the last throws of having the -- so all those
15 essentially done.
16 There is a Part 30 and Part 40 license
17 which got issued yesterday. This is for the source
18 and the byproducts; that was issued. And we are now
19 currently working on the Part 70 license which allows
20 them to receive fuel. And that is scheduled to be
21 completed in the next few weeks.
22 So that's where we stand in terms of how
23 we are, and now we're coming to a very small subset of
24 portions of things that need to be done, which will be
25 the fire protection, completion of a couple of items

1 in the instrumentation controls, IPEEE, the
2 environmental issues, some issues with regard to the
3 reactor systems.
4 CHAIR RAY: All right.
5 MR. MILANO: Okay. Regarding conclusions,
6 and there are expectation for the next meeting. And
7 again, this is a rehash of what we have been
8 discussing all morning.
9 You know, for the July meeting we expect
10 to have Supplement 23 completed. Supplement 23 will
11 include a review of Chapter 7 the instrumentation and
12 controls, Chapter 15 for accident transient analysis,
13 Chapter 4 on the nuclear fuel and also some other sub
14 items. One is in Section 13,6 on security, we'll be
15 talking about cyber security. And then in Chapter 14
16 on the testing program we'll discuss with you the
17 integrated safegaurds testing. And then finally, any
18 of the items especially in the area of electrical
19 where we have been able to close out the open item.
20 If it's more than just a routine confirmation, we'll
21 discuss with you what the staff did in terms of
22 closing those out.
23 And then finally, just with regard our
24 general sequence right that we're in is, it is getting
25 own to the point where we're basically focusing only

1 on critical path items and closeout and confirmation
2 of activities.
3 And with that, that's the end of the
4 presentation by the NRR and regional staff.
5 CHAIR RAY: Okay. Well, let's add to the
6 July list a couple of items here.
7 MR. MILANO: Okay. Yes.
8 CHAIR RAY: One is, I don't know what form
9 this will take yet, but you've heard us say that
10 there's a lot of effort on the part of the ACRS to
11 engage in the final resolution of requirements for
12 cyber security. And you made the point that Watts Bar
13 Unit 2, whether its the only or one of the few,
14 anyway, will be where we see that implemented first.
15 MR. MILANO: That's right.
16 CHAIR RAY: We need that discussion in
17 July. How extensive it is, whether it's just
18 applicable to Watts Bar Unit 2 or whether we're going
19 to be trying to look beyond Watts Bar Unit 2 to other
20 implications of what you come up, and we'll see. If
21 you're not able to do it in July, which I heard you
22 say you might not be able to do, then clearly at the
23 next opportunity.
24 The other thing is we did spend time and
25 again a couple of meeting going over the relationship

1 between the Unit 2 startup operations and Unit 1. I
2 understand there's been some change from what we last
3 reviewed; that's to be expected. But there is a very
4 large incentive for finding ways to make it possible
5 to do what needs to be done on Unit 2 without
6 affecting Units 1. And therefore, I think we need to
7 be alert to how that is being accomplished. Because
8 suspect that either the rules have changed or
9 something has happened since the last time we reviewed
10 it. And the fact that there will be this testing that
11 goes on in the refueling outage of Unit 1 shortly,
12 that's presumably fine because it's in a refueling
13 outage. What's really of importance is what goes on
14 after that. And if it's everything that's required to
15 load fuel in Unit 2 and start it up, all of that's
16 going to be done with Unit 1 in operation; that'll be
17 of interest. And we'll just need to get comfortable
18 with the idea that there isn't anything that -- we'd
19 like to know what the rules that apply to that process
20 and make sure we're clear about it in our mind.
21 Because like I say, it was discussed a good deal in
22 the past.
23 All right. So those are a couple of things
24 I would add to your list in July, and one for them for
25 sure, the other one maybe --

1 MR. MILANO: All right.

2 CHAIR RAY: -- depending on where you are

3 able to get by that point in time.

4 It's not for July or any other time having

5 to do with Watts Bar, but somewhere we need to catch

6 up as a Committee with an understanding of this issue

7 that arose in the discussion of one of the open items,

8 #31. And I understand there's an Agency paper on the

9 street, and there may be many members who are well

10 aware of what the status of it is. But anyway, not

11 for any presentation having to do with Watts Bar, but

12 I'll just make a note for my colleagues and Girija to

13 follow-up on that we need to get familiar with where

14 that stands.

15 And I guess that's all I had for now.

16 Do you have anything, Charlie, you want to

17 add?

18 MEMBER BROWN: No, that covered me.

19 CHAIR RAY: John?

20 MEMBER STETKAR: No, nothing.

21 CHAIR RAY: Okay. With that, we'll be

22 hearing next from the applicant, and I assume you guys

23 will be around if we need to call on you.

24 MR. MILANO: With that, I'm going to turn

25 it over to Mr. Ashok Bhatnagar, and he's the Senior

1 Vice President for New Generation Development.

2 CHAIR RAY: Okay. Highly respected.

3 MR. BHATNAGAR: Oh, thank you. It's a

4 good way to start anyway.

5 CHAIR RAY: Okay. Here comes the paper.

6 Good. Thank you.

7 Ashok, it's too early yet, but I'm going

8 to look for a chance where to take a break in not too

9 long before they run out of coffee downstairs. So

10 just bear in mind as our presentation unfolds here,

11 it'll be not because of any problem with the

12 presentation, but just because we got to schedule in a

13 break sometimes and it's usually better to take it

14 shortly after 2:00 than to wait until after 3:00.

15 So with that, the floor is yours.

16 MR. BHATNAGAR: Do you want us to wait for

17 Mr. Brown or has he just stepped out for just a

18 second.

19 CHAIR RAY: No, you can begin.

20 MR. BHATNAGAR: Okay. All right.

21 CHAIR RAY: We still have a quorum.

22 MR. BHATNAGAR: Okay. Thank you for

23 having us here today. And appreciate your time and

24 effort that it's taken to review the significant work

25 that really has been accomplished both by the staff

1 and TVA for almost over a year, year and a half now.
2 We have made a lot of progress, but as you've noted,
3 there's still a lot of work left to go. But one thing
4 that I will tell you; that the communications between
5 the staff and TVA has been very good. We continue to
6 watch all these activities, there's a lot of
7 activities that have to be taken to completion. W
8 have a good list, we understand what's open, we
9 understand what we need to do to get those things
10 completed. And we're going to continue to do that.
11 I do want to say that the completion of
12 Watts Bar Unit 2 is a very critical item for us as an
13 Agency. If you noticed our recent updates our vision
14 for TVA, very squarely in that vision is the idea of
15 clean, low cost generation of which nuclear power is a
16 very important part. And specifically, Watts Bar is
17 at the beginning stages of that implementation. And
18 that's why it's of significant importance to us.
19 I do want to make one comment about the
20 licensing process itself. We have done everything
21 possible to stay within the guidance that was provided
22 by the Commissioners in the SRM; that we license Unit
23 2 as a reference with Unit 1 licensing basis. And
24 we've attempted to do that pretty much across the
25 board. It did provide additional guidance on what if

1 you wanted to stray from that, and we've also tried to
2 stay true to those guidance requirements. Is that if
3 there are reasons to do something different and it
4 will not cause to have some kind of deterrence to
5 having operational consistency between Unit 1 and Unit
6 2, we've tried to take some actions associated with
7 that also.
8 I would want to leave you before I turn it
9 over to my team to start the presentation is that as
10 we said Browns Ferry, we've always had the time and
11 resources to do it right, and we'll continue to have
12 that same philosophy in this project. And we do have
13 the time, we do have the resources to do it correctly.
14 And I think we'll be able to show you that.
15 And to that point, I know there's a lot of
16 discussion about whether or not we were trying to
17 force things into an outage that may or may not
18 happen. But I will tel l you this: If we need to do
19 a mid-cycle outage, we will. There's no doubt in mind
20 that this is an important asset for us. So if we go
21 along and we get past this outage in April, and we
22 could, we could find things you know a month after the
23 outage that we need to do, there's nothing wrong with
24 taking the unit down and safely doing the activities.
25 Obviously, we'll always challenge

1 ourselves to see if there's a way to do it online,
2 just like we do all online maintenance. We have a
3 very sophisticated process that we go through to
4 decide what kind of online maintenance we're going to
5 do, what kind of online we'll do. That's actually run
6 by the Operating side. They will look at any activity
7 that we want to take on. And if they decide and we
8 decide that it's not safe to do online, we'll put into
9 a forced outage or a planned outage and we'll make
10 sure we get that done.
11 CHAIR RAY: Well, that's very good.
12 Since I want to comment on that, let me
13 just say that's very good to hear you say that.
14 The very first time we went through things
15 they were being driven very hard by the plant outages
16 on Unit 1. And it wasn't bad at that point but it was
17 obvious, at least from the discussions, that that was
18 a driver for what was being done when, and so on so
19 forth. And, in fact, doing work on Unit 2 without it
20 having to be tied to Unit 1, of course, is optimal
21 from the standpoint of being able to take your time to
22 do it right. But there's some things that might call
23 for a forced outage, as you say. And to have you
24 affirm that that's what would happen if that was
25 necessary is reassuring.

1 MR. BHATNAGAR: Sure. But I think we will
2 show you specifically on the safeguards test that
3 we've been able to work our way through that issue and
4 show both to us and Unit 1 that can be safely done on
5 line for the scope that we need to get done.
6 CHAIR RAY: Well, you've put a lot more
7 work into that than we have.
8 MR. BHATNAGAR: Yes.
9 CHAIR RAY: As you can well understand
10 when you approach this things, there's so many things
11 that are integrated that it's hard to do without doing
12 a work to ensure yourself that you're not going to
13 trip Unit 1, you know an unplanned trip of Unit 1 is
14 not the end of the world, but it's not something that
15 we want to have happen.
16 MR. BHATNAGAR: Absolutely. Ye,s we don't
17 need. Yes.
18 With that, let me turn it over to Ed.
19 MR. FREEMAN: Thanks, Ashok.
20 My name is Ed Freeman. I'm the Engineering
21 Manager for TVA on the project.
22 Slide No. 2 just gives the agenda, the
23 items that we were here to present. Ultimately, we
24 brought a status presentation to show you where we
25 are. But I think we've gotten some answers to some of

1 the questions that we heard between your and the
2 staff, and may be able to elaborate a little bit more
3 and get you further down towards the final answer on
4 those.
5 Slide No. 3 gives the project completion
6 status and the schedule, the milestone schedule. I
7 believe that you've seen this one before.
8 One comment that I'll make on it is if you
9 look in the, I'll call it the bottom right hand
10 corner, you'll see several system milestone dates.
11 We're currently under a schedule review that
12 ultimately we're transitioning from a bilk commodity
13 kind of construction process where you go out and do a
14 bunch of cable, a bunch of pipe supports and stuff
15 like that. And going more into a system completion
16 mode.
17 And these dates that you see here were
18 floated against a pretty aggressive internal schedule
19 and target that we had for ourselves. And we expect as
20 a result of the review that we're going, that some of
21 these dates for these, I'll call them small
22 milestones. They're certainly not as big as full
23 power operation, the big one that you see on the right
24 there. But some of those dates will likely change the
25 next time that you see this graph. I will say,

1 however, we expect to still meet that full power
2 operation, that October 2012 date. We see no reason
3 for that to change at all at this time.
4 Bill?
5 On the Slide No. 4 this gives the overall
6 status of the engineering project. And I do have an
7 answer for your question, Mr. Chairman, if you'll
8 indulge me on what Bechtel is responsible for versus
9 TVA.
10 We didn't confine Bechtel to, I'll say,
11 duplicate Unit 1. They are free to improve on that,
12 and in some cases we have. But ultimately, you know
13 the fundamental design of the unit, the design
14 standards that they're applying are industry standard,
15 or TVA standards or in most cases both. The design,
16 you know from the original equipment manufacturer is
17 pretty standard for the four loop Westinghouse plants.
18 Ultimately the same components from Unit 1 are the
19 major components for Unit 2. So you're going to
20 expect a lot of the answers to be the same. In fact,
21 where those answers weren't the same, we have to
22 scratch our head and figure out why. I mean, we have
23 an obligation to do that to see if we have an error or
24 if there's something in the Unit 1 design that we need
25 to investigate further. And we've done that.

