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UNITED STATES NUCLEAR REGULATORY COMMISSION'S

ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

October 5, 2005

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This transcript has not been reviewed, corrected and edited and it may contain inaccuracies.

1 UNITED STATES OF AMERICA

2 NUCLEAR REGULATORY COMMISSION

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4 ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

5 (ACRS)

6 SUBCOMMITTEE ON PLANT LICENSE RENEWAL

7 + + + + +

8 WEDNESDAY

9 OCTOBER 5, 2005

10 + + + + +

11 ROCKVILLE, MARYLAND

12 + + + + +

13 The Advisory Committee met in Room O-1G16,

14 White Flint One, at 12:30 p.m., Mario V. Bonaca,

15 Chairman of the Subcommittee, presiding.

16

17 COMMITTEE MEMBERS:

18 MARIO V. BONACA Chairman

19 THOMAS S. KRESS Member

20 WILLIAM J. SHACK Member

21 JOHN D. SIEBER Member

22 JOHN J. BARTON Consultant

23 GRAHAM M. LEITCH Consultant

24 JOHN G. LAMB Staff

25 CAYETANO SANTOS, Designated Federal Official

1 ALSO PRESENT:

2 Don Arp

3 Bob Moll

4 Joe Valente

5 Ken Brune

6 Bill Crouch

7 Joe McCarthy

8 Rich DeLong

9 Ama Pal

10 Yoira Diaz Sanabria

11 Ram Subbaratnam

12 P.T. Kuo

13 Jake Zimmerman

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

2 Time: 12:33 p.m.

3 CHAIRMAN BONACA: The meeting will now
4 come to order. This is a meeting of the Plant License
5 Renewal Subcommittee. I am Mario Bonaca, Chairman of
6 the Plant License Renewal Subcommittee. ACRS members
7 in attendance are John Sieber, William Shack, and Tom
8 Kress and ACRS consultants, Graham Leitch and John
9 Barton, are also present. Cayetano Santos of the ACRS
10 staff is the designated Federal Official for this
11 meeting.

12 The purpose of this meeting is to discuss
13 the license renewal application for Browns Ferry Units
14 1, 2 and 3. We will hear presentations from
15 representatives of the Office of Nuclear Reactor
16 Regulation, the Region II office, and the Tennessee
17 Valley Authority.

18 The subcommittee will gather information,
19 analyze relevant issues and facts and formulate
20 proposed position and action as appropriate for
21 deliberation by the full Committee.

22 The rules for participation in today's
23 meeting were announced as part of the Notice of this
24 meeting, previously published in the *Federal Register*.

25 We have received no written comments or

1 requests for time to make oral statements from members
2 of the public regarding today's meeting.
3 A transcript of the meeting is being kept
4 and will be made available as stated in the *Federal*
5 *Register* notice. Therefore, we request that
6 participants in this meeting use the microphones
7 located throughout the meeting room when addressing
8 the subcommittee. Participants should first identify
9 themselves and speak with sufficient clarity and
10 volume so that they can be readily heard.
11 Before I proceed with the meeting, I would
12 like to summarize for those members of the
13 subcommittee that were not present on September 21
14 when we really reviewed the general issue of restart
15 of Unit 1 and also some issues of license renewal.
16 There were a number of issues discussed that pertain
17 to the license renewal of particularly Unit 1.
18 We talked about how Unit 1 meets the
19 requirement for operating experience and meets the
20 requirements of the rule, and in that context we felt
21 that there were throughout the application, and
22 particularly the SER, a number of compensatory steps
23 where the experience was not sufficient; for example,
24 the commitment to some periodic inspections and things
25 of that nature. However, the SER did not include a

1 statement up front of how this issue of complying with
2 the operating experience of the rule was being dealt
3 in a comprehensive fashion, and the staff agreed to
4 develop that kind of discussion in the SER, not now,
5 of course, but for the final SER.
6 The second issue we discussed was the
7 periodic inspections. We felt positively inclined
8 toward those. We felt that that was responsive to, in
9 fact, filling the gaps into the operating experience
10 for systems in lay-up. However, we felt that there
11 wasn't enough information there yet, and we really are
12 anxious to see more about that. That can be provided
13 at another time.
14 The other point we raised was regarding
15 the application -- not the application, the SER.
16 Although there is now a commitment to periodic
17 inspections, there are still in the SER a number of
18 locations where one-time inspection prior to restart
19 are being used for certain systems. So there is some
20 confusion there. It may be purely editorial due to
21 the fact that the commitment to periodic inspection
22 came at a later time.
23 These are the three issues that we
24 discussed, and I just wanted to bring them up for
25 information, and they would be of interest to the

1 committee, because the committee has raised concerns
2 regarding operating experience.
3 One last note: At the end of the meeting,
4 we will have to tell the staff and the licensee what
5 the Committee may want to hear tomorrow. They are
6 coming for a one and a half-hour presentation to the
7 full Committee. So we will discuss it at that time.
8 With that, we will now continue with the
9 meeting. I call upon Mr. Kuo of the Office of Nuclear
10 Regulatory -- Reactor Regulations to begin.
11 DR. KUO: Thank you, Dr. Bonaca. My name
12 is P.T. Kuo. I am the Project Director of the License
13 Renewal and the Impact Program. I have many staff
14 members with me. On my left is Jake Zimmerman, who is
15 the Section Chief for Section B, who is responsible
16 for the audit activities for this project.
17 On my right are the Project Manager --
18 License Renewal Project Managers, Ram Subbaratnam, and
19 Yoira Diaz. They have been managing the review for
20 this project, and there are technical review staff in
21 the audience who supported the review of this project.
22 We also have invited our Regional staff
23 who are responsible for the inspection activities at
24 the site. Carter Julian and Steve Cahill both are
25 here. Later on, they are going to make a presentation

1 on inspection also.

2 As you are aware, this is a very

3 complicated review for Browns Ferry, and the reason,

4 because there are three activities that are being

5 pursued concurrently. That is the license renewal,

6 the Unit 1 restart, and the EPU for all three units.

7 But for this presentation, today's presentation, we

8 are only focusing on license renewal, and we have been

9 reviewing the license renewal application based on the

10 assumption of 100 percent -- I mean, not 100 percent --

11 - at the current power level. For Unit 1, it is 100

12 percent. For Units 2 and 3, it is 105 percent. That

13 has been our basis for this license renewal review.

14 We tried to assemble the current licensing

15 basis for the review at the current power level, and

16 we understand that the TVA is also in parallel

17 pursuing the EPU. Their planning is to restart Unit

18 1, 2 and 3 at the 120 percent power, but I just want

19 to reemphasize that our review is based on the current

20 power level.

21 Resulting from our review, we have --

22 CHAIRMAN BONACA: And so is the

23 application.

24 DR. KUO: Yes. But the application --

25 CHAIRMAN BONACA: You know, in some cases

1 we have had members raising questions regarding what -
2 - because there has been such an evolution, you know,
3 and the plant has changed from the moment the
4 application was submitted to today, and I believe you,
5 Graham, raised that issue.
6 DR. LEITCH: Yes. Well, I understand that
7 the application is at the present power level, but yet
8 the configuration of the plant is a dynamic thing.
9 The application, as I understand it, was based on the
10 plant as it appeared in the middle of 2003. I think
11 July 1, 2003, was the freeze date. But now since that
12 time, I guess, my understanding is that, for example,
13 the recirc piping has -- At that time it was 304
14 stainless. In the interim, it has been changed to 316
15 nuclear grade stainless.
16 Now when you review the application, are
17 you reviewing 304 stainless or 316 stainless as far as
18 an aging management program? Now maybe in that
19 example it doesn't make any difference, but what I'm
20 saying is what configuration of the plant are we
21 reviewing?
22 DR. KUO: It's really a good question. We
23 tried to struggle with this also during our review.
24 I think what we are doing is that, if this 306 pipe,
25 for instance, is physically present or that they are

1 committed to install in place this 306 pipe, then our
2 review is based on the suggested configuration.
3 However, the judgment is made on the basis of 100
4 percent -- I mean, not 100 -- I keep on saying 100 --
5 current licensing power level, although it may be good
6 for 120 percent power, but we are not -- At this
7 review, we are not making that determination.
8 DR. LEITCH: My question is not so much
9 about the power level as about license renewal.
10 Perhaps the aging management program would be
11 different for 316 versus 304. So when you look at the
12 aging management program, what vintage of the plant
13 are you looking at? And in some cases, the plants may
14 never come to the same vintage.
15 It is my understanding that Unit 1 has
16 been changed to 316 stainless. Two and 3 have not,
17 and will not. They will stay at 304 stainless. So
18 perhaps the aging management programs would be
19 different.
20 My question really is: Which have we
21 evaluated?
22 DR. KUO: Like I said, if they have
23 committed to replace these 304 piping to 306, either
24 already in place physically or committed to install,
25 then our reviews are based on 306. Aging management

1 program is going to be associated with the 306 piping
2 rather than 304.
3 DR. BARTON: So you have two aging
4 management programs for some components. Right?
5 DR. LEITCH: In that example I cite -- and
6 I'm not sure whether the aging management program is
7 different or not. Perhaps I don't have the best
8 example, but what I'm saying is in this example, Unit
9 1 -- Even in the long term after all the dust settles,
10 Unit 1, it's my understanding, is going to be 316
11 stainless, nuclear grade. Units 2 and 3 are going to
12 be 304 stainless.
13 So do we evaluate two different programs,
14 one for Unit 1 and a different program for Units 2 and
15 Three?
16 DR. KUO: I ask Ram to address that.
17 MR. SUBBARATNAM: Yes. This is Ram
18 Subbaratnam, Project Manager for License Renewal.
19 The question is we have done a power
20 looking review. If the material committed to is the
21 316, it may not be existing today. We have just
22 reviewed them for aging management for material and
23 aging effect for the material, the way it would appear
24 when it is restarted.
25 That means, when you look at the

1 application, we have all the bold bordered boxes which
2 gives you a reminder that this material is going to be
3 replaced in future. However, we are going to do the
4 aging management and the review based on the material
5 which is to come in future, actually.
6 So it is not on a current basis. And of
7 course, licensing can be articulated a little bit
8 better, but what we do is we focus also -- we will
9 also focus on the material and the aging management as
10 it exists in Unit 2 and 3, after all the enhancements
11 are done to make Unit 1 look like Unit 2 and 3, which
12 are the current operating plants.
13 So they will, to some extent, extrapolate
14 experience from Units 2 and 3, but it is on the future
15 material and the future position of how it going to
16 be.
17 DR. LEITCH: But it is my understanding
18 that 2 and 3 are not going to be changed to 316
19 standards, but remain as 304. Now maybe I'm wrong.
20 DR. KUO: Bill, would you like to take
21 this question?
22 MR. CROUCH: This is Bill Crouch. I'm the
23 Site Licensing Manager at Browns Ferry.
24 In Units 2 and 3 we have replaced a
25 portion of the recirc piping with 316 NG. There is

1 304 and 316 NG in both of those two units.

2 In Unit 1, it will be purely 316 NG. The

3 aging management program is the same for both 304 and

4 316. So putting in the additional 316 material

5 doesn't change the aging one way or the other, and

6 since Units 2 and 3 have both materials in them, both

7 materials are in the aging management program.

8 DR. LEITCH: So I guess maybe I have

9 picked a poor example then, that in this case the

10 aging management programs turn out to be the same.

11 But I can't think of the example where they are not

12 the same, but --

13 MR. CROUCH: Let me give you more

14 information. As part of Unit 1 recovery, we have not

15 introduced any new materials that are not already in

16 Units 2 and 3.

17 DR. LEITCH: Okay. So there is new

18 condensate pumps and feed pumps and --

19 MR. CROUCH: Same materials.

20 DR. LEITCH: -- condensate booster pumps

21 and all that equipment that we --

22 MR. CROUCH: Same materials.

23 DR. LEITCH: -- saw you laboring with down

24 there last month is all the same materials --

25 MR. CROUCH: All the same materials.

1 DR. LEITCH: -- that has already been
2 evaluated then?
3 MR. CROUCH: Right. It may be slightly
4 bigger, but it is the same materials, performing the
5 same functions in the same environment.
6 DR. LEITCH: Okay. That helps me. Thank
7 you.
8 MR. CRANSTON: My name is Greg Cranston,
9 the Project Team Leader conducting the audits.
10 The same aging management programs applied
11 for all three. There may be some minor differences,
12 but those are things we would look at in conjunction
13 with our aging management review line items where we
14 have line items for every single system. If there is
15 something different, then that is noted in there.
16 Also, when we do our comparison of AMR
17 line items, we just don't necessarily look at that
18 particular material, the environment, the aging effect
19 and the aging management program just for that one
20 system. We do cross-checks and sorts to see how that
21 aligns with other systems as far as how they are
22 treating that particular type of component in that
23 same environment with the same effect to look for
24 anything that may be different.
25 So we are looking for consistency there as

1 well, the cross-check between all three units and even
2 different systems, to see that they are all being
3 treated the same. When we find outliers, like for
4 some reason there is a line item that they use water
5 chemistry control in one but they are using some type
6 of visual inspection or something in the other, then
7 we challenge that to see was that something that was
8 misrepresented in the document that they have to fix
9 or what is the rationale for it, and we follow through
10 on that. But the programs apply for all three units.
11 DR. LEITCH: Okay. Thank you.
12 CHAIRMAN BONACA: You talked about to see
13 if there is something in the document to be fixed.
14 Clearly, there is a lot in the document to be fixed,
15 because the plant has changed as we go forth, and also
16 there has been a debate between the staff and the
17 licensee on the problems.
18 The biggest example is the one of this
19 periodic inspection commitment that is not documented
20 anywhere. is now to be in the Appendix B, and is not
21 the SER either. It's just mentioned in passing.
22 So now to the degree possible, I think the
23 final SER should have some clarification of these
24 issues, because a standard reviewer like myself who
25 cannot benefit from the direct interaction, I cannot

1 issue requests for additional information or whatever.
2 I am left pondering what's up and what's down. I
3 mean, you know, when you go through the SER, we
4 already pointed out to you this morning some of the
5 issues of Section 347 where there are inconsistencies
6 there.
7 So I think there has to be some
8 clarification so we understand these issues.
9 DR. KUO: You are right, Dr. Bonaca. As
10 I recall, there were three actions that we took away
11 from the last meeting. What you said about the
12 periodic inspection item is one of the three, and the
13 other two are the operating experience -- for
14 instance, that was not addressed in the SER; it didn't
15 appear in any of the documents. We are going to make
16 that improvement.
17 We have asked the applicant to provide us
18 the operating experiences. Then there is another
19 issue, to define the inspection terms -- terminology,
20 I believe. So we are going to work on those issues.
21 CHAIRMAN BONACA: I understand, and I
22 appreciate that. The only thing I wanted to mention
23 here is, to the degree possible, you know, when you do
24 the final revision of the SER, be aware that a
25 standard reader like ourselves here are being

1 challenged by the situation where there have been
2 replacement in components, in commitments, things of
3 that nature, and I think we need to be able to review
4 a document that is consistent.
5 I am not asking for the application to be
6 updated, but --
7 DR. KUO: Additional information should be
8 provided, yes.
9 CHAIRMAN BONACA: It's challenging to
10 perform the review.
11 DR. LEITCH: Just one comment in that
12 regard. I found the Appendix F in the application
13 very helpful, but that was -- It seemed to me that
14 Appendix F was how are we going to bring Unit 2 and 3
15 up to the same basis as Unit 1, but the other side of
16 that coin, I think, is when we have moved Unit 1
17 further along in the design process by some of the EPU
18 modifications and everything, what needs to be done on
19 Unit 2 and 3 to bring it up to that?
20 I think it's sort of like -- I think it is
21 like the other side of the coin that we are asking
22 for. It's like an Appendix F where those six or seven
23 things are listed there. But as I say, they are more
24 what the plan is to bring 2 and 3 up to 1, but now 1
25 has moved further along, and what remains to be done

1 on 2 and 3? I think it's the other side of the coin.
2 DR. KUO: I think that you are talking
3 about between the license and the EPU.
4 DR. LEITCH: Yes.
5 DR. KUO: Yes. And we are fully aware of
6 it, and that's why I want to emphasize that the basis
7 of our review is at the current power level, and the
8 assumption of that is that all three units have a
9 consistent current licensing basis. They should be at
10 least comparable.
11 DR. SHACK: Okay. That is a question,
12 P.T., because Appendix F is presumably the tabulation
13 of changes that you need to make in order to bring
14 them to the current licensing basis, and my question
15 was: For license renewal, did you make the judgment
16 that they all got to the current licensing basis or
17 did you make the judgment that, whether or not they
18 had exactly the same licensing basis, the aging
19 management programs were adequate?
20 DR. KUO: We make the judgment that
21 whatever they do on Unit 1, bring the Unit 1 to a
22 licensing basis consistent with Units 2 and 3.
23 DR. SHACK: So you think that Appendix F
24 are the necessary and sufficient conditions to bring
25 Unit 1 to the current licensing basis of 2? You have

1 made that judgment, that they are sufficient?

2 DR. KUO: Yes, we make that judgment.

3 Yes.

4 CHAIRMAN BONACA: Insofar as the current

5 licensing basis?

6 DR. KUO: Right. That's correct.

7 CHAIRMAN BONACA: Okay.

8 DR. KUO: Okay. If there's no further

9 questions, I think I will turn over the meeting to TVA

10 to make their presentation, and they will be followed

11 by the staff's presentation on SER and the Regional

12 inspection activities.

13 DR. LEITCH: I just have one other

14 question, which I guess is right in the area we are

15 discussing. Have there been annual updates to the

16 licensing renewal application while the review has

17 been ongoing?

18 DR. KUO: I believe we had, but I would

19 like Ram to address the details.

20 MR. SUBBARATNAM: Yes. We are going to

21 constantly track this annual update. So far, since

22 the time of submission of the application in January

23 of 2004, we have received one licensing basis update

24 on the application on January of 2005, and one more is

25 due at the end of this year.

1 We will continue to track the TLB update
2 all the way through. The last document which updated
3 was around 10-15 pages, which captured what happened
4 in between.
5 DR. LEITCH: We don't have that document.
6 Right? We are reviewing the original submittal of the
7 license?
8 MR. SUBBARATNAM: That's right. Actually,
9 that was probably like the REI submittal. I could
10 give you the documentation, if you need to look at it.
11 That's like 20 pages worth of licensing basis update
12 they made. This is unique to Browns Ferry.
13 Some of them could have been completed
14 from the time the application was submitted to us and
15 today. So we are going to keep tracking it and, when
16 I make my presentation, I have a special template of
17 inspection which is going to track how these 13 items
18 are going to be tracked. We are going to make it a
19 condition for Unit 1's basis becoming par with Unit 2
20 and 3.
21 DR. LEITCH: I wonder why the ACRS ought
22 not receive the revised application.
23 DR. KUO: There is no revised application.
24 It's just an annual update provided.
25 DR. LEITCH: But we haven't received that

1 document, have we?

2 DR. KUO: I don't think -- We can give it

3 to you, sir. It is the submittal which came in

4 afterward.

5 DR. LEITCH: Okay. Thank you.

6 DR. KUO: We will take that as an action.

7 DR. LEITCH: Thank you.

8 DR. SHACK: Just a question on that.

9 Those don't seem to be posted on the website either,

10 or at least I can't find them.

11 MR. SUBBARATNAM: The annual update won't

12 be a part of -- The website has got only the draft

13 SER, the open items, so far.

14 DR. SHACK: Right. And the original

15 license application and Appendix F.

16 MR. SUBBARATNAM: Appendix F.

17 DR. SHACK: But shouldn't it also have

18 everything that they submit?

19 MR. SUBBARATNAM: That is a good question.

20 We will take a look at that.

21 DR. KUO: As a matter of fact, I have a CD

22 which have compiled all the RAIs.

23 DR. SHACK; Yes, we can get the CD, but

24 the public is only going to go to the website.

25 DR. KUO: We will take action. Thank you.

1 MR. CROUCH: Dr. Bonaca, are we ready?

2 CHAIRMAN BONACA: Please.

3 MR. CROUCH: Thank you. My name is Bill

4 Crouch, and I am the Site Licensing Manager at the

5 Browns Ferry Nuclear Plant of TVA. We appreciate the

6 opportunity we have to come today and to talk to you

7 about the license renewal project for Browns Ferry.

8 We have brought several people here with

9 us today so we can answer your questions, and I would

10 like to take a few moments here to introduce some of

11 the players that we have with us here.

12 Immediately to my right is Rich DeLong.

13 He is the Site Engineering Manager at Browns Ferry,

14 and next to him is Joe McCarthy of my licensing staff.

15 We also have with us the basic staff that put together

16 the license renewal application. We have Ken Brune,

17 who is the Project Manager.

18 Working for him in the various areas of

19 mechanical, electrical and civil, we have Nicky Hamby,

20 Don Arp, Russell Jansen, Roger Jennings. We also have

21 Kevin Groom of the Site Licensing staff, who is a

22 materials person. These were all our engineering type

23 people.

24 Then from our Unit 1 engineering staff, we

25 have Joe Valente, who is the Unit 1 Engineering

1 Manager, Dave Burrell, Bob Moll, and Henry Jones.
2 They are overseeing the restart efforts for Unit 1.
3 We also have with us Kathryn Sutton from
4 Morgan Lewis Bokius.
5 As I said, we would like to thank you for
6 the opportunity to come and talk to you. We recognize
7 that some of our presentation today is a little bit of
8 what you heard two weeks ago when we were here, but we
9 wanted to make sure that we set the stage for the
10 others.
11 When we were here two weeks ago, you gave
12 us specific questions that we have tried to answer and
13 drill more down into the area of the license renewal
14 projects for Units 1, 2 and 3. So that's the real
15 impetus of our presentation today.
16 As we go through this, I will give you a
17 brief description of the overall Browns Ferry plant.
18 We will talk about the license renewal application,
19 how we have done the scoping of the various systems
20 and components that are involved, then how we did the
21 time-limiting aging analysis and the aging management
22 programs and reviews that we did.
23 In response to some of your specific
24 questions, we will talk a little bit more abut the
25 Unit 1 layup program, the operating experience of

1 Units 2 and 3 and how it applies to Unit 1, and we
2 will talk about the commitments, how we are tracking
3 those and making sure they get implemented. Finally,
4 we will briefly discuss the open items that are in the
5 SER, and inspections and things.
6 So moving on to page 2 of the
7 presentation, all three units at Browns Ferry are
8 General Electric BWR reactors with Mark I
9 containments. They are in a common building with a
10 common environment. All three units have been
11 maintained under the same general environmental
12 conditions all through their life, because they had
13 similar type environmental control systems.
14 The plants -- When they were originally
15 designed and constructed, they were configurationally
16 identical as much as you can make units that are
17 opposite hand type thing. Then they are operationally
18 identical in that they operate under the same
19 operating processes. They have the same equipment,
20 same procedures. Everything is operationally
21 identical.
22 Each unit has undergone a history of
23 operation. As everybody knows, Unit 1 started first.
24 Then we had the fire that shut us down for roughly a
25 year and a half. At that time Unit 2 had just begun

1 operation, just before the fire. So both of them were
2 shut down for a while.
3 Then over the years we have brought Unit
4 2 back on line, then Unit 3 back on line. So what we
5 have here is the approximate years of operation for
6 each of the units, and these are calendar years, not
7 effective full power years.
8 Units 2 and 3 have been in operation since
9 their recovery in 1991 and 1995, respectively. The
10 operations proceeded smoothly. We have operated at
11 the original license thermal power of 100 percent from
12 the units' restart until 1998 and 1999 when the two
13 units were uprated five percent to 105 percent of
14 original rated thermal power. That's what they are
15 running at right now.
16 Unit 1 is in a recovery outage, and the
17 restart is scheduled for May of 2007. We are -- As
18 you guys saw when you were at our plant, we are
19 undergoing extensive modifications in Unit 1 to make
20 Unit 1 come up to speed with Units 2 and 3 from a
21 plant configuration, plant materials and a plant
22 licensing basis standpoint.
23 When the units get back and all three are
24 running, they will be operationally identical, and we
25 emphasize operationally identical because of some of

1 the things that we talked about before, in that in a
2 few cases you cannot buy a specific piece of equipment
3 anymore, primarily in the area of electronics. But
4 they will still operate the same for the operators.
5 They will have the same operating procedures. They
6 will be licensed for all three units.
7 At Browns Ferry, our NRC performance
8 indicators are all green.
9 DR. LEITCH; Now it is my understanding
10 that the reactor oversight program is not in effect on
11 Unit 1. Is that correct?
12 MR. CROUCH: That is partially correct.
13 There are a few programs that are common for all three
14 units, such as the --
15 DR. LEITCH: Yes, okay.
16 MR. CROUCH: Those are already being
17 monitored under the revised reactor oversight process.
18 The other cornerstones where Browns Ferry Unit 1 is
19 not up to operation yet, they are still being
20 monitored under conditional enforcement.
21 As we get to restart and just beyond when
22 the plant is back operating, we will transition all of
23 Browns Ferry Unit 1 to the new process.
24 DR. LEITCH; So when you say the
25 indicators are green --

1 MR. CROUCH: This is for Units 2 and 3 for
2 everything, and then everything is in Unit 1 that is
3 in this new process.
4 DR. LEITCH: Okay. Now what about the
5 inspection findings? Are there any greater than
6 green?
7 MR. CROUCH: No. Not that I know of, no.
8 DR. LEITCH; Okay. Thanks.
9 MR. CROUCH: Moving to page 3, The Browns
10 Ferry license renewal application was a three-unit
11 application. It was originally started to be a two-
12 unit application. We then backed up and included Unit
13 1 into it as part of the restart effort. So that
14 before it was submitted to the NRC, it was a three-
15 unit application. The application was submitted on
16 December 31, 2003.
17 Shown up here is the original license
18 expiration dates for each of the units. You can see
19 they are in 2013, '14 and '16 respectively.
20 As we have talked about during your
21 opening comments, the license renewal application is
22 based upon the current licensed thermal power for each
23 unit. For Unit 1, which has not been uprated any,
24 that unit will be in the license renewal application
25 at the 3298 megawatts. Units 2 and 3, which have

1 undergone the five percent uprate, are at the 3458
2 megawatts.
3 The overall process of returning a unit to
4 service involved making many modifications to the
5 plants to come into conformance with the current
6 licensing regulatory type statutes that exist at the
7 time. We have made those modifications on Unit 2. We
8 have made them on Unit 3, and we are now making them
9 on Unit 1.
10 The areas of those modifications that
11 affected the license renewal application are called
12 out in the license renewal application in what is
13 called Appendix F, and that lists the differences
14 between Unit 1 versus Units 2 and 3 that will be
15 resolved as part of the licensing renewal process, as
16 part of the restart process, to make the units back so
17 that they have the same current licensing basis.
18 Now, obviously, we are also in the process
19 of doing the modifications associated with EPU, but
20 these modifications in Appendix F would bring the
21 units back into current licensing basis as far as the
22 equipment that is involved. Then we will proceed
23 onward with the EPU application to uprate the plants.
24 As part of the review of the license
25 renewal application, we have been in close

1 communications with the NRC staff, and to date we have
2 received approximately 230 requests for additional
3 information. Of those, 13 were environmental, and the
4 remainder related to the safety evaluation. The
5 responses to those have been provided back to the NRC
6 staff.
7 DR. LEITCH: Let me just ask, Bill, just
8 to clarify this: There's a couple of places where the
9 statement is made that TVA plans for Unit 1 current
10 licensing basis at restart to be the same as the
11 current licensing basis for 2 and 3.
12 Now but at restart Unit 1 is going to have
13 the EPU modifications.
14 MR. CROUCH: That's right.
15 DR. LEITCH: But I guess what you are
16 saying is -- By that initial statement, you are saying
17 that those modifications don't really impact the
18 current licensing basis.
19 MR. CROUCH; They will be a further
20 enhancement to the current licensing basis, so that
21 for licensing renewal we are really looking at the
22 Unit 1 plant, if you brought it on line today at 3293,
23 it would match the licensing requirements for Units 2
24 and 3. We would have the same systems, like for
25 example in Appendix F. You've got things that we are

1 going to add in such as the hard well vent, MSIV
2 leakage hardened path. All those type of systems will
3 be added into Unit 1 so that it will have the same
4 licensing basis in terms of systems and requirements.
5 Then all three units are in the process of
6 being uprated to EPU.
7 DR. LEITCH; So things like the bigger
8 recirc pumps that -- or the bigger reactor feed pumps
9 that will be in place on Unit 1 at restart don't
10 really impact the licensing basis. Is that what I
11 hear you saying?
12 MR. CROUCH: They don't impact the
13 licensing basis as far as licensing renewal is
14 involved. They will still have the same materials.
15 They will still be pumping the same water. All the
16 environments will be the same.
17 CHAIRMAN BONACA: The licensing basis --
18 I mean, the statement made in Appendix F is broader
19 than just purely the - You are making a broad
20 statement of licensing basis. So you are saying the
21 accident analysis is still acceptable, still within
22 the acceptable limits.
23 MR. CROUCH: That's correct. Obviously,
24 the accident analysis, transient analysis, is being
25 redone as part of EPU.

