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NUCLEAR REGULATORY COMMISSION

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ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

(ACRS)

SUBCOMMITTEE ON PLANT LICENSE RENEWAL

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WEDNESDAY

OCTOBER 5, 2005

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ROCKVILLE, MARYLAND

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The Advisory Committee met in Room O-1G16, White Flint One, at 12:30 p.m., Mario V. Bonaca, Chairman of the Subcommittee, presiding.

COMMITTEE MEMBERS:

MARIO V. BONACA	Chairman
THOMAS S. KRESS	Member
WILLIAM J. SHACK	Member
JOHN D. SIEBER	Member
JOHN J. BARTON	Consultant
GRAHAM M. LEITCH	Consultant
JOHN G. LAMB	Staff
CAYETANO SANTOS, Designated Federal Official	

ALSO PRESENT:

Don Arp

Bob Moll

Joe Valente

Ken Brune

Bill Crouch

Joe McCarthy

Rich DeLong

Ama Pal

Yoira Diaz Sanabria

Ram Subbaratnam

P.T. Kuo

Jake Zimmerman

I N D E X

P R O C E E D I N G S

Time: 12:33 p.m.

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

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

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

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

We have received no written comments or

requests for time to make oral statements from members of the public regarding today's meeting.

A transcript of the meeting is being kept and will be made available as stated in the *Federal Register* notice. Therefore, we request that participants in this meeting use the microphones located throughout the meeting room when addressing the subcommittee. Participants should first identify themselves and speak with sufficient clarity and volume so that they can be readily heard.

Before I proceed with the meeting, I would like to summarize for those members of the subcommittee that were not present on September 21 when we really reviewed the general issue of restart of Unit 1 and also some issues of license renewal. There were a number of issues discussed that pertain to the license renewal of particularly Unit 1.

We talked about how Unit 1 meets the requirement for operating experience and meets the requirements of the rule, and in that context we felt that there were throughout the application, and particularly the SER, a number of compensatory steps where the experience was not sufficient; for example, the commitment to some periodic inspections and things of that nature. However, the SER did not include a

statement up front of how this issue of complying with the operating experience of the rule was being dealt in a comprehensive fashion, and the staff agreed to develop that kind of discussion in the SER, not now, of course, but for the final SER.

The second issue we discussed was the periodic inspections. We felt positively inclined toward those. We felt that that was responsive to, in fact, filling the gaps into the operating experience for systems in lay-up. However, we felt that there wasn't enough information there yet, and we really are anxious to see more about that. That can be provided at another time.

The other point we raised was regarding the application -- not the application, the SER. Although there is now a commitment to periodic inspections, there are still in the SER a number of locations where one-time inspection prior to restart are being used for certain systems. So there is some confusion there. It may be purely editorial due to the fact that the commitment to periodic inspection came at a later time.

These are the three issues that we discussed, and I just wanted to bring them up for information, and they would be of interest to the

committee, because the committee has raised concerns regarding operating experience.

One last note: At the end of the meeting, we will have to tell the staff and the licensee what the Committee may want to hear tomorrow. They are coming for a one and a half-hour presentation to the full Committee. So we will discuss it at that time.

With that, we will now continue with the meeting. I call upon Mr. Kuo of the Office of Nuclear Regulatory -- Reactor Regulations to begin.

DR. KUO: Thank you, Dr. Bonaca. My name is P.T. Kuo. I am the Project Director of the License Renewal and the Impact Program. I have many staff members with me. On my left is Jake Zimmerman, who is the Section Chief for Section B, who is responsible for the audit activities for this project.

On my right are the Project Manager -- License Renewal Project Managers, Ram Subbaratnam, and Yoira Diaz. They have been managing the review for this project, and there are technical review staff in the audience who supported the review of this project.

We also have invited our Regional staff who are responsible for the inspection activities at the site. Carter Julian and Steve Cahill both are here. Later on, they are going to make a presentation

on inspection also.

As you are aware, this is a very complicated review for Browns Ferry, and the reason, because there are three activities that are being pursued concurrently. That is the license renewal, the Unit 1 restart, and the EPU for all three units. But for this presentation, today's presentation, we are only focusing on license renewal, and we have been reviewing the license renewal application based on the assumption of 100 percent -- I mean, not 100 percent -- at the current power level. For Unit 1, it is 100 percent. For Units 2 and 3, it is 105 percent. That has been our basis for this license renewal review.