1 We expect the answers to be the same, but
2 we didn't confine it to that. And a couple of
3 examples.
4 You know, we did the 79.14, 79.02, the
5 piping, isometric and hanger designs. Our results, we
6 reduced 340 snubbers as compared to the original
7 design and compared to Unit 1. So that was a
8 reduction in maintenance requirements and, of course,
9 a reduction in costs, so we liked it.
10 Also, we kind of took the gloves off and
11 said we want you to eliminate as many operator manual
12 actions as you can in the -- program. And the numbers,
13 I forget the exact counts of that -- I think that we
14 have like 45 or 50 compared to Unit 1 --
15 MR. HILMES: Unit 1 has around a 100 state
16 valves TVA. Unit 1 has around a 100.
17 MR. FREEMAN: Sorry.
18 MR. HILMES: We are less than 50.
19 MR. FREEMAN: So, I heard your question,
20 and I hope that addresses it. We didn't tell them to
21 Xerox Unit 1. We couldn't do that to begin with.
22 Similar techniques are being used, similar
23 components are installed in the plant, we expect
24 similar answers. But where we came up with a better
25 answer, we let it be. And basically where we had to

1 make a change, we've done that.

2 CHAIR RAY: Okay. Well, no, that does

3 speak to the issue quite clearly. You know, it's

4 something that could have gone any one of several ways

5 because the extent to which you choose to Bechtel

6 responsible for the end result, necessarily means that

7 they have to be free to identify where there are

8 things that they would do differently, whether it's a

9 fouling factor in the cooling water system or, you

10 know what's in conduit and what's not; all kinds of

11 standards which may or may not be in codes that

12 represent their way of doing things. Not that it

13 would be any better than what TVA was doing before.

14 And the example of the snubbers or the pipe supports

15 is probably good. Perhaps TVA was more conservative

16 before in terms of how much pipe support they put in

17 the plant.

18 MR. FREEMAN: That's true.

19 CHAIR RAY: And it's an improvement to

20 take that out as long as you do it in a way that

21 you're consciously aware of what's happening. So that

22 sounds responsive and I'm satisfied.

23 MR. FREEMAN: Okay. Good.

24 Going through the slide, the first bullet

25 there says two unit operations with margin. You know,

1 we are certainly obligated to make sure that all of
2 the systems, whether they be shared systems or
3 dedicated to one unit or the other, that there is
4 adequate margin for safe operation and for them to do
5 their functions.
6 We did have some cases, you know where
7 we've improved margin both by necessity and because it
8 was the right thing to do. A few examples of this is
9 we have installed an additional offsite power supply.
10 We basically put an upgrade on the common station
11 service transport, put an automatic tap changer on it
12 so that they could be qualified offsite power sources
13 to support the units.
14 We're also installing redundant breakers
15 on all the 500 kV lines into and out of the plant.
16 That's for the redundancy, basically for reliability.
17 And it also will meet the new regulations from FERC,
18 I believe what it is.
19 ERCW pump upgrades that we're currently
20 doing the installation of.
21 Examining the flow model and calculations
22 that we had on that -- I'm sorry, it's Essential Raw
23 Cooling Water System. It's safety-related raw cooling
24 water. But anyway, there was inadequate margins there
25 to support two unit operations, at least to support

1 any pump degradation as they ran you would soon reach
2 the operability limits, the minimum flows that it
3 would have considering that degradation. And so we
4 speced out and we're purchasing eight new pumps, and I
5 think four of them are installed, a fifth one is
6 currently in installation. And we expect by --
7 probably right after our outage, May or June time
8 frame, we'll have all eight pumps replaced with higher
9 capacity pumps that will meet all of the operational
10 requirements for two unit operations.
11 Going on down the slide, you see the
12 current engineering project stands at 89 percent
13 complete with a remaining 100 hours being focused on
14 open item and design package closure.
15 The closure of those CAPs and special
16 programs we have to basically document that we have
17 done it properly and completed all the work and
18 supporting the field and startup testing activities.
19 We've committed to engineering closure
20 dates for all those CAPs and special programs We
21 completed to licensing. I believe it was communicated
22 to the staff what we expect to do. And so far we've
23 been able to meet our schedule for that.
24 If you look at the bottom item there, it
25 says all engineering resources. I heard the term

1 Knoxville. We're no longer in Knoxville. We moved
2 everybody down to the site so we could see everybody
3 face-to-face. It was becoming a struggle as our
4 activities became more of a field interface for us to
5 do that over the telephone and over the TV screen. So
6 in December everybody was located, and they're in
7 trailers outside or in our field, and they're located
8 inside the gate. But the access has been great
9 improvement on communications with us and the
10 customers that we have.
11 And Slide No. 5 shows the construction
12 status. The statistics show 64 percent complete. And
13 as I said, we're transitioning to a system completion
14 mode at this time. We still have some bulk
15 commodities to complete there. If you look at the
16 focus areas, we have some of the numbers here.
17 We have about 1600 hanger modifications
18 left to complete.
19 Show 21,000 feet of tubing.
20 About a quarter million or more feet of
21 cable.
22 12,000 cable terminations to go.
23 For systems, we're looking at ones that
24 are required to be in the outage. I mean, the major
25 system that we're focusing on right now is that ERCW

1 system, the one with the pumps.

2 And we have to do the flow-balancing. And

3 it's mainly an access issue to have to get inside Unit

4 1 containment because the system is a shared system.

5 And based on the operating mode or the operating

6 scenario that we are balancing to that's most limiting

7 for the system flows, we have to get access to some of

8 the devices inside Unit 1 containment and adjust

9 flows. And we also would have to maintain the minimum

10 flows to all the Unit 1 loads as we balance the Unit 2

11 loads. So, that's one of our focus areas.

12 You see the other systems there. The rest

13 of it does goes to getting the safety-related systems

14 done to where they lead to the later milestones of the

15 safety injection, the containment integrated leak rate

16 testing, hot functional testing and, of course, the

17 safeguards test at sometime later this year.

18 The next slide deals with the

19 refurbishment programs. We called them refurbishment

20 programs, I think you've been presented both of these.

21 But the active refurbishment program is basically

22 that that's kind of akin to preventative maintenance

23 where we disassemble, inspect and lubricate and test

24 and assure the components that actually move and run

25 and that we aren't replacing are ready for service.

1 The numbers there that you see:

2 Safety related valves, we're 57 percent

3 complete;

4 Pumps are 25 percent, and;

5 Motors are 54 percent.

6 We've been monitoring this daily in our

7 plan of the day meeting. We're transitioning to

8 different styles of meetings, but we would still hit

9 this at least two times a week to make sure this

10 status continues to progress.

11 The passive refurbishment program, I know

12 that this program has been presented to you as a line

13 item in one of our previous meetings. This gives the

14 status. It shows 18 percent complete. The attributes

15 evaluated are listed there, but if you will turn to

16 page 7 and you'll see a matrix that gives for system-

17 by-system. I hope that you can read it because it's

18 blurry on the screen that I've got in front of me. But

19 it gives system-by-system and commodity-by-commodity

20 out the side the inspections that we expect to

21 conduct, and the current status for each one of those

22 systems.

23 And this was compiled on those systems

24 getting the flow diagram out, and targeting points and

25 commodities and everything that we believe that we

1 need to inspect.

2 We have had a couple of wins out of this,
3 and we've seen some systems that we didn't expect to
4 see corrosion in. And it is just corrosion, it will
5 clean up. We haven't found anything that is
6 unrecoverable in doing these inspections. But it
7 caused us to change our cleaning methodology from
8 maybe just a normal system flush that we had expected
9 to do to hydrolasing, or something that's more
10 aggressive in order to clean it out. So, the
11 inspections have probably saved us some time.

12 On Slide No. 8 there you'll see the
13 current status of the startup testing program.
14 Overall status is we have 15 systems turned over to
15 startup and we expect that system 67, that ERCW system
16 to come across soon. That' the one on the bottom
17 there that we wish to flow-balance during the upcoming
18 outage.

19 I do want to address the safeguards
20 testing discussion there. In October the 6th,
21 thereabouts, we discussed the change in that
22 safeguards test from the outage to online. That was
23 because, I mean it was in the outage because there was
24 a presumption that the electrical independence
25 sections of that, that's where you ultimately will

1 kill both buses, both trains if you will, train Alpha
2 and train Bravo to prove that they're independent of
3 one another. Then you test on the train Bravo and
4 make sure that you don't need train -- or that train
5 Alpha remains de-energized.
6 There was a presumption that we had to do
7 on the Unit 2 buses. And we did a review of
8 everything that they did with the Unit 1 test and
9 concluded that all of the buses, the independent set
10 that is required for the buses on down through the
11 distribution system had been verified adequately.
12 And further, we presented to the staff
13 that since that test was conducted there have been no
14 modifications that could possibly have compromised
15 that independence. And so the testing became confined
16 to just a train of the Alpha train Unit 2 shutdown
17 train and the Bravo Unit 2 shutdown train. There are
18 common loads on those, but ultimately the loads are
19 primarily supported are primary Unit 2 loads. So now
20 it's just now basically akin to the load acceptance
21 test that all stations are required to do. And
22 specifically our sister station is required to do once
23 an outage.
24 So online, and we will observe the
25 appropriate limiting conditions of operations for the

1 tech specs for those common loads and for the bus
2 itself. But online basically we'll be testing the
3 proper load sequencing for either loss of offsite
4 power or with offsite power available for all the
5 different accident scenarios that the test is required
6 to verify for Unit 2. We'll watch the Unit 2 load
7 sequence on and we'll ensure that the common systems,
8 the ones that will be required for Unit 1 being on
9 line, have adequate controls and adequate support to
10 make sure that Unit 1 operates safely.
11 CHAIR RAY: Well, some version of that
12 presentation that you gave to the staff that led to
13 them accepting that conclusion, you should plan to
14 present to us in July.
15 MR. FREEMAN: Yes.
16 MR. CROUCH: We presented that to you in
17 the October 6th meeting.
18 CHAIR RAY: Well, I don't recall that it
19 led to the conclusion then that we could no longer
20 have to do that test with Unit 1 offline.
21 MR. CROUCH: That was the --
22 CHAIR RAY: That was the conclusion?
23 MR. CROUCH: That was the focus of the
24 meeting, yes.
25 CHAIR RAY: And that was presented to the

1 Subcommittee in October?

2 MR. CROUCH: Yes.

3 CHAIR RAY: Because if it did, it

4 completely escaped my attention. Did you talk about

5 them therefore there was no coupling other than this

6 load balancing?

7 MR. CROUCH: Yes.

8 CHAIR RAY: All right. I'll go back and

9 look at it then.

10 MR. CROUCH: Okay.

11 MR. FREEMAN: If you continue to have

12 questions about that, I'm sure that we could have

13 something short to give.

14 CHAIR RAY: Yes.

15 MR. FREEMAN: I will say, though, that

16 Sequoyah, our sister plant and we're very, very

17 similar right down the road, it's a required

18 surveillance to basically kill a shutdown board at a

19 time and watch the accident loads sequence onto that

20 diesel. And that's very close to the test that we're

21 doing. We have to do a little extra, but it's extra

22 verifications rather than extra equipment out of

23 service and extra --

24 CHAIR RAY: Yes.

25 MR. FREEMAN: So, I mean this is something

1 that we're going to do every outage on both units.
2 CHAIR RAY: Okay. Well, that's fine. And
3 like I say, I'm having to recollect back over more
4 than one meeting here. If what you're describing was
5 already presented to us, I'm not going to ask you to
6 do it again.
7 MR. CROUCH: Okay.
8 MR. FREEMAN: If there's any question --
9 MR. BHATNAGAR: But if there's follow-on
10 questions, we would certainly be happy to come back.
11 CHAIR RAY: Okay. All right.
12 MR. BHATNAGAR: And I want to say one
13 other thing. Besides the ERCW, there are other work
14 orders that have to be done during this outage also.
15 So there's a scope of wok that is done during this
16 outage outside of just the ERCW. The ERCW is probably
17 one of our more significant interfaces with the unit,
18 but there's some activities on common buses and things
19 like that that would still be done during this outage.
20 But that is all already part of the outage scope.
21 So right now the ESF was the one big test
22 to kind of move from outage to non-outage.
23 CHAIR RAY: Yes. And I didn't make that
24 connection in this meeting that Bill's talking about
25 here.

1 MR. CROUCH: We can talk afterwards and I
2 can get you a copy of the presentation.
3 CHAIR RAY: Yes. I think it would be
4 better if I'd go back and get the presentation.
5 Because otherwise I'm going to be working from a
6 handicap of not remembering that conclusion.
7 MR. CROUCH: Okay.
8 CHAIR RAY: Because I thought we were
9 still having to tie that major test to the outage. In
10 other words, it didn't come through to me somehow that
11 that was no longer the case.
12 MR. FREEMAN: Okay. And the other bullet
13 that I haven't really spoken to, we do expect in the
14 summer, early in the summer, to turn our first system
15 over to the operating plant. And that should be the
16 CCW system. And it should happen around June. So be
17 ready.
18 On Slide 9, this speaks to the unit
19 interface. This is basically two pieces. This is the
20 control of our work and operating spaces, and it also
21 is the nuclear power grid preparing to receive a
22 second unit at Watts Bar.
23 For the integration team --
24 CHAIR RAY: Ed, let me interrupt you here
25 and say this point seems like a good point. Is this

1 the October presentation?