1 CHAIRMAN BONACA: That's right, and what
2 you are saying is that you may have analytical results
3 which are slightly different, while within the
4 acceptable bounds of the normal analysis.
5 MR. CROUCH: That's correct.
6 DR. LEITCH: I just wonder whether that
7 statement is rigorously still true. I mean, it may
8 have been true when the license renewal application
9 was submitted, but is it still -- It says TVA plans
10 for Unit 1 current licensing basis at restart to be
11 the same as the current licensing basis for 2 and 3 --
12 at Unit 1 restart.
13 MR. CROUCH; You are getting to the
14 problem of we were told we cannot address in the
15 licensing renewal application EPU conditions, because
16 that would be an implicit approval of EPU. So we
17 didn't really know how to word it any other way.
18 They will be the same from the standpoint
19 we will have all the same systems in. They will be
20 performing the same processes but, obviously, we are
21 in the overall process of uprating all three units to
22 120 percent power. So that was the context that
23 statement was made in.
24 DR. LEITCH: Yes, I understand. It's
25 just, when you take that statement by itself, it just

1 looks a little odd. But I understand the way this is
2 being done, it's difficult to explain it in one
3 sentence.
4 MR. CROUCH: Right. At this point in
5 time, I am going to turn it over Rich DeLong, our Site
6 Engineering Manager. He is going to talk to us about
7 how we did the scoping for the license renewal
8 application for the systems and components. He is
9 going to talk to us about our time-limiting aging
10 analysis that we have done, and then our aging
11 management review and our aging management programs
12 that we've got. So, Rich.
13 MR. DeLONG: Good afternoon, and thank you
14 again for having us here. My name again is Rich
15 DeLong, Site Engineering Manager, Browns Ferry, and we
16 will begin on Slide 4 with a discussion on scoping for
17 license renewal of Browns Ferry.
18 Now the scoping basis for our license
19 renewal application included, certainly, our updated
20 final safety analysis report, our safe shutdown
21 analysis calculation, maintenance rule documentation,
22 and also our controlled plant component database which
23 would be our master equipment database.
24 CHAIRMAN BONACA: Which is for Unit 1 for
25 maintenance rule, you assumed the same scope as the

1 other units?

2 MR. DeLONG: That's correct. That's

3 correct. From a scoping point of view, that's

4 correct. And of course, our existing licensing basis

5 -- We talked a lot about licensing basis here in our

6 design basis documents for the units.

7 From a specific scoping point of view for

8 regulated events, we considered, certainly, fire

9 protection, environmental qualification, ATWS and

10 station blackout.

11 There are 77 mechanical/electrical systems

12 in scope in approximately 25 structures. Are there

13 any questions about the basic scoping envelope?

14 DR. LEITCH: I had a question about the

15 non-safety related liquid filled piping. There is a

16 statement on page 2.5-1 of the license renewal

17 application that says that the non-safety related

18 liquid filled piping within these four structures were

19 evaluated, and not to present an issue, I guess -- I

20 don't have the whole quote right here in front of me.

21 I guess I was wondering specifically about

22 the RHR service water pipe tunnel. That is one of the

23 four structures where liquid filled non-safety related

24 piping was excluded -- not excluded, but judged to be

25 not an impact on safety related piping.

1 I guess I was wondering how that occurs --
2 I guess, specifically, what non-safety related piping
3 that we are dealing with in that tunnel. Could it
4 damage safety related piping?
5 MR. DeLONG: Specifically, I believe that
6 the pipe we are dealing with is raw cooling water
7 piping that runs in those same tunnels with RHR
8 service water. Ken, can you elaborate on that
9 evaluation?
10 MR. BRUNE: Yes. This is Ken Brune. We
11 were asked about that. We initially did not have some
12 of the non-safety related piping in the service water
13 tunnel in scope, and we were asked by the staff.
14 Since it could pose a water spray effect, all the
15 piping -- liquid filled piping in the tunnel was put
16 in scope.
17 DR. SIEBER: These are all low energy
18 lines, though. Right?
19 MR. BRUNE: Yes.
20 DR. LEITCH: I'm not quite sure I heard
21 the answer. You are saying the non-safety related
22 piping in that tunnel is now in scope?
23 MR. BRUNE; Yes. The non-safety related
24 piping in that tunnel is now in scope.
25 DR. LEITCH: Okay. Thank you.

1 DR. SIEBER: In your station blackout
2 scoping for specific regulated events, do you have
3 non-safety related switchyard type equipment included
4 in that scoping? And if so, what is it?
5 MR. DeLONG: The answer is, yes, we do.
6 The specifics -- I will defer out to Don for
7 specifics.
8 MR. ARP: My name is Don Arp, and I am
9 with the Browns Ferry license renewal lead.
10 Initially, you go out to the first breaker, power
11 circuit breaker, in the switchyard into our shutdown
12 boards, and all the buses and cabling in between, and
13 those are non-safety.
14 MR. DeLONG: Non-safety, but considered.
15 DR. LEITCH: I guess I had another
16 question about scoping. There is a statement made on
17 page 2.1-9 in the application that says that Browns
18 Ferry did not realign system components. Now I'm not
19 exactly sure what you mean by that, but I guess our
20 previous experience with BWRs like, for example, where
21 they had nitrogen or air piping penetrating the dry
22 well rather than put the whole compressed air system
23 in scope, they actually put that segment of the piping
24 from the endboard valve to the outboard valve --
25 they've kind of scoped that. They didn't -- What they

1 called a realignment, and they scoped that with the
2 drywell.
3 Now I'm interpreting this to mean that you
4 did not do that. How did you deal with that kind of
5 an issue?
6 MR. DeLONG: Go ahead, Ken.
7 MR. BRUNE: This is Ken Brune again. We
8 did not realign if we had a partial system of any
9 system. We identified that portion of the system in
10 scope for licensing by itself and did not essentially
11 say it was part of any other system.
12 DR. LEITCH: Okay. So in the example that
13 I'm using -- for example, that the compressed air
14 system -- than you would say generally not in scope,
15 but this part immediately penetrating the drywell out
16 to both valves was in scope?
17 MR. BRUNE: Yes, we would, and that would
18 be shown on our boundary drawings as just that
19 portion.
20 DR. LEITCH: Okay. Thanks. I understand.
21 MR. DeLONG: Okay. On slide 5, time-
22 limited aging analysis, here we see several things
23 that we considered that were applicable to us in terms
24 of time-limited aging analysis.
25 The first one, of course, is neutron

1 embrittlement of the reactor vessel and its internals,
2 and we will talk more about that on the next slide.
3 Metal fatigue, and already have said EQ, environmental
4 qualification; primary containment fatigue; and
5 several plant-specific time-limited aging analyses:
6 Reactor building crane load cycles; radiation
7 degradation of drywell expansion gap foam; irradiation
8 assisted stress corrosion cracking of reactor vessel
9 internals; stress relaxation of core plate hold-down
10 bolts; and emergency equipment cooling water weld flaw
11 evaluation.
12 On slide 6 you will see specifically the
13 time-limited aging analysis associated with neutron
14 embrittlement. For Unit 1 it is conservatively
15 evaluated at 54 effective full power years, and also
16 at extended power uprate conditions, and that is
17 extended power uprate conditions from the very
18 beginning, not just the period of time anticipated to
19 be at EPU but rather working back all the way to the
20 beginning of operation.
21 In the case of Unit 1, the actual expected
22 effective full power years at the time of current
23 license period expiration is about 14.2 EFPY. So in
24 fact, about 34.2 if you assume all 20 effective full
25 power years for the extended license, compared to 54

1 evaluated for effluents.

2 In the case of Units 2 and 3, it is

3 conservatively evaluated at 52 effective full power

4 years. The assumption for current license period was

5 32 effective full power years, which was calculated

6 based on 80 percent of capacity factor for 40 calendar

7 years.

8 DR. LEITCH: Those numbers are obviously

9 quite conservative in either case, but it just puzzles

10 me why you had evaluated Unit 1 for more effective

11 full power years than 2 and 3. I mean, Unit 1

12 certainly couldn't get to 54, now could Units 2 and 3

13 get to 52, but I just wondered why you did it that

14 way.

15 MR. DeLONG: Certainly, we would evaluate

16 it more accurately for the PT curve development, but

17 in this case it was fundamentally the desire to

18 demonstrate that we had significant margin for neutron

19 embrittlement in the station.

20 MR. CROUCH; The real reason -- The way

21 they calculated it was for Unit 1 they took the first

22 40 years of operation and assumed an 85 percent

23 capacity factor, and then added 20 more years to it.

24 For Unit 2 and 3 the calculations were just done at a

25 different time, and the person who did it assumed only

1 80 percent capacity and then added 20 years. So it
2 just came out a different number.
3 DR. LEITCH: Okay.
4 MR. DeLONG: And in both cases, you know,
5 these were calculated in accordance with Reg Guide
6 1.190 and, obviously, meets the requirements of that
7 Reg Guide.
8 DR. LEITCH: I wonder if there were any
9 cases -- I guess I was just thinking about this when
10 I was reviewing this material. I wonder if there are
11 cases where effective full power years might not be
12 the right metric to use, particularly in the case of
13 Unit 1. You know, if I am trying to evaluate the
14 condition of a used car, for example, I want to know
15 both the mileage and the age. You know, this is a low
16 mileage -- Unit 1 specifically is a low mileage.
17 MR. CROUCH: Well, from the neutron
18 embrittlement point of view, that's correct.
19 DR. LEITCH: I guess I am wondering if
20 there are TLAAs that are more directly related to age
21 than to power.
22 MR. DeLONG: Well, there certainly are.
23 You know, corrosion potentially during layup periods
24 might have an effect as a time-limited aging point of
25 view, but we certainly address later on in the

1 presentation how we develop what we think is a good
2 defense in depth for understanding the effect of, in
3 the case of Unit 1, the extended layup period on aging
4 and how the aging -- and how we ensure ourselves
5 during the course of the extended period that we
6 continue to work to understand if there is any
7 potential effect associated with the 20-year aging --
8 or 20-year layup period on aging.
9 We already, of course, have a significant
10 amount of information in understanding how 10 years of
11 layup period fundamentally has not affected Unit 3 in
12 terms of its aging during its period of operation.
13 DR. LEITCH: Good. Thank you.
14 MR. DeLONG: On Slide 7 -- this is a slide
15 you have seen before. Many of you have. There are 39
16 aging management programs total for Browns Ferry, 38
17 of which are common to all three units, one of which
18 is a Unit 1-only program. We will certainly talk more
19 about that in a few minutes.
20 There are 11 existing aging management
21 programs requiring no enhancement, 11 that were
22 revised to include Unit 1 but didn't otherwise require
23 enhancement, and then 11 that required enhancement for
24 all units.
25 That's slightly different than the last

1 slide you saw. We did, in fact, move one program from
2 requiring no enhancement down to requiring
3 enhancement. So previously we had 12 up there
4 requiring no enhancement. That's no longer the case.
5 We made a change. So now we are 11, 11 and 11, and
6 six new aging management programs.
7 DR. LEITCH; I notice that you concluded
8 that an aging management program for fuse holders was
9 not necessary. I guess that is different than a lot
10 of other folks came to that conclusion. Is there
11 something unique about your situation that led you to
12 that conclusion?
13 MR. DeLONG: Let me defer to Don on that
14 particular item.
15 MR. ARP: Yes. This is Don Arp again.
16 They went through a pretty good evaluation, I think,
17 of about 14,000 fuses, and based on their location and
18 their function, their duty cycles and the loading, we
19 found that we didn't have aging effects that required
20 management.
21 DR. LEITCH: I assume by the fact that
22 that is not an open item, the staff has agrees with
23 that position?
24 MR. SUBBARATNAM: This is Ram Subbaratnam.
25 I think it is not an open item in the staff SER.

1 Presumably, staff agrees with that position.

2 DR. LEITCH: I'm still not sure I

3 understand why. I mean, don't we -- aren't most other

4 applicants implementing a fuse holder aging management

5 program?

6 MR. PAL: I am Ama Pal. -- was the reason

7 why they didn't need an aging management program for

8 the fuse holders. We were satisfied. This is not

9 unique. Others also use that approach.

10 DR. LEITCH: So the ISG does not require

11 an aging management program, but only the one --

12 MR. PAL: Yes, it gives the option.

13 Either you provide the aging management program or you

14 can provide the reasons why you don't need a program.

15 DR. LEITCH: Okay. Thank you.

16 DR. BARTON: Where did the criteria come

17 from that you only now look at fuse holders that are

18 subjected to frequent mechanical stresses. You

19 identify those as removing a fuse a replacing it at

20 least once a year. Where did that once a year

21 criteria come from, and apparently the staff bought

22 it? Can anybody explain that to me? Your reason for

23 not having a program is you look at all your fuses,

24 evaluate them. I understand all that. Then you said

25 you evaluated the holders subject to frequent

1 mechanical stresses as those that were fuses that have
2 been pulled and reinstalled at least once a year.
3 Where does that criteria come from?
4 MR. ARP: This is Don Arp again.
5 Actually, I think what we found is that, of the number
6 of fuses that had a potential of being not located in
7 a piece of equipment, active equipment, we only had,
8 I think --
9 DR. BARTON: You didn't have many. I
10 remember that.
11 MR. ARP: Yes. And when we looked at our
12 last five years of operating experience with those
13 fuses, we found that only three, I believe, had been
14 pulled, and those were for some routine maintenance
15 activities. So that criteria was there, but we also
16 looked at what did we really do, and in reality we had
17 only pulled a very few, and that was in maintenance
18 activities.
19 DR. BARTON: Staff's happy?
20 MR. SUBBARATNAM: Actually, I am trying to
21 read their section of the SER, what they are trying to
22 say here. I have discovered in Section 2.1185, the
23 applicant developed their process, but I didn't find
24 any evaluating fuse holders as a part of license
25 renewal evaluation -- fuses in the plan, and then

1 applying a series of evaluation and screening to
2 identify plan fuses, planned operating experience --
3 They evaluated all the remaining fuses.
4 DR. LEITCH: I think the key -- The answer
5 I might have expected is that some plants, every time
6 you do a surveillance test, you have to pull switches.
7 Other plants have switches, and you are not
8 repetitively pulling fuses, and I guess, you know, I'm
9 not hearing this answer. Had I heard that, well,
10 Browns Ferry, has been designed with switches rather
11 than having to pull the fuses, that would have been a
12 good justification, but I'm not hearing that. I just
13 don't know what the justification is.
14 DR. BARTON: Well, their justification is
15 they only pull several of them a year due to
16 maintenance and -- you know. So I don't know. They
17 must have a system where they do calibrations or INC
18 stuff where they don't pull fuses, but it's not clear
19 to me what that is.
20 MR. DeLONG: Well, I think that's probably
21 an accurate representation. That, in fact, was what
22 the study was, to evaluate fuse applications where
23 there was a significant number of removals and
24 reinstallations, and the way our procedures,
25 processes, maintenance activities ensue, there is not

1 a need maybe to do it as often as maybe some other
2 plants do. I'm certainly not familiar with all the
3 plant designs out there in terms of how they use the -
4 - I know they are out there, huge fuse holders that
5 tend to put a lot of stress on one or the other of the
6 clips.
7 MR. PAL: This is Ama Pal again. The
8 concern is the condition of the fuses, and Browns
9 Ferry told us that they are not bringing that. They
10 have some other means to reenergize the circuits, and
11 it is only for some routine maintenance type of work
12 they do, they replace the fuse. A fuse blown, they
13 replace the fuse, which will not cause any loosening
14 of the fuse holders. So that's the reason we accepted
15 that.
16 MR. DeLONG: If there are no other
17 questions, we will move on to looking at some of the
18 specific aging management programs by category here.
19 On slide 8, you will see --
20 DR. LEITCH: Rich, let me just ask one
21 thing about aging management programs that will help
22 me with this discussion as you go forward, and maybe
23 I'm jumping ahead to a later presentation that we will
24 hear about in the inspection report. But in the
25 inspection report of January '05, which is admittedly

1 now nine months ago, there are statements made in
2 there that a lot of the aging management programs are
3 really just shells, that they are not complete, that
4 they are certainly not implemented.
5 There is a schedule for implementation in
6 the license renewal application, but all it says is
7 they are all going to be implemented before the end of
8 the current license period. But hopefully, they will
9 be a more aggressive schedule, not only for
10 implementation but also for developing the substance
11 of these aging management programs.
12 I wonder, has there been a lot of work
13 done since the January '05 inspection?
14 MR. DeLONG: Yes, sir, quite a bit. In
15 fact, yes, I know you will hear that here in a
16 subsequent presentation on the inspection that just
17 occurred, as a matter of fact was in progress when we
18 were here last.
19 DR. LEITCH: We have yet to see the
20 results of that inspection. So that's still in the
21 pipeline.
22 MR. CROUCH: In fact, all of our markups,
23 if you will, for all of the programs that we describe
24 here today is complete. In other words, those
25 programs are all developing in draft form. They are

1 not approved yet, but developed in the markup phase.
2 They have been developed by the project staff and
3 reviewed by the operating unit staffs for all the
4 program owners in the unit -- have reviewed those and
5 commented on them.
6 Those were what was the subject of review
7 for this inspection that was occurring a couple of
8 weeks ago when we were here last.
9 DR. LEITCH: Okay. Thanks. I will
10 probably have some more questions about that when we
11 get into that part of the agenda, but I just wanted to
12 set the stage for this here.
13 MR. DeLONG: We will talk about that.
14 DR. LEITCH: Okay. Thank you.
15 MR. DeLONG: Again on slide 8, these are
16 the programs that are existing aging management
17 programs that required no enhancement for license
18 renewal.
19 On slide 9, these are the aging management
20 programs that required revision to incorporate Unit 1.
21 In other words, they are programs that were
22 established after Unit 1 was shut down and were not
23 originally developed -- either originally developed
24 with Unit 1 at scope or didn't recognize the existence
25 of Unit 1 when they were developed, because it was

1 shut down. These have been revised to incorporate
2 Unit 1.
3 CHAIRMAN BONACA: A question I have with
4 respect to startup. You have -- Take, for example,
5 the first five here. You know, they are impacted
6 somewhat by the BWR VIP program. So you will have to
7 go through those inspections or requalifications or
8 whatever.
9 MR. DeLONG: Absolutely the case, to
10 conform with the appropriate VIP guidelines for those
11 inspections and ultimately, depending on what is
12 found, may be invoking VIP guidelines for repair.
13 CHAIRMAN BONACA: So whatever you identify
14 through those inspections and determine to need
15 additional work or whatever, you will put into
16 procedures that deal with all three units now. But
17 you will have differences between the units, won't
18 you?
19 For example, you are going to replace a
20 piece of piping that -- you know, with chromoly
21 piping. Will you still perform the same level of
22 inspections on that piping that you would do? Okay,
23 so you will have the same commitment?
24 MR. CROUCH: But when you go and pipe, for
25 example, the chromoly piping in the FAC program, you

1 will go in and take your baseline measures. Then you
2 will take another set of measurements, and you will
3 project where, going through the check works and the
4 FAC manager and so on.
5 CHAIRMAN BONACA: Yes. So you will
6 address the differences in that process.
7 MR. CROUCH; Right. You project when you
8 need to do all your various inspections, but it will
9 be in the program, just the same, even though it will
10 have the chromoly piping.
11 MR. DeLONG: In the case of vessel
12 internals, for instance, there's certainly going to be
13 differences between the three units in terms of not
14 only their condition but also, in some cases, what
15 components might be in those units, just depending on
16 what you have to do in terms of repair, for instance.
17 All of those things are addressed in the BWR
18 inspection guides and repair guides, and will allow us
19 to make the right decisions based on the inspection
20 results for repair or subsequent inspection.
21 CHAIRMAN BONACA: All right.
22 MR. DeLONG: On slide 10, here you see the
23 aging management programs that required enhancement.
24 This is enhancement with respect to the program and
25 its scope and the conduct of the inspections maybe or

1 even the inclusion of new scope that wasn't originally
2 there in the case of these programs.
3 Slide 11: These are new aging management
4 programs. As we talked about before, there are five
5 that affect all three units. They are listed there in
6 the first bullet, and then there is one that is Unit
7 1 only, and that is the Unit 1 periodic inspection
8 program that we will talk about here in a couple of
9 slides.
10 CHAIRMAN BONACA: Now that -- No, that's
11 fine. Okay.
12 MR. DeLONG: On slide 12: Our one-time
13 inspection program. It obviously applies to all three
14 units. It verifies the effectiveness of the aging
15 management programs by confirming that unacceptable
16 degradation is not occurring.
17 Where no aging management program is
18 defined, the inspections confirm one of two things,
19 either that there are no aging effects occurring or
20 that those aging effects are occurring at such a low
21 rate that it doesn't affect the intended function for
22 the extended -- during the course of the extended
23 period.
24 These one-time inspections are to be
25 completed prior to the period of extended operation,

1 and as close to the period of extended operation as we
2 can schedule them, given the operating conditions of
3 the station.
4 Examples of those items: We just picked
5 a few items to give you a sense for what types of one-
6 time inspections we will be doing. There are more.
7 With that, I am going to turn it over to
8 Bill Crouch to talk about our Unit 1 periodic
9 inspection program, which is certainly unique to
10 Browns Ferry.
11 DR. BARTON: Before you get onto that,
12 throughout the LRA you talk about one-time
13 inspections. Items are going to be covered by a one-
14 time inspection program, and you see it so many times.
15 It appears almost that the whole site is covered by a
16 one-time inspection program.
17 I just wonder, is that true, and how do
18 you manage that? I don't understand. Everything is
19 going to be done by a one-time inspection. I don't
20 see a heck of a lot of periodic inspections or other
21 inspection programs discussed or described in the LRA.
22 Everything is a one-time inspection.
23 I always thought one-time inspection was
24 reserved for selected items that you are going to do
25 before you go into another 20 years, things that --

1 you know, structures and buried stuff and, you know,
2 there's a handful of those things that don't get
3 inspected very often. So you go and do it as a one-
4 time before you go 20 years. You guys are doing --
5 everything seems to be one-time inspection program.
6 I'm confused.
7 MR. CROUCH: A wonderful lead-in to what
8 I was about to talk about.
9 DR. BARTON: That's why it's a perfect
10 question.
11 MR. DeLONG: There is confusion in the
12 original license renewal application and the SER, and
13 we are working with the staff to clear that up.
14 Throughout the course of making the license renewal
15 application, we used some terms interchangeably
16 sometimes and realized that it created confusion. So
17 let me explain.
18 There is actually three different types of
19 inspections that we kind of intermingled, using that
20 one term of one-time inspection. As part of the
21 scoping and recovery for Unit 1 restart, we have
22 performed many, many inspections on piping. We
23 sometimes refer to those as one-time inspections, but
24 they are not one-time inspections.
25 They are what we are now calling restart

1 inspections, and they were done purely for the
2 purposes of scoping out how much of the scope had to
3 be included in the Unit 1 recovery. They are also
4 providing a baseline of the current condition of the
5 systems prior to restart.
6 Then there are other inspections that are
7 being done, and that's the purpose of this next slide,
8 the Unit 1 periodic inspection program; and I will go
9 through it in a moment. But it is basically going and
10 looking at, for all those things that we have not
11 replaced in Unit 1 -- we replaced a large amount of
12 piping and valves and stuff like that. For those
13 things that we have not replaced, we want to do an
14 additional inspection before the period of extended
15 operation so that we know that those components are
16 still good, that they are still similar to the current
17 condition and results of Units 2 and 3.
18 Then there are one-time inspection
19 programs that are part of the license renewal
20 application, and that was what Rich was just talking
21 about. So we are working to clear up that term.
22 CHAIRMAN BONACA: Thank you. And now I'm
23 jumping ahead. So you go ahead. I'll ask a question
24 when you get there.
25 MR. CROUCH: Okay. So Unit 1 periodic