We tried to assemble the current licensing basis for the review at the current power level, and we understand that the TVA is also in parallel pursuing the EPU. Their planning is to restart Unit 1, 2 and 3 at the 120 percent power, but I just want to reemphasize that our review is based on the current power level.

Resulting from our review, we have --

CHAIRMAN BONACA: And so is the application.

DR. KUO: Yes. But the application --

CHAIRMAN BONACA: You know, in some cases

we have had members raising questions regarding what -- because there has been such an evolution, you know, and the plant has changed from the moment the application was submitted to today, and I believe you, Graham, raised that issue.

DR. LEITCH: Yes. Well, I understand that the application is at the present power level, but yet the configuration of the plant is a dynamic thing. The application, as I understand it, was based on the plant as it appeared in the middle of 2003. I think July 1, 2003, was the freeze date. But now since that time, I guess, my understanding is that, for example, the recirc piping has -- At that time it was 304 stainless. In the interim, it has been changed to 316 nuclear grade stainless.

Now when you review the application, are you reviewing 304 stainless or 316 stainless as far as an aging management program? Now maybe in that example it doesn't make any difference, but what I'm saying is what configuration of the plant are we reviewing?

DR. KUO: It's really a good question. We tried to struggle with this also during our review. I think what we are doing is that, if this 306 pipe, for instance, is physically present or that they are

committed to install in place this 306 pipe, then our review is based on the suggested configuration. However, the judgment is made on the basis of 100 percent -- I mean, not 100 -- I keep on saying 100 -- current licensing power level, although it may be good for 120 percent power, but we are not -- At this review, we are not making that determination.

DR. LEITCH: My question is not so much about the power level as about license renewal. Perhaps the aging management program would be different for 316 versus 304. So when you look at the aging management program, what vintage of the plant are you looking at? And in some cases, the plants may never come to the same vintage.

It is my understanding that Unit 1 has been changed to 316 stainless. Two and 3 have not, and will not. They will stay at 304 stainless. So perhaps the aging management programs would be different.

My question really is: Which have we evaluated?

DR. KUO: Like I said, if they have committed to replace these 304 piping to 306, either already in place physically or committed to install, then our reviews are based on 306. Aging management

program is going to be associated with the 306 piping rather than 304.

DR. BARTON: So you have two aging management programs for some components. Right?

DR. LEITCH: In that example I cite -- and I'm not sure whether the aging management program is different or not. Perhaps I don't have the best example, but what I'm saying is in this example, Unit 1 -- Even in the long term after all the dust settles, Unit 1, it's my understanding, is going to be 316 stainless, nuclear grade. Units 2 and 3 are going to be 304 stainless.

So do we evaluate two different programs, one for Unit 1 and a different program for Units 2 and Three?

DR. KUO: I ask Ram to address that.

MR. SUBBARATNAM: Yes. This is Ram Subbaratnam, Project Manager for License Renewal.

The question is we have done a power looking review. If the material committed to is the 316, it may not be existing today. We have just reviewed them for aging management for material and aging effect for the material, the way it would appear when it is restarted.

That means, when you look at the

application, we have all the bold bordered boxes which gives you a reminder that this material is going to be replaced in future. However, we are going to do the aging management and the review based on the material which is to come in future, actually.

So it is not on a current basis. And of course, licensing can be articulated a little bit better, but what we do is we focus also -- we will also focus on the material and the aging management as it exists in Unit 2 and 3, after all the enhancements are done to make Unit 1 look like Unit 2 and 3, which are the current operating plants.

So they will, to some extent, extrapolate experience from Units 2 and 3, but it is on the future material and the future position of how it going to be.

DR. LEITCH: But it is my understanding that 2 and 3 are not going to be changed to 316 standards, but remain as 304. Now maybe I'm wrong.

DR. KUO: Bill, would you like to take this question?

MR. CROUCH: This is Bill Crouch. I'm the Site Licensing Manager at Browns Ferry.

In Units 2 and 3 we have replaced a portion of the recirc piping with 316 NG. There is

304 and 316 NG in both of those two units.

In Unit 1, it will be purely 316 NG. The aging management program is the same for both 304 and 316. So putting in the additional 316 material doesn't change the aging one way or the other, and since Units 2 and 3 have both materials in them, both materials are in the aging management program.