2 Let's take a 15 minute break now while I

3 get some coffee. And I'll look back at that

4 presentation and see if I'm satisfied.

5 So, 2:30.

6 (Whereupon, at 2:12 p.m. a recess until

7 2::30 p.m.)

8 CHAIR RAY: We are back on the record.

9 MR. FREEMAN: Okay. Thank you, Mr.

10 Chairman.

11 Again, I'm on Slide 9. This slide speaks

12 to both the integration of the second unit into the

13 Operating staff's plans ultimately. It also speaks to

14 the way that the Unit 2 project is interfacing with

15 the Unit 1 work control processes.

16 The Integration Team and for the Nuclear

17 Power Group preparing to receive the unit. The

18 departmental assessments and actions continue to

19 progress. Each department has a staffing plan with

20 either trainees already in the mill or an expectations

21 that they're going to hire experienced new hires when

22 the time comes.

23 Just for instance, we have 50 operators in

24 some form of license training -- or some form of

25 training, rather. And there are 70 maintenance

1 technicians going through the training mill as well.
2 Additionally, some supplemental workers,
3 or some departments have hired some supplemental
4 workers just to fill in the workload that's going to
5 come as the systems become fully tested and ready and
6 their work to receive the systems; to do the walk
7 downs and paper reviews and everything that they're
8 going to do, they've chosen to hire supplemental
9 contract workers to help them out with that workload.
10 The preparation of the programs, the
11 engineering programs for the Unit 2 equipment
12 procedures both operating and technical, that
13 preparation is underway as well as the maintenance
14 procedures and preventative maintenance tasks and
15 everything. So that is progressing well and continues
16 to be monitored.
17 There actually was because of the
18 training, because we got started early, we have ten
19 non-licensed operators from Unit 1 that are over
20 supporting activities. And we expect to maintain at
21 least that and get some other folks with licenses to
22 come over and help us review our work and also to
23 interface with us on the startup testing program. And
24 that should happen soon.
25 The schedule interface continues to work

1 well, although Unit 1 staff has challenged us to get a
2 little further ahead because the level of activity
3 that we're doing is stepping up a little bit. And
4 when it comes to presenting work to them that they
5 would need to review because of potential impacts,
6 either just being in the space or ultimately for
7 impacts to the Unit 1 operating equipment, they've
8 asked us to move a little further ahead in our
9 scheduling activities so they can get a look at it
10 ahead of time and make sure that it's included in
11 their plans. And we are striving to do that.
12 We are being deliberate on the systems
13 which interface with Unit 1. There are shared
14 systems. And we've developed a process that requires
15 approval, requires a technical evaluation and requires
16 a 50.59 evaluation before we, for instance, open up an
17 interface point valve and divert water from the Unit 1
18 system down to Unit 2 flow path. There is a thorough
19 review. That evaluations are approved by the Unit 1
20 engineering staff and also ultimately the final
21 approval rests with the Unit 1 licensed operators. So
22 that is something that we have done to ensure that we
23 have no impact as we begin to operate our equipment.
24 We do continue to report our plans and
25 progress to the Operating staff in their plan of the

1 day meeting each day. And there is a weekly interface
2 meeting which Mr. Mende here to my right chairs each
3 and every Monday where the issues; we get to hear the
4 status of their progress towards being ready to
5 receive the unit and also any action items, anything
6 that they need from us is put on the table, in fact
7 with a due date.
8 And finally, all of our Corrective Action
9 documents, those are problem evaluation reports, are
10 reviewed by the Operations staff for implications and
11 reportability on the operating unit.
12 There is one item that didn't make the
13 slide here that bears mentioning. In early December
14 we had an INPO team, a 14 member team with industry
15 peers come on for an assist visit. And they basically
16 were examining primarily the Operating staff's
17 readiness to receive the unit, how well that they were
18 transitioning their culture and the programs and their
19 thinking from a one unit site to a two unit site,
20 because you know it is significantly different. That
21 team left us with 30 recommendations which the plant
22 has put in the matrix and are managing and ensuring
23 that they get the benefit of that particular review.
24 But that review was conducted. And I think there will
25 be a follow-up review later this year as part of the

1 regular E and A.

2 CHAIR RAY: When we were at the site there

3 was -- I can't describe it to you now precisely. But

4 in any event, there was a need to control the opening

5 of some common space between the units. And there was

6 a temporary access to the Unit 2 containment that I

7 don't -- what's the status of all that now?

8 MR. FREEMAN: It's in a configuration that

9 you saw it in; the temporary accesses remain open. We

10 remain under the same controls as well. What you're

11 talking about is our secondary containment boundary,

12 we call it ABSCE.

13 CHAIR RAY: Yes.

14 MR. FREEMAN: And we have to manage that.

15 I mean, some of our new cables and some of our new

16 pipes in some cases pass through that boundary, so we

17 have to make penetrations. But there's available

18 margin that is tracked in a log, and we manage it

19 everyday.

20 So, that is under the control of the

21 Operating staff and the management, I guess being the

22 the recording of what breaches might be open. I

23 believe that's a Unit 1 guy that manages that today.

24 The restoration of those temporary

25 openings will come later this year.

1 CHAIR RAY: Later this year?

2 MR. FREEMAN: Yes.

3 CHAIR RAY: At some point you got to move

4 to the normal configuration, I guess, and start living

5 with that.

6 MR. FREEMAN: Yes, we do.

7 Bill, you got the next slide.

8 MR. CROUCH: Okay. This is Bill Crouch.

9 A lot of the things here on this slide

10 we've already touched on and we've gone through the

11 items, so I'm not going to go into a lot of details on

12 them.

13 We've already talked about the fact that

14 the I&C submittals are critical path. We are

15 continuing to push those. Steve is heavily involved

16 with reviewing those documents and providing -- for

17 example, we got another large submittal to be

18 submitted, hopefully, by tomorrow and then more will

19 be available early next week and then we'll be

20 supporting the audit starting the 28th. So we're

21 continuing to push that.

22 The fire protection program we are

23 completing the final analysis of the as-designed

24 configuration by Monday. We're going to take a two

25 week period to do an independent review of it and

1 actually submit it on about March the 15th.

2 And then we already talked about the

3 safety analyses that are ongoing and the issues on the

4 mass-addition transient and the over pressure and the

5 steamline break.

6 The ECCS gas, the Generic Letter on that,

7 we expect to make that submittal early next week. Not

8 the ECCS gas, the sump submittal next week. And the

9 ECCS gas will be in about normally a week after that.

10 All these open items coming out of the

11 SSER 22. There's 51 open items and we're actually

12 working that. We intend to close all those during the

13 month of March.

14 The next item on the slide there is the

15 issue that's already been talked about some too, is

16 the environmental aspects. The two items that we're

17 required to complete was the SAMA analysis as we

18 talked about it's already been submitted. And then

19 the two other environmental type studies are the

20 impingement study and the entrainment study that will

21 be coming out in March of 2011.

22 Another thing that's probably worthy of

23 mentioning a little bit, the issue that James brought

24 up in his presentation. It's obviously on everybody's

25 mind. Getting done with all the inspections they have

1 to do. And what we're doing is we're trying to
2 facilitate that by putting together closure packages
3 for all the generic letters, bulletins, the CAPs and
4 special programs; trying to put together a closure
5 package that contains like this is what the issue is,
6 this is what Unit 1 did to resolve it, this is what
7 Unit 2's doing to resolve it and copies of all the
8 cover sheets or other documents that required to close
9 this. And it's been helping to facilitate the
10 closure.
11 We had one close the other day. We handed
12 it to the inspector, he was able to close it in about
13 four hours. So that's, obviously, a small one like
14 that, but by doing it that way we're able to
15 facilitate getting James through the process. So
16 that's been very good.
17 CHAIR RAY: Tell us about the GSI-191. Is
18 it going to be of any difference in terms of its
19 resolution on Unit 2 than Unit 1?
20 MR. CROUCH: We will be installing
21 essentially the same sump strainer. I say
22 "essentially the same," because the Unit 2 strainer is
23 the same size as Unit 1 but it's got a slightly
24 improved pressure drop, internal pressure drop.
25 We're also going in and we're removing the

1 fibrous material inside the Unit 2 containment so that
2 all will be left will be the kind of latent fiber from
3 dust and dirt. We removed all of the fiber that
4 results that results from the fire wrap.
5 CHAIR RAY: So Unit 2 will be better?
6 MR. CROUCH: Yes.
7 CHAIR RAY: It'll be less challenged from
8 a standpoint of GSI-191?
9 MR. CROUCH: Yes.
10 CHAIR RAY: Okay.
11 MR. CROUCH: You also during the course of
12 the morning here have asked some questions about the
13 inspections of vendors. We called back and we got
14 information.
15 The Bechtel QC of the vendors, they have
16 completed 1457 inspections based upon 957 visits to
17 the vendors. So they're actively engaged in that
18 progress.
19 You also asked about station blackout and
20 the ability to achieve the opening of the breakers and
21 the opening of the doors in the amount of time. Rick
22 called back and found out that there's ten breakers
23 that have to be operated within 30 minutes, and that
24 there are six panel doors. And they do a validation
25 of this every five years.

1 MEMBER BROWN: Ten breakers?

2 MR. CROUCH: Ten breakers.

3 MR. MENDE: There's ten in our -- listed
4 as 30 minute time frame criteria. There's a number of
5 other breakers that are opened for load management.
6 But the procedure has ten significant loads that are
7 opened within the first 30 minutes.

8 MEMBER BROWN: And I think you said ten
9 panel --

10 MR. CROUCH: Six panels.

11 MEMBER BROWN: Six panels?

12 MR. CROUCH: Okay. You also asked or
13 there wa some discussion about the cyber security and
14 we mentioned the fact that we were a pilot. And what
15 it is, we are a pilot for the inspection process. And
16 we're following the NEI 08-09 Rev 6, which is an NRC
17 endorsed guidance for how to implement Regulatory
18 Guide 5.71.

19 MEMBER STETKAR: I'm not sure that NRC has
20 endorsed Rev 6. Has it, Charlie?

21 MEMBER BROWN: 08-09?

22 MEMBER STETKAR: Yes.

23 MEMBER BROWN: No, they haven't endorsed
24 08-09. But they did say that the template -- I want
25 to make sure -- was accepted --

1 MEMBER STETKAR: I just want to make sure
2 it's clear on the record of what NRC has endorsed.
3 MEMBER BROWN: -- Yes, 08-09 is not
4 endorsed. Yes, we were told that yesterday. Even I
5 can remember one day, sometimes. But the template, I
6 guess there's been a letter. John, correct me, there
7 was --
8 MEMBER STETKAR: There's an NSIR letter--
9 MEMBER BROWN: There's an NSIR letter that
10 says the template is an acceptable method. I think
11 that's the term
12 MEMBER STETKAR: But it's not an
13 acceptable method for use. The staff did not yet
14 fully endorse the entire document.
15 MR. CROUCH: Okay. Another question was
16 asked this morning, and I'm basically going to turn it
17 over to Frank, on the steam generator replacement, you
18 were asking some questions about that.
19 MR. KOONTZ: Yes. I think you guys wanted
20 to know what the industry experience was on the steam
21 generators and where there's still some like Watts Bar
22 out there.
23 CHAIR RAY: Yes.
24 MR. KOONTZ: From the thermally annealed 2
25 being the two that Watts Bar has, we'll be the last

1 one. I guess there's some thermally annealed
2 generators that are still out there.
3 We have the Westinghouse model D3
4 generators and there's a series D3, D4 and D5. Out of
5 that population all the D3s have been replaced, all
6 the D4s have been replaced, but there were four plants
7 that had one unit each of D5 generators still
8 installed and operating. That was Byron, Braidwood,
9 Catawba and Comanche Peak.
10 And our experience was we got about ten
11 years on our Unit 1 steam generator. We're hoping to
12 do better then that on Unit 2. We are doing the
13 synchronization, we're trying to when we startup Unit
14 2.
15 What we did on Unit 1 is we monitored the
16 generator and the MDE results. And if you look at the
17 scatter plot from the other generators, what you see
18 is that they have knee in the curve. In other words,
19 you go out for various years of operation, calendar
20 years of operation and then suddenly what you'll start
21 seeing is more and more flaw indications of the
22 generators.
23 We're able to control that on Unit 1 with
24 steam generator tube plugging and leak limited
25 sleeves. It goes to ten years of calendar years of

1 operation.

2 So with our zinc injection and some of the

3 other things we're doing, we're hoping we'll get

4 better than ten years out of the generators we have.