1 inspection program: We are still working out the
2 details with the staff on exactly the particular items
3 that are within the scope and exactly how we are going
4 to do it. But basically, what it will be, it will be
5 inspections -- Like we said, we are going to perform
6 inspections after Unit 1 is returned to operation to
7 verify that there are no additional aging effects
8 occurred.
9 We recognize that Unit 1 could potentially
10 be seeing some type of new aging, because of having
11 been shut down and laid up for so many years. So we
12 wanted to perform these inspections to make sure that,
13 once we get back operating, that something new and
14 unexpected is not occurring.
15 Based upon our operating experience from
16 Unit 3 which had a similar type shutdown and layup of
17 10 years, we don't expect to see anything, but this
18 will give us this added assurance that nothing is
19 happening.
20 CHAIRMAN BONACA: Well, no. I mean, Unit
21 3 was a good example of where restarting, then you
22 found that some of the piping had to be replaced. And
23 I agree that probably that experience is applicable,
24 I mean, with consideration for Unit 1. But I'm saying
25 that you always have surprises in other respects, that

1 you would have those kind of performance that required
2 replacement later on.
3 MR. CROUCH: So these Unit 1 inspections
4 will be inspections of non-replaced piping.
5 Obviously, the replaced piping is all brand new, and
6 you would not expect to see any effects of a layup or
7 effects from the previous operation or anything like
8 that. So this is looking at non-replaced piping.
9 We will conduct these -- The first round
10 of these inspections will be completed prior to the
11 period of extended operation but after several years
12 of Unit 1 operation.
13 So we won't start the plan up and the next
14 week they will perform an inspection of it and claim
15 that this satisfies this requirement. I don't know
16 the exact number of years that we are going to do it,
17 since we are still working out the details, but we
18 will let the plant operate some time to see if any new
19 type of aging mechanisms show up during this time.
20 CHAIRMAN BONACA: And you intend to submit
21 the program before the final SER?
22 MR. CROUCH: Yes. Ken, the program will
23 be finalized before the SER, won't it?
24 MR. BRUNE; Yes. We have already -- This
25 is Ken Brune. We have already submitted a new

1 Appendix description of the program. Hope to have
2 everything finalized, staff satisfied.
3 CHAIRMAN BONACA: And you will have enough
4 detail? That means that I don't expect that you will
5 have the periodicity of the inspections, the timing,
6 before you perform the first inspections, but other
7 elements -- I mean, you can provide them now. So to
8 the degree to which you can provide information, you
9 know, right now the SER doesn't have anything except
10 a quote: There is going to be a periodic inspection
11 program.
12 MR. BRUNE; Right.
13 MR. CROUCH: So partially in answer to
14 that question, once we do the inspection after we
15 restart but before the extended operation, then we
16 will do another inspection during the period of
17 extended operation; and based upon those three
18 results, the pre-restart, the post-restart, the prior
19 period and the post-extended operation period, we will
20 then analyze the data and determine what additional
21 inspections need to be performed and at what
22 frequency.
23 You may find at that point in time that
24 there is no new aging mechanisms occurring and that
25 your results are handled through other existing

1 programs, and nothing else needs to be done, or you
2 may need to continue monitoring. We will have to look
3 at the results and figure that out.
4 CHAIRMAN BONACA: Yes, after three points,
5 if we are comfortable.
6 MR. CROUCH: Right. We will have to be
7 comfortable with it.
8 DR. LEITCH: And you are going to think
9 about, hopefully, things that might be related more to
10 aging than to where. I mean, I guess -- I can't think
11 of a real good example, but we don't have much
12 experience with this. Perhaps that is why I can't
13 think of an example.
14 I'm back to my car that has low mileage,
15 and I look at the tires, and I inspect them and say,
16 well, those tires are fine and they still have plenty
17 of tread on them. So I don't replace them, but maybe
18 there's something else, other variables, the
19 sidewalls. The tread will still be fine, but the
20 sidewalls will go, which is more an aging than a wear
21 thing.
22 I guess the key here is to be thinking
23 about are there those kind of issues that could be
24 related more to age than to wear, and to be sensitive
25 for those types of things.

1 MR. CROUCH; I think that is precisely
2 what the program is designed to do, is again look for
3 some aging mechanism that is related to this extended
4 layup period that would not otherwise manifest itself,
5 say, in a unit that had been operating fundamentally
6 continuously through its original license period.
7 DR. LEITCH: Yes.
8 CHAIRMAN BONACA: And I think the SER has
9 a good discussion there, a quotation for some latent
10 effects and the need for essentially inspecting in
11 order to get a rate of degradation, aging degradation.
12 That is really the intent of the inspection program,
13 because that is a concern there.
14 MR. CROUCH: We have been talking up to
15 know about the classical license renewal issues of
16 scoping and TLAAs and aging management programs and
17 reviews. Now in response to some of your questions
18 that you had last time, we wanted to transition a
19 little bit and talk a little bit more the Unit 1 layup
20 program.
21 So on page 14, this is basically the same
22 information you saw before that we -- the Unit 1 layup
23 program, the criteria was the EPRI document, and we
24 had systems that were in dry layup and wet layup.
25 When we maintained the systems in dry layup, the

1 components were -- Obviously, if they were water-
2 filled components, everything was drained. The system
3 was placed in a condition where you had dehumidified
4 air being blown through the system. The conditions at
5 the outlet end of the flow path were monitored to
6 ensure that the relative humidity was below 60
7 percent.
8 We checked to make sure that there was no
9 standing water in the systems. We would go open the
10 low point drains. So we were ensuring that the system
11 was in an environment where you would not expect to
12 experience corrosion or other aging type applications.
13 The systems that were in wet layup: These
14 systems, the chemistry of the water was maintained
15 within normal operating chemistry for the most part.
16 Systems like the reactor vessel, the water chemistry
17 was maintained in accordance with the tech spec
18 limits, so that you would not expect to see any new
19 aging mechanisms that would exist in a layup system
20 versus what you would see in a system that was in
21 normal operation.
22 We took the lessons learned from the Unit
23 3 layup and subsequent restart and applied them to
24 Unit 1 in the way we did the layups, where we did
25 layups, what components we chose, that kind of thing.

1 So overall, we tried to fashion the program for Unit
2 1 just like what we had seen in Unit 3, because we
3 knew what the end result would be and the results we
4 expected to achieve.
5 CHAIRMAN BONACA: But, you know, as you
6 know, the SER has a number of points where it points
7 to an inspection in 1997 or other inspections at that
8 time where they found problems with the layup in the
9 early time, and you recognize that.
10 MR. CROUCH; Right. There were some
11 earlier problems. Those problems were addressed and
12 corrected, and the overall condition of the system
13 would be monitored as part of these inspections we
14 just talked about to make sure that any shortcomings
15 in the layup program did not adversely affect the
16 system.
17 Moving on to 15, you see some examples
18 there of the systems that were in layup, both dry and
19 wet. Not much really to talk about there other than
20 just to list the systems.
21 In all cases, our results of the layup met
22 or exceeded the EPRI guidelines. We saw very good
23 results in terms of the systems when you go and take
24 them back out of layup and do internal inspections of
25 them. The condition, the piping was in very good

1 condition. We did not see any kind of unexpected
2 degradation in any of these systems.
3 We performed visual examinations, surface
4 examinations such as PT or MT. We have done
5 ultrasonic examinations and remote inspections using
6 things like boroscopes to asses the condition of Unit
7 1. Even though we did all of this layup, both wet and
8 dry, we have not relied upon the fact that we've put
9 it in layup as the sole basis for saying that a system
10 is good prior to returning it to operation.
11 We have performed these inspections as we
12 talked about to go and reverify that our layup was
13 successful such that the systems will be capable of
14 performing their intended design function during the
15 current period of operation, and then we have assessed
16 that for the ability to extend on into the extended
17 period of operation.
18 CHAIRMAN BONACA: For the record, you use
19 the words that I liked, "as the sole basis." I agree
20 that you didn't do that, because I'm saying that you
21 did take some credit for the layup. Clearly, it was
22 in layup. You are reusing the component. Now you are
23 refurbishing, as you used the expression before, which
24 means OCB testing and all that kind of thing. But I'm
25 saying that, you know, there is some dependency on the

1 layup. That's why you are doing periodic inspections.

2 MR. CROUCH: Oh, we depend upon it from an

3 economic standpoint. But our point here is not that

4 we didn't depend upon it to maintain the viability of

5 the plant, but when get ready to restart this plant,

6 we will not stand up and say this system has got to be

7 good solely because it was in the proper kind of

8 layup.

9 CHAIRMAN BONACA: I agree, and you said

10 "solely," and I like that. It's different in the

11 bullet here.

12 DR. BARTON: Question: The secondary side

13 of the main condensers -- how were they maintained?

14 Was there a dryer or something involved with them?

15 MR. MOLL: Basically, the condenser -- The

16 steam side of the condenser was open. The air for the

17 layup would have been circulated through it as well as

18 up through the feedwater, that whole chain through the

19 feedwater heater on the steam side.

20 DR. BARTON: What did you do, block it off

21 at the top at the expansion joint or something? Was

22 it pulled through the turbine? I'm trying to figure

23 out if there is any degradation on the steam side of

24 the main condenser? How did you maintain that?

25 MR. MOLL: Well, mostly the condenser was

1 open to the atmosphere. We've had the low pressure
2 turbine and the casings apart on Unit 1. We have re-
3 tubed the Unit 1 condenser, and there will be
4 inspections of the condenser internals as part of Unit
5 1 restart.
6 MR. CROUCH; So the steam side of the
7 system was open to the atmosphere. The raw water
8 side, the tubs, they have all been replaced.
9 DR. BARTON: I understand. Put stainless
10 steel tubes in there.
11 MR. CROUCH: Stainless steel tubes.
12 DR. BARTON: I was wondering about the
13 steam side and what kind of corrosion you might have
14 had going on there in the last 20 years. That was my
15 concern.
16 MR. CROUCH: Any other questions about the
17 layup? We can give you more detail if you want to
18 know about specific systems or whatever.
19 The question that came up last time about
20 operating experience and the fact that there is
21 nothing documented in the SER basically about why the
22 operating experience for Units 2 and 3 is applicable
23 to Unit 1: This slide here is basically the same one
24 as what we talked about last time, talking about the
25 requirement for 20 years of operation and that Unit 1

1 meets this requirement, and it's 20 years since our --
2 more than 20 years since our original license was
3 granted to us, and that, therefore, we meet the
4 requirement 50.71.
5 The Unit 2 and 3 operating experience
6 being applicable to Unit 2 and 3: We talked about
7 that some last time, and I have been in the process
8 with my staff preparing a paper, and I've got the
9 draft here that we will be working with the NRC staff
10 to add into the SER. That basically goes through and
11 talks about how we took the lessons learned from Units
12 2 and 3, both operation and layup, and applied them to
13 Unit 1 in terms of what had to be replaced, what had
14 to be inspected, what we have seen after operation,
15 that kind of stuff that we have incorporated into
16 this.
17 CHAIRMAN BONACA: And I understand. I
18 mean, I don't -- We are not taking here a legal
19 position. We are talking about the intent of the
20 rule. The statement of consideration of very clear
21 about not so much he 20 years. I mean, we have seen
22 exceptions taken before, and we have supported them.
23 But the substance, which is the intent of the rule,
24 having substantial plant specific operating
25 experience. The statement of consideration is very

1 clear about that.

2

3 You know, again, what we asked for was
4 identified to us. Those compensatory steps that you
5 have made where you think that it may not cover. I
6 mean, you yourself in, if I remember, Appendix B, you
7 are stating that during the performance of the aging
8 management activities, the operating experience of
9 Unit 1 may not be the same as the operating experience
10 of Unit 2 and 3 due to the layup program implemented
11 on Unit 1 during the extended outage.
12 So there is an issue and, to the degree to
13 which you are addressing it, you know, that is
14 satisfactory to us. I would like to read what it is
15 coming out to be.
16 MR. CROUCH: So we will provide
17 information to the staff of our basis and
18 justification for why we have taken the information
19 from 2 and 3 and used it to come up with the scoping
20 for Unit 1 restart, as well as the scoping for all the
21 future inspections as we talked about.
22 CHAIRMAN BONACA: And you talk about, I
23 imagine, the periodic inspections that are also a
24 compensatory step in license renewal. I mean, we
25 cannot ask for more than the inspections. That is

1 really what license renewal ends up being. You are
2 taking care of equipment by looking at it, identifying
3 aging mechanisms, and fixing them.
4 So to me, that is a significant step you
5 are taking toward complying with this requirement.
6 MR. CROUCH: That's correct.
7 DR. SHACK: I think it goes the other way.
8 I mean, I don't think anybody denies that industry
9 experience in Unit 2 and 3 experience and applicable
10 to Unit 1, and you can take all those into
11 consideration. The question is, is there something
12 plant specific about Unit 1 that isn't covered by
13 that? You know, to me, you've tried to address that
14 with the periodic inspections, you know, that there
15 was something different there.
16 CHAIRMAN BONACA: Right.
17 DR. SHACK: But it is really is -- I am
18 all for applying all the experience that you have
19 learned everywhere else, not just on 2 and 3, but
20 every BWR in the United States, and taking that into
21 account. But it's that other converse statement that
22 I thought was sort of indicated by the 20 -- you know,
23 is there something plant specific. So that's really
24 the focus of where the question arises.
25 MR. CROUCH; Obviously, if we knew up

1 front what these other unknown aging mechanisms were,
2 we would have put them into programs right now, but --
3
4 DR. SHACK: As far as you can tell, all
5 the piping materials are the same -- you know, you
6 haven't --
7 MR. CROUCH: We have not introduced any
8 new types of materials into Unit 1 that's not already
9 existing in 2 and 3. Now there may be a slightly
10 bigger scope of it or slightly smaller scope of it,
11 depending on what was replaced, like we talked about
12 on the recirc piping.
13 We will replace all of the recirc piping
14 with 316 MG, whereas Units 2 and 3 have a mixture of
15 304 and 316, but we've got both materials in 2 and 3,
16 316 and 304, which are the same as what we will see in
17 Unit 1. We haven't put any new materials in Unit 1
18 that don't already exist, at least to some extent, in
19 2 and 3, in the same application and the same
20 operating environment.
21 On page 17, it's kind of a summary of what
22 we were just talking about, in that Unit 1 has 10
23 years of operation. Unit 3 was shut down for 10
24 years. During that shutdown period, we did a layup
25 very, very similar to what we've got or had in Unit 1.

1 So we know what the expected results of that layup
2 would be. We know what the post-restart results of
3 that layup would be.
4 During the 10 years of operation that
5 we've had on Unit 3 since the 10 years of shutdown, we
6 have seen no new layup induced aging effects. So we
7 haven't gotten into the period of operation and
8 suddenly discovered something that was a direct result
9 of having been laid up in whatever manner it was.
10 We took the experience from the layup of
11 Unit 3 and applied it over into Unit 1. A couple of
12 examples we have here are the examples like we talked
13 about before on the RHR service water piping, which is
14 a raw water system. It comes from the intake
15 structure. It is underground piping. It comes up
16 into these RHR service water tunnels that you talked
17 about, which is basically an underground tunnel that
18 the piping is -- It's not buried in the tunnel. It is
19 running above grade but inside the tunnel. Then it
20 goes through the wall into the reactor building.
21 We saw in Unit 3 that the piping just
22 inside the reactor building was severely degraded.
23 You could go and take wall thickness measurements on
24 it, and the pipe basically had holes in it everywhere.
25 When we went and cut the pipe off and

1 looked from the reactor building side into the
2 tunnels, you could look down the pipe about 100 feet
3 or so, and the piping was perfectly intact down
4 through there. We asked ourselves what's the
5 difference.
6 The difference is that inside of the
7 reactor building the temperature is up. You know,
8 normal reactor building type temperature is 65 to 95
9 degrees, where over in the tunnel it is an underground
10 type environment, a cave. So it is maintained much
11 cooler. So you did not see this aging mechanism
12 occurring over there.
13 When we found this problem in Unit 3, we
14 immediately went and did UT measurements on the piping
15 in Unit 2 that was currently in operation to make sure
16 that this wasn't a phenomenon in the Unit 2 piping
17 that was inside the building. We didn't see the
18 phenomenon there at all.
19 The difference is that during Unit 2 layup
20 -- or during Unit 2 shutdown that piping was
21 maintained full of water the entire time. So it was
22 not in a moist air environment. It was totally liquid
23 filled during the entire time.
24 When we went over to Unit 1 and looked at
25 it, you saw there we have two sets of pipe that were

1 in operation for Unit 2 support and two that were in
2 the drained type condition. They followed exactly
3 what we saw over in Unit 2 in that the pipes that were
4 full of water looked very good.
5 We have since gone and cut those as part
6 of Unit 1 recovery, replacing valves. I looked down
7 those pipes, and they do not have any degradation like
8 what we saw in Unit 3.
9 Over on the other loop, which was the loop
10 that was drained, it was in the same condition as what
11 we saw in Unit 3. It was severely degraded, and the
12 material was basically nonexistent. It had corroded
13 from the inside out and was gone.
14 So we took that lesson learned on Unit 3
15 when we went into the Unit 1 scoping, and applied it
16 directly. We also saw the same kind of thing on some
17 small bore piping in the EECW or raw cooling water
18 systems. We had these lines. They were isolated, but
19 some of the isolation valves leaked through.
20 So we didn't have the exact same geometry,
21 but you set up the same conditions by having basically
22 an air filled line with a small amount of water in a
23 warm environment, and the piping degraded, and we are
24 having to replace that.
25 As we talked about, Unit 1's licensing

1 basis will be the same as Unit 2 and 3 at restart by
2 virtue of the items that are in Appendix F. We didn't
3 re-include a list of the items in Appendix, but
4 there's 13 basic design feature type things in here,
5 such as adding in the hardwell vent, replacing the
6 IGSEC susceptible pipe, different things. It's a
7 whole list of things. We've gone down through there.
8 DR. LEITCH: While we are talking about
9 licensing basis, there was a note that intrigued me
10 that I didn't understand. There is actually a
11 footnote to page 2.1-2 of the license renewal
12 application that says, "Licensing action is planned to
13 change the license basis from 10 CFR Part 100.11 to 10
14 CFR 50.67."
15 I don't know what that is all about. I
16 don't understand the significance of that. Does that
17 apply to all three units? What is the story on that?
18 MR. CROUCH: Henry?
19 MR. JONES: This is Henry Jones from
20 Browns Ferry. I believe that refers to AST transition
21 we made just recently where you go to 10 CFR 50.56, I
22 believe it is.
23 DR. LEITCH; Sixty-seven.
24 MR. JONES: Sixty-seven? That's what it's
25 referring to, AST.

1 DR. LEITCH: And that licensing action has
2 been approved?
3 MR. JONES: That's correct, for all three
4 units.
5 DR. LEITCH; Okay.
6 MR. CROUCH: Approved for all three units,
7 and has been implemented on Units 2 and 3, and will be
8 implemented as part of restart for Unit 1.
9 DR. LEITCH: Okay. Thank you.
10 MR. CROUCH: Once we get ready to restart
11 Unit 1, we will have the same basic design,
12 configuration, operating procedures, technical
13 specifications, and UFSAR that will be identical to
14 Units 2 and 3, obviously with this discussion like we
15 have already had about EPU, which will affect the
16 UFSAR in some places. It doesn't affect tech spec
17 things, but as far as the basic operation of the
18 plant, Unit 1 will be operationally identical to Units
19 2 and 3.
20 We have incorporated our internal and
21 external plant operating experience into the Browns
22 Ferry Corrective Action Program, so that if we have a
23 problem that we know of related to license renewal,
24 some type of an aging mechanism, that is entered into
25 our Corrective Action Program. There is an action

1 assigned for all three units.

2 Moving on to page 18, as part of the

3 process of going through the license renewal and

4 discussions back and forth with the staff, we have

5 made various commitments. These commitments are made

6 in the application and in the subsequent request for

7 additional information.

8 Once we have made the commitment, we have

9 consolidated all of these into one letter so that they

10 are all in one place. Each one of these commitments

11 is also tracked in two places on site. We have a

12 system that we use to track our licensing commitments.

13 We refer to it as TROY.

14 We also have entered it into the

15 Corrective Action Program as what we call a PER, and

16 each one of these databases has individual steps for

17 each commitment for each unit. There's approximately

18 114 commitments made to date.

19 By entering it into the two different

20 tracking systems, we will ensure that the actions get

21 tracked and get implemented on their due dates.

22 As part of the --

23 DR. LEITCH: I keep jumping ahead to the

24 inspection report, which we are going to hear about.

25 But there was an indication there that there seemed

1 not to be a good turnover process to the permanent
2 plant staff. In other words, I got the feeling that
3 there was a license renewal organization, and then
4 there was the permanent plant staff that kind of was
5 a little bit insulated from the license renewal
6 effort.
7 I just wonder. These commitments -- are
8 these ongoing commitments to carry out the various
9 inspections? Do you plan -- Let me ask the question
10 this way. Do you plan to continue to have a license
11 renewal organization or will all this activity be
12 integrated with the plant staff?
13 MR. CROUCH: No. All of these aging
14 management programs have a site owner. Every one of
15 the site owners that we have for these aging
16 management programs were involved in this very recent
17 review and comment process for the draft aging
18 management programs that the project team developed,
19 but they are mine. I own them. So I'm in front of
20 you today.
21 All of those aging management programs are
22 owned by the station, by the operating staff.
23 DR. LEITCH: Okay. Good. Good. I think
24 that's almost the way that it has to be. There has to
25 be that sense of ownership.

1 MR. CROUCH; Absolutely. These are
2 ongoing -- Almost all of them are ongoing programs
3 that we will manage through the extended operating
4 period. So they are clearly mine, and I own them.
5 DR. LEITCH: Thanks.
6 MR. CROUCH: Moving on to page 19. As
7 part of going through the license renewal application
8 and the RAI, we have currently three open items, the
9 first two related to core plate hold-down bolts and
10 the drywell shell corrosion. Those are talked about
11 in the SER. We are in the process right now of
12 talking with the staff to come up to a resolution on
13 these two items.
14 The third one, the inspection of the RHR
15 service water piping -- that's a new item that came up
16 during this recent inspection when the Region II staff
17 was in. Once again, we are in the process of
18 discussing it with the Region II staff as to how to
19 resolve this open item.
20 DR. BARTON: What is that one about?
21 MR. CROUCH: In the intake pumping station
22 the water that is going to the RHR service water pumps
23 -- it comes in through the traveling screens into a
24 set of sumps that the condenser circulating water
25 pumps take suction off of.

1 Coming out of that sump, there is three
2 pipes that go -- They are embedded pipes that go
3 through the structure back to another set of sumps
4 where the RHR service water pumps take suction from.
5 The pipe is embedded. So you can't get to
6 it from an external. During the December time frame,
7 the statement was made that we would perform an
8 inspection of that piping. Our staff interpreted that
9 or intended that to be an external inspection of the
10 piping.
11 They later realized that the piping was
12 embedded and could not be inspected. The Region II
13 staff would like to have a visual inspection of the
14 internals of the piping. We have been providing
15 justification for them of why we do not think a visual
16 internal inspection is required.
17 Basically, the system is designed such
18 that immediately upstream of the piping, the piping
19 gets a chemical injection for both corrosion
20 inhibitors and biocides, and the water that has this
21 high concentration of corrosion and biocide goes
22 immediately through that piping, and our basic
23 position is that the injection of the chemicals along
24 with the configuration ensures that that piping
25 remains open, that it will not get blocked up, and it

1 will continue to pass the water to the circulated RHR
2 service water pumps. So that is still under
3 discussion right now.
4 MR. SUBBARATNAM: Bill, this is Ram
5 Subbaratnam. While we are on the topic of the open
6 items, because of the enormous interest in this Unit
7 1 periodic inspection program, we are going to call it
8 an open item, and we will track it that way. I wanted
9 to let you know that. So it is going to be four open
10 items on this now.
11 MR. CROUCH; Okay.
12 DR. LEITCH: I suppose, during the staff's
13 presentation, we are going to hear more about these
14 open items?
15 MR. SUBBARATNAM: That's right.
16 MR. CROUCH: Page 20, summarizing what we
17 have talked about. We've got a three-unit application
18 at current licensed thermal power, and it takes some
19 understanding of what that means at current licensed
20 thermal power, since we are in the process of
21 transitioning to a new licensed thermal power for all
22 three units.
23 When we prepared our license renewal
24 application, we used the generic Aging Lessons Learned
25 document, Rev. 0. We used this for preparing our

1 aging management reviews and programs, and we also use
2 it as a basic guidance for how to do your TLAAs.
3 The Appendix F, which is the list of the
4 Unit 1 programs where -- programs and modifications
5 that we are making to ensure that Unit 1 will be
6 consistent with 2 and 3. This way we can tell you
7 that the application will be consistent for all three
8 units. And as we talked about, the unit 2 and 3
9 operating experience is applicable to Unit 1.
10 So we are comfortable that, when we get
11 ready to restart Unit 1, that we know how this plant
12 is going to operate, and we know how it is going to
13 age, based upon what we have already seen in Units 2
14 and 3.
15 Any other questions?
16 DR. LEITCH: Just a comment. I found two
17 things particularly helpful in the license renewal
18 application. One was Appendix F, and the other was
19 the bold border highlighting to attract attention to
20 the differences between Unit 1 and 2 and 3. I thought
21 both those things were helpful in the review.
22 DR. BARTON: I have one question. I'm not
23 too clear on -- The maintenance rule has not been
24 implemented on Unit 1, but it will implemented prior
25 to restart. Correct?

1 MR. CROUCH: That is correct.

2 DR. BARTON: So what's been done with
3 respect to how maintenance was performed and the
4 records? What's been done that you could compare it
5 to kind of the maintenance rule requirements for
6 systems on Unit 1?