DR. LEITCH: So I guess maybe I have picked a poor example then, that in this case the aging management programs turn out to be the same. But I can't think of the example where they are not the same, but --

MR. CROUCH: Let me give you more information. As part of Unit 1 recovery, we have not introduced any new materials that are not already in Units 2 and 3.

DR. LEITCH: Okay. So there is new condensate pumps and feed pumps and --

MR. CROUCH: Same materials.

DR. LEITCH: -- condensate booster pumps and all that equipment that we --

MR. CROUCH: Same materials.

DR. LEITCH: -- saw you laboring with down there last month is all the same materials --

MR. CROUCH: All the same materials.

DR. LEITCH: -- that has already been evaluated then?

MR. CROUCH: Right. It may be slightly bigger, but it is the same materials, performing the same functions in the same environment.

DR. LEITCH: Okay. That helps me. Thank you.

MR. CRANSTON: My name is Greg Cranston, the Project Team Leader conducting the audits.

The same aging management programs applied for all three. There may be some minor differences, but those are things we would look at in conjunction with our aging management review line items where we have line items for every single system. If there is something different, then that is noted in there.

Also, when we do our comparison of AMR line items, we just don't necessarily look at that particular material, the environment, the aging effect and the aging management program just for that one system. We do cross-checks and sorts to see how that aligns with other systems as far as how they are treating that particular type of component in that same environment with the same effect to look for anything that may be different.

So we are looking for consistency there as

well, the cross-check between all three units and even different systems, to see that they are all being treated the same. When we find outliers, like for some reason there is a line item that they use water chemistry control in one but they are using some type of visual inspection or something in the other, then we challenge that to see was that something that was misrepresented in the document that they have to fix or what is the rationale for it, and we follow through on that. But the programs apply for all three units.

DR. LEITCH: Okay. Thank you.

CHAIRMAN BONACA: You talked about to see if there is something in the document to be fixed. Clearly, there is a lot in the document to be fixed, because the plant has changed as we go forth, and also there has been a debate between the staff and the licensee on the problems.

The biggest example is the one of this periodic inspection commitment that is not documented anywhere. is now to be in the Appendix B, and is not the SER either. It's just mentioned in passing.

So now to the degree possible, I think the final SER should have some clarification of these issues, because a standard reviewer like myself who cannot benefit from the direct interaction, I cannot

issue requests for additional information or whatever. I am left pondering what's up and what's down. I mean, you know, when you go through the SER, we already pointed out to you this morning some of the issues of Section 347 where there are inconsistencies there.

So I think there has to be some clarification so we understand these issues.

DR. KUO: You are right, Dr. Bonaca. As I recall, there were three actions that we took away from the last meeting. What you said about the periodic inspection item is one of the three, and the other two are the operating experience -- for instance, that was not addressed in the SER; it didn't appear in any of the documents. We are going to make that improvement.

We have asked the applicant to provide us the operating experiences. Then there is another issue, to define the inspection terms -- terminology, I believe. So we are going to work on those issues.

CHAIRMAN BONACA: I understand, and I appreciate that. The only thing I wanted to mention here is, to the degree possible, you know, when you do the final revision of the SER, be aware that a standard reader like ourselves here are being

challenged by the situation where there have been replacement in components, in commitments, things of that nature, and I think we need to be able to review a document that is consistent.

I am not asking for the application to be updated, but --

DR. KUO: Additional information should be provided, yes.

CHAIRMAN BONACA: It's challenging to perform the review.

DR. LEITCH: Just one comment in that regard. I found the Appendix F in the application very helpful, but that was -- It seemed to me that Appendix F was how are we going to bring Unit 2 and 3 up to the same basis as Unit 1, but the other side of that coin, I think, is when we have moved Unit 1 further along in the design process by some of the EPU modifications and everything, what needs to be done on Unit 2 and 3 to bring it up to that?

I think it's sort of like -- I think it is like the other side of the coin that we are asking for. It's like an Appendix F where those six or seven things are listed there. But as I say, they are more what the plan is to bring 2 and 3 up to 1, but now 1 has moved further along, and what remains to be done

on 2 and 3? I think it's the other side of the coin.

DR. KUO: I think that you are talking about between the license and the EPU.

DR. LEITCH: Yes.

DR. KUO: Yes. And we are fully aware of it, and that's why I want to emphasize that the basis of our review is at the current power level, and the assumption of that is that all three units have a consistent current licensing basis. They should be at least comparable.