5 CHAIR RAY: Well, I hope you do, too. God,

6 I hate to think about sleeves, gee whiz. Was the

7 first plant to put in sleeves and it's no fun. Okay.

8 MR. CROUCH: Okay. Going to the next

9 slide, page 11. When we were here last time you asked

10 us some questions that we did not have the answers to

11 at the time, so we've come back to answer some of

12 those questions.

13 The first one had to do with the status of

14 the Watts Bar baffle bolts. So once again, I'm going

15 to turn it over to Frank.

16 MR. KOONTZ: Frank Koontz again. I'll try

17 that one.

18 We don't currently have any plans to

19 change the baffle bolts on Watts Bar Unit 2. We have

20 the same similar design as what we've got on Unit 1.

21 Back in '93 the Westinghouse Owners Group did a study

22 on the baffle bolt issue and concluded that Watts Bar

23 was in one of the lower susceptibility plants, we

24 weren't the lowest, but we were in the lower. We

25 haven't seen any problems on Unit 1.

1 EPRI also did some testing in 2008 and
2 they tested 316 bolts, irradiated 316 bolts. There
3 was some -- and they had 17 effective full power years
4 on them. They also tested 347 stainless steel bolts
5 from Point Beach and they had 23 effective full power
6 years.
7 The 136 bolts did not exhibit any
8 indication of cracking, however the 347 they did see
9 some indications of cracking for those bolts.
10 I'm aware there's some recent issues on
11 Cook. Some of the differences between Cook and Watts
12 Bar is:
13 We have the 316 bolts, they have the 347
14 bolts, which they did see cracking when they were
15 doing the testing;
16 We have a lower stress, in fact we
17 normalized the stresses out. We're about 13 percent
18 of the stress on our bolts that Cook has in their
19 design.
20 And all of that is reported back in the
21 report 13266 Rev 1 WCAP.
22 The Watts Bar design is up-flow through
23 the former region, which means that the pressure drop
24 between the baffle and the interior of the core is
25 much less than a down-flow plant. Cook happens to be

1 a down-flow plant, so that's why they see higher
2 stresses. They require pressure drop on those bolts.
3 We also have longer bolts. The shank on
4 our bolt is 2½ inches long and .56. So that plays
5 into part of it also.
6 And, of course, we haven't seen any
7 irradiation on Unit 2 yet.
8 CHAIR RAY: See, now if and when it does
9 become time to replace steam generators, you can't do
10 it through an equipment hatch approach like a dragon
11 team?
12 MR. KOONTZ: In Unit 1 what we did is we
13 cut holes in the top of the containment, pulled them
14 out through the top of the containment and then re-
15 concreted the dome.
16 CHAIR RAY: Okay.
17 MR. CROUCH: Okay. Ready for the next
18 topic?
19 CHAIR RAY: Yes.
20 MR. CROUCH: Okay. The next question that
21 you brought up was regarding the tritium concentration
22 where we had a tritium linkback back several years
23 ago. And once again, we'll turn it back over to
24 Frank.
25 MR. KOONTZ: Frank Koontz again.

1 If you'll look over your slide on page 13,
2 I think one of the previous meetings Bill presented
3 the results of our tritium analysis that was done back
4 in 2004. We had a company named Arcadis come in and
5 characterize the site.
6 And we had two tritium leaks that we had
7 located. One was associated with a transfer canal,
8 fuel transfer canal. And that was actually leaking
9 out through the building into the trench drain that
10 goes around the plant. And that's shown on page 14.
11 You can see the trench drain, the red line that
12 surrounds the plant and some of the plume there you
13 can see goes along the side of the control building.
14 There was also a larger leak from the
15 standpoint of radionuclide release over in our common
16 radwaste line. The radwaste line comes out of the
17 plant, travels to the east towards the towers and then
18 turns and goes south towards the river. And if you
19 look at page 14 there's a well that's labeled Kilo, K.
20 And it's right down near the groundwater flow divide
21 lines. It's kind of hard to see. You see that
22 there's a K and KK next to it.
23 K, to give you an idea, in October of
24 2003--
25 MR. CROUCH: Frank, what you are showing

1 is here?

2 MR. KOONTZ: It's the one to the left of

3 the arrow. That's Kilo Kilo and then there's a

4 smaller one next -- back a little bit towards the end

5 of the line. It's right on the line going north to

6 south.

7 CHAIR RAY: And I think we can see it

8 better on here.

9 MR. KOONTZ: But anyway, back in October

10 of 2003 that well had indicated 353,700 picocuries per

11 liter of tritium coming into that well. By the time

12 Arcadis did the characterization in March 2004, was

13 down to 109,000 picocuries per liter.

14 We did repair both of those issues. We put

15 a liner in the transfer canal which stopped the

16 leakage from the transfer canal and that cleaned up

17 the trench drain. We also replaced the radwaste pipe,

18 it had a small hole in it, and that cleaned up that.

19 And now we're down to in October 2007 well Kilo was

20 reading 15,000 picocuries per liter. So, it's come

21 down quite a bit.

22 Our radiological monitoring program wells

23 are down. Around the highest of those, we put in to

24 monitor tritium for the tritium program, is down

25 around 2490 picocuries per liter.

1 Now our Chemistry Department does have
2 Arcadis in recharacterizing the site, and that report
3 due in late March this year. So, we should have a new
4 update on that later this year. But everything
5 appears to be cleaning up pretty adequately since we
6 isolated the source.
7 MEMBER STETKAR: I don't know what the
8 compass directions here are, I can't read it. On Slide
9 13 where you see the entire scene from the radwaste
10 piping.
11 MR. KOONTZ: Yes.
12 MR. RAGHAVAN: Does that extend out beyond
13 the site fence? I don't know where the fence line is
14 here.
15 MR. KOONTZ: I'd have to go back and look
16 at a site map. I don't believe it goes beyond the
17 site yet.
18 You can see the intake pumping station.
19 MEMBER STETKAR: Yes, yes.
20 MR. KOONTZ: The river is on down here,
21 just below that.
22 MEMBER STETKAR: Yes.
23 MR. KOONTZ: It kind of comes along here
24 on your plot.
25 MEMBER STETKAR: Okay.

1 MR. KOONTZ: It's just down towards the
2 bottom.
3 MEMBER STETKAR: Okay. Okay. Thank you.
4 MR. KOONTZ: We don't have to report until
5 they get to 20,000 picocuries per liter.
6 MEMBER STETKAR: Yes.
7 MR. CROUCH: Okay?
8 CHAIR RAY: Yes.
9 MR. CROUCH: The final question that came
10 up last time was about reviewing weld flaw
11 similarities. We had a well flaw in one of our
12 reactor coolant system wells and you were asking is
13 there any similarity between the situation hat we have
14 versus the situation at V.C. Summer. We've gone back
15 and we've talked to our senior metallurgist and our
16 senior welding engineers. And they've concluded that
17 the situation at Watts Bar was due to a singular type
18 embedded weld flaw as opposed to the situation that
19 developed at V.C. Summer due to repeated repairs where
20 they had repaired the weld up to about 80 different
21 times. And that the result of welding on the V.C.
22 Summer that the stress analysis and the stresses have
23 been disrupted.
24 That the work that we did, we reanalyzed
25 all the stresses and looked at it we don't think

1 there's any similarities either geometrically or
2 stress-wise between the two of them.
3 CHAIR RAY: All right. Thank you.
4 MR. CROUCH: That completes our
5 presentation. Do we have any other questions?
6 CHAIR RAY: Well, give us a moment here.
7 Do we have any challenge?
8 MEMBER BROWN: No, other than a heart
9 attack one.
10 CHAIR RAY: And, John?
11 MEMBER STETKAR: Nothing, sir. Thank you.
12 CHAIR RAY: All right. I think that
13 completes it. And at this point on the matter were
14 discussing earlier, we re-access and discuss with the
15 staff the information that we were talking about in
16 terms of decoupling Unit 2 from Unit 1, and basically
17 the lack of a need to do the test that was driving the
18 outage coupling. And if we need anything more from
19 you, we'll let you know.
20 MR. CROUCH: Okay.
21 CHAIR RAY: We do have on the agenda a
22 need to invite public comments, although we've
23 received no request for making any such comments
24 earlier. We will, this is a public meeting. And we
25 will now ask the audience here, since there's no open

1 line, if there is anyone who wishes to make a comment?
2 Seeing none, we will then conclude that we
3 can complete the last item on the agenda, which is
4 Subcommittee discussion, meaning we'll just see if
5 there's anything other than what I've already said.
6 We did get some further comment here on
7 cyber security. Charlie, and where does that leave
8 you in terms of how you think this thing stands?
9 They've indicated they were a pilot for the purpose of
10 the inspection, but they believe the requirements are
11 basically as they stated. And so there's not anything
12 that's going to -- no new information that's going to
13 be associated with their involvement in cyber
14 security.
15 MEMBER BROWN: The reason I got back a few
16 minutes later was that the NSIR, Craig Erlanger, was
17 one of the presenters yesterday. And I asked him
18 about that. And he made the same comment, that it was
19 an inspection. So that's a consistency for the
20 response.
21 One of our issues yesterday was to ensure,
22 I mean there's kind of two pieces to this. There's
23 the licensing piece and then there's the subsequent
24 what I would call post-licensing CSP. But their cyber
25 security plan has to be in place before it's either

1 fuel load -- I don't know what -- or before startup.
2 MR. MILANO: Before the operating license
3 is issued.
4 MEMBER BROWN: Before it's issued. And
5 our discussion in our meeting yesterday and before
6 were is there anything that the NRO guys, staff has to
7 ensure in their review of the design, what's being
8 presented to them, whether it's the same as Watts Bar
9 or whether there's other pieces that go with it are
10 those in touch? You know, is NSIR in bed with them or
11 -- I don't want to say in bed, that's poor
12 terminology. I used that again. I'm sorry. Are they
13 aware of what's going on in the licensing side so that
14 when they review the cyber part that they can
15 accomplish the end goals and meet them.
16 Now, by the way, to compliment his
17 comments according to Erlanger or NSIR, they have to
18 meet the 08-09. They said they signed up to that,
19 taken that approach, and 5.71, Regulatory Guide 5.71
20 for the plan and whatever the entrails that fall off
21 of that. So they're subject to the whole piece under
22 this thing.
23 CHAIR RAY: Is that different than what
24 they said?
25 MEMBER BROWN: No. Well, he talked about

1 08-09, he didn't mention Regulatory Guide 5.71 in his
2 comment a few minutes ago. That's the only reason I
3 brought it up. That's my understanding.
4 So, I would just suggest that people
5 communicate and make sure, I'm sure you guys are
6 already talking inspection so you should be aware of
7 what you're required to do. And I would just suggest
8 that you talk with your counterparts to make sure that
9 you all are tracking together.
10 CHAIR RAY: But it doesn't sound to me
11 like, if I can follow what you're saying, that there's
12 anything more that we are looking for from Watts Bar.
13 MEMBER BROWN: I don't know. But quite
14 frankly, we haven't seen anybody implement or how they
15 intend to implement the cyber. We haven't seen a
16 cyber security plan yet.
17 Let me finish, okay?
18 If there is a plan or the beginnings of a
19 plan that they're putting together, it would be good
20 for us to see that since that's part of our thrust is
21 to see and monitor those, the aspects of cyber
22 security. Not the threat assessments, but how the
23 cyber security execution is being accomplished. So, I
24 think there would be some benefit to see what are they
25 doing.

1 MEMBER STETKAR: It's essential. I mean,
2 that's in discussion. It's the vulnerability
3 assessment and whatever you've done and whatever
4 protections you put in place that we can discuss, you
5 know under the auspices of these meetings.
6 CHAIR RAY: We're not saying you have to
7 be finished with it.
8 MEMBER STETKAR: I mean threat assessment
9 is outside the scope of our purview.
10 CHAIR RAY: Yes.
11 MR. ARENT: This is Gordon Arent.
12 We have developed the program. We have
13 begun implementation of the program. And we would
14 prepared in July to walk you through what we've done,
15 how it's worked.
16 CHAIR RAY: Yes.
17 MR. ARENT: And what activities we're
18 doing to support these factors. So we'd be prepared
19 to do that.
20 MEMBER BROWN: Again, we don't expect you
21 to be complete because you're not there, but just what
22 is the plan.
23 MR. ARENT: Right.
24 CHAIR RAY: All right. Well, that's fine.
25 MEMBER BROWN: With the Chairman's

1 permission.

2 CHAIR RAY: The issue that I have talked

3 about a couple of times, again, doesn't involve Watts

4 Bar, and therefore should not be a part of this

5 further deliberation here. It has to do with the

6 coincidence of loss of offsite power with a loss of

7 coolant accident.