7 MR. CROUCH: The Unit 1 systems prior to
8 restart -- we will have gone through for systems that
9 are not being replaced, either components being
10 replaced or piping replaced -- we will have gone
11 through and brought it up to current standards on
12 preventive maintenance, any kind of inspections that
13 have to be done, all the systems will be calibrated,
14 and at that point in time, once we get ready to turn
15 the system back on, then it will be entered into the
16 maintenance rule program for the accumulation of
17 operating experience.

18 DR. DeLONG: I think there is another
19 aspect, too. There are, certainly, some Unit 1
20 systems, electrical distribution, for instance, RHR
21 service water, raw cooling water, that are shared in
22 common systems that are in operation today and are in
23 scope.

24 DR. BARTON: Yes. Those aren't the ones
25 I'm worried about.

1 MR. DeLONG: And also there is a -- A
2 portion of our transition includes establishing the
3 performance criteria for those systems. We will
4 certainly use our experience in Unit 2 and 3 to assist
5 with that, and of course, the PSA results for Unit 1
6 operating to establish that performance criteria for
7 those systems.
8 The scoping for Unit 1 is primarily
9 identical to Unit 2.
10 DR. BARTON: Okay.
11 CHAIRMAN BONACA: Any other questions for
12 TVA? If not, we will take a break now, and meet again
13 at 2:30 for the staff presentation.
14 (Whereupon, the foregoing matter went off
15 the record at 2:14 p.m. and went back on the record at
16 2:32 p.m.)
17 CHAIRMAN BONACA: Okay. Let's resume the
18 meeting, and now we have the staff presentation of the
19 SER.
20 MR. SUBBARATNAM: Thank you. My name is
21 Ram Subbaratnam. I am the Project Manager for the
22 Browns Ferry license renewal application. I am being
23 assisted by Yoira Diaz, who is also a PM, and she will
24 be presenting her findings on Chapter 4 following my
25 presentation.

1 TVA has got three major licensing action
2 requests currently under review with the NRC, namely
3 Unit 1 restart, an extended power uprate request,
4 including this license renewal request.
5 The ACRS Subcommittee was kind enough, and
6 had previously accepted, TVA's request and toured the
7 plant and the Region II in the month of August of
8 2005. TVA also appeared to make the presentation to
9 the Subcommittee on September 21, 2005, on all the
10 licensing actions.
11 As the record with the Subcommittee, this
12 presentation is only related to the safety review
13 matters of the license renewal application. As
14 previously recently stated, this license renewal
15 application request is at the currently authorized
16 power level and does not include the extended power
17 uprate. Next slide.
18 DR. BARTON: How come you only have two
19 open items on your slide?
20 MR. SUBBARATNAM: Yes. I think that was -
21 - That is an error. We are going to correct it.
22 There's going to be four open items. In fact, there
23 are only three open items related to the SER. Another
24 inspection had added the fourth one. So we will
25 officially have four open items on this SER which we

1 will have to close before they come to the final one.
2 Section 2.1, scoping and screening
3 methodology - seismic anchorage. The applicant
4 performed a detailed review of the seismic
5 qualification documentation to identify the non-safety
6 related piping, supporting heat coolant anchors or
7 other components within the scope of license renewal
8 for 54.4(a)(2) for the cases where the non-safety
9 related piping or components are directly connected to
10 safety related piping or components.
11 This review included the identification of
12 each seismic class boundary identified in the current
13 licensing basis. As a result, from the expanded scope
14 to satisfy the refined criteria, the applicant brought
15 two new portions of piping, components of existing
16 systems, and two additional structures were added to
17 the scope of license renewal. These structures were
18 the rad waste and service buildings. Next slide,
19 please.
20 DR. LEITCH: I don't think this is
21 necessarily a TVA matter, but I was wondering about
22 the turbine electrohydraulic control system, as far as
23 scoping. I guess we generally consider that to be
24 active, and so that's the reason it is not in scope.
25 I notice the TVA application indicated that it was not

1 in the scope, but there are things that can happen to
2 the turbine EHC system that certainly affects safety
3 related equipment.
4 I am thinking about not so much the
5 electronics, which are clearly active, but the
6 hydraulic portion of those systems. I guess they have
7 always been excluded, have they not?
8 MR. SUBBARATNAM: That's right. I think,
9 typically, they are excluded, but I can ask staff for
10 mechanical scoping if they would like to take that.
11 DR. KUO: Any staff member has anything on
12 it or have knowledge about that? We will take this
13 under advisement. We will get back to you on that.
14 DR. LEITCH: It's not really related to
15 this application. It's more just a general curiosity
16 question.
17 DR. KUO: Okay.
18 DR. LEITCH: But there can be significant
19 plant transients caused by -- and have been
20 significant transients caused by rupturing of that
21 piping or vibration in that piping, the piping hangars
22 not properly set and so forth.
23 MR. SUBBARATNAM: So why could not be
24 included in the (a)(2) classification of NSR affecting
25 safety related components? Okay.

1 DR. LEITCH: Yes. That's the essence of
2 the question.
3 DR. BARTON: Browns Ferry -- does 1 have
4 an EHC system or does it have a mechanical system?
5 DR. LEITCH: No, they do have an EHC
6 system.
7 DR. SIEBER: Yes, that's the right age for
8 it. The insurance company pays a lot of attention to
9 the EHC systems, but the safety function is performed
10 by the main steam isolation valves.
11 DR. LEITCH; Well, if the bypass system
12 fails. I mean, when I'm saying the EHC system, I'm
13 including the turbine bypass system and so forth.
14 MR. SUBBARATNAM: Okay. Section 2.1:
15 Scoping and screening methodology secondary,
16 containment integrity: This item pertains to seismic
17 qualification of containment penetration seals and the
18 associated piping and supports outside of the
19 secondary containment.
20 The staff wanted information how Browns
21 Ferry assured these seals remain seismically qualified
22 and remain functional if a potential age-related
23 degradation occurred on the non-safety related piping
24 attached to it.
25 After the plant walkdown, the applicant

1 verified that the few mechanical systems required
2 system boundary changes that affected either the
3 scoping and screening or AMR review results, and that
4 there were no new components added. These boundary
5 changes were duly incorporated because of this
6 walkdown.
7 Section 2.4 --
8 DR. LEITCH: Just before you move on,
9 something I read indicated that the containment
10 atmospheric dilution system was just a post-LOCA
11 system. I was wondering, were the Browns Ferry
12 containments required to be inerted at power or is it
13 indeed only post-LOCA?
14 MR. SHACK: I think they are. Aren't all
15 BWR?
16 DR. LEITCH: Far as I know they were.
17 That's why I was surprised. It doesn't really affect
18 the scoping. It's just some of the wording there, and
19 maybe I was just misreading it, but it had the
20 implication -- It didn't clearly state, but it had the
21 implication that it was only a post-LOCA requirement.
22 It's just a curiosity question. Thank you.
23 MR. SUBBARATNAM: Section 2.4 on scoping
24 and screening of containments, structures and
25 supports: Open item 2.4-3 on drywell shell corrosion.

1 During the review of this system, the
2 staff identified a concern that any water leakage
3 resulting from a potential failure of the drywell to
4 reactor building refueling cavity seal leakage
5 potentially degrades the inaccessible surface of the
6 drywell.
7 In discussing this issue with the
8 applicant, the staff reports two options to the
9 applicant: One, to include the aging of the refueling
10 cavity seal into the scope of license renewal, so that
11 that will assure that the potential degradation of the
12 inaccessible side of the drywell is monitored and
13 managed; or, alternately, the staff would also like to
14 return an option to periodically monitor the
15 degradation, if any, of the inaccessible side of the
16 drywell by some suitable testing matters, such as
17 ultrasonic testing.
18 This item is still open. We are still in
19 dialogue with the applicant how to approach the
20 solution for this item.
21 DR. LEITCH: Reading between the lines, it
22 sounds like this is kind of a hard spot. Right? I
23 mean, I think we are at sort of an impasse here, are
24 we?
25 MR. SUBBARATNAM: Well, actually, the

1 thing is that the licensee is arguing the refueling
2 cavity seal strictly is used only for doing the pool
3 transfer. It is not --
4 DR. LEITCH: Well, that's where they leak.
5 MR. SUBBARATNAM: Yes. Well, even the
6 leak, yes, that is true. So that's why we are still
7 working with them, but we will resolve one way or the
8 other, and we will get it in the scope, unless the
9 applicant will like to make a solution right here.
10 Section 2.5: Scoping and screening of
11 electrical and I&C systems. The applicant performed
12 scoping and screening of I&C components using the
13 spaces approach. The applicant had excluded the
14 source vent monitor and the intermediate monitor
15 instrument cables from the scope of license renewal,
16 because these systems were designated non-safety
17 related in the plant specification.
18 After dialogue with the staff, since the
19 intermediate monitor circuits were part of the
20 surveillance specification, they were eventually
21 brought back into the license renewal scope. The
22 applicant also agreed to bring the IRM circuits to be
23 managed by appropriate aging management program.
24 MR. LEITCH: That same discussion also
25 referred to the APRMs?

1 MR. SUBBARATNAM: The discussion was only
2 about SRMs and IRMs. SRMs clearly were not in the
3 plant spec. So we couldn't get it in. The IRM also
4 was disconnected as not in the tech spec, but we could
5 go back in the surveillance specifications where we
6 found a linkage where the IRMs were required, and the
7 licensee had to agree to bring it into scope or at
8 least to put them in.
9 2.6: Integration of Browns Ferry Unit 1
10 restart activities and license renewal activities:
11 The element unique to Unit 1 is that the restart
12 activities include modifying the Unit 1 licensing
13 basis to make consistent with the current licensing
14 basis at Units 2 and 3.
15 The applicant identified 13 Unit 1
16 differences that will be eliminated when restart
17 activities are completed. The license renewal
18 application review is performed under a regulatory
19 framework that ensues as each activity item defined in
20 the license renewal application Appendix F is
21 completed. The corresponding highlighted or the bold
22 bordered text in the license renewal application will
23 apply to Unit 1.
24 The only change to the application will be
25 to the bolded border. No changes are required to

1 scoping and scanning results, the aging management
2 review results or the TLLS.
3 The staff reviewed all the bold bordered
4 items in the LRA as they will exist when Unit 1
5 restarts. That is focusing on the material, the aging
6 effect, and the aging management program of components
7 and piping as they exist in Units 2 and 3. This
8 answers to an earlier question.
9 DR. LEITCH: Yes. Thank you.
10 MR. SUBBARATNAM: Next slide, please.
11 2.7: Conclusion for scoping and screening: ON the
12 basis of its review, the staff concluded, pending
13 resolution of the open item 2.4-3, that the applicant
14 had adequately identified those systems and components
15 that are within the scope of license renewal, as
16 required by 10 CFR 54.4(a), and those systems and
17 components that are subjected to an AMR, as required
18 by 10 CFR 54.21(a)(1).
19 Section 3.0 on aging management program:
20 Basically, it is a same repeat of the slide what the
21 TVA projected. There are 39 aging management
22 programs. Thirty-eight of them are common for all the
23 three units. One is specific to Unit 1, which is the
24 Unit 1 periodic inspection program. There are six new
25 programs, and four plant specific programs.

1 We will talk about a few highlights or the
2 exceptions which staff agreed during review of these
3 aging management programs. This is an exception to
4 the inspection of overhead heavy load and light load
5 handling systems program.
6 The applicant requested an exception to
7 the overhead heavy load and light load handling
8 systems program, such that it may not monitor for
9 crane fatigue. The staff evaluated the reactor
10 building crane fatigue as a TLAA.
11 This TLAA analysis remains valid for the
12 60 years with 7,500 cycle estimate, which is a very
13 small fraction of a 100,000 cycle design. Hence, the
14 staff concurred with the applicant that the fatigue
15 monitoring program is not required for the extended
16 duration of operation.
17 Section 3.0 on buried piping and tanks
18 inspection program: The applicant relies solely on
19 opportunistic inspection to check buried piping. If
20 there are not any opportunity inspection, the buried
21 piping will not be inspected. However, staff
22 deliberated with the licensee, and finally the
23 applicant agreed to inspect the buried piping within
24 the 10 years after entering the period of extended
25 operation, unless conclusive opportunistic inspections

1 that provide that a representative sample have
2 occurred within the 10 year period. If that didn't
3 happen, then the licensee agreed, they committed to
4 perform a focused inspection.
5 If no inspection is conducted, then we
6 will pull up a little of those piping, and they are to
7 come back and show us. We do a focused inspection to
8 see why the piping was not inspected.
9 CHAIRMAN BONACA: Consistent with GALL.
10 MR. SUBBARATNAM: Yes. Section 3.0:
11 Aboveground carbon steel tanks program: The staff
12 identified the aging management program does not
13 perform thickness measurements of fuel oil tanks'
14 bottom surfaces. We identified this to the applicant,
15 and finally the applicant revised the one-time
16 inspection programs to require ultrasonic thickness
17 measurements of the fuel oil tank bottom surfaces to
18 ensure that significant degradation is not occurring.
19 This is again one of those GALL
20 confirmations.
21 Confirmatory Item 3.3.2.35-1 on auxiliary
22 systems. Loss of preload and cracking of bolting in
23 the aux system.
24 This confirmatory item pertains to the
25 loss of preload due to stress relaxation and cracking

1 of carbon steel bolting of used in auxiliary system.
2 The staff required an inspection team confirmation
3 through the plant regards the results of any self-
4 assessments, inspections or maintenance activities on
5 proper bolting and procedures.
6 Staff requested the Region II AMR
7 inspection team to verify this is a part of the AMR
8 inspection confirmation. I am sure Cahill will make
9 a reference to this in his presentation. The team
10 verified the confirmatory item in a recently concluded
11 inspection, and this will be dispositioned in the
12 inspection report to be issued in November 2005.
13 Section 3.5, the aging management review
14 of civil structures and components: Inspection of
15 inaccessible concrete structures, primarily of the
16 intake structures, are not performed due to hazardous
17 conditions for the divers.
18 Staff needed historical site groundwater
19 chemistry test results, groundwater sampling, and
20 testing frequency to conclude if indeed the
21 environment at Browns Ferry was nonaggressive. As
22 seen from the table of data, TVA verified this
23 conclusion and provided the data as shown in the table
24 and, as you can see, it is nonaggressive.
25 Section 3.7 on aging management review of

1 Unit 1 systems in layup: In describing the wet layup
2 methodology, the applicant stated that TVA did not
3 solely rely on Unit 1 layup program, like Bill Crouch
4 described, during the extended outage. Staff,
5 however, in reviewing this, especially in Section 3.7
6 of the SER, needed additional information from the
7 applicant to conclude that no new degradation have
8 occurred in the extended outage.
9 Specifically, the staff wanted to find out
10 that (1) severe aging did not occur during the
11 extended outage; (2) additional aging properly
12 identified, evaluated and managed; and to report the
13 aging management can distinguish the aging due to the
14 extended period from the aging due to future
15 operations. They wanted that confirmation.
16 The result was that Browns Ferry committed
17 to the Unit 1 periodic inspection which will be
18 conducted through the extended period of operation.
19 CHAIRMAN BONACA: Now before you move on,
20 is this going to be a confirmatory -- No?
21 MR. SUBBARATNAM: No. To open item
22 category, no, because we have too many items to be
23 resolved on this, and staff is going to need more
24 expanded scope of the elements. So we are going to
25 basically an open item, because also we don't have the

1 staff evaluation per se in the aging management
2 program part of the section of the SER. So we think
3 it is proper we can make it an open item.
4 CHAIRMAN BONACA: And if I understand it,
5 to try to have it in the final SER.
6 MR. SUBBARATNAM: Yes, we will have it in
7 the final SER.
8 Section 3.7. This is the Unit 1 periodic
9 inspection program. Browns Ferry submitted the Unit
10 1 periodic inspection program. The staff needed
11 additional information of the program elements, which
12 involved scope, the sampling basis, detection of aging
13 effects, monitoring and trending, and suitable
14 operating experience.
15 So once we complete all of this
16 information and when we update our SER, we will bring
17 it back to the Committee again.
18 DR. KUO: Now this is an open item, is it?
19 MR. SUBBARATNAM: Yes, this is an open
20 item.
21 DR. KUO: No longer confirmatory?
22 MR. SUBBARATNAM: No, it is no longer a
23 confirmatory item.
24 Section 3.8: Conclusion of the aging
25 management reviews and the aging management programs.

1 On the basis of its review of the AMR
2 results and the AMPs, with the exception of the open
3 item on the Unit 1 periodic inspection program, the
4 staff concludes that the applicant had demonstrated
5 the aging effects will be adequately managed so that
6 the intended functions will be maintained consistent
7 with the current licensing basis for the extended
8 period of operation, as required by 54.21(a)(3).
9 DR. BARTON: Got a question for you. In
10 the SER on fire protection programs, the applicant
11 proposed 18-month inspection interval on carbon
12 dioxide fire suppression systems?
13 MR. SUBBARATNAM: Right.
14 DR. BARTON: GALL suggests or recommends
15 12-month, and you gave in to the 18-months. Is the
16 GALL wrong, or what?
17 MR. IQBAL: I think that 18 months is the
18 licensing basis. That's why we accepted that
19 frequency. GALL recommends 12 months. Right. But
20 their licensing basis is 18 months.
21 DR. BARTON: So are you guys going to fix
22 GALL? Has this come up? I don't remember this coming
23 up before.
24 DR. KUO: We will take this as a takeaway
25 action here.

1 DR. BARTON: Pardon?

2 DR. KUO: I say we will take this away for

3 action, because it has to be consistent. Right.

4 DR. BARTON: Recommended 12, and their

5 basis is 18. You are going to accept the 18, and you

6 got to do something to GALL.

7 DR. KUO: We will have to go over this.

8 GALL is our standard requirements -- not the

9 requirement, the recommendations, but the guidelines

10 for the staff unless they are citing a justification.

11 So we are going to look at it.

12 DR. BARTON: Okay. Thank you.

13 MR. SUBBARATNAM: Is there any other

14 question on this section?

15 Well, then Yoira will present the Section

16 4 on the time limited aging analyses.

17 MS. DIAZ SANABRIA: Yes. Good afternoon.

18 I am Yoira Diaz Sanabria. I started working as

19 project manager for the Browns Ferry license renewal

20 application since January 2004. Today I will be

21 discussing the time limited aging analyses, known as

22 TLAAs, contained in Section 4 of the Safety Evaluation

23 Report.

24 These TLAAs included reactor vessel and

25 internals neutron embrittlement, metal fatigue,

1 environmental qualification, primary containment, and
2 other plant specific analyses.
3 The applicant provided the analysis of the
4 upper shelf energy thermal shock and adjusted
5 reference temperature contained in the reactor vessel,
6 internal neutral embrittlement TLAA. No open issues
7 were identified in these sections.
8 For open shelf energy, the applicant
9 performed a plant specific analysis that satisfied 10
10 CFR 50, Appendix G criteria of 50 foot-pounds. The
11 applicant evaluated the fracture analysis by using the
12 equivalent margin analysis methodology, which is based
13 on copper and fluence values.
14 In our independent review --
15 DR. SHACK: Why would they assume it to be
16 less? I mean, did they calculate them to be less when
17 they did the upper shelf?
18 MS. DIAZ SANABRIA: Ganesh?
19 MR. CHERENKI: I am Ganesh Cherenki from
20 the Materials Branch. The upper shelf, actually, they
21 used because they don't have the original upper shelf
22 background materials. So they have to use the --
23 report which is approved by staff, BWR Reactor 74, and
24 based on that, we did the analysis, and all the
25 analysis in the background region involvement were

1 bounded by the topical report.

2 DR. SHACK: Hasn't there been some dispute

3 recently about how fluences are computed in BWRs?

4 MR. IQBAL: Lambros.

5 DR. SHACK: That's Lambros? Okay.

6 MR. IQBAL: I'm not quite sure what the

7 dispute was about.

8 DR. SHACK: I just thought there was some

9 dispute over how the fluences were calculated, that

10 the codes were under discussion. Maybe I'm just

11 wrong.

12 MR. IQBAL: Okay. There were some

13 limitations in the code, but G has been approved about

14 three years ago, four years actually, and we were

15 trying to resolve those issues, which have been

16 successfully resolved. I'm not sure the thing has

17 gone out, but at least we have it on my desk.

18 DR. SHACK: Okay. So everybody agrees on

19 the fluence now?

20 MR. IQBAL: Yes. Yes. Actually, there

21 was never a disagreement.

22 DR. SHACK: There was never a

23 disagreement.

24 MR. IQBAL: -- on the specific steps in

25 the methodology, which we have resolved.

1 MS. DIAZ SANABRIA: In an independent
2 review, the staff found that all building materials
3 met the acceptance criteria specified in the staff
4 approved boiler water reactor vessel and internals
5 project, BWR VIP 74, and confirmed the applicant's
6 conclusion, answering your question.
7 The analysis projected through the end of
8 the extended period of operation remains valid in
9 accordance with 10 CFR 54.21(c)(1)(ii).
10 Continuing with Section 4.2, here is the
11 data for the adjusted reference temperature parameter
12 and the use factor value for each unit. The ART for
13 Unit 1 is 159 Fahrenheit. For Units 2 and 3 it is
14 157. The corresponding USE factor is 45 foot-pound
15 for each unit.
16 Section 4.3 of the SER discussed the
17 reactor coolant environment effects TLAA, among
18 others. I am just going to point out one of the
19 TLAAs.
20 The applicant stated that cumulative usage
21 factor, CUF, of some components are projected to
22 exceed the ASME Section III Class 1 limit before the
23 end of the period of extended operation. The staff
24 found the applicant's environmental fatigue effects
25 assessment acceptable, and also the applicant's

1 commitment to use the fatigue monitoring program to
2 assure that the CUF of the critical locations will not
3 exceed the limiting CUF value in accordance with 10
4 CFR 54.21(c)(1)(iii).
5 Section 4.7 of the SER included other
6 specific plant -- other plant-specific analyses for
7 reactor building crane load cycle, dose to seal rings,
8 radiation degradation of drywell expansion gap foam,
9 irradiated assisted stress corrosion cracking, stress
10 relaxation of core plate holddown bolts, which we have
11 an open item, emergency equipment cooling water weld
12 flaw evaluation.
13 DR. LEITCH: Where are these seal rings in
14 the HPCI and RCI? Just go back to that previous
15 slide, please, the second bullet that says dose to
16 seal rings. What seal rings are we talking about
17 there, HPCI and RCI?
18 MS. DIAZ SANABRIA: On the high pressure,
19 yes.
20 DR. LEITCH; I'm not sure I understand
21 what seal rings are involved there.
22 MS. DIAZ SANABRIA: David Jeng.
23 MR. JENG: This is not the one -- That's
24 the expansion gap form. This is the dose to seal
25 rings. I am David Jeng. The seal ring I am covering

1 is the one up by the containment in the building seal.
2 This is for the high pressure coolant ejection and
3 vessel core.
4 MR. SUBBARATNAM: TVA would like to
5 address this? Ken?
6 MR. BRUNE: Yes. That particular item,
7 according to the SER also, is no longer a TLAA,
8 because that portion basically has tests on it to
9 check to make sure there is no unacceptable
10 degradation. So there was originally a calculation
11 which was used for the design purposes, but it is not
12 the -- the calculation is not relied upon for
13 operation.
14 MR. SUBBARATNAM: Okay.
15 DR. LEITCH: This is more fundamental than
16 that.
17 DR. BARTON: Pump seal rings or something?
18 MR. SUBBARATNAM: No, it's not a pump seal
19 ring. These are the valve seal rings, basically.
20 DR. BARTON: Valves?
21 MR. SUBBARATNAM: Yes, valves. As a
22 matter of fact, then what we did, the licensee
23 proposed it, and then we went back to the staff and
24 checked with them. They said that we don't do -- the
25 old system typically is not one of those plant-

1 specific TLAAs. Staff had previously done it. So
2 this was probably a little bit of an overcautious
3 inclusion. This is the valve seals, basically, valve
4 seal rings.
5 DR. LEITCH: Valve seal rings. The HPCI
6 and RCI?
7 MR. SUBBARATNAM: Yes.
8 DR. SHACK: But are they elastomers?
9 MS. DIAZ SANABRIA: Actually, this TLAA
10 was withdrawn by the applicant.
11 MR. SUBBARATNAM: This was not a typical--
12 MS. DIAZ SANABRIA: Section 4.7.7 provides
13 the stress relaxation analysis of the core plate
14 holddown bolts. The loss of preload of the core plate
15 holddown bolts due to thermal and irradiation effects
16 was evaluated in accordance with the requirements of
17 10 CFR 54.21(c)(1)(ii).
18 The applicant specifies that the analysis
19 was evaluated at the assumed expected loss of preload
20 of 20 percent which bounds the original BWRVIP-25
21 value.
22 The applicant indicated that core plate
23 holddown bolts will maintain sufficient preload to
24 prevent sliding of the core plate by friction under
25 normal or accident conditions. The bolts also meet

1 the ASME Section III, Class 1, Level D service limits
2 at the end of the period of extended operation.
3 After the staff reviewing the method of
4 analysis based on the General Electric's plant-
5 specific stress relaxation analysis on irradiated
6 stainless steel materials, requested additional
7 information to address the following: Horizontal and
8 vertical loads for all operating conditions; sliding
9 of core plate from core plate rim; axial and bending
10 stresses.
11 The staff has not yet received the
12 information above-mentioned. However, the applicant
13 is still ongoing on its review. Therefore, this issue
14 remains unresolved, and identifying the SER as open
15 item 4.7.7.
16 DR. BARTON: This has to do with the
17 holddown bolts. Has the applicant found any cracks in
18 this plate -- core plate? Are there any cracks in the
19 Browns Ferry upper core plates?
20 MR. DeLONG: This is Rich DeLong. The
21 answer is no.
22 DR. BARTON: Thank you.
23 MS. DIAZ SANABRIA: Based on the staff's
24 review and subject to resolution of open item 4.7.7,
25 concluded that the applicant has provided an adequate

1 analysis of the TLAAs.

2 If you don't have further questions, I

3 would like to turn over the presentation to Caudle

4 Julian and Steve Cahill.

5 CHAIRMAN BONACA: Any questions from the

6 members? No questions. So we will move on to the

7 inspections. Thank you. Appreciate it.

8 DR. LEITCH: Just a question about that

9 core plate and your hydrogen water chemistry program.