DR. SHACK: Okay. That is a question, P.T., because Appendix F is presumably the tabulation of changes that you need to make in order to bring them to the current licensing basis, and my question was: For license renewal, did you make the judgment that they all got to the current licensing basis or did you make the judgment that, whether or not they had exactly the same licensing basis, the aging management programs were adequate?

DR. KUO: We make the judgment that whatever they do on Unit 1, bring the Unit 1 to a licensing basis consistent with Units 2 and 3.

DR. SHACK: So you think that Appendix F are the necessary and sufficient conditions to bring Unit 1 to the current licensing basis of 2? You have

made that judgment, that they are sufficient?

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

CHAIRMAN BONACA: Insofar as the current licensing basis?

DR. KUO: Right. That's correct.

CHAIRMAN BONACA: Okay.

DR. KUO: Okay. If there's no further questions, I think I will turn over the meeting to TVA to make their presentation, and they will be followed by the staff's presentation on SER and the Regional inspection activities.

DR. LEITCH: I just have one other question, which I guess is right in the area we are discussing. Have there been annual updates to the licensing renewal application while the review has been ongoing?

DR. KUO: I believe we had, but I would like Ram to address the details.

MR. SUBBARATNAM: Yes. We are going to constantly track this annual update. So far, since the time of submission of the application in January of 2004, we have received one licensing basis update on the application on January of 2005, and one more is due at the end of this year.

We will continue to track the TLB update all the way through. The last document which updated was around 10-15 pages, which captured what happened in between.

DR. LEITCH: We don't have that document. Right? We are reviewing the original submittal of the license?

MR. SUBBARATNAM: That's right. Actually, that was probably like the REI submittal. I could give you the documentation, if you need to look at it. That's like 20 pages worth of licensing basis update they made. This is unique to Browns Ferry.

Some of them could have been completed from the time the application was submitted to us and today. So we are going to keep tracking it and, when I make my presentation, I have a special template of inspection which is going to track how these 13 items are going to be tracked. We are going to make it a condition for Unit 1's basis becoming par with Unit 2 and 3.

DR. LEITCH: I wonder why the ACRS ought not receive the revised application.

DR. KUO: There is no revised application. It's just an annual update provided.

DR. LEITCH: But we haven't received that

document, have we?

DR. KUO: I don't think -- We can give it to you, sir. It is the submittal which came in afterward.

DR. LEITCH: Okay. Thank you.

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

DR. LEITCH: Thank you.

DR. SHACK: Just a question on that. Those don't seem to be posted on the website either, or at least I can't find them.

MR. SUBBARATNAM: The annual update won't be a part of -- The website has got only the draft SER, the open items, so far.

DR. SHACK: Right. And the original license application and Appendix F.

MR. SUBBARATNAM: Appendix F.

DR. SHACK: But shouldn't it also have everything that they submit?

MR. SUBBARATNAM: That is a good question. We will take a look at that.

DR. KUO: As a matter of fact, I have a CD which have compiled all the RAIs.

DR. SHACK; Yes, we can get the CD, but the public is only going to go to the website.

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

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

CHAIRMAN BONACA: Please.

MR. CROUCH: Thank you. My name is Bill Crouch, and I am the Site Licensing Manager at the Browns Ferry Nuclear Plant of TVA. We appreciate the opportunity we have to come today and to talk to you about the license renewal project for Browns Ferry.

We have brought several people here with us today so we can answer your questions, and I would like to take a few moments here to introduce some of the players that we have with us here.

Immediately to my right is Rich DeLong. He is the Site Engineering Manager at Browns Ferry, and next to him is Joe McCarthy of my licensing staff. We also have with us the basic staff that put together the license renewal application. We have Ken Brune, who is the Project Manager.

Working for him in the various areas of mechanical, electrical and civil, we have Nicky Hamby, Don Arp, Russell Jansen, Roger Jennings. We also have Kevin Groom of the Site Licensing staff, who is a materials person. These were all our engineering type people.

Then from our Unit 1 engineering staff, we have Joe Valente, who is the Unit 1 Engineering

Manager, Dave Burrell, Bob Moll, and Henry Jones. They are overseeing the restart efforts for Unit 1.

We also have with us Kathryn Sutton from Morgan Lewis Bokius.