8 And so, John, again I ask you there's

9 nothing for the applicant, but is there anything you

10 want to lay on the table here as an issue for the

11 Committee going forward?

12 MEMBER STETKAR: No, I don't think so.

13 No. Nothing I could think of.

14 CHAIR RAY: Okay. With that, I see all

15 these suitcases in the back of the room, we'll adjourn

16 and let these people go home.

17 (Whereupon, at 2:59 p.m. the Subcommittee

18 meeting was adjourned.)

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ACRS Subcommittee Meeting Regarding

Watts Bar Nuclear Plant Unit 2

Status of Licensing and Inspection

Docket No. 50-391

February 24, 2011

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

Agenda

- Current Status of Project
  - Licensing
  - Construction Inspection
- Supplement 22 to SER
- Expectation for Next Meeting

NRR Presentation of Status of Licensing Activities

U.S.NRC
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Protecting People and the Environment

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Protecting People and the Environment

Status of Operating License Application

- Safety, environmental, and program reviews
- Staff Review Status
  - Generic communication items (GL 04-02 and 08-01)
  - Corrective action program plans (Complete)
  - Safety Evaluation Report
    - SSER 22
    - Critical path items and project milestones
  - Programs
    - security, emergency preparedness, quality assurance (Complete)
    - fire protection, anti-trust, and cyber-security (Ongoing)
  - Technical Specifications

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

Safety Evaluation Report Topics

- TVA amendments to FSAR received (A92 to A102)
- Staff review in progress
  - Supplements to original SER
  - Unit 1 current licensing basis (USAR) – reference for Unit 2
  - Overall progress
  - Project challenges

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

Safety Evaluation Report (SER) 22

- Published February 2011
- Characterization of Staff Review and Findings
  - Proposed changes consistent with Unit 1 licensing basis
    - USAR Revision 8
    - Focus on Amendments and Changes under 10 CFR 50.59
  - Evaluation for dual-unit operation
  - Proposed changes that are different from Unit 1
  - Single unit to site-wide program approach
  - Clarifications and Administrative Changes

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

Supplement 22 to SER (SSER 22)

- Chapters/Topics Covered
  - 2. Site Envelope
  - 3. Design Criteria
  - 5. Reactor Coolant and Connected Systems
  - 6. Engineered Safety Features
  - 8. Electric Power Systems
  - 9. Auxiliary Systems
  - 10. Steam and Power Conversion
  - 13. Conduct of Operation
  - Other various programs

U.S.NRC
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Protecting People and the Environment

SSER 22 Scope of Review Effort

- **2.1 Geography and Demography**
  - Reviewed the revised population densities and projections
  - EA, LPZ, and population center distances continue to meet 10 CFR Part 100 criteria

- **2.2 Nearby Industry, Transportation, and Military Facilities**
  - Updated information on potential hazards in vicinity
  - Reduction in quantity and material types from barge traffic and potential impact on intake
  - Continues to meet criteria in GDC 4

- **2.3 Meteorology**
  - Updated climatic information
    - Primary data sources NOAA National Climatic Data Center and Watts Bar site measurements
  - Updated to Regulatory Guide (RG) 1.76, Rev. 1, “Design-Basis Tornado and Tornado Missiles for Nuclear Power Plants”
    - Original proposed design basis consistent with RG 1.76, Rev. 0, “Design Basis Tornado for Nuclear Power Plants (April 1974)
    - RG 1.76, Rev. 1 (March 2007), reflects reduction in some design basis characteristics and addition of tornado missile criteria

- **3.5.1.3 Turbine Missiles**
  - Acceptance Criterion (SRP 3.5.1.3 Dated March 2007)
    - Probability of Missile Generation P_1 : 1E-4 for Favorably Oriented Turbines
  - WBN-2 Turbine Orientation and Calculated Results
    - Favorably-Oriented
    - Calculated P_1 is Two Orders of Magnitude Lower than the Criterion

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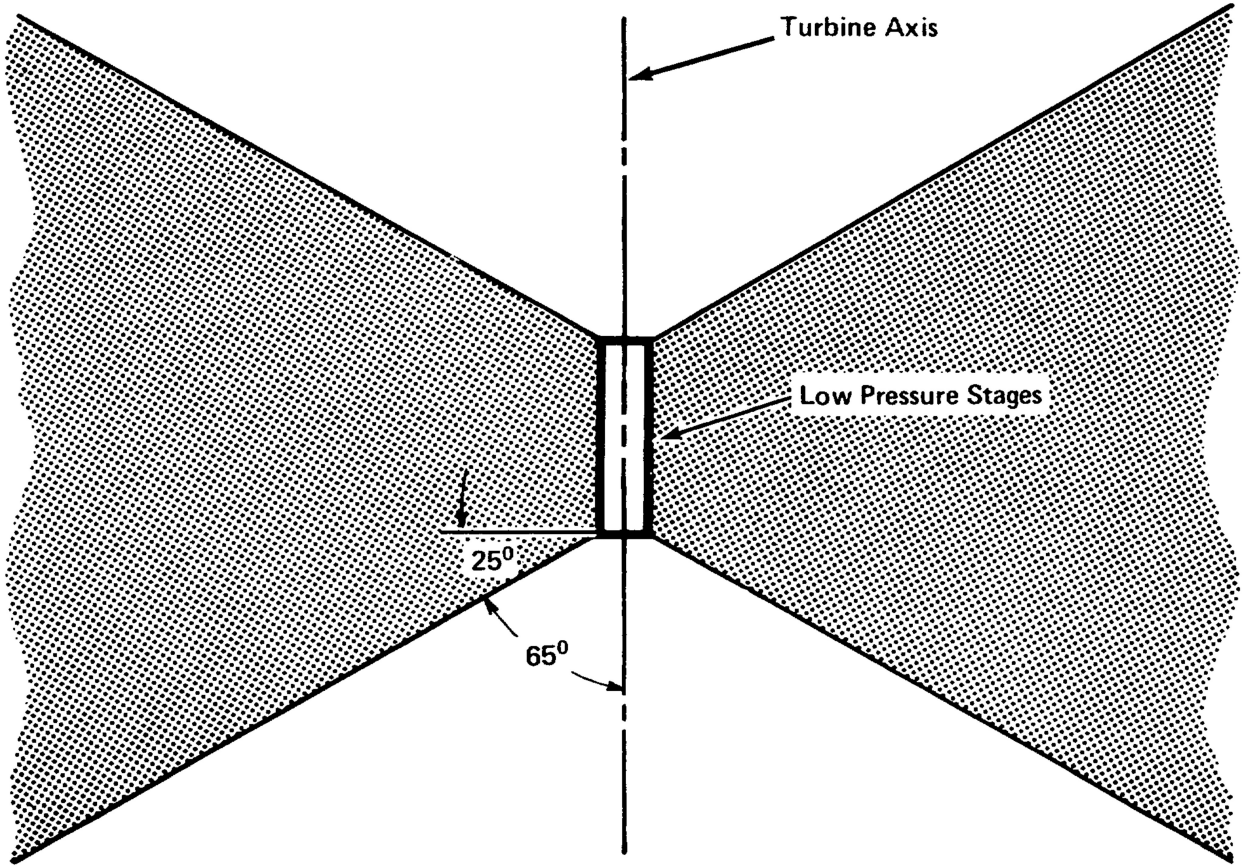

- **3.9.1 Special Topics for Mechanical Components**
  - **FW piping analysis done same as for Unit 1**
- **3.9.2 Dynamic testing and Analysis of SSCs**
  - **Revision of maximum deflections in RPV internals during DBA**

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5.3.1 RV Integrity – Surveillance Program

- Surveillance capsule withdrawal schedule meets 10 CFR Part 50, Appendix H requirements

- Capsules have high lead factors ~ 4
  - WBN 2 will compare surveillance data to Regulatory Guide 1.99, Revision 2 predictions and similar material data from other reactors

- Open Item related to initial RT_{NDT} determination of surveillance materials
  - Surveillance program description unclear with respect to whether Charpy (C_v) tests are performed

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5.3.1/5.3.2/5.3.3 RV Integrity-USE, P-T Limits, and PTS

- Staff calculation confirmed that upper shelf energy and pressurized thermal shock reference temperature values meet regulatory requirements

- Staff calculation confirmed pressure-temperature (P-T) limits are acceptable

- Two open items related to information missing from the proposed Pressure Temperature Limits Report (PTLR)
    - Open Item 45 – COMS arming temperature
    - Open Item 46 – COMS lift setpoints

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5.2.3 RCPB Materials – Compatibility with Reactor Coolant

- In FSAR Amendment 97, TVA proposed adding zinc to the reactor coolant system to reduce dose rates
- No concerns about pressure boundary integrity
- Staff found TVA adequately addressed
  - potential zinc effects on fuel based on consideration of Operating Experience
  - consideration of zinc in crud risk analyses
  - chemistry monitoring.

- **6.2.1 Containment Functional Design**
  - Revised long-term containment analysis for the DBA LOCA
  - Changes included in the revised analysis
    - Reduced initial ice inventory
    - Changes to the mass and energy release model and the containment heat sink model
- **6.2.4 Containment Isolation Systems**
  - Relief valves used as CIVs set at 1.5 containment pressure or greater and none discharge outside containment
  - These and other changes consistent with WBN Unit 1

- **9.4.6 Reactor Building Purge Ventilation System**
  - Added two Containment Vent Air Cleanup Units to filter the containment vent air before it is released into the annulus
  - Revised to reflect CVI and partial ABI following a FHA in the Auxiliary Building or containment during refueling operations

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Review Areas Remaining Open in Chapter 9

- General Design Criterion 5--Sharing of structures, systems, and components.
  - Structures, systems, and components important to safety shall not be shared among nuclear power units unless it can be shown that such sharing will not significantly impair their ability to perform their safety functions, including, in the event of an accident in one unit, an orderly shutdown and cool down of the remaining units.

- GDC 5 especially applicable for systems shared by both units

- Essential Raw Cooling Water (ERCW) and Component Cooling System (CCS) are shared systems between Unit 1 and Unit 2

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- TVA original position that non accident unit need only be shut down to Hot Standby (> 350° F)

- TVA current position that non accident unit can be cooled down within 72 hours following a LOCA in the other unit to be within compliance of GDC 5. Staff evaluating TVA response.

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- **10.2 Turbine Generator**
  - Review not complete on turbine disk integrity
- **10.3.1 Main Steam Supply (including MSIV)**
  - Revised MSIV closure time from 5 to 6 seconds
  - TVA sensitivity analysis bounds time
- **10.3.3 Steam and Feedwater Materials**
  - Allows use of low-alloy steel for improved FAC resistance
- **10.4.8 SG Blowdown System**
  - Removed requirement for daily blowdown samples
  - Open issue with sampling for water chemistry per EMCB BTP5-3

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Watts Bar Nuclear Unit 2
SER Section 8

Electric Power Systems

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Electric Power Systems

Overview

- Staff evaluated the design of Watts Bar electric power systems using the criteria set forth in the Standard Review Plan Section 8.1, "Acceptance Criteria and Guidelines for Electric Power Systems"
- Staff has not previously reviewed the capability of the preferred and emergency electric power systems for dual-unit operation
- Focused on requirements set forth in following documents:
  - GDC 5 - Sharing of Structures, Systems, and Components
  - GDC 17 - Electric Power Systems
  - GDC 18 - Inspection and testing of electric power systems
  - RG 1.81 - Shared and Shutdown Electric Systems for Multi-Unit Nuclear Power Plants
  - RG 1.75 - Physical Independence of Electric Systems

Electric Power Systems

Overview (cont.)

- Specifically Reviewed the following design requirements regarding the capacity and capability of the onsite and offsite power systems:
  - dual-unit trip as a result of an abnormal operational occurrence
  - accident in one unit and concurrent shutdown of the second unit (with and without offsite power)
  - accident in one unit and spurious ESF actuation in the other unit (with and without offsite power)

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Offsite Power System

- The staff reviewed the system design requirements for the offsite electric power system, including capacity, capability, independence, redundancy, and testability.

- Identified 4 Open Items
  - ❖ #26 Pre-operational testing EDG response to load sequencing
  - ❖ #27 Margin in transformer sizing criteria
  - ❖ #28 Bus Voltages with load tap changer
  - ❖ #29 Updated Grid Stability Analyses

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Offsite Power System

- The staff concluded that TVA has adequately demonstrated that WBN Unit 2 will meet the design requirements and that the Unit 2 offsite electric power system complies with GDCs 17 and 18, pending resolution of the open items.