10 You do have hydrogen water chemistry on the two units

11 and plan to have it on the third, but is your hydrogen

12 water chemistry program aggressive enough that it

13 protects the core plate?

14 MR. BRUNE: My name is Ken Brune. I'm

15 with TVA, Browns Ferry Engineering.

16 Currently, we are using noble metals with

17 hydrogen water chemistry. So we maintain a certain

18 level of noble metals deposition to protect the core

19 plate. We are also implementing the BWRVIP-2.0

20 program to be able to show that we are keeping the ECP

21 values below the -230 millivolt level to mitigate

22 IGSEC for the core plate and the other vessel internal

23 components.

24 DR. LEITCH: Okay, good. Thank you.

25 DR. BARTON: You guys are trying to

1 protect all the core internals then. Right?

2 MR. BRUNE: Yes, sir. That is correct.

3 DR. BARTON: Got you.

4 MR. JULIAN: Good afternoon. My name is

5 Caudle Julian. I work with NRC in Region II, and I

6 have been the team leader on many of the license

7 renewal inspections, including the Browns Ferry

8 inspection which we just completed here a couple of

9 weeks ago.

10 This slide you have seen before. So I

11 won't dwell on it. It tells you that we have written

12 a manual chapter and inspection procedures for doing

13 license renewal inspections. Site-specific inspection

14 plans are developed, and we are scheduling our

15 inspections to support NRR's review.

16 We try to keep a consistent team of the

17 same five inspectors, and the training program to

18 replace any that fall out due to retirement, which has

19 happened to us a couple of times.

20 DR. LEITCH: Caudle, now this inspection

21 that has just been completed -- has a report been

22 issued? I don't think we have seen it yet.

23 MR. JULIAN: Not yet. Not yet. We are

24 writing the report, but I will give you the results in

25 just a moment of what we have done.

1 DR. LEITCH: Okay. Thanks.

2 MR. JULIAN: Briefly, the scoping and
3 screening inspection -- We won't cover this ground
4 again. It is to confirm that the applicant has
5 included the appropriate SSCs in scope.

6 CHAIRMAN BONACA: Let me ask a question,
7 because this is the Region. I mean, you are the front
8 line, and you have all these activities coming
9 together. How do you separate -- This seems to be a
10 very focused scoping and screening inspection for
11 license renewal. I'm sure you are conducting
12 inspections right now for startup or for
13 requalification of components.

14 MR. JULIAN: Are you speaking Browns Ferry
15 specifically?

16 CHAIRMAN BONACA: Yes.

17 MR. JULIAN: Only Browns Ferry?

18 CHAIRMAN BONACA: Yes.

19 MR. JULIAN: We have a group of inspectors
20 in the Division of Reactor Safety which I have taken
21 with me on all the license renewal inspections, and
22 they were used to do the Browns Ferry license renewal
23 inspections.

24 Separate from that, Steve Cahill will tell
25 you all about his inspection program, which includes

1 the Division of Reactor Projects and support from DRS.

2 MR. CAHILL: I'll get into what our folks

3 do. What Caudle does is a niche, and he deals with

4 the same subset of licensee personnel at each site.

5 So, really, I mean the residents help him out to give

6 him some insight into the things that are going on,

7 but generally, he really doesn't -- We don't cross

8 paths too much.

9 CHAIRMAN BONACA: Okay. Very focused on

10 the license renewal.

11 MR. CAHILL: Because he is inspecting

12 programs mostly.

13 CHAIRMAN BONACA: Okay.

14 MR. JULIAN: Right. The only thing on

15 this slide to note is that we have made a revision to

16 cut back on the scoping and screening inspection and

17 focus primarily on the (a)(2) situations as far as

18 scoping and screening goes, and Browns Ferry was used

19 -- we did use that process at Browns Ferry.

20 The aging management programs inspections:

21 The objective here is to confirm that AMPs are working

22 well, the existing ones, and to examine the

23 applicant's plans for establishing new AMPs.

24 The slide is pretty much standard. We

25 told you what we had done before. We examined records

1 of past tests, verified inclusions of future tasks in
2 established site task tracking system, and verify the
3 material condition of the plant is being adequately
4 maintained by going out and looking at equipment.
5 If we need it, we have in our procedures
6 the option to do a final wrap-up inspection. That
7 usually has been two to three days in length, and we
8 perform -- look at any open items from previous
9 inspections, any items requested by NRR, and verify
10 again that the applicant has loaded future actions
11 into their tracking system, and we are looking for a
12 transition plan of some sort where, as was discussed
13 earlier, the efforts of the license renewal aging
14 management programs are transferred to someone to own
15 them at the plant in the future.
16 The first inspection we did at Browns
17 Ferry, the aging management program inspection, was
18 November 29 through December 27. We concluded that
19 the existing programs to be credited as aging
20 management programs for license renewal were generally
21 functioning well, based on looking at past results.
22 The inspectors observed the applicant had
23 not yet begun the implementation process for new and
24 enhanced aging management programs, and some of the
25 AMP procedures have yet to be defined and composed.

1 Next slide, please.

2 For existing programs, the identification
3 and selection of which particular existing procedures
4 constituted AMP had yet to be done. Region II
5 concluded that the NRC would perform another
6 inspection when the applicant had progressed further
7 with AMP implementation. But we did conclude that,
8 while walking down plant systems and examining plant
9 equipment, the inspectors found no significant adverse
10 conditions, and it appears to us that the plant
11 equipment was being maintained adequately.

12 DR. BARTON: Is there a significant
13 difference in the material condition in the power
14 block versus outbuildings?

15 MR. JULIAN: No. We did not see that. We
16 thought that things were well maintained everywhere we
17 went at Browns Ferry.

18 DR. BARTON: Good. Thank you.

19 CHAIRMAN BONACA: On the second bullet.
20 Don't skip yet.

21 MR. JULIAN: I'm sorry?

22 CHAIRMAN BONACA: Go ahead. I had a
23 question later on, on this slide. So I wanted to keep
24 it up.

25 MR. JULIAN: On this slide?

1 CHAIRMAN BONACA: Yes. My question was:
2 What is your expectation? I mean, when are you
3 expecting to have to perform an additional inspection?
4 Bullet Number 2, I am left with the question, is it
5 going to be six months from now? Is it going to be
6 six years from now before they walk into license
7 renewal?
8 MR. JULIAN: This slide is perhaps a
9 little misleading. We went to do the aging management
10 program inspection in November-December time frame.
11 It was two weeks in length, and we anticipated that
12 would be the major portion of our work.
13 We found that they really weren't ready
14 for that inspection. So we went back for an
15 additional week, the week of September 19, and we
16 still have some issues. So we have decided we are
17 going to do still another inspection down the road.
18 CHAIRMAN BONACA: So that would be before
19 the SER is issued?
20 MR. JULIAN: Yes. The timing of that will
21 support the schedule for issuing the SER. I'm not
22 sure -- We haven't decided whether, before the SER is
23 issued versus after, but it will certainly before the
24 end of the process, certainly.
25 CHAIRMAN BONACA: I mean, we approve these

1 applications -- from previous applications we have
2 some expectation of what you expect to see by the time
3 you have to report an SER. I mean, you cannot just
4 have empty shells of programs. You have to have
5 something more than that.
6 MR. JULIAN: That is correct. Well, let
7 me tell you what we saw this time, and I'll tell you
8 where we are at.
9 CHAIRMAN BONACA: Okay.
10 MR. JULIAN: The next slide. The second
11 inspection we did September 19-23. We reviewed a
12 sample. I've counted 40. They say 39, a discrepancy
13 in the number of implementation packages, and they
14 contain marked-up procedures, proposed procedure
15 changes to be made, changes to be made to the plant --
16 or the operating procedures or maintenance procedures
17 for the plant.
18 The packages contained some errors and
19 were not meticulously reviewed, in our opinion. We
20 could find some errors in these packages, and the
21 applicant initiated a problem evaluation report, a
22 corrective action document, a PER, for this corrective
23 action.
24 We took a look at -- Let me stop there and
25 amplify a little bit on the question you asked. They

1 have something now. They have an implementation
2 package for each aging management program. It
3 contains the basic elements we think would do the job.
4 They have got marked-up procedures the way
5 the propose to change them. There are details in some
6 places that are not there yet. We found a couple of
7 errors in things. We think that some of the dates
8 that were in there were wrong. There were things that
9 were marked as needing to be done prior to the period
10 of extended operation when indeed they need to be Unit
11 1 restart items.
12 They are going to fix that as a result of
13 the PER that they initiated, and we think that, going
14 back through these packages again and correcting
15 errors in it, that they will look broader than we
16 looked. We looked at a sampling. If they will look
17 broader than we looked and look at them all again and
18 get them shaken out, we think that they will be
19 acceptable.
20 DR. LEITCH: These programs theoretically
21 don't have to be implemented until just prior to
22 entering the period of extended operation.
23 MR. JULIAN: That is correct.
24 DR. LEITCH: But, hopefully, an applicant
25 would have a schedule for more prompt implementation

1 of these programs. But in the material I have, the
2 only commitment is the one that is required. It says
3 they will do them before the period of extended
4 operation. Is there any informal schedule for when
5 these programs might be implemented? Maybe that's not
6 a question for you, Caudle, as much as it is for the
7 applicant.
8 MR. DeLONG: This is Rich DeLong. The
9 schedule for implementation for the AMPs is in
10 development. It's not complete. Matter of fact, it
11 is not even ready for my review yet, but the intent
12 is, in fact, to use a schedule to support dealing with
13 all the 114 commitments that we have made that are all
14 related to implementing the aging management program,
15 to make sure we get it all done in the right refueling
16 cycles. There's a lot of inspections to do. In fact,
17 all of that will be back-reflected in our long range
18 planning process, not only for on-line activities but
19 for outage activities.
20 DR. LEITCH; Yes. We have been concerned
21 with a few applicants where the commitment is
22 basically only to do it prior to the beginning of
23 extended operation, and we are concerned about the bow
24 wave of work, the high peak load of work that that
25 would push forward, plus the fact we think it's just

1 good practice to begin the implementation of some of
2 these AMP programs as soon as you possibly can.
3 MR. JULIAN: I think that's a valid
4 concern, and it is certainly a management concern
5 also, not only because of the amount of workload but
6 also because of the cash flow issue that comes along
7 with that big workload. But you know, we also believe
8 that it makes sense for a more staged implementation
9 around the refueling, as we have between now and the
10 beginning of the extended operating period, and
11 factoring that in with the workload associated with
12 other initiatives.
13 DR. LEITCH: That high peak workload is
14 not only for the applicant but also for the NRC staff
15 to inspect those activities and so forth. So we are
16 just concerned with flattening that peak as much as we
17 possibly can.
18 Do you think, when we come back for the
19 final meeting, you could give us some indication as to
20 what that schedule might be?
21 MR. DeLONG: It depends on when that final
22 meeting is you referred to. March of 2007?
23 MS. DIAZ SANABRIA: The full Committee
24 meeting is March '06.
25 MR. DeLONG: By March of 2006 we ought to

1 be able to certainly provide you with some -- a draft
2 of that. It may not be final at that point.
3 DR. LEITCH: I realize that is not a
4 commitment. I'm just looking for some kind of a
5 signal as to what your plans are in that area.
6 MR. DeLONG: We'll do that. We will bring
7 a draft schedule to give you some sense for how we are
8 going to lay these out within our own long range
9 planning process.
10 DR. LEITCH; Okay, good. Thank you.
11 MR. JULIAN: Let's see. Next slide
12 concerning future actions. We reviewed their plans
13 for tracking future actions using their TROI system.
14 It is a computerized system they have used for years
15 and years to keep up with licensing commitments, I
16 believe, primarily, at TVA. It is used throughout
17 TVA.
18 When we got there to the site, the aging
19 management program implementation packages, their
20 record number essentially, was not linked to the
21 tracking system and TROI, but they quickly corrected
22 that within a day or so.
23 The inspection samples that we selected,
24 the commitments were indeed included in TROI, and we
25 could find them, but it was hard. There was much

1 duplication within the package that we got from TROI,
2 and varying format of putting things in. There were
3 examples where they had an entry for Unit 1, entry for
4 Unit 2, entry for Unit 3, and then examples where they
5 said implement the aging management program for all
6 three units with just one item, and it was a random
7 search, flipping through a stack of paper, and it was
8 hard for us to figure out if they had captured
9 everything.
10 We did not find anything missing, but it
11 wasn't a user friendly effort. We were told at the
12 exit interview that, to back this up, the applicant
13 has decided to track the future actions using their
14 standard corrective action program system to write a
15 PER on this, which is what many of the applicants are
16 doing. Nearly everyone we have seen is doing that,
17 because that is a system that will stay with us and,
18 if it needs to change, it will change, and everything
19 will go with it. It won't be lost anywhere.
20 We have decided that Region II will follow
21 upon these issues during a future inspection, as we
22 have discussed. We would like to go back and see the
23 further implementation of the corrective actions on
24 the aging management program packages. We would like
25 to see the results of loading things into the PER

1 system, and generally get a feel that everything that
2 needs to be tracked is tracked.
3 DR. LEITCH; Now, Caudle, your inspection
4 report of January 27, '05, the one that you have been
5 -- the original one -- indicated that there was no
6 implementation plan to transition responsibility for
7 implementing license renewal of the plant operating
8 staff.
9 I talked to the applicant earlier about
10 that. They seemed to feel that that was coming along
11 pretty well. Did you confirm that in this inspection?
12 MR. CAUDLE: No, we did not. We did not.
13 That is one thing we would like to go back and look
14 at. We didn't have a good understanding of that
15 program, and so we would like to do that during the
16 next inspection to understand what the transition
17 program is.
18 When you talk to people, the system
19 engineer for service water system, they are aware of
20 license renewal. They are aware that they will catch
21 the load for the program down the line, but they are
22 not sure what it is yet. That was our experience
23 during the first inspection, certainly.
24 DR. LEITCH; Yes.
25 MR. JULIAN; And we didn't take the time

1 to go sample that again two weeks ago. We are going
2 to do that during the third inspection.
3 DR. LEITCH: Okay. So that it is not
4 that you looked at that area and found it deficient on
5 the second inspection. You just didn't really
6 concentrate on that area.
7 MR. JULIAN: We didn't have the time to
8 look. We kept ourselves busy looking at the
9 implementation packages and the commitment tracking
10 aspects. So that is something that we have to do down
11 the line.
12 DR. LEITCH: Because our experience
13 indicates that that plant staff ownership of the
14 program is a very important comment -- a very
15 important component, I should say, to the long term
16 viability of the program.
17 MR. JULIAN: We certainly agree with that.
18 That's one of the criteria that we are looking for in
19 each of the inspections, as I have shown on the slide
20 earlier.
21 DR. LEITCH: Good.
22 MR. JULIAN: Two issues -- we'll just stay
23 with this slide, if you would, please. Two issues
24 that came up that I ought to cover. Ram mentioned
25 about the confirmatory item, I believe, that NRR had,

1 the bolting issue. This had to do with concern that
2 there would be high strength bolts in use out in the
3 plant, in the balance of plant that could crack over
4 time.
5 We looked at -- We had some extensive
6 discussions with TVA about their efforts here, and
7 they have gone to great lengths to show that these
8 type of high strength bolts could not be in the plant,
9 because they were not purchased for Browns Ferry.
10 In addition, they showed us a PER that
11 they had worked a couple of years ago on a Diablo
12 Canyon issue, I believe it was, where they had done a
13 similar, earlier search of that records to find this
14 out, and we think we have the information to close
15 that item here to NRR's satisfaction. We are working
16 with NRR staff to make sure that we've got all the
17 stuff we need.
18 The issue that Bill Crouch brought up on
19 RHR service water piping is one that we need to
20 resolve. During the first inspection we did, we
21 looked at the construction of the intake structure and
22 recognized that there are three pipes that are 24
23 inches in diameter and about 40 feet long. I think it
24 says it's cast iron, I believe, and they are cast into
25 the concrete structure. So you end up with

1 essentially three pipes that provide the safety
2 related water supply for the RHR service water pump.
3 This is different than most intake
4 structures. Most intake structures would have the
5 safety related pumps taking suction some way on an
6 unobstructed ultimate heat sink source.
7 We raised the question of wouldn't it be
8 a good idea to do an inspection on these pipes to see
9 that they have not corroded away or they have not
10 corroded or fouled to the point that they are choking
11 down, the surface area is going down, or any other
12 aging effects are happening on it.
13 We thought we had an agreement that they
14 would do a one-time inspection. They have widely
15 used, as you've noticed, one-time inspection at Browns
16 Ferry, many, many things to be done, more than most
17 people have.
18 When we came back this time, we understood
19 that they have changed their mind when they recognized
20 what we were asking to be done. They are saying that
21 they don't want to do it, because they don't think it
22 needs doing, and it is too hard. That's what it comes
23 down to.
24 They have a good point, that one way would
25 be to send divers into the pit behind where the

1 safety related pumps are continually working. They
2 can't do that without shutting -- They can't shut all
3 the pumps down without taking a three-unit outage, and
4 the divers have been in there before cleaning up
5 debris and so on, but it's very hazardous, and we
6 agree. We don't want to put people in jeopardy.
7 Our point is that we think that there are
8 now remote inspection techniques, TV cameras, things
9 that can be done to take -- use best efforts to take
10 a look at the piping as a one-time inspection.
11 Right now, TVA has written a PER on this.
12 The way out of this quandary is they have written a
13 PER to say that we had a misunderstanding, and the NRC
14 thought we are going to do this inspection, but we are
15 not. And they are working now on their explanation,
16 written explanation for this, and we will continue to
17 work that in the future and, when we come back for the
18 third inspection, surely we can be at some point for
19 settling that.
20 DR. SIEBER: Are you working on your
21 rebuttal?
22 MR. JULIAN: Yes. I'm going to get Ram to
23 help me.
24 Let's go ahead. We put here the
25 performance indicators, since you all usually ask for

1 them. But as they have said earlier -- go ahead to
2 the next one, please -- they are green for Browns
3 Ferry Units 2 and 3 as of right now. The next slide,
4 please.
5 Region II concluded that the NRC will
6 perform another inspection when the applicant has
7 progressed even further with AMP implementation. And
8 in walking down plant systems and examining plant
9 equipment, the inspectors found no significant adverse
10 conditions, and it appears to us that the plant
11 equipment was being maintained adequately as of today.
12 That concludes what I have to say. Any
13 questions for me?
14 DR. LEITCH: There was one intriguing
15 thing. I'm not sure that it is a license renewal
16 issue. Perhaps it's a current operating issue where
17 the emergency equipment cooling water -- sounds like
18 some grate or something was plugged with debris.
19 I guess I'm having trouble understanding
20 what was the significance of that? Are we doing
21 something to prevent recurrence of that situation?
22 MR. JULIAN: When we were there the first
23 time, we got involved in this thing about the
24 emergency equipment cooling water catch basins. There
25 are three of these things, one for each unit, and the

1 water -- a portion of the water coming out of the
2 plant after it has done its function, headed back to
3 the river, goes into these catch basins, and they look
4 just like a storm drain. They look like a cast
5 concrete box with a steel grate over the top of it.
6 The water comes into the basin, and then
7 exists the basin in a -- I think it's a clay-type, I
8 believe, and the issue of concern was that the goes-
9 out pipe might be crushed, might be affected by an
10 earthquake or something of that nature.
11 So these basins are there, such that the
12 EECW water coming into the basin could overflow the
13 basin and just run across the asphalt. So we went
14 looking for these things, and we had a tough time
15 finding them, because they haven't been looked at for
16 years back then.
17 They were partially plugged. Unit 2
18 particularly was kind of bad. It had plastic that had
19 been pushed over it, and a lot of gravel and stuff on
20 it.
21 We concluded that they would have still
22 done the job. There's enough driving head, we think,
23 in the water coming into the basin that the water
24 would have found its way out. So we didn't think it
25 was an operability issue.

1 TVA wrote a PER on it and was going to get
2 it corrected. When we went back this time, we
3 followed up on that matter, and we found that the
4 corrective actions -- they had listed several
5 corrective actions, one of which is very effective,
6 that the young lady who is a system engineer for that
7 system goes out weekly and walks it down and, if she
8 sees excessive buildup of gravel and debris, she calls
9 the maintenance folks to come clean it off, and she is
10 still doing that forever. I guess there is no end to
11 that commitment. She has other things to do, but
12 that's one that she does.
13 One thing that we didn't see was that
14 there was a corrective action that said post these
15 things. Put a sign out there. It says this is a
16 safety related thing; do not block. That had not been
17 done. They had written a work order back in December,
18 but they hadn't done it.
19 So we pointed that out to them, and they
20 had the sign up within a couple of days. So it now
21 has a sign, and those basins are still there. They
22 have not changed the configuration of them any, but we
23 think that they continue to be operable.
24 DR. LEITCH: Okay. Thank you.
25 MR. JULIAN: Any other questions for me?

1 DR. LEITCH: You are not discussing the
2 audit report, are you? That's a separate
3 presentation?
4 MR. JULIAN: No. Do you have a
5 presentation for the audit?
6 DR. KUO: Audit report -- We have the
7 audits leader here, if you have questions. I think
8 Mr. Greg Cranston can answer the question.
9 DR. LEITCH; Okay. I have a couple.
10 MR. CAHILL: My name is Steve Cahill. I
11 am the Division of Reactor Projects Branch Chief down
12 at Region II. I have the routine oversight for the
13 TVA sites, which includes the Browns Ferry Unit 1
14 recovery.
15 I was originally going to talk about our
16 routine oversight of all three units, but as you saw
17 by the performance indicators that Caudle had up
18 there, there is really not much to discuss on Units 2
19 and 3.
20 Ever since we implemented the revised
21 reactor oversight process in the year 2000, the
22 operating units 2 and 3 have never had anything
23 greater than a green finding or performance indicator.
24 So they have been, in our mind, relatively a good
25 performing site that has not really gotten any

1 increased regulatory attention.

2 So I am going to focus mostly on Unit 1,

3 and I have talked to most of the ACRS members here

4 before on our visit to the site and when they were in

5 Atlanta in August. So I'll try not to be too

6 redundant in some of the stuff that I talked to you

7 about before.

8 I just want to give you a little

9 perspective when we set up the framework for oversight

10 of Unit 1. This was back when Luis was running the

11 region. This is the third unit TVA was recovering,

12 and they had pretty good success in recovering the

13 other two. So there's some credibility and a good

14 track record in our mind.

15 It was a very similar effort. I mean,

16 TVA's approach has been this is a unit that's

17 licensed; it's been in the shutdown; we've just to get

18 it back up to current licensing and design basis.

19 They were very quick to lay out their approach to be

20 essentially operationally identical. That term has

21 been around since they first talked to us.

22 TVA had a desire to do this in a

23 predictable manner. They actually came in originally

24 asking us to do this using the ROP, because of the

25 predictability nature of that.

1 DR. SHACK: Now when Unit 3 came back on
2 line, they did that same thing? So they came back
3 with identical units? That was a goal for that
4 restart?
5 MR. CAHILL: Yes. They never wanted to
6 have anything different between the units other than
7 just the normal out of sequence things you are going
8 to get with the outages. I mean, that's in their best
9 interest, too, and it make sour job a lot easier,
10 because you are not trying to -- It's almost like
11 dealing with separate plants if you do it any other
12 way.
13 DR. SIEBER: Well, the driving force is
14 the operator licenses. If the plants are different,
15 then the operators have to be licensed for each plant.
16 MR. CAHILL: At the Browns Ferry units,
17 the operators have always been licensed -- They have
18 one license which is good for all the units.
19 DR. SIEBER: For all three units.
20 MR. CAHILL: It's always been that way,
21 and there is nothing that we have seen that is going
22 to make that change.
23 So anyway, our perspective is that we did
24 not perceive the need for the same significant scope
25 of oversight that we had done for the first two

1 recoveries. I mean, we were doing individual SERs on
2 the Unit 2 recoveries for every program, and that was
3 pretty labor intensive, and there was a lot both in
4 the region and the headquarters working on it.
5 So we launched an approach on what we are
6 going to do with Unit 1. We realize there's a lot of
7 stuff, though, that is different now, and Unit 1 did
8 present some challenges, because of things that had
9 changed, most significantly the reactor oversight
10 process.
11 That had been implemented in 2000, and
12 that was after the Unit 2 and 3 recoveries. So we did
13 not have that challenge with them.
14 TVA, like I said, initially requested that
15 we use the ROP. They were using their normal design
16 change process, which we were used to in the operating
17 units, and they tried to lay out the concept that this
18 is just a long refueling outage. We are just going to
19 be doing a bunch of modifications to get everything up
20 to current speed.
21 Now that was a bit of a simplification,
22 and I think they knew that, but I can understand why
23 that they would want to use the ROP, because of the
24 predictability. But it also complicated a lot of
25 things on our side.