As I said, we would like to thank you for the opportunity to come and talk to you. We recognize that some of our presentation today is a little bit of what you heard two weeks ago when we were here, but we wanted to make sure that we set the stage for the others.

When we were here two weeks ago, you gave us specific questions that we have tried to answer and drill more down into the area of the license renewal projects for Units 1, 2 and 3. So that's the real impetus of our presentation today.

As we go through this, I will give you a brief description of the overall Browns Ferry plant. We will talk about the license renewal application, how we have done the scoping of the various systems and components that are involved, then how we did the time-limiting aging analysis and the aging management programs and reviews that we did.

In response to some of your specific questions, we will talk a little bit more abut the Unit 1 layup program, the operating experience of

Units 2 and 3 and how it applies to Unit 1, and we will talk about the commitments, how we are tracking those and making sure they get implemented. Finally, we will briefly discuss the open items that are in the SER, and inspections and things.

So moving on to page 2 of the presentation, all three units at Browns Ferry are General Electric BWR reactors with Mark I containments. They are in a common building with a common environment. All three units have been maintained under the same general environmental conditions all through their life, because they had similar type environmental control systems.

The plants -- When they were originally designed and constructed, they were configurationally identical as much as you can make units that are opposite hand type thing. Then they are operationally identical in that they operate under the same operating processes. They have the same equipment, same procedures. Everything is operationally identical.

Each unit has undergone a history of operation. As everybody knows, Unit 1 started first. Then we had the fire that shut us down for roughly a year and a half. At that time Unit 2 had just begun

operation, just before the fire. So both of them were shut down for a while.

Then over the years we have brought Unit 2 back on line, then Unit 3 back on line. So what we have here is the approximate years of operation for each of the units, and these are calendar years, not effective full power years.

Units 2 and 3 have been in operation since their recovery in 1991 and 1995, respectively. The operations proceeded smoothly. We have operated at the original license thermal power of 100 percent from the units' restart until 1998 and 1999 when the two units were uprated five percent to 105 percent of original rated thermal power. That's what they are running at right now.

Unit 1 is in a recovery outage, and the restart is scheduled for May of 2007. We are -- As you guys saw when you were at our plant, we are undergoing extensive modifications in Unit 1 to make Unit 1 come up to speed with Units 2 and 3 from a plant configuration, plant materials and a plant licensing basis standpoint.

When the units get back and all three are running, they will be operationally identical, and we emphasize operationally identical because of some of

the things that we talked about before, in that in a few cases you cannot buy a specific piece of equipment anymore, primarily in the area of electronics. But they will still operate the same for the operators. They will have the same operating procedures. They will be licensed for all three units.

At Browns Ferry, our NRC performance indicators are all green.

DR. LEITCH; Now it is my understanding that the reactor oversight program is not in effect on Unit 1. Is that correct?

MR. CROUCH: That is partially correct. There are a few programs that are common for all three units, such as the --

DR. LEITCH: Yes, okay.

MR. CROUCH: Those are already being monitored under the revised reactor oversight process. The other cornerstones where Browns Ferry Unit 1 is not up to operation yet, they are still being monitored under conditional enforcement.

As we get to restart and just beyond when the plant is back operating, we will transition all of Browns Ferry Unit 1 to the new process.

DR. LEITCH; So when you say the indicators are green --

MR. CROUCH: This is for Units 2 and 3 for everything, and then everything is in Unit 1 that is in this new process.

DR. LEITCH: Okay. Now what about the inspection findings? Are there any greater than green?

MR. CROUCH: No. Not that I know of, no.

DR. LEITCH; Okay. Thanks.

MR. CROUCH: Moving to page 3, The Browns Ferry license renewal application was a three-unit application. It was originally started to be a two-unit application. We then backed up and included Unit 1 into it as part of the restart effort. So that before it was submitted to the NRC, it was a three-unit application. The application was submitted on December 31, 2003.

Shown up here is the original license expiration dates for each of the units. You can see they are in 2013, '14 and '16 respectively.

As we have talked about during your opening comments, the license renewal application is based upon the current licensed thermal power for each unit. For Unit 1, which has not been uprated any, that unit will be in the license renewal application at the 3298 megawatts. Units 2 and 3, which have

undergone the five percent uprate, are at the 3458 megawatts.

The overall process of returning a unit to service involved making many modifications to the plants to come into conformance with the current licensing