- Staff will update the SSER upon satisfactory closure of the open items

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Onsite Power Systems

- The onsite power system consists of an ac power system and a dc power system.
- Compliance with GDC and RGs relates to both the ac and dc systems.
- The staff reviewed the system design requirements for the onsite electric power system, including capacity, capability, independence, redundancy, and testability

Onsite Power Systems

- **Adequacy of Diesel Generator Capacity**
  - Four 4,400 KW EDGs for 2-Unit site
  - Limiting case has approximately 5% margin between steady-state loading and EDG rating
  - Frequency and voltage response during sequencing and steady-state operation within requirements

Onsite Power Supplies

- **AC Power System Design Characteristics**
  - The safety loads distributed between 2 electrical divisions such that the operation of any one of the two is required to meet minimum safety requirements.
  - Each 6.9 kV emergency bus connected to EDG provided with Loss of Voltage (LOV) and Degraded Voltage (DVR) Relays.
  - Sufficient capacity, capability, independence, redundancy, and testability are provided in the 2 ac divisions, ensuring the performance of safety functions assuming a single failure.
  - Selective tripping of electrical equipment is used to ensure separation criterion between divisions and non-safety equipment is satisfied during fault

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Onsite Power Supplies

- **Staff identified 3 Open Items**
  - #30 Equipment operability at DVR setpoint
  - #31 Existing Auto Sequencing Logic designed for LOCA followed by LOOP. TVA to evaluate.
  - #32 Provide impact of EDG operating at extremes of allowable voltage and frequency

DC Power and UPS

- **DC Power System Design Characteristics**
  - Separate 125-V dc channels supply control power for each of the two ac load groups.
  - The ac power for the battery chargers in each of these dc channels is supplied from the same ac load group for which the dc channel supplies the control power.
  - The Class 1E dc channels, including batteries, chargers, dc distribution boards, and equipment are physically separate and independent in each unit.
  - Sufficient capacity, capability, independence, redundancy, and testability are provided in the dc channels, ensuring the performance of safety functions assuming a single failure.
  - The 120-V ac vital instrumentation power has four uninterruptable power supply (UPS) units per unit

Onsite UPS and DC Systems (Cont.)

- The Unit 1 and 2 Class 1E dc and UPS systems support common loads during all modes of plant operation
  - Independence is maintained such that a single failure does not prevent orderly shutdown of either unit
- TVA dc analysis considered the worst-case loading for each channel
- Loading considers an accident on one unit and a spurious accident signal on the other

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Onsite Power System - Conclusion

- The sharing of common loads does not inhibit the safe shutdown of one unit while the other unit is experiencing an accident
- TVA has adequately demonstrated that WBN Unit 2 will meet the design requirements and that the WBN Unit 2 onsite ac and dc power system complies with GDC 5, 17, and 18, pending resolution of the open items
- Staff will update in an SSER upon satisfactory closure of the open items

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Station Blackout Analyses

- Watts Bar Unit 2 is a 4-hour coping plant
- Battery capacity adequate after load shedding
  - Open Item #33 - Design changes being implemented to support DC load shedding for compliance with SBO
- Adequate condensate inventory
- Room temperatures within allowable range
- With RCS leakage, core will remain covered
- Adequate compressed air for valve operation
- Watts Bar Unit 2 will meet the SBO requirements pending resolution of the above open item

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Watts Bar Nuclear Unit 2
SER Section 3.11

Environmental Qualification of Mechanical and Electrical Equipment

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Overview

- Original staff EQ review was only applicable for Watts Bar Unit 1
- NRC staff evaluated Watts Bar Unit 2 EQ of Electrical Equipment using the criteria set forth in Standard Review Plan Section 3.11, acceptance criteria and guidelines specified in RG 1.89, and NUREG-0588 to ensure compliance with 10 CFR 50.49

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Open Items

- Staff identified 9 Open Items
  - Perform a detailed inspection and evaluation prior to fuel load to determine how the WBN Unit 2 EQ program complies with the requirements of 10 CFR 50.49.
  - Verify the accuracy of the WBN Unit 2 EQ list prior to fuel load.
  - Based on extensive layup period of equipment within WBN Unit 2, NRC staff must review, prior to fuel load, the assumptions used by TVA to re-establish a baseline for the qualified life of equipment.

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Open Items (Cont.)

- Review of TVA's EQ Program procedures for WBN Unit 2 prior to fuel load.
- Review EQ of the 6.9 kV motors to Category I requirements in accordance with 10 CFR 50.49.
- Confirm that the Electrical Penetration Assemblies (EPAs) are installed in the tested configuration, and that the feedthrough module is manufactured by the same company and is consistent with the EQ test report for the EPA.

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Open Items (Cont.)

- Review TVA's use of the term "equivalent" (e.g., identical, similar) regarding the replacement terminal blocks to the NRC staff. The staff reviewed the additional information provided by TVA and considers this item closed.
- Review TVA's reasoning for not upgrading the MSIV solenoid valves to Category I, as specified in 10 CFR 50.49(1).
- Review TVA's supporting documentation to justify its establishment of a mild environment threshold for total integrated dose of less than 1x10^3 rads for electronic components such as semiconductors or electronic components containing organic material.

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Equipment Qualification - Conclusion

- Staff has insufficient information at this time to conclude that the TVA EQ program conforms to the requirements of 10 CFR 50.49; the relevant parts of GDC 1, 2, 4, and 23; Criteria III, XI, and XVII of Appendix B to 10 CFR Part 50; and the criteria specified in NUREG-0588.
- Staff will update the SSER upon satisfactory closure of the open items.

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Status of Program Reviews

- **Radiological Emergency Plan**
  - FEMA finding on off-site planning
  - Staff review of onsite planning completed
- **Physical Security Plans**
  - Staff input on plan prepared
  - Awaiting TVA completion of target sets
- **Fire Protection Program**
  - Final Fire Protection Report (as-designed) in December 2010
  - Final Fire Protection Report (as-constructed) in October 2011
- **Startup Test Program**

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Critical Path Items

- Instrumentation
  - Common Q – post-accident monitoring – digital upgrade
  - Containment High Radiation Monitor – digital upgrade
- Accident and Transient Analyses
  - Mass addition transients – inadvertent ECCS
- Fire Protection Program
- Supplement to Final Environmental Statement
  - SAMA
  - Aquatic studies

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Schedule

- ACRS Subcommittee Meetings
  - July and November 2011
- ACRS Full Committee Meeting
  - December 2011

Region II Presentation of Status of Construction Inspection Activities

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Status of Inspection Program

- Completed 2010 End-of-Cycle review
  - 14 Non-cited Violations issued in 2010
  - Potential substantive cross-cutting issue due to 4 findings with the same cross-cutting aspect
- RII expended 14,700 staff hours on the project in 2010
- New senior resident inspector
- Two resident inspector vacancies filled with 8-month rotation assignments
- Resident turnover high. Challenge to fill resident positions for short-term assignments.

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Inspection Activities

- Focusing on system cleanliness restoration – Both primary and secondary systems
- Performing quarterly inspections of controls to ensure construction activities do not adversely impact Unit 1
- Violation on seismic qualification of replacement molded case breakers – resolution still pending
- PI&R focused inspection on walkdown quality problems
- Closed seven CAP/SPs (including CAP sub-issues)
- Challenge: Inspecting a large number of open items prior to fuel load.

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Upcoming/Ongoing Inspections

- Independent Design Verification Program (IDVP)
  - Experienced lead inspector, four contract inspectors, and senior electrical inspector
  - Assessing the quality of TVA's design review, inspecting two different systems, and performing potions of an electrical design system functional inspection (EDSFI)
- System preoperational testing inspections (IMC 2513)
  - Review of testing program and infrastructure - Readiness inspection
  - Preparing for ERCW testing during Unit 1 Spring outage
  - Assessing the scope and schedule for our inspection of supporting programs – RP, EP, security, etc.
- Problem Identification & Resolution inspection
- Hanger analysis CAP team inspection

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Refurbishment Activities

- Inspection guidance provided by IP 37002
- Completed scoping team inspection - verified appropriate SSCs included in the program
- Good progress on implementation inspections: Includes SSC inspections, rebuilds, and replacements
- Completed 60% of inspection samples in IP 37002
- Engaging TVA on visual inspection of piping - URI

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Conclusions

- Construction inspections are continuing; no significant inspection findings – identified issues are pursued to ensure adequate corrective action
- RII has adequate inspection resources
- Amount of inspections has increased consistent with increase in safety-related construction activities

Oversight of Watts Bar Unit 2 Activities

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Oversight

- Watts Bar Unit 2 Reactivation Assessment Group
- Last met on February 14, 2011
- Public meeting with TVA

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Conclusion

- Staff review continuing
- Encountered some delays
- Milestones for 2011
  - Complete most technical review by 3rd quarter
  - SSER 23 and draft supplement to FES-OL by June 2011
  - Complete review of fire protection report by November 2011
  - Complete ACRS Review by December 2011

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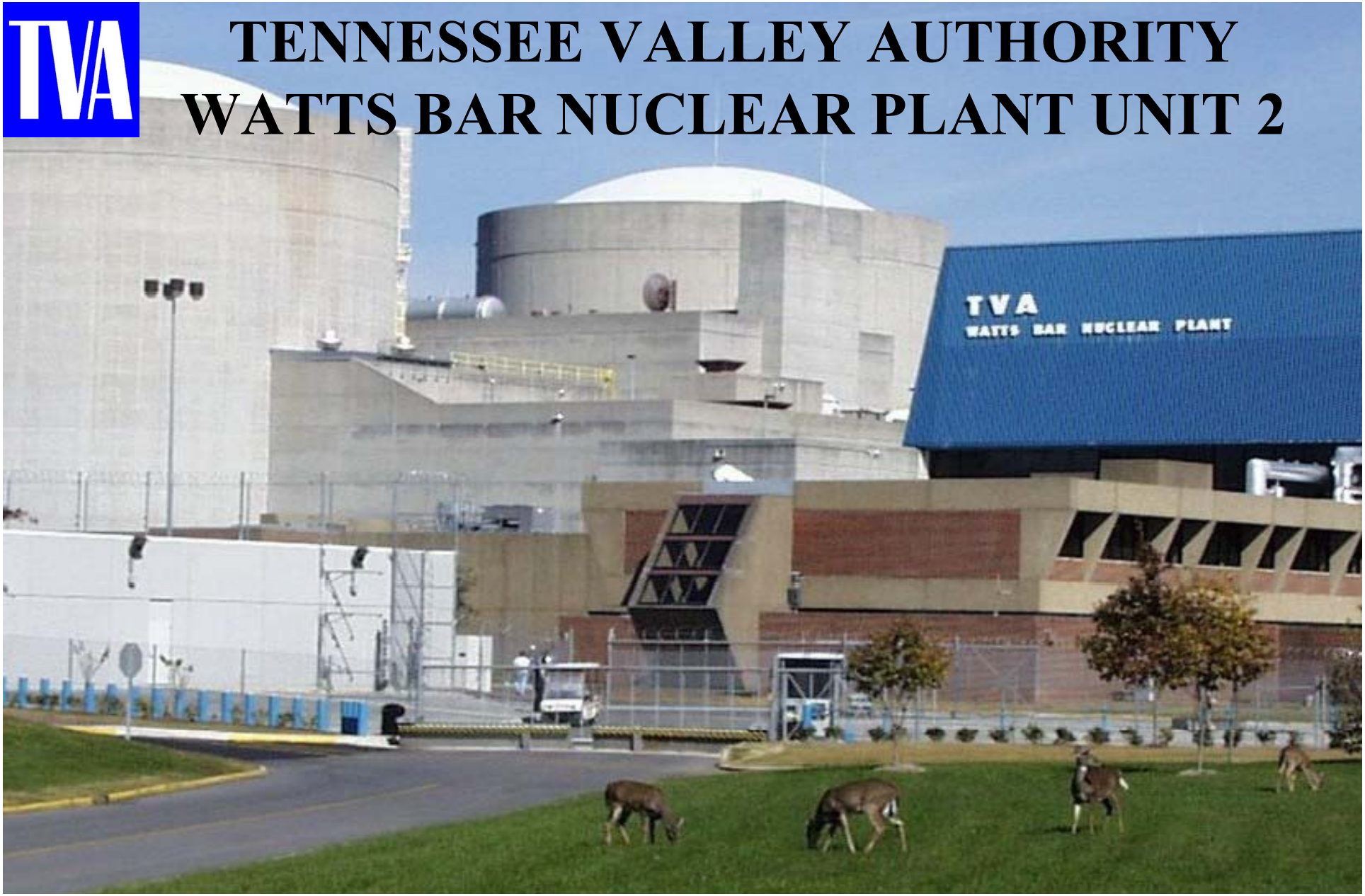
Conclusions – Expectations for Next Meeting

- Focus of next SC Meeting in July 2011
  - Instrumentation and Controls
  - Accident and Transient Analyses
  - Nuclear fuel
  - Resolution of open items from SSER 22
- Sequence of reviews before ACRS
  - Critical path items
  - Closeout of open and confirmatory items