1 The enforcement basis for the ROP is based
2 on the significance of termination process or risk
3 informed process. When you are looking a de-fueled
4 unit that is basically in a somewhat construction
5 state, that is not really applicable. So that gave us
6 the challenge as far as how we would be able to follow
7 up on any findings we had.
8 Also the report documentation: The ROP
9 has a very high threshold for report documentation.
10 You basically don't write about anything other than
11 the scope of what you did unless you have a finding,
12 and that did not suit our needs either.
13 There's a lot of effort that was done with
14 all the operating units that rolled them into the
15 reactor oversight process in 2000. There's a lot of
16 verification inspections and establishment of
17 performance indicators, which again had never been
18 done for Unit 1.
19 The whole basis for our assessment
20 program, the action matrix, really -- you couldn't
21 apply that to a shutdown, de-fueled unit like Unit 1
22 was. So we came to the conclusion very early that we
23 needed to device a unique oversight process, and we
24 were going to do it via authoring a manual chapter.
25 One tool that was available to us that we

1 have used, and you have probably heard this many other
2 times with Davis-Besse and others, is the manual
3 chapter 0350 process, which is the oversight.
4 We decided very early that that was not
5 something that we were going to use. One, there is a
6 stigma associated with that. It's only done for
7 plants that are in trouble and down, and TVA had long
8 since gotten past the 1985 issues that shut them down.
9 Also, there is a lot of onerous oversight that is
10 required with that, that the five-year project TVA was
11 laying out, we did not want to apply those resources
12 early in the project. We didn't feel that it was
13 warranted.
14 Also one other consideration we had was
15 they had fixed a lot of these special programs, the
16 things that were applicable to all TVA and all Browns
17 Ferry. They had fixed those programs on the Unit 2
18 and 3 recovery. We know we didn't need to reverify
19 the fixes to those programs. The programs were fixed.
20 All we really needed to do was check on implementation
21 of those in the Unit 1 recovery.
22 Also one other consideration we had when
23 looking in the manual chapter: I mentioned before the
24 documentation. We knew we needed to have a clear
25 documentation trail for anything we did on Unit 1,

1 just to be able to resolve things at the end, be able
2 to respond to questions like you folks might ask, as
3 I've noticed you like to do, and basically be able to
4 track down anything that -- you know, that there was
5 nothing, no loose ends, that we didn't touch for Unit
6 1 aside from what TVA laid out for us.
7 We wanted to incorporate the lessons
8 learned. We had a lot of core staff, like Caudle
9 said. He uses the same group of folks for license
10 renewal. We had a lot of folks that were involved in
11 Unit 2 and 3 recovery in the region. They were very
12 familiar with what the issues were, what TVA's
13 corrective actions were, and there's some efficiencies
14 to be gained from that. So we wanted to take
15 advantage of that.
16 So we developed a manual chapter, Manual
17 Chapter 2509. It was issued in August of 2003. It
18 was jointly developed by folks in the region and the
19 Inspection Program Branch up here in NRR. It is a
20 specific manual chapter specific to just the Unit 1
21 recovery effort.
22 There was a conscious decision we had in
23 the beginning not to test out new construction
24 approaches. Once headquarters got wind that Unit 1
25 was going to be coming back up and we were going to be

1 doing something like this, I'll be honest, my door was
2 getting beaten down with everybody trying to figure
3 out how to test out all the different ways we had for
4 possibly inspecting construction of new power plants,
5 and we would use Browns for Unit 1 recovery as a test
6 pilot for that.
7 That really -- With the perspective I laid
8 out before, that was not compatible with what we
9 needed to do, and we did not go down that path.
10 The one thing also -- I mean, that would
11 have required a lot more, I guess, onerous and system
12 specific oversight that we did not plan to do, and
13 that would have been a significant impact on TVA,
14 which they obviously were trying to avoid.
15 DR. SIEBER: It looks to me like there's
16 a lot of construction either going on or will go on.
17 So why is this different than building a new plant?
18 MR. CAHILL: From my perspective as a
19 person that's dealing with operating reactors, TVA is
20 using their normal modification process. Now,
21 granted, this is a very long outage, but their
22 argument that this is a long refueling outage has some
23 merits, because they are using the process that my
24 residents and the regional inspectors look at every
25 day when they go out for inspections. They are just

1 using them for a more significant scope of activity.
2 They are mostly staying within the
3 original design basis. With construction, you are
4 looking at a lot of things for the first time, and you
5 are looking at them against their design basis and
6 doing verifications.
7 We are looking more that they are just
8 doing modifications which are a small subset of a
9 system, not an entire system, even for things as major
10 as some of the piping replacements that they have
11 done, and we are just verifying they are staying
12 within their design criteria that already existed.
13 So it's a lot less of a scope of
14 inspections from our point of view. There's a lot
15 less to verify. I'm not that familiar with all the
16 new construction, possible oversight approaches, but
17 I heard some pretty novel concepts on how we were
18 going to do it, and we just didn't have the resources
19 to be doing it in a whole different way.
20 We've done this two times before, and Luis
21 painted a clear picture that, you know, we had tested
22 out our processes for overseeing TVA, and we wanted to
23 stick with what was tried and true.
24 DR. SIEBER: Okay.
25 DR. LEITCH: Did you feel any differently

1 about that with respect to the reactor water cleanup
2 system? I guess that one system seems like it is
3 almost -- almost completely new.
4 MR. CAHILL: Reactor water cleanup? The
5 recirc? Talking about the recirc?
6 DR. SIEBER: No, the reactor water
7 cleanup. It's different.
8 DR. LEITCH: Pumps are in a new location.
9 The heat exchanger is new.
10 MR. CROUCH; Steve, this is Bill Crouch.
11 On reactor water cleanup, we did replace a major
12 portion of piping, but there was another major portion
13 of that system that was not replaced, and the portion
14 that we did replace we put it in, in the same
15 configuration, same materials as what we had already
16 done on Units 2 and 3.
17 So we were just implementing the same kind
18 of mod on Unit 1 as what we had already done on 2 and
19 3, just like Steve was talking about, the sequences
20 and mods from unit to unit.
21 DR. LEITCH: Unit 2 and 3 already has the
22 cold pumps?
23 MR. CROUCH; Yes. Already has the same
24 material, cold pumps, everything.
25 MR. CAHILL: We have looked at the new

1 heat exchangers they put in, and from my resident's
2 perspective, it wasn't a whole lot different. I
3 really didn't get into much discussions with them,
4 because TVA just recently did the turnover of that
5 system, and we were looking as they went through that
6 process, and it really was really straightforward from
7 our perspective.
8 So to answer your question, no, I wouldn't
9 change my mind based on that system.
10 DR. LEITCH: Okay. Thank you.
11 MR. CAHILL: Anyway, the final draft of
12 the manual chapter was issued as a public document.
13 We had had some interactions with TVA. We put a draft
14 out there for public comment so we could also interact
15 with TVA, so they understood the approach we were
16 using.
17 Just some key attributes I am going to
18 point out in this manual chapter that's very germane
19 to our oversight.
20 We had a different open item closure
21 criteria. We are basically allowing our inspectors to
22 close a restart item if the identical solution that
23 was done on Units 2 and 3 is being done by TVA. In
24 other words, we are not going to wait and keep the
25 thing open until the very, very end, until the last

1 bolt is tightened and the last thing is in there.

2 We have inspected their processes, and we

3 will do spot checks on their processes, have

4 confidence in TVA's processes; and if there is nothing

5 different that they are doing on Unit 1 from the other

6 ones, we are not going to basically give that same

7 level of onerous oversight all the way until the very

8 end. That was a conscious decision that was laid out

9 in the beginning.

10 The other thing the manual chapter laid

11 out was a lot of public communication expectations,

12 very similar to the stuff that would be on an 0350

13 type process, public meetings that we were going to

14 have interactions with TVA and let the public observe

15 and comment.

16 It kept oversight at the regional level

17 until about the final 12 months before restart. So we

18 are not going to establish a formal restart oversight

19 panel until approximately 12 months before TVA's

20 startup date.

21 So that kept the restart oversight at my

22 level and another branch chief, Mark Lesser in the

23 Division of Reactor Safety, responsible primarily for

24 keeping track and scheduling all the inspections and

25 the activities associated with Unit 1.

1 Also, this was very important to me, that
2 it allows us to use the pre-ROP report documentation
3 guidance. It allows us basically to write whatever we
4 want. We can have a very detailed discussion of what
5 we looked at, what we found, what we thought, and it
6 should be very easy for somebody to come back and
7 follow our paper trail to understand the basis for why
8 we closed something out and said it was okay for
9 restart.
10 Having been involved in an 0350 plant at
11 Crystal River and previously at Watts Bar with Caudle
12 when they were coming up and getting initially
13 licensed, I knew that was very important to be able to
14 recreate that decision making process. So our reports
15 -- I know some of you have read them -- are,
16 hopefully, very conducive for that.
17 Another thing that I mentioned before, the
18 ROP was a challenge, and we came up with a framework
19 on here that -- This might have some applicability to
20 new construction, because we have had people asking
21 about it, but figuring out how you are going to
22 transition this plant into the ROP, there's a lot of
23 challenges about getting all the different
24 cornerstones and all the things that are -- you know,
25 the inspection procedures we normally use, the

1 performance indicators, getting those established.

2 It's not something you can just say, when

3 the plant starts up, that it is instantly in effect.

4 There has to be a transition, and we laid that out in

5 the manual chapter. As Bill mentioned before, we

6 actually did it the end of last year.

7 So actually, effective the beginning of

8 2005 four of the seven ROP cornerstones were

9 transitioned over and are basically being monitored,

10 as Bill said, under the ROP. So emergency

11 preparedness, the two health physics areas, and

12 security -- we give Browns Ferry one just baseline

13 inspections just like the other two units get, because

14 there is nothing left unique to the Unit 1 recovery in

15 those areas.

16 We are also using traditional enforcement,

17 like I said. The STP isn't really conducive. So we

18 are using the traditional enforcement and the

19 construction supplements, where they are applicable.

20 Next slide. I'm sorry, you are on the right one.

21 TVA established a regulatory framework

22 with us early. They submitted a series of letters in

23 2002 and '03 to update their Unit 1 restart scope.

24 This is something that they had done before with Units

25 2 and 3, and they just wanted to update it for the

1 lessons learned and the current status of where they
2 were on all the items that they had on their plate
3 that they considered that they had to have resolved
4 for Unit 1 to start up.
5 So in August of 2003, we issued a final
6 regulatory framework agreement, which basically, after
7 some interaction, agreed with what TVA had submitted
8 as far as what the scope of list of items was for
9 restart. It includes their special programs that I
10 mentioned before that they laid out back in the
11 Eighties from when they were shut down, and it also
12 included a lot of generic items, things that had come
13 up since the '85 shutdown of Unit 1 that had to be
14 resolved before Unit 1 could start up.
15 Another thing we also did in the region
16 was do a very thorough scrub of all the databases
17 we've had, all the inspection reports going back
18 particularly to Unit 2 and 3 ones, to make sure we
19 didn't miss anything. I like to use the phrase, we
20 looked under every rock to make sure that there is no
21 open item out there that was not really actually
22 resolved for Unit 1.
23 Typical of these is that you find
24 something that was -- Unit 1 was discussed, but it was
25 really actually closed for 2 and 3, and you can't

1 really discern from reading the report write-ups
2 whether Unit 1 was addressed or not.
3 If there was any doubt, we would throw it
4 on our list, and we resolved it and closed it clearly
5 in the report, to make sure it was clearly resolved
6 for Unit 1. So I am optimistic that nobody is going
7 to find any open item or generic issue out there that
8 we haven't addressed.
9 Manual chapter 2509 required us to lay out
10 an inspection plan, and this is a key point. I sort
11 of made this before, but this is a question. We were
12 getting some questions from the ACRS about the
13 construction applicability to the Unit 1 recovery.
14 A key point of difference in our
15 inspection plan versus a construction one is our
16 inspection is primarily based around the regulatory
17 framework, the list of items that need to get resolved
18 for them to be able to recover and restart this
19 already licensed unit.
20 So it's based on the regulatory framework
21 and our recovery issues list. Those are what drive
22 our inspection plan; whereas, a construction plan
23 would be more on a system by system basis. So there's
24 a different framework we are working off of as we
25 going forward.

1 Our inspection plan -- I'll give you the
2 main parts of it. The schedule right now is primarily
3 being driven by the recovery issues list status. Our
4 original inspection focus was to look at things like
5 the demolition of equipment that TVA was doing and the
6 initial engineering they were doing. But now that
7 we've got -- They are in a closeout items mode, and so
8 are we.
9 So we issued our recovery issues list as
10 a public document after the last restart meeting we
11 had with TVA in July of this year. It was a public
12 meeting in Atlanta. That's a detailed list, and it
13 has a lot of inspection scheduling information.
14 TVA issues us a quarterly update report
15 where they go through every single item on their
16 regulatory framework. There's a few extra things that
17 we have thrown onto ours that were not in their
18 initial one, but they give us their update, and we
19 compare that against our list, and that's a key basis
20 for our scheduling.
21 When TVA considers themselves pretty much
22 done with a special program or an issue, we try to lay
23 out the schedule of the inspections to coincide with
24 that.
25 So we issue a detailed schedule to TVA

1 every six months. We do that along with our reactor
2 oversight process assessment schedule that we send out
3 for all the plants in the country. We just include
4 Unit 1 in that for efficiency. So TVA knows what our
5 schedule is.
6 To be honest, a lot of this -- With the
7 activities and the nature of what is going on with
8 Unit 1, the schedule is somewhat fluid. So we do move
9 things on Unit 1 around a lot just as their activities
10 change to be as efficient as we can, and to deal with
11 the limited resources that we have.
12 Our preliminary work-off projects are --
13 They are shaping up well now, because we are on a good
14 track. This year we have been closing a lot of items,
15 particularly over the last couple of months. So we
16 are looking to get the items closed ahead of TVA's
17 projected restart date.
18 So right now we don't see that as a
19 challenge, and TVA has not expressed it as a
20 challenge.
21 Another primary thing that is driving our
22 schedule is TVA's systems turnover process. They call
23 it SPAE for System Plant Acceptability Evaluation, and
24 SPOC, System Plant Operability Checklist. That's a
25 process that they use to take each system on a system

1 by system basis to basically verify that it's been put
2 back together, everything is in the appropriate
3 condition for its design licensing basis, and they do
4 the appropriate testing to actually get it ready to
5 go, make sure the procedure is in place, and they turn
6 it over to the operating side of the staff.
7 It is the same process TVA has used for
8 Watts Bar licensing and Unit 2 and 3 recoveries. So
9 we are very familiar with it, and it's a system that
10 we understand and have some confidence in.
11 TVA has tested out the system on a couple
12 supports systems, and we have inspected that already.
13 But this is a primary job that has fallen to my
14 resident inspectors. As TVA starts turning over some
15 more safety significant systems through this process,
16 we are going to be following along.
17 Like I said, we already inspected to
18 validate the process. We are not going to look at
19 every single system. We are going to do a risk
20 informed sampling.
21 Obviously, if we found problems with the
22 process that we hadn't identified before, our risk
23 informed sampling would go up. But we are going to,
24 obviously, pick the most safety significant systems,
25 and those will be the ones high on our list to verify

1 this process. But it's not going to be every single
2 system.
3 TVA has given us a detailed list for when
4 they are going to be doing all their system turnovers,
5 and we are arranging that schedule now. But the
6 approach for this, we are going to look at the package
7 that TVA lays out that has all the design licensing
8 basis in it, all the modifications, and we are going
9 to verify that that system does fall within its
10 licensing and design basis.
11 We are going to do a walkdown, and we are
12 going to really focus a lot on the end results. We
13 are going to do a lot of observation of the testings
14 and the reviews that they do before they turn the
15 system over. We are going to verify that the
16 procedure is in place. That is a standard approach we
17 have used for the other units and the Watts Bar
18 recovery.
19 There's been a question a couple of times
20 and, for those that haven't heard before, people ask
21 what consideration we give to the layup process. I'll
22 say just what TVA did. There is no credit given to
23 anything that was layup.
24 Going through this process, TVA doesn't
25 credit it, and it doesn't really impact our

1 inspections. We are still looking to make sure that
2 it meets all the requirements, that the system is
3 functional, and that it is going to go through the
4 testing that's going to verify that all these design
5 basis assumptions are valid, and we are going to make
6 sure it meets that.
7 After that is all done, we have high
8 confidence that it is operable and ready to perform
9 its safety function.
10 Another main thing that drives our
11 inspection plan is the ROP cornerstone transition.
12 I'm not going to go through the details of this. I
13 mentioned before that we transitioned the four
14 cornerstones already, but we do have a detailed matrix
15 that we have laid out for each of the cornerstones.
16 I guess the primary thing I wanted to
17 point out was we do transition inspections. Those are
18 driving a lot of our current upcoming inspections. We
19 are looking at program areas that we normally do that
20 ROP based our inspections on, and making sure that the
21 Unit 1 programs are up to the same speed.
22 A good example, I think, before that was
23 mentioned about maintenance rule. We have a
24 maintenance rule inspection coming up. It is the
25 first time we are going to look at maintenance rule on

1 Unit 1, very similar in scope to what we did when we
2 initially implemented the maintenance rule, which was
3 never done on Unit 1. But that is not driven by
4 anything on our restart list. It's not driven by
5 something on the regulatory framework. It is being
6 driven primarily because we know we need to have a
7 maintenance rule implementation in effect, and we are
8 going to be doing routine inspections on that.
9 The final transition of the Unit 1 to the
10 ROP and the other remaining cornerstones will not
11 happen until after startup and after the performance
12 indicators get established.
13 The last part of our plan is just
14 significant modifications or verifications, the term
15 I used. We are looking for any design work that they
16 have done that doesn't fall under one of the special
17 programs. It is not being driven by something that is
18 already on our list. We are including those design
19 change modifications on our list to take a look at.
20 Similarly, when they do verifications such
21 as the reactor vessel in-vessel inspections that they
22 are doing -- they have been doing all summer -- that
23 is not something that is specifically driven by
24 anything on our list, but obviously it is important.
25 Obviously, it is something that the NRC should have an

1 understanding of what they do, what the results are.
2 So we put those things on our schedule.
3 Often those things partially overlap with
4 some of the things on the restart list, but we have
5 been able to work that stuff out pretty well.
6 So the picture I wanted to paint here was
7 our inspection plan and the approach we are taking to
8 Unit 1 is somewhat of a patchwork. I mean, there's
9 different things. We are working off of a list. We
10 are looking at the design work that they have done.
11 We are looking on a system by system basis at the
12 important ones that they are turning over, and we are
13 looking at how we are going to get this plant rollover
14 into the ROP. Next, inspection approach.
15 The last thing I just wanted to talk about
16 was the inspection approach. The ownership of the
17 recovery items: Every issue that is on our list,
18 everything that we have scheduled for inspection, has
19 an inspector assigned as a lead owner.
20 We are trying to factor in new inspectors
21 to get them up to speed, because a lot of our folks
22 are close to retirement. So we want to basically have
23 another core group of people with this knowledge for
24 the next time we need something like this.
25 The owner develops the inspection plan.

1 I've had some questions from some of the ACRS members
2 about how we go about doing this, and it does vary.
3 It depends on what the issue is.
4 The owner looks at what the issue is. If
5 it's a special program that the TVA has resolved long
6 ago, there's probably only some very basic
7 verifications to look at what was different from Units
8 2 and 3, and maybe not a lot of paper review.
9 Sometimes if there is a new approach they are taking,
10 it is going to take more.
11 So each plan varies, but it is reviewed by
12 either myself or Mark Lesser before the inspector goes
13 out and does it.
14 Is there any questions? You did ask some
15 before, and people were wondering how we did it.
16 We issue quarterly integrated reports.
17 I'm glad to see some of you are reading them. We
18 started issuing those in the second quarter of 2003.
19 So all the Unit 1 inspection efforts are contained in
20 the quarterly integrated report with the lower
21 documentation threshold that I mentioned.
22 The focus of our inspections -- It's not
23 really a cookie cutter process either, as I mentioned
24 before. We are going to look at all of the procedures
25 that we have for reference.

1 The Manual Chapter 2509 I laid out lists
2 a lot of procedures, and a lot of them go back to the
3 old engineering procedures, old construction
4 procedures, old restart test procedures. We use those
5 for reference to make sure that we understand all the
6 insights that would have been done back then, and use
7 those on a case by case basis to apply any applicable
8 things to the activity that we are inspecting to make
9 sure that we have the plan that the inspector lays out
10 covers all the bases for what we need to look at.
11 We are going to review any differences in
12 detail on the site. So this is not just paper review.
13 Inspectors look at the packages TVA puts together,
14 looks at the differences, but then there is always on-
15 site inspection to sample TVA's implementation in a
16 final form.
17 This is the last bullet up here. I
18 mentioned the final phases of recovery. As we get
19 through closing a lot of the items, we are going to be
20 looking primarily at the system adequacy testing. We
21 are going to be looking at risk informed sample to
22 make sure that we understand everything that TVA is
23 doing to turn over their systems and make sure that we
24 are as confident as they are that they are ready to
25 perform their safety function.

1 At the end we are going to be doing fairly
2 standard oversight. We are going to be having an
3 operational readiness assessment team inspection. The
4 scope of that is yet to be determined, and we will
5 probably be applying our normal oversight, because the
6 plant has been shut down for a while, some 24-hour
7 coverage, some constant oversight and review of the
8 self-assessments that TVA is doing on themselves.
9 The current plans we've got going forward:
10 The restart oversight panel that I mentioned wasn't
11 going to be established until the last year is just
12 about to be formed. The charter is drafted. It is
13 ready for final signature, and our intent was to have
14 it in place at the beginning of this fiscal year.
15 So the next time I would anticipate that
16 there will be a restart panel formally established.
17 It really should be any day now. Then there is
18 planning already in progress for the initial meeting
19 of that panel.
20 We are still planning for the sampling
21 inspections, like I mentioned, of the SPAE-SPOC
22 process. So the TVA system recoveries, now that we
23 have their detailed schedule, we are trying to lay out
24 our resources.
25 This next bullet is an important one. We

1 are still working closely with Ram and the project
2 managers. If there's anything that comes out of their
3 Unit 1 reviews on license renewal or the extended
4 power uprate that is something that they need to have
5 resolved to have before the Unit starts up, something
6 they are basing their decision on, we laid out in the
7 beginning years ago when we started planning meetings
8 for these that we would take anything from them and
9 put them on our restart recovery list to make sure
10 that it was resolved before the unit starts up, if it
11 is important to their efforts.
12 TVA formally submitted a restart test
13 program to us, and review of that is underway, both in
14 the region and in headquarters, to understand the
15 scope of what TVA plans to do and what oversight we
16 are going to have for that.
17 That was the end of what I had to talk
18 about. Any questions?
19 CHAIRMAN BONACA: Very good.
20 DR. LEITCH: It may sound like I am going
21 to ask about EPU, but I'm not. You were just coming
22 up to the current license power level on number 1.
23 Are there any large transient testing? Is there any
24 large transient testing planned?
25 MR. CAHILL: Planned?

1 DR. LEITCH: Yes.

2 MR. CAHILL: If they were just coming up?

3 DR. LEITCH: Yes.

4 MR. CAHILL: No. It's a licensed unit.

5 All that has been done, and they are not changing

6 anything.

7 DR. LEITCH: I mean, I know we may have

8 some discussions beyond that point, but what I'm

9 saying is up to the current licensed power level.

10 MR. CAHILL: There is nothing from what I

11 know that would warrant us trying to get TVA to do

12 that.

13 DR. LEITCH: Okay. Another question I

14 had: It just rattled through my mind as you were

15 talking there. It may not be directly on the point,

16 but what is the source of the fuel for Unit 1 restart?

17 Is it all new fuel?

18 MR. CAHILL: It's not.

19 DR. LEITCH: Equilibrium core?

20 MR. CAHILL: You want to talk to that,

21 Bill? He can give you the specifics.

22 MR. CROUCH: Yes. The Unit 1 core is

23 going to be G.E. fuel type. A large majority of it is

24 G-14 new fuel. However, we are reusing some once and

25 some twice burned fuel that comes from Unit 2, you

1 know, to round out the core.

2 DR. LEITCH: Okay. So it would kind of

3 approach an equilibrium core then with some new, some

4 once burned, some twice burned?

5 MR. CROUCH: That's correct.

6 MR. CAHILL: They are switching fuel

7 vendors on the other of the operating units, and they

8 can use the old fuel that they used with G.E.

9 CHAIRMAN BONACA: I am surprised, because

10 I thought that to support the power uprate, you needed

11 to have the new fuel with a larger number of rods.

12 You can use the old fuel?

13 MR. CROUCH: You can use the G.E. fuel.

14 That was not the reason for the fuel switch. The EPU

15 was not the reason for the fuel switch.

16 CHAIRMAN BONACA: Okay.

17 MR. CAHILL: Okay. Anybody else?

18 CHAIRMAN BONACA: Well, thank you for the

19 presentation. Yes, questions? Okay. No questions.

20 So we will thank you for the presentations. They have

21 been informative.

22 What I would like to do now is to do two

23 things, actually. One is to go around the table and

24 get some views and thoughts after the presentation we

25 had today, and the second is talk about tomorrow's

1 presentation to the main Committee and the issues that
2 we should recommend to put on the agenda.
3 DR. LEITCH: Mario, just before we get
4 into that summary, I had a couple of questions for
5 Greg.
6 CHAIRMAN BONACA: Please go ahead. Good.
7 DR. LEITCH: Greg, I was wondering, on
8 page 13 of the audit report it speaks about operating
9 experience.
10 MR. CRANSTON: Yes.
11 DR. LEITCH: And it says a review of the
12 prior five to 10 years of operating and maintenance
13 history should be sufficient.
14 I guess I was just wondering how you did
15 that with Browns Ferry Number 1, what was done.
16 MR. CRANSTON: My name is Greg Cranston.
17 We looked at what they had there for each of the aging
18 management programs that we looked at. We looked at
19 26 of the 39 programs, and they prepared design basis
20 books and information for each of those.
21 Included in that was operating experience
22 for each of the systems where they had collected
23 information, either based on just in-plant operating
24 experience or even outside operating experience. So
25 we had those books available to us to go back and look

1 at those. We could also look at their PERs or
2 whatever we thought that was appropriate to look into
3 that deeply to see --
4 CHAIRMAN BONACA: Would you speak into the
5 microphone? It's hard to listen.
6 MR. CRANSTON: We also looked at their
7 PERs to determine -- in some cases, to determine what
8 type of corrective action they might have taken or
9 what they may be doing in conjunction with the
10 operating experience they have gained. So that was
11 our main source of information.
12 In some cases, we followed up with
13 conversations with the engineers at the audit.
14 DR. LEITCH: Okay. The other question --
15 Well, I guess we sort of heard the answer to this one.
16 It says -- I guess, on page 253 talking about
17 commitments, it says "Any AMP credited for license
18 renewal that is also required to comply with the
19 current licensing basis for Unit 1 at restart will be
20 in place at restart."
21 I guess I was concerned about whether that
22 would really happen, based on what we heard about the
23 AMPs not coming along as fast as we might have
24 thought. But I guess in the meantime we've heard now
25 that this more recent inspection indicates sufficient

1 or at least significant progress in that area.

2 So, you know, that statement, I guess, was

3 just kind of worrying me, whether that would really

4 come to pass or not, but it sounds like we are on

5 track -- the licensee is on track to make that happen.

6 That's really all I had.

7 CHAIRMAN BONACA: Okay. Any other

8 questions for the staff? If not, I will go around the

9 table. We will start with you, Graham.

10 DR. LEITCH: Well, I think, as has been

11 said before and a number of people have made this

12 comment, we need better justification as to the

13 applicability of Unit 2 and 3 experience to Unit 1.