TENNESSEE VALLEY AUTHORITY
WATTS BAR NUCLEAR PLANT UNIT 2

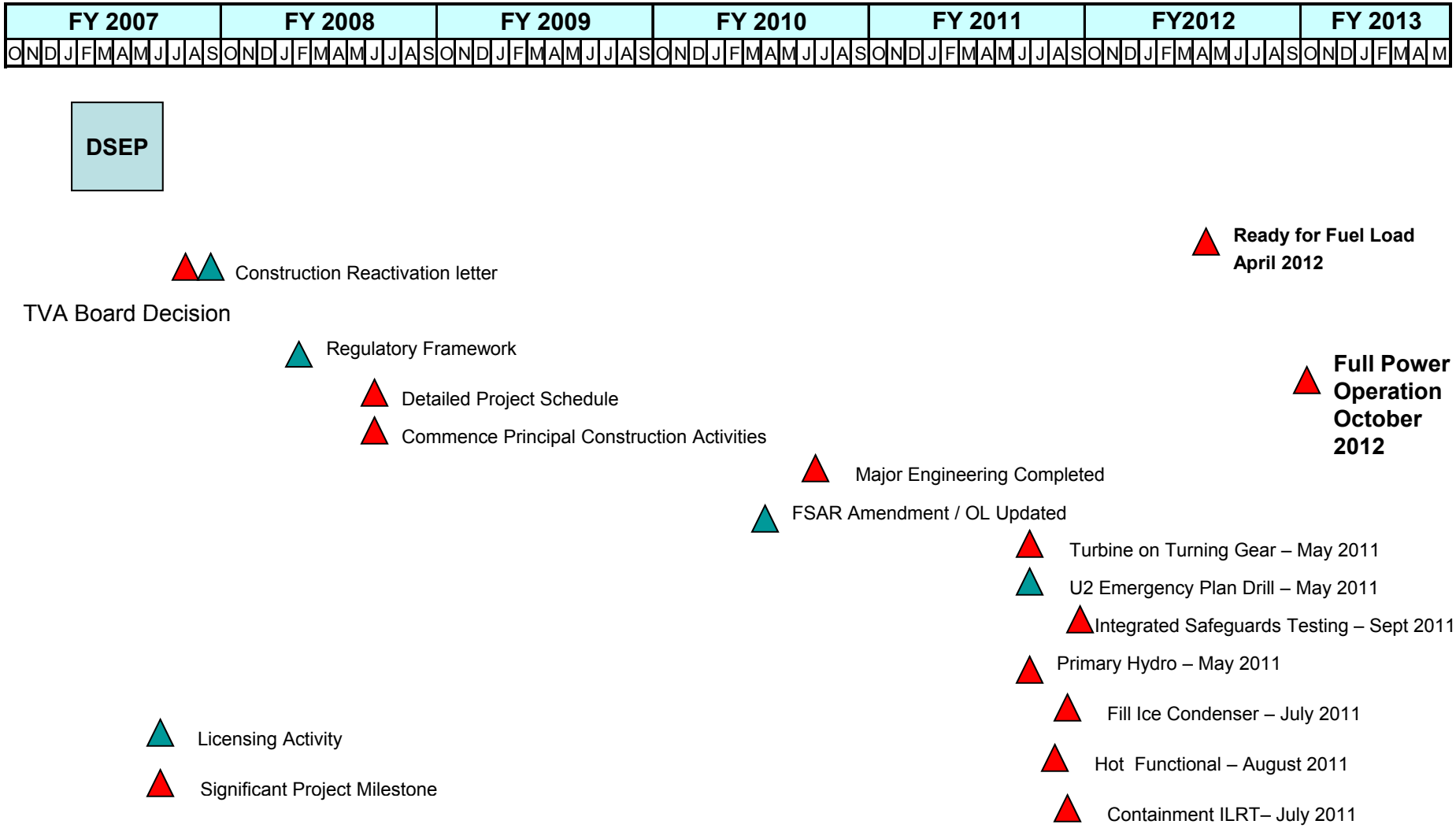


WBN Unit 2	**February 24, 2011**	**ACRS Presentation**

Agenda

- Construction Completion Status
  - Integrated Schedule
  - Engineering
  - Construction
  - Refurbishment
  - Licensing
  - Startup Testing
- Overview of Unit 1 & Unit 2 Integration
- Action Items
- Questions

WBN2 Project Completion Status



Freeman

WBN2 Project Completion Status

Engineering

- Two Unit Operations with margin

- Overall Progress ~ 89% complete
  - Design Modifications ~ 99.8% complete
  - Calculations ~ 92% complete
  - Corrective Action Programs and Special Programs ~ 85% complete

- Focus Areas
  - Field Support
  - CAP and SP Completion
  - Open Item Closure

- All Engineering Resources at Site

WBN2 Construction Completion Status

Construction

- Overall Progress – >64% complete

- Construction Focus Areas
  - Cable Pull, Hangers
  - Sense and Sample Lines
  - Refurbishment Activities

- Critical Path
  - Bulk Work (Cable Pull, Hangers, Sensing/Sample Lines)
  - Essential Raw Cooling Water
  - Component Cooling System
  - Ice Condenser Ice Loading
  - Testing: Safety Injection, Containment Integrated Leak Rate and Hot Functional Testing

- Construction Quality Continues to be Good
  - 1500+ Surveillances Conducted
  - Rejection rate remains less than 2.2% across all disciplines

- On Track to Complete Construction Activities to Support Current Fuel Load Schedule of April 2012

WBN2 Construction Completion Status

Active Refurbishment Program Status

- Safety Related Valves (all types) – 57% Complete
- Safety Related Pumps – 35%
- Safety/Quality Related Motors – 54%

Passive Refurbishment Program Status

- Program in progress ~18% complete
- Attributes Evaluated
  - Pipes, tanks, orifice, Heat Exchangers, Traps
  - Duct
  - Instrument Sensing lines
  - Electrical Penetrations, Disconnects and Terminal Blocks

WBN2 Construction Completion Status

Sys Number	System Name	Pipe		orifice		duct		HTX		tank		trap		Inst sense line		Epen		disconnect		Term blocks		COMMENTS	System Complete
		Completed	Planned	Completed	Planned	Completed	Planned	Completed	Planned	Completed	Planned	Completed	Planned	Completed	Planned	Completed	Planned	Completed	Planned	Completed	Planned		
001	Main Steam	3	28							0	4												**9.4%**
003	FW	20	41	0	7			0	3	0	3	0	2										**35.7%**
026	Fire Protection	5	19	0	5																		**20.8%**
030	Ventilation	1	1	0	2	0	10	1	20									0	2			ESTIMATE	**5.7%**
031	AC/Chiller Water	1	15															0	2				**5.9%**
032	Control Air	15	15																			Turned over	**100.0%**
033	Service Air	0	15																				**0.0%**
040	Station drainage	0	2							0	2												**0.0%**
043	Sampling	0	10	0	2			0	28	0	5												**0.0%**
059	Demin water	5	8																				**62.5%**
061	Ice Condenser	1	10	0	31					0	1												**2.4%**
062	CVCS	49	61	0	18			0	6	0	2												**56.3%**
063	Safety Injection	46	76	0	18			0	2	0	7												**44.7%**
065	EGTS	0	0			0	5															ESTIMATE	**0.0%**
067	ERCW	44	95	0	19																		**38.6%**
068	RCS	3	12							0	1												**23.1%**
070	Component Cooling	15	23	0	26																		**30.6%**
072	Containment spray	16	22	0	6			0	2														**53.3%**
074	RHR	13	27	0	2			0	3														**40.6%**
077	Waste Disposal	14	35							0	1												**38.9%**
078	Spent Fuel Pit cooling	0	6	0	1																		**0.0%**
081	Primary Makeup water	4	7							0	1												**50.0%**
084	Flood Mode Boration Makeup	0	3																				**0.0%**
085	CRD																	0	1				**0.0%**
094	Incore Instrumentation																	0	2				**0.0%**
271	Cont/Aux Bldg Cranes																	0	3				**0.0%**
276	Local Inst Panels													0	50					0	25	ESTIMATE	**0.0%**
292	Aux Bldg conduit																			0	250	ESTIMATE	**0.0%**
293	Rx Bldg conduit															0	53						**0.0%**
304	Containment Penetrations															0	246					DOCUMENTATION ONLY	**0.0%**
		255	531	0	137	0	15	1	64	0	27	0	2	0	50	0	299	0	10	0	275		Total
		48.0%		**0.0%**		**0.0%**		**1.6%**		**0.0%**		**0.0%**		**0.0%**		**0.0%**		**0.0%**		**0.0%**			**18.2%**

Freeman

NOTE: Civil passive commodities and protective coatings not included in this list.

WBN2 Construction Completion Status

Start-up Testing

- Overall Testing Progress
  - Fifteen (15) Systems Turned Over to Start-up Test Organization

- Condenser Circulating Water System will be the first system turned over to the Operating Plant in June 2011 to test the turnover process.

- Integrated Safeguards Test – Perform with Unit 1 on-line after Hot Functional Tests

- Essential Raw Cooling Water – Flow balance during Unit 1 outage Spring 2011

WBN Unit Interface

- WBN 1 / 2 Integration Team
  - Transition schedule
  - Departmental transition plans

- Unit 1 Presence on Unit 2
  - 10 Non-Licensed Operators
  - Work Orders reviewed by experienced Operations personnel
  - Unit 2 activities affecting Unit 1 in T-week Schedule – Risk Review
  - Work on common systems uses WBN-1 work control process
  - Configuration control for System Boundaries at Interface Points

- Unit 2 Presence on Unit 1
  - Attend Unit 1 Plan of Day meeting
  - Address daily activities
  - Work in operating spaces reviewed daily

WBN2 Project Completion Status

Licensing

- Overall Progress:
  - NRC Reviewing Licensing Documents in Support of Operating License
    - Challenges to Completion - I&C, Fire Protection Program and Selected Safety Analysis Reviews
  - NRC's Development of Environmental Report in Support of National Environmental Policy Act (NEPA) in Development
    - Actions to Complete
      - Severe Accident Management Alternatives – Submitted
      - Impingement & Entrainment Studies – March 2011

Action Items

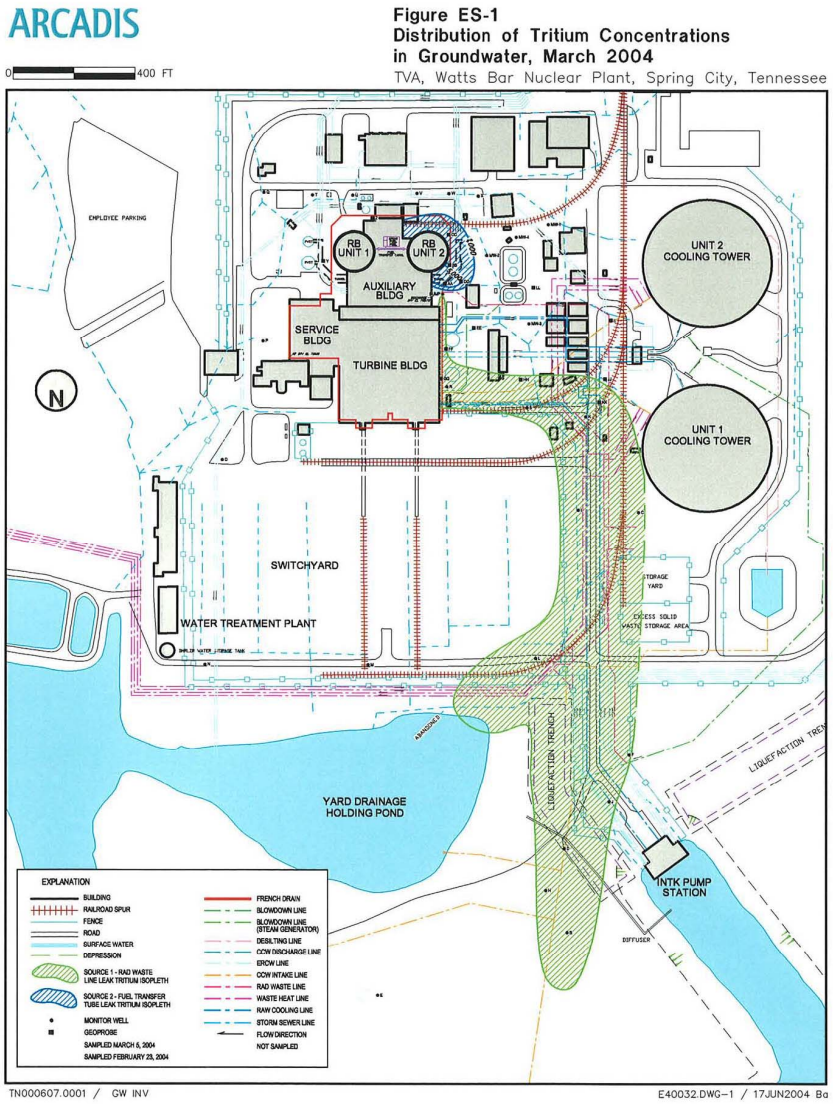
The following action items were opened at the previous ACRS meeting:

- Baffle Bolts – Status of WBN bolts
- Tritium Plume Concentration – What is the concentration in the plume?
- Weld Flaw Similarities – Are there any similarities between the condition found at Watts Bar versus VC Summer?