14 My own feeling is that that justification

15 can be made. I just don't think that case has been

16 made as strongly as it could have been made, and we

17 have talked about that ad nauseam, I guess. So that's

18 not really a new issue.

19 I think it is important to understand more

20 clearly -- and I think again it would help to clarify

21 -- which version of the plant we are really approving

22 when we approve the license renewal application,

23 because it is kind of a dynamic thing.

24 We have talked about it before here, and

25 we have talked about it a couple of times at this

1 meeting, and it is not that I have a serious concern
2 about it. But I think it does need some
3 clarification, because the plant design is changing as
4 we speak, and it has changed considerably since the
5 license renewal application freeze state in July of
6 2003.
7 CHAIRMAN BONACA: And we see that very
8 much in the SER. I mean, you can see from the REI,
9 etcetera, that there is an evolution of changes in the
10 plant also.
11 DR. LEITCH: And the last point I had was
12 I still have concern, and Caudle mentioned it, but I
13 think we need to take a hard look at the plan to
14 transition this license renewal program to the
15 permanent plant staff.
16 I think TVA feels that that is well
17 underway, and we got a good positive answer from TVA.
18 I think the staff just has to follow up and confirm
19 that that is indeed the case; because I think that is
20 very, very important.
21 If the plant staff doesn't really own this
22 thing, if it is like somebody else off on the side is
23 telling the plant staff, well, this is a good idea,
24 you ought to do this, why those kind of commitments
25 don't really get carried out near as enthusiastically

1 as ones where there is a real sense of ownership, and
2 I think we just have to be sure there is that sense of
3 ownership, and I sense that from TVA today, but I
4 think the staff just needs to -- the regional staff
5 just needs to confirm that.
6 CHAIRMAN BONACA: And it is a legitimate
7 concern, because assuming that they got an SER early
8 next year in March or whatever, from that point to the
9 moment of restart everybody will forget about license
10 renewal. I mean, it's life. They are going to have
11 something so much more massive in front of them.
12 That's going to happen.
13 DR. SHACK: Except that a lot of those
14 programs are needed for restart.
15 CHAIRMAN BONACA: Well, not really.
16 License renewal program?
17 DR. SHACK: Your aging management
18 programs.
19 CHAIRMAN BONACA: Okay, yes.
20 DR. SIEBER: For a restart? Not all of
21 them.
22 CHAIRMAN BONACA: Not all of them.
23 DR. LEITCH: Well, you know, TVA is still
24 working on a schedule for when to bring those programs
25 to implementation, and so we hope to hear more about

1 that.

2 CHAIRMAN BONACA: Any other comments?

3 DR. LEITCH: No, that is basically it.

4 CHAIRMAN BONACA: Do you want to comment

5 now on what we should talk about tomorrow?

6 DR. LEITCH: Tomorrow there is -- what? --

7 an hour on the agenda, an hour and a half or

8 something?

9 CHAIRMAN BONACA: One and a half.

10 DR. SIEBER: Talk faster.

11 CHAIRMAN BONACA: Well, clearly, we know

12 some of the issues here today for the members. I

13 mean, you know, we talked about them. One is the

14 applicability of operating experience, and then the

15 program modifications. So those will have to be on

16 the table, I would say, to the level or to the degree

17 to which we saw a presentation today.

18 They were addressed by the licensee, and

19 they can be presented with the same slides there, but

20 simply a condensed version of what we have seen today?

21 DR. LEITCH: I think so. I think there

22 are a number of the Committee members who may not have

23 heard what I would call the strategic discussion about

24 how this whole thing is going to proceed -- that is,

25 the restart, the power uprate, the license renewal.

1 I think it is going to be -- I think we
2 have to focus tomorrow's discussion on license
3 renewal, but I do think a preamble, a very brief
4 preamble perhaps, to bring those on the Committee who
5 have not participated in these discussions to bring
6 them up to speed with the interrelationship between
7 these various licensing activities. But we cannot let
8 that dominate tomorrow's meeting, because that is not
9 the purpose. I mean, we are dealing with license
10 renewal tomorrow.
11 CHAIRMAN BONACA: Well, let's remember
12 that if we didn't have the uniqueness of the combined
13 actions, the issue of restart and operating
14 experience, we would not be having a meeting tomorrow.
15 Normally, we don't have a meeting like that. We would
16 just bring this to the final Committee at the time of
17 the SER, final SER.
18 So we have to focus on really the reason
19 why we have this committee, is to address all the
20 concerns of the Committee, with the fact that the
21 plant did not run for 23 years and, therefore, there
22 are issues of layup, how are they being addressed.
23 Operating experience is one issue, and the initiative,
24 particularly the inspection program, that are supposed
25 to compensate for those issues.

1 So those should be the emphases of the
2 meeting tomorrow, or at least be prepared to answer
3 the questions in those areas.
4 DR. SHACK: Now who is presenting
5 tomorrow?
6 CHAIRMAN BONACA: That's another question.
7 DR. SHACK: Just the licensee or the staff
8 and the licensee?
9 CHAIRMAN BONACA: I would say that we
10 probably should have the staff.
11 DR. SIEBER: Yes, that is what I would
12 recommend.
13 CHAIRMAN BONACA: Because they have the
14 SER. The licensee is going to be present and, if
15 there is a need, then you can get up and give your
16 view.
17 DR. SHACK: And straighten things out,
18 right.
19 CHAIRMAN BONACA: Yes.
20 DR. SIEBER: I don't want to jump in out
21 of turn, but I heartily agree with what Graham said,
22 that you have to start right off making the
23 distinction that there's three different things going
24 on: License renewal; the restart; and a potential
25 power uprate. And the only thing we are going to deal

1 with is license renewal.

2 I would think that the key document that

3 explains everything that is going on is the SER, and

4 any letter we write will be written against the SER.

5 CHAIRMAN BONACA: That's right.

6 DR. SIEBER: So that is what we ought to

7 talk about tomorrow.

8 CHAIRMAN BONACA: Okay. Let's move on to

9 Tom.

10 DR. KRESS: I agree with the statements

11 already made in terms of what we should cover

12 tomorrow. I particularly think it is important to get

13 the regional view on the inspections. I thought that

14 was very useful to me, and I do think we need the

15 discussion that talks about those three things going

16 on, and we are concentrating now on license renewal.

17 I suppose issues with respect to license

18 renewal -- I don't think there are any showstoppers.

19 I think we are in pretty good shape with respect to

20 license renewal.

21 Now I think they have identified the right

22 aging management programs and followed the GALL

23 report. So I don't have any real issue there right

24 now to bring forth.

25 CHAIRMAN BONACA: Okay, thank you. Jack?

1 DR. SIEBER: Contrary to what I just said
2 about the focus being on license renewal, I feel this
3 tremendous impulse to talk about the restart, because
4 I've thought a lot about it, and what's the right way
5 for the licensee to do it, what's the right way for
6 the staff to do it. I have really wrestled with it
7 and tried to keep my mouth shut.
8 There's a good reason for that, because I
9 really looked at the various kinds of inspection
10 programs and construction programs that licensees have
11 used in the past, for one reason or another.
12 For example, new construction which has
13 a lot of inspection effort going into verifying the
14 craft skills, verifying designs and so forth, is that
15 appropriate? Pieces of it are. Other pieces of it
16 are not.
17 If I look at the 350 process, Browns Ferry
18 1 didn't end up where they are under a 350 kind of a
19 situation. So the 350 process is overkill and really
20 doesn't address a lot of these modifications. It
21 addresses programmatic improvement, which apparently
22 is already in reasonable condition, and a restart
23 conducted under the ROP, to me, particularly with the
24 plant shut down and all these modifications going on,
25 is inappropriate, too.

1 So after having wrestled mightily with my
2 personal decision as to what to do, I conclude that
3 what Region II is doing is the right thing. So that's
4 a lot of words to say that I think that all of that is
5 appropriate.
6 As far as license renewal is concerned, I
7 agree that there does not appear to be showstoppers
8 involved, but I also agree with the issues that Graham
9 brought up. How do you establish the degree of
10 operating experience, which to me means experience
11 with the materials and construction of the plant as
12 far as aging is concerned? How do you do that for
13 Unit 1 when Unit 1 has such little operating time?
14 From the standpoint of the SER, that needs
15 to be strengthened, as far as I'm concerned. And I
16 think that is important.
17 I think the SER has to be consistent with
18 the state of what is being done right now and, in some
19 cases, that is probably not fully the case.
20 I would concentrate tomorrow's
21 presentation on, not exclusively but to some extent,
22 the open items, explaining what they are and why they
23 are important, so there is a decent understanding of
24 those kinds of issues.
25 CHAIRMAN BONACA: Yes. I wouldn't worry

1 too much about all the list of items and scoping and
2 other things.
3 DR. SIEBER: No.
4 CHAIRMAN BONACA: Some of that will be
5 sufficient. I think the important thing is to say
6 what open items remain, to recognize that some of them
7 have grown. The numbers actually go up from two to
8 four, dealing with some of the issues we raised, and
9 put them in context.
10 Any other comments, Jack?
11 DR. SIEBER: Well, I said I wasn't going
12 to talk about EPU, and I'm not. On the other hand, it
13 is lurking in the grass out there, and when we get
14 there, it will be, I think, demanding on all of us to
15 get it right. So that's it. That's my opinion, but
16 overall I think everyone has done a pretty good job.
17 CHAIRMAN BONACA: Bill?
18 DR. SHACK: You know, the uniqueness of
19 this license renewal again is the fact that we are
20 dealing with a plant that was shut down and doesn't
21 have the amount of operating experience.
22 I thought they made a pretty good case of
23 the applicability of the operating experience from 2
24 and 3 and the fact that they had the restart
25 experience from the one unit that is, in many ways,

1 not quite as extensive here, but it's been laid up for
2 quite sometime. They have had an experience with that
3 restart and aging and experience with it.
4 So I think they can make a pretty good
5 case out of that, and I'm sort of like Tom. I really
6 don't see any showstoppers to the license renewal.
7 CHAIRMAN BONACA: It has to be developed.
8 DR. SHACK: I would disagree. Tomorrow,
9 you know, this presentation until we get up to
10 Steve's, which isn't really related to license
11 renewal, looks like every other license renewal
12 presentation from the staff. You know, they are going
13 through their thing.
14 The picture, to me, that gives you a
15 better picture of what is different about this is
16 actually the licensee's presentation, although --
17 DR. BARTON: Thank you. I agree.
18 DR. SHACK; You know, if I was looking at
19 somehow giving the big picture to the Committee
20 tomorrow, I think the licensee's presentation gets
21 closer to it, although as Jack says, we write our
22 letter based on the SER, but you know, if I had to
23 pick 15 slides to give tomorrow --
24 DR. BARTON: If we want a crisper
25 presentation that's going to lead to a lot less

1 questions, if you don't understand what's going on, I
2 would have the licensee do it.
3 DR. SIEBER: I agree with that.
4 CHAIRMAN BONACA: Yes. You may be right.
5 I mean, I wasn't intending that the staff would have
6 the same presentation they gave us today.
7 DR. SHACK: I don't think they really want
8 to rewrite it.
9 CHAIRMAN BONACA: I think you are right.
10 Browns Ferry can go through this, and then the staff
11 could simply address the issues that we have -- which
12 have the open items, including the ones of the
13 operating experience and the periodic inspections.
14 MR. CROUCH; Dr. Bonaca, what if we
15 offered to make the presentation tomorrow, basically
16 using this same package, and we will skip some pages
17 as we go along, but present the package for all the
18 members so that, if they have some questions, they can
19 ask them. But we will pick out the salient points
20 through here to get through this in much less than an
21 hour so that, if there are questions that we need to
22 bring in the staff or the region, we'll do that.
23 CHAIRMAN BONACA: Yes. I think it's good
24 to do that, and then the staff could just simply
25 address the open issues, open items, among the open

1 items, you know, and there I go back on operating
2 experience. That is an issue that the whole Committee
3 has raised. They want to hear about that. And of
4 course, the periodic inspections.
5 DR. SHACK: One thing I think we should
6 hear -- and it is a bit disturbing -- is the fact that
7 the inspections sort of show the slow coming up to
8 speed in the AMPs. I think that point -- You know, I
9 was feeling pretty good up until the presentation, and
10 then things went south again a little bit. I think it
11 is sort of important to bring that up.
12 CHAIRMAN BONACA: Good comment, Bill,
13 actually, about tomorrow. That's good.
14 Okay. John.
15 DR. BARTON: Having screwed up your whole
16 train of thought, what you want to do tomorrow --
17 CHAIRMAN BONACA: No, actually, it was a
18 good suggestion.
19 DR. BARTON: I think it makes sense to
20 have the applicant to do it, because the points I made
21 like what's different about this application -- you
22 got restart, EPU, license renewal -- and how is it
23 being handled, I think it's best for the applicant to
24 handle.
25 What are the issues to close open items?

1 You know, anybody can do that. Maybe the staff can do
2 that, but I think for the overall Committee, I think
3 the committee needs to hear that. All right? What
4 are the open issues?
5 Now I guess I counted up to five now. We
6 started out the day with two. I think we got five.
7 So what are they and, you know, what is it going to
8 take to close?
9 The aging management programs, the status
10 and --
11 CHAIRMAN BONACA: What is the question
12 here? What do you see as the fifth one? Something
13 new that they have just added?
14 DR. BARTON: What's that? I counted five
15 when we were all done here. Now there's only four?
16 All right.
17 MR. CROUCH; There's the core plate
18 holddown bolts, the drywell steel, the drywell shell
19 corrosion, inspection of the RHR service water piping,
20 and then the Unit 1 periodic inspection program.
21 CHAIRMAN BONACA: Yes.
22 DR. BARTON: That's five. That's five.
23 No, it's four.
24 DR. CROUCH: Core plate holddown bolts,
25 drywell shell inspection, RHR service water

1 inspection, and the Unit 1 one-time inspection. And
2 the periodic inspection?
3 DR. BARTON: Yes, okay. There's five.
4 All right, aging management program status and what
5 they are, Graham's issue on operating experience,
6 inspection programs, one-time and periodic -- describe
7 that -- and I'm hung up same as Graham is. I just
8 heard the NRC say no transient testing either, and I
9 am baffled.
10 You know, they did it all before going up
11 to this power level, etcetera, etcetera, but now I got
12 new feed pumps, I got new equipment, I got new
13 instrumentation, la-de-da, la-de-da. Why aren't I
14 doing any SCRAMs and runback transients?
15 You know, I had an old plant. It was
16 built in '69, and we changed that kind of stuff out,
17 and we did transient testing up the ying-yang, but we
18 had been up and down a zillion times from zero to 100
19 percent. We had new equipment, new procedures. You
20 got to prove that this thing is going to run back like
21 it's supposed to or, you know, it's going to scram
22 from a higher power level and fall apart. I don't
23 know how the hell you are not going to prove that.
24 That, to me, is basic.
25 DR. SIEBER: Did you do your transient

1 testing intentionally?

2 DR. BARTON: Did we do a what?

3 DR. SIEBER: Your transient testing

4 intentionally?

5 DR. BARTON: Intentionally? Yes. It was

6 laid up in the startup program.

7 DR. SIEBER: Well, the point is -- That

8 sounds funny, but the point is, if you are going to do

9 it, the question is are you going to do it --

10 DR. BARTON: Well, you should do it

11 intentionally, because then you are planning for it.

12 DR. SIEBER: Or is it going to happen?

13 DR. BARTON: And if it happens? You don't

14 want it to happen. You want to plan for it.

15 DR. SIEBER: That's right.

16 CHAIRMAN BONACA: Okay.

17 DR. BARTON: That's my input. So far as

18 tomorrow's presentation, we already agreed to what it

19 is going to contain.

20 My views: You know, I think what we have

21 seen -- I think we raised the right issues. We are

22 going to hear about those. The reason why it is so

23 important is that the gut reaction of everybody who

24 looked at the plan was, hey, I mean, what would you

25 do, first of all, in the power uprate, your restart

1 power uprate, and then license renewal. That seems to
2 be the right order.
3 That is why it is important for the
4 members who are not here today and were not here on
5 the 21st to understand the context in which there is
6 alternatives, and they are being presented.
7 I tend to agree that I don't see
8 showstoppers if the program inspections, periodic
9 inspections, are properly developed in a way that
10 satisfied the need for those systems which are not
11 being replaced.
12 So with that, you know, I think we pretty
13 much saw the significant issues, and I don't have
14 anything else to add, really, to whatever has been
15 said already here.
16 So with that, I'll go around here asking
17 if there are any further comments from the staff or
18 the licensee or the public. No further questions?
19 DR. KUO: We don't have any comments right
20 now.
21 CHAIRMAN BONACA: Okay. If not, then the
22 meeting is adjourned, and we will see you tomorrow.
23 (Whereupon, the foregoing matter went off
24 the record at 4:26 p.m.)
25

CERTIFICATE

This is to certify that the attached proceedings before the United States Nuclear Regulatory Commission in the matter of:

Name of Proceeding: Advisory Committee on Reactor Safeguards Plant License Renewal Subcommittee Meeting

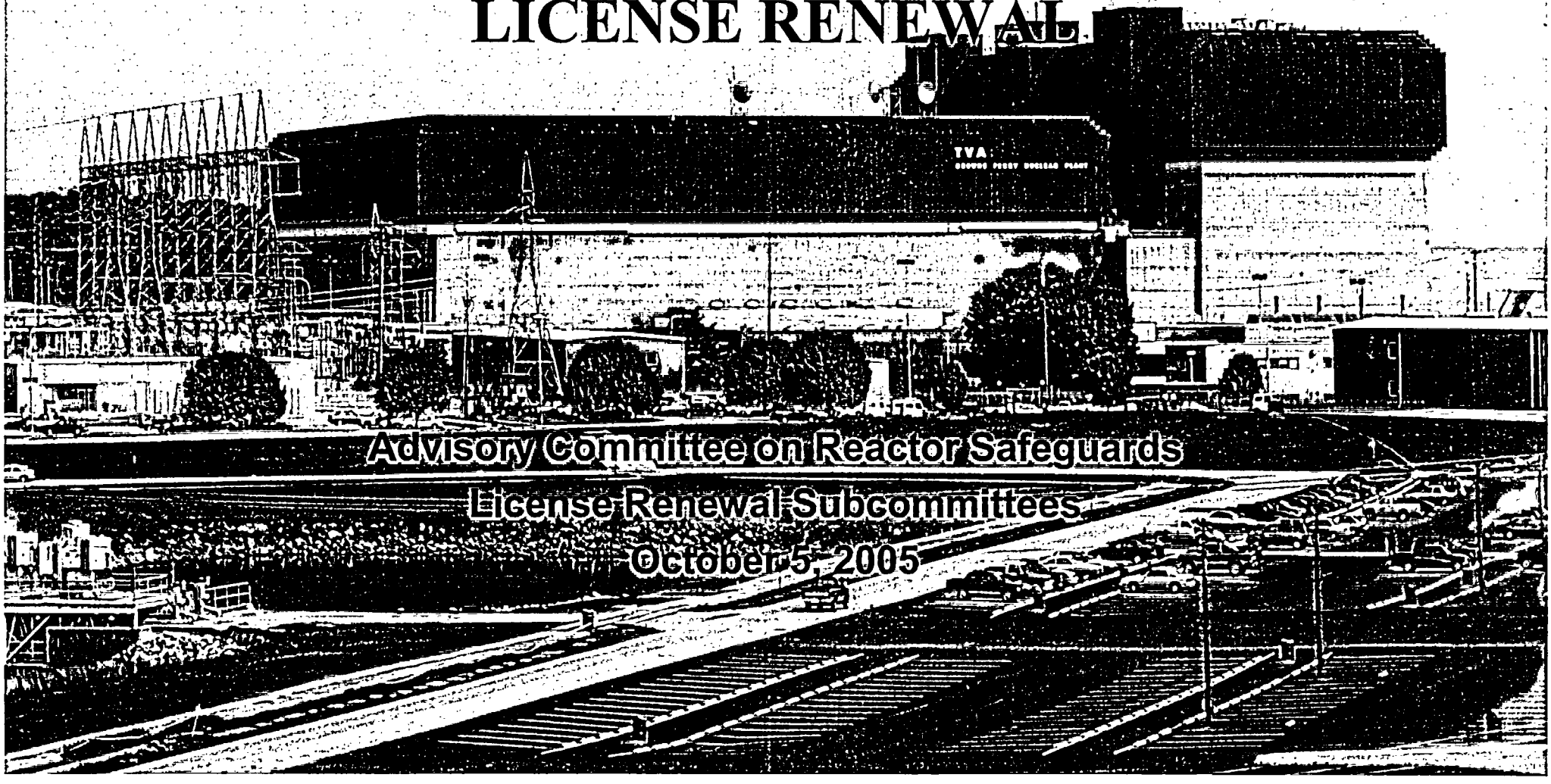
Docket Number: n/a

Location: Rockville, MD

were held as herein appears, and that this is the original transcript thereof for the file of the United States Nuclear Regulatory Commission taken by me and, thereafter reduced to typewriting by me or under the direction of the court reporting company, and that the transcript is a true and accurate record of the foregoing proceedings.

Eric Hendrixson
Official Reporter
Neal R. Gross & Co., Inc.

TENNESSEE VALLEY AUTHORITY
BROWNS FERRY NUCLEAR PLANT



LICENSE RENEWAL

Advisory Committee on Reactor Safeguards

License Renewal Subcommittees

October 5, 2005

Agenda

- Description of Browns Ferry
- BFN License Renewal Application
  - Scoping
  - Time-Limited Aging Analysis
  - Aging Management Programs
- Unit 1 Layup
- Unit 1 Operating Experience
- License Renewal Commitments
- Open Items

Description of Browns Ferry

- All Three BFN Units are General Electric BWR 4 Reactors with Mark I Containments
- Approximate Years of Operation
  - Unit 1 – 10
  - Unit 2 – 23
  - Unit 3 – 18
- BFN Units 2 and 3 in Operation Since Recovery in 1991 and 1995, Respectively
- Unit 1 in Recovery Outage with Restart Scheduled for May 2007
  - Unit 1 will be operationally identical to Units 2 and 3
- NRC Performance Indicators Green

BFN License Renewal Application

- Three-Unit Application Submitted December 31, 2003
- Original License Expiration
  - Unit 1 – December 20, 2013
  - Unit 2 – June 28, 2014
  - Unit 3 – July 2, 2016
- License Renewal Application at Current Licensed Thermal Power for each Unit (Unit 1 – 3293 MWt, Units 2 and 3 – 3458 MWt)
- Appendix F Describes the Differences Between Unit 1 and Units 2 and 3
  - These differences will be eliminated prior to Unit 1 restart (May 2007)
- Requests for Additional Information ~230 (13 are Environmental, Remainder are Safety Evaluation)

Scoping

- Scoping Basis
  - Updated Final Safety Analysis Report
  - Safe Shutdown Analysis calculation
  - Maintenance Rule documentation
  - Controlled Plant Component Database
  - Licensing Basis and Design Basis documents
- Specific Scoping for Regulated Events
  - Fire Protection
  - Environmental Qualification
  - Anticipated Transients Without Scram
  - Station Blackout
- 77 Mechanical / Electrical Systems in Scope

Time-Limited Aging Analysis

- Neutron Embrittlement of the Reactor Vessel and Internals
- Metal Fatigue
- Environmental Qualification of Electrical Equipment
- Primary Containment Fatigue
- Plant Specific Time-Limited Aging Analyses
  - Reactor Building Crane Load Cycles
  - Radiation Degradation of Drywell Expansion Gap Foam
  - Irradiation Assisted Stress Corrosion Cracking (IASCC) of Reactor Vessel Internals
  - Stress Relaxation of the Core Plate Hold-Down Bolts
  - Emergency Equipment Cooling Water Weld Flaw Evaluation

Reactor Vessel
Time-Limited Aging Analysis

- Neutron Embrittlement of the Reactor Vessel and Internals
  - Unit 1: Conservatively evaluated using 54 Effective Full Power Years at Extended Power Uprate conditions
    - Peak fluence of limiting weld 1.95×10^{18} n/cm^2
  - Units 2 and 3: Conservatively evaluated using 52 Effective Full Power Years at Extended Power Uprate conditions
    - Peak fluence of limiting weld 2.3×10^{18} n/cm^2

License Renewal
Aging Management Programs

- 39 Aging Management Programs Total
  - 38 are common to Units 1, 2, and 3
  - 1 is for only Unit 1 (i.e., Unit 1 Periodic Inspection Program)
- 11 Existing Aging Management Programs Requiring No Enhancement
- 11 Existing Aging Management Programs Revised Only to Include Unit 1
- 11 Existing Aging Management Programs Require Enhancement for all Units
- 6 New Aging Management Programs

License Renewal
Aging Management Programs

- Existing Aging Management Programs Requiring No Enhancement
  - 10 CFR 50 Appendix J Program
  - Above ground Carbon Steel Tanks Program
  - ASME Section XI Inservice Inspection Subsections IWB, IWC, and IWD Program
  - ASME Section XI Subsection IWE Program
  - Bolting Integrity Program
  - BWR Control Rod Drive Return Line Nozzle Program
  - Diesel Starting Air Program
  - Fuel Oil Chemistry Program
  - Inspection of Overhead Heavy Load and Light Load Handling Systems Program
  - Reactor Head Closure Studs Program
  - Systems Monitoring Program

License Renewal
Aging Management Programs

- Existing Aging Management Programs Requiring Revision Only to Incorporate Unit 1
  - BWR Feedwater Nozzle Program
  - BWR Penetrations Program
  - BWR Reactor Water Cleanup System Program
  - BWR Stress Corrosion Cracking Program
  - BWR Vessel Inside Diameter Attachment Welds Program
  - Chemistry Control Program
  - Closed-Cycle Cooling Water System Program
  - Environmental Qualification Program
  - Fire Protection Program
  - Flow-Accelerated Corrosion Program
  - Open-Cycle Cooling Water System Program

License Renewal
Aging Management Programs

- Existing Aging Management Programs Requiring Enhancement (All Units)
  - ASME Section XI Subsection IWF Program
  - Buried Piping and Tanks Inspection Program
  - BWR Vessel Internals Program (includes steam dryers)
  - Compressed Air Monitoring Program
  - Electrical cables not subject to 10 CFR 50.49 Environmental Qualification requirements used in Instrumentation Circuits Program
  - Fatigue Monitoring Program
  - Fire Water System Program
  - Inspection of Water-Control Structures Program
  - Masonry Wall Program
  - Reactor Vessel Surveillance Program
  - Structures Monitoring Program

License Renewal
Aging Management Programs

- New Aging Management Programs (for all Three Units)
  - Accessible Non-Environmental Qualification Cables and Connections Inspection Program
  - Bus Inspection Program
  - Inaccessible medium voltage cables not subject to 10 CFR 50.49 Environmental Qualification Requirements Program
  - One-Time Inspection Program
  - Selective Leaching of Materials Program
- New Aging Management Program (Unit 1 Only)
  - Unit 1 Periodic Inspection Program

One-Time Inspection Program

- Applies to Units 1, 2, and 3
- Verifies the Effectiveness of Aging Management Programs by Confirming that Unacceptable Degradation is not Occurring
- Where No Aging Management Program is Identified, the Inspections Confirm either:
  - Aging Effects are not Occurring, or
  - Aging Effects are Occurring at a Rate that does not Affect the Intended Function
- To be Completed Prior to the Period of Extended Operation
- Examples of inspection items:
  - Reactor coolant pressure boundary piping, valves, fittings less than four inches
  - Bottom thickness of above ground tanks
  - Submerged concrete and component supports
  - Ventilation ducts

Unit 1 Periodic Inspection Program

- Periodic Inspections will be Performed after Unit 1 is Returned to Operation to Verify No Additional Aging Effects are Occurring
- The Periodic Inspection Sample Locations will be a Subset of Non-Replaced Piping Locations (takes credit for restart inspections)
- First Round of Periodic Inspections will be Completed Prior to Period of Extended Operation and after Several Years of Unit 1 Operation
- An Inspection will be Performed during the Period of Extended Operation
- Subsequent Inspection Frequency will be Determined Based on Inspection Results

Unit 1 Layup Program

- Criteria
  - EPRI NP-5106, "Sourcebook for Plant Layup and Equipment Preservation", Revisions 0 (1987) and 1 (1992)
- Types of Layup
  - Dry
  - Wet
- Lessons Learned from Unit 3 Layup and Subsequent Restart Applied to Unit 1

Unit 1 Layup Program

- Examples of Systems in Layup
  - Dry

Core Spray	Condensate
Reactor Core Isolation Cooling	Feedwater
High Pressure Coolant Injection	Off Gas
Residual Heat Removal	Main Steam

  - Wet

Reactor Vessel	Control Rod Drive
Recirculation	

- Results Met or Exceeded EPRI Guidelines
- Performed Visual, Surface, Ultrasonic, and Remote Inspections to Assess Unit 1 Condition
- No credit was taken for the lay-up program in determining the acceptability of structures, systems, or components for Unit 1 restart

Unit 1 Operating Experience

- 10 CFR 54.17(c):

  An application for a renewed license may not be submitted to the Commission earlier than 20 years before the expiration of the operating license currently in effect.

- Unit 1 Met this Requirement

- Unit 2 and Unit 3 Operating Experience is Applicable to Unit 1

Unit 1 Operating Experience

- Unit 1 has 10 Years of Operation
- Unit 3 Shutdown for 10 Years
  - Extensive layup experience with Unit 3 directly applicable to Unit 1
  - No layup induced aging effects during 10 years of ensuing operation
- Layup Experience from Unit 3 Incorporated into Unit 1 Recovery
  - RHR service water piping
  - Small bore piping
- Unit 1's Licensing Basis will be the same as that of Unit 2 and Unit 3 at Restart (Appendix F)
- Unit 1's Design, Configuration, Operating Procedures, Technical Specifications, and Updated Final Safety Analysis Report Identical to Unit 2 and Unit 3
- Internal and External Plant Operating Experience Incorporated into BFN Corrective Action Program

License Renewal Commitments

- Commitments made Through Application and Requests for Additional Information
- Tracked with Onsite Commitment Tracking System and Corrective Action Program
- ~ 114 Commitments made to Date

Open Items

- Core Plate Hold-Down Bolts
- Drywell Shell Corrosion
- Inspection of RHRSW Piping

Summary

- Three Unit Application at Current Licensed Thermal Power
- Prepared using Generic Aging Lessons Learned Report (Rev. 0, 2001)
- Appendix F ensures Unit 1 Differences are resolved prior to Restart of the Unit
- Unit 2 and Unit 3 Operating Experience is Applicable to Unit 1

Browns Ferry Nuclear Plant
Units 1, 2, and 3
License Renewal
Safety Evaluation Report

Staff Presentation to the ACRS Subcommittee
Ram Subbaratnam, and
Yoira Diaz Sanabria, Project Managers
Office of Nuclear Reactor Regulation
October 5, 2005

Review Highlights

- **License extension request – December 31, 2003**
  - Unit 1: December 20, 2013
  - Unit 2: June 28, 2014
  - Unit 3: July 2, 2016
- **SER with Open and Confirmatory Items issued on August 9, 2005**
- **Two (2) Open Items**
  - 1 Scoping and Screening: OI 2.4-3
  - 1 Time-limited aging analysis: OI 4.7.7
- **Three (3) Confirmatory Items**
- **Four (4) License Conditions; Three Standard and one specific to BFN**
- **Fourth Condition requires completion of Unit 1 CLB differences (13 Items) described in LRA Appendix F**

Section 2.1: Scoping and Screening Methodology – Seismic Anchorage

- BFN revised the current methodology for supports/equivalent anchors within the scope for 10 CFR 54.4(a)(2) for the cases where NSR piping or components are directly connected to SR piping or components.

- Result: Brought new portions of piping, components of existing systems, and two additional structures within the scope of license renewal

Section 2.1: Scoping and Screening Methodology Secondary Containment Integrity

- Seismic qualification of containment penetration seals and the associated piping and supports outside of the secondary containment.

- Staff requested BFN identify any additional piping, supports, and other components outside secondary containment that are required to maintain the structural integrity of the secondary containment

- BFN verified that a few mechanical systems only had systems boundary changes

Section 2.4: Scoping and Screening of Containments, Structures and Supports

Open Item 2.4-3 Drywell Shell Corrosion

- Potential Corrosion of the inaccessible portion of the Drywell affected by the leakage from the refueling cavity seal

- The staff proposed two options:

  (1) Bring the refueling cavity seal in the scope of LR or
  (2) Periodically monitor the potential degradation of the inaccessible side of the dry well

Section 2.5: Scoping and Screening of Electrical and I&C Systems

- Scoping and screening I&C components performed using the spaces approach

- BFN excluded SRM and IRM circuit cables from the LR scope

- Resolution: IRM circuits brought into scope and managed by suitable AMP

Section 2.6: Integration of BFN Unit 1 Restart Activities and LR Activities

- Unit 1 CLB differences (13 Items) described in LRA Appendix F
- LRA review performed under a regulatory framework
- Standard Aging Management Review of components identified in the bold border boxes
- License condition ensures implementation of all changes

Section 2.7: Conclusion for Scoping and Screening

- On the basis of its review, the staff concluded, pending resolution of OI 2.4-3, that the applicant had adequately identified those systems and components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and those systems and components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

Section 3.0: Aging Management Program (AMP)

- **Total of 39 Aging Management Programs**
  - 38 are common for all three units
  - 1 specific to Unit 1 (i.e., Unit 1 Periodic Inspection Program)
  - 6 New Programs
  - 4 Plant-Specific Programs

Section 3.0: Overhead Heavy Load and Light Load Handling Systems Program

- Exception to Inspection of Overhead Heavy Load and Light Load Handling Systems Program
  - Program does not monitor for crane fatigue
  - Reactor building crane fatigue was evaluated as a TLAA
  - The TLAA remains valid through extended period of operation and hence fatigue monitoring not required

Section 3.0: Buried Piping and Tanks Inspection Program

- Applicant relied solely on opportunistic inspections to check buried piping.

- The applicant agreed to inspect the buried piping within 10 yrs after entering the PEO, unless conclusive opportunistic inspections have occurred within the 10-yr period.

- If not, the applicant committed to perform a focused inspection

Section 3.0: Aboveground Carbon Steel Tanks Program

- The staff identified that the AMP does not perform thickness measurements of fuel oil tanks' bottom surface

- The applicant revised One-Time Inspection Program to require ultrasonic thickness measurements

Section 3.3: Aging Management Review (AMR) – Auxiliary Systems

Confirmatory Item 3.3.2.35-1

- Loss of preload and cracking of bolting in the auxiliary system
  - Staff required confirmation and results of any self assessments, inspections or maintenance activities on the auxiliary system bolting
  - Region II AMR inspection verified the confirmatory item in a recently concluded Inspection .
  - Disposition in inspection report to be issued in November 2005.

Section 3.5 AMR of Civil Structures and Components

- Aging Management of Inaccessible Areas
  - Inspection of Inaccessible concrete structures
  - Results of Browns Ferry groundwater and Wheeler Reservoir water sampling indicated a non-aggressive environment

Parameter	Groundwater	Wheeler Reservoir	Acceptable Limit
pH ranges	6.33- 8.77	7.28- 8.64	> 5.5
Chlorides (ppm)	18.3	13.9	< 500
Sulfates (ppm)	30.3	15.5	<1500
Phosphates (max. ppm)	0.5	0.5	---

Section 3.7: AMR of Unit 1 Systems in Lay Up

- The applicant does not rely solely on Unit 1 Lay up Program during the extended outage
  - Staff needed confirmation that no new degradation occurred in extended outage
  - Resolution: The applicant committed to Unit 1 periodic inspection that will be conducted through the extended period

Section 3.7: AMR of Unit 1 Systems in Lay Up

Confirmatory Item 3.0-3 LP

- Unit 1 Periodic Inspection Program
  - BFN submitted Unit 1 Periodic Inspection Program
  - Staff in reviewing the Program element needed additional confirmation.
  - Section 3.0 of the final SER will include the staff evaluation of this program

Section 3.8: Conclusion of AMR and AMP

- On the basis of its review of the AMR results and AMPs, the staff concluded that the applicant had demonstrated that the aging effects will be adequately managed so that the intended functions will be maintained consistent with the CLB for the period of extended operation, as required by 10 CFR 54.21(a)(3).

Section 4: Time Limited Aging Analyses (TLAAs)

- Reactor Vessel and Internals Neutron Embrittlement
- Metal Fatigue
- Environmental Qualification
- Primary Containment Fatigue
- Other Plant-Specific Analyses

Section 4.2: Reactor Vessel and Internals Neutron Embrittlement

- **Upper Shelf Energy (USE)**
  - Vessel beltline USE values were assumed to be less than the 10 CFR 50, Appendix G criteria.
  - Equivalent margin analysis (generic) provides bounding USE value based on copper and fluence values
  - Staff performed independent analysis and confirmed applicant's conclusion
  - Analysis projected through end of PEO operation pursuant to 10 CFR 54.21(c)(1)(ii)

Section 4.2: Reactor Vessel and Internals Neutron Embrittlement

- Adjusted Reference Temperature (ART)

Parameter	Unit 1	Unit 2	Unit 3
ART	159°F	157°F	157°F
USE (35 ft-lb for EMA)	45 ft-lb	45 ft-lb	45 ft-lb

Section 4.3: Metal Fatigue

- **Reactor Coolant Environmental Effects**
  - CUF of some components are projected to exceed the ASME Section III Class 1 limit before the end of PEO
  - Effects of aging on the intended functions at these locations will be managed in accordance with 10 CFR 54.21 (c)(1)(iii) as part of the Fatigue Monitoring Program.

Section 4.7: Other Plant-Specific Analyses

- Reactor Building Crane Load Cycle
- Dose to Seal Rings: High Pressure Coolant Injection and Reactor Core Isolation
- Radiation Degradation of Drywell Expansion Gap Foam
- IASCC of Reactor Vessel Internals
- Stress Relaxation of Core Plate Hold-down Bolts
- EECW Weld Flaw Evaluation

Section 4.7.7: Stress Relaxation Core Plate Hold-Down Bolts

- TLAA evaluated for loss of pre-load in accordance with 10 CFR 54.21 (c)(1)(ii)

- Expected loss of preload of 20% which bounds the original BWRVIP-25 value

- In a plant specific analysis
  - Core plate hold-down bolts will maintain sufficient preload to prevent sliding of core plate
  - Hold-down bolts meet ASME Section III, Class 1, Level D service limits at the end of PEO

Section 4.7.7: Stress Relaxation Core Plate Hold-Down Bolts

- Open Item 4.7.7
  - The staff reviewed the method of analysis based on GE's generic stress relaxation data on irradiated stainless steel materials
  - The staff requested additional information to address
    - Horizontal and vertical loads for all operating conditions during PEO
    - Sliding of core plate from core plate rim during extended period of operation
    - Axial and bending stresses of bolts

Section 4.8: Conclusion of TLAAs

- The staff reviewed the information in LRA Section 4 and on the basis of its reviewed concluded that, subject to resolution of OI 4.7.7, the applicant has provided an adequate analysis of TLAAs.

Browns Ferry Nuclear Plant
Units 1, 2, and 3
License Renewal
Safety Evaluation Report

Caudle Julian, Senior Project Manger

DRP, Region II

License Renewal Inspection Program Implementation

- License renewal manual chapter - MC 2516
- License renewal inspection procedure - IP 71002
- Site-specific inspection plan for each applicant
- Scheduled to support NRR's review
- Resources - consistent team of the same five inspectors
- Training program for replacement team members

Scoping and Screening Inspection

- Objective: To confirm that the applicant has included all appropriate SSCs in the scope of License Renewal as required by the Rule

- MC 2516 and IP 71002 have been revised to reduce the scope of Scoping and Screening inspections and combine them with Aging Management Program inspections

- Focus is on 10 CFR 54.4 (a) (2) situations - non safety related that could effect safety related equipment

Aging Management Programs Inspection

- Objective: To confirm that existing AMPs are working well and to examine the applicant's plans for establishing new AMPs and enhancing existing AMPs
- Two weeks in length
- Examine records of past tests and surveillances from existing AMPs, and examine the implementation plans for new or expanded AMPs
- Verify inclusion of future tasks into established site task tracking system
- Verify that material condition of plant was being adequately maintained to date

Additional (Optional) Inspection: Open Items

- 2 - 3 days in length
- Close any open items from previous inspections
- Close any inspection items requested by NRR
- Verify that applicant has loaded future tasks into established site task tracking system
- Verify that a transition plan for completion of license renewal project was established

Browns Ferry License Renewal Inspection

- AMP inspection conducted November 29 - December 17, 2004
- Inspection concluded that existing programs to be credited as aging management programs for license renewal are generally functioning well.
- Inspectors observed that the applicant had not yet begun the implementation process for new and enhanced AMPs
- AMP procedures have yet to be defined and composed

Browns Ferry License Renewal Inspection

- For existing programs, the identification and selection of which particular existing procedures constitute the AMP had yet to be done

- Region II concluded that NRC will perform another inspection when the applicant has progressed further with AMP implementation.

- In walking down plant systems and examining plant equipment the inspectors found no significant adverse conditions and it appears plant equipment was being maintained adequately.

Browns Ferry License Renewal Inspection

Second (optional) AMP Inspection

- Conducted September 19 - 23, 2005

- Reviewed sample of 40 AMP Implementation Packages containing proposed procedures

  - Packages contained some errors and were not meticulously reviewed

  - Applicant initiated PER for corrective action

Browns Ferry License Renewal Inspection

Second (optional) AMP Inspection (cont.)

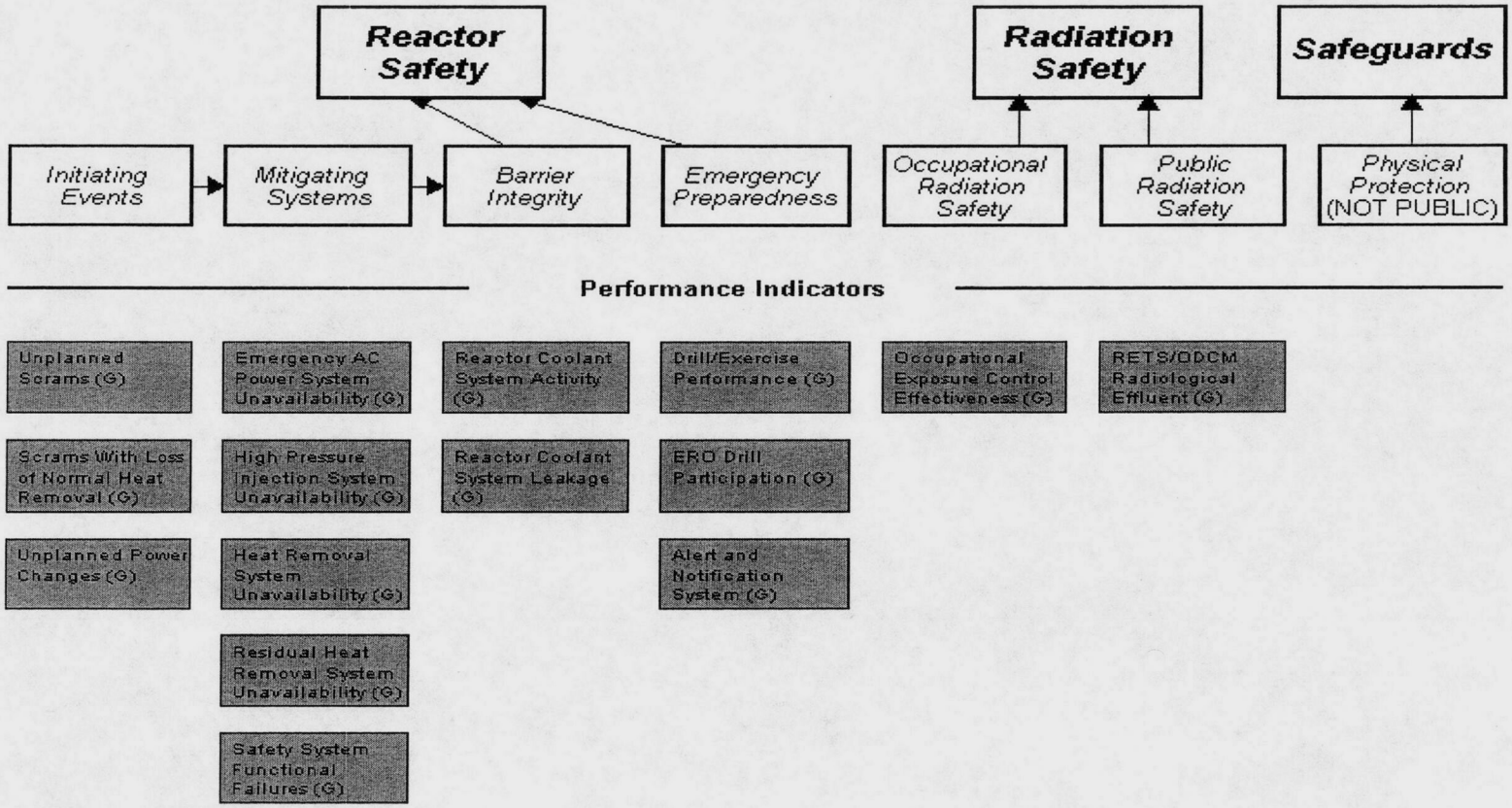
- Reviewed plans for tracking future actions using TROI system

  - Not initially linked to Implementation Packages but quickly corrected
  - Inspection sample commitments were included
  - Much duplication and varying format resulting in confusing document

- Applicant decided to track future actions using PER process

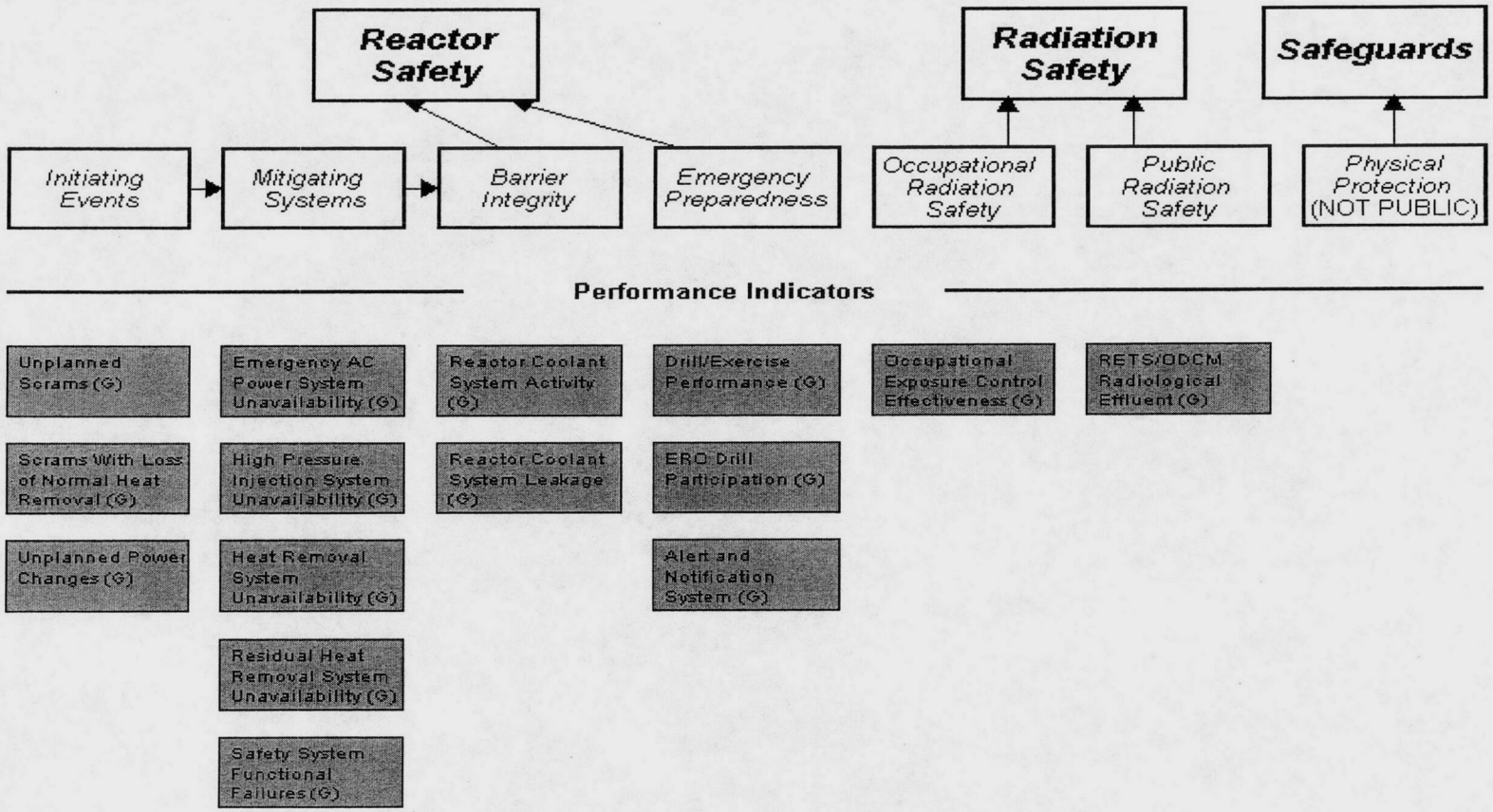
- Region II will follow up on these issues during a future inspection

Browns Ferry 2
2Q/2005 Performance Summary



Last Modified: August 3, 2005

Browns Ferry 3
2Q/2005 Performance Summary



Last Modified: August 3, 2005

Conclusion

- Region II concluded that NRC will perform another inspection when the applicant has progressed further with AMP implementation.

- In walking down plant systems and examining plant equipment the inspectors found no significant adverse conditions and it appears plant equipment was being maintained adequately.

Browns Ferry Nuclear Plant Units 1, 2, and 3 Inspection and Oversight Activities

Stephen Cahill, Chief
DRP, Region II

NRC OVERSIGHT FRAMEWORK

- **Initial NRC perspective & considerations**
  - Unit 2 & 3 recovery experience

- **Need established for unique NRC Manual Chapter (MC)**
  - ROP implemented since Unit 2 & 3 recoveries
  - TVA using existing normal change processes

- **Several other considerations creating need for a MC**
  - No need to re-verify adequacy of fixes to programs
  - Focus inspections on just program implementation

NRC OVERSIGHT FRAMEWORK

- **MC 2509 issued in August 2003**

  - Specific to oversight of Unit 1 Recovery
  - Conscious decision not to test new construction approaches
  - Final draft shared as public document

- **Key attributes of MC 2509**

NRC OVERSIGHT FRAMEWORK

- **Regulatory Framework established**

  - TVA letters in 2002 & 2003 to establish U1 restart scope
  - NRC issued a final Regulatory Framework agreement on August 14, 2003

- **Inspection Plan**

  - Unlike system based new construction program
  - Based on Reg. Framework and Recovery Issues List

INSPECTION PLAN

- **Schedule now primarily driven by Recovery Issues List status**

  - Original focus was equipment removal and engineering
  - List first issued as public document in July 2005
  - TVA provides detailed Quarterly Status Update
  - Inspections targeted when program complete and substantial physical work done

- **System turnover to Operations process - SPOC**

- **ROP Cornerstone Transition**
  - Cornerstone (CS) Transition Matrix
  - Four CS's into ROP approach as of January 1, 2005

- **Significant Modifications or Verifications**
  - Inspecting safety-significant items

INSPECTION APPROACH

- **Ownership of Recovery List Items**
  - All assigned a lead
  - Use of new inspectors factored in to assignments

- **Quarterly Integrated Reports**
  - Documentation threshold

- **Focus of Inspections**
  - Review any applicable inspection procedures for reference
  - Review issue background & references
  - Identify any differences from Unit 2 & 3 resolution
  - Review differences in detail
  - Sample TVA's implementation

INSPECTION APPROACH

- **Final Phases of Recovery**

  - System adequacy testing focus: risk informed sampling

  - Operational Readiness Assessment Team inspection

  - Will apply our "routine" oversight of extended shutdown plant restart

CURRENT PLANS

- **Restart Oversight Panel Charter ready for final signature**
  - Planning in progress for initial meeting

- **Planning for sampling inspections of System Recoveries**

- **Incorporating License Renewal and EPU open items**
  - Will track in Unit 1 Recovery Issues List where appropriate

- **Review of Restart Test Program underway**