Crouch

QUESTIONS

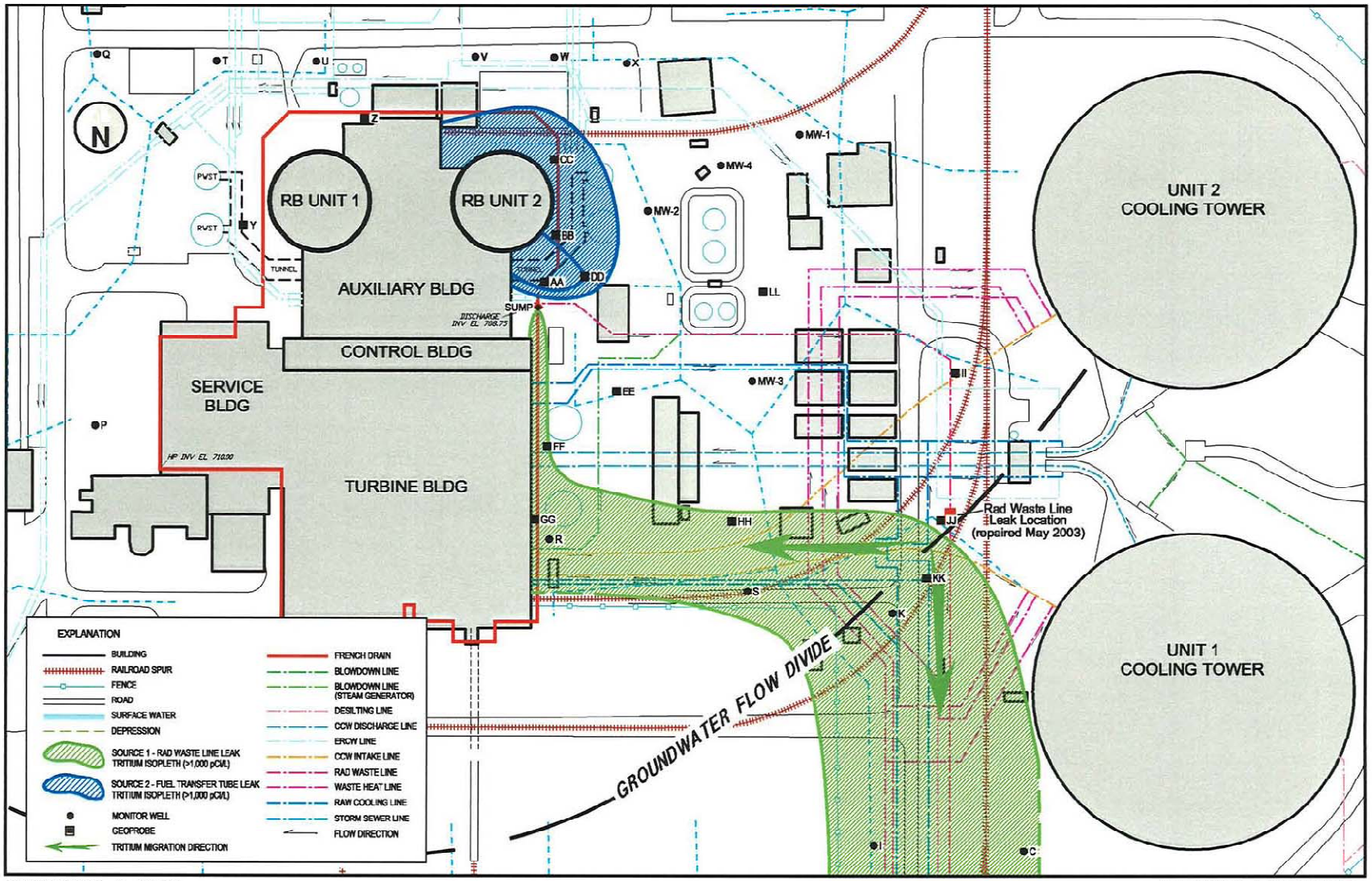
Tritium Plume



ARCADIS

Figure ES-2
Source #1 - Rad Waste Line Leak
TVA, Watts Bar Nuclear Plant, Spring City, Tennessee

0 200 FT

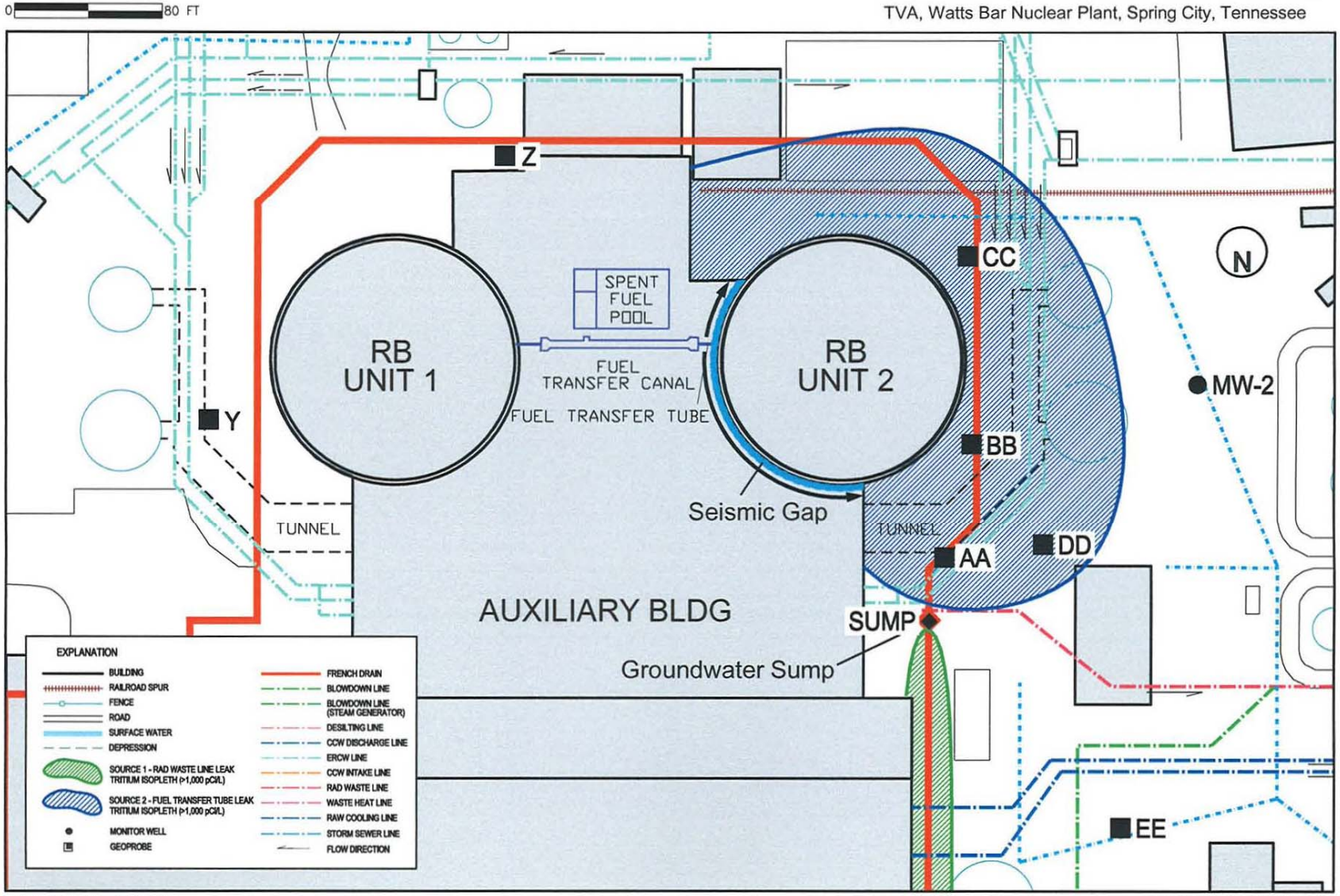


TN000607.0001 / GW INV

E40035.DWG / 17JUN2004 Ba

ARCADIS

Figure ES-3
Source #2 - Unit 2 Fuel Transfer Tube Sleeve
TVA, Watts Bar Nuclear Plant, Spring City, Tennessee



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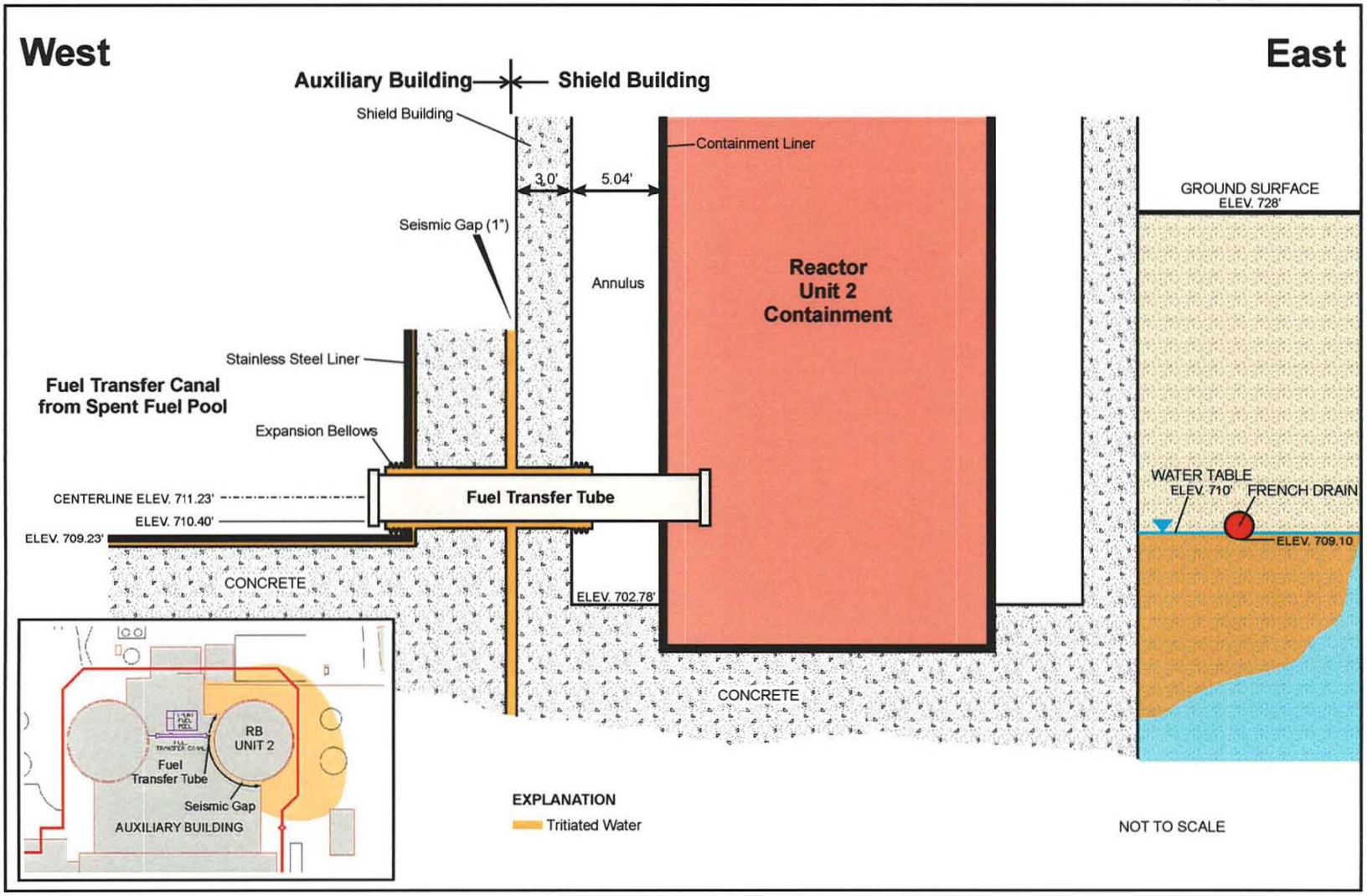
ARCADIS

Exhibit ES-4
Source #2 - Schematic Cross-Section
TVA, Watts Bar Nuclear Plant, Spring City, Tennessee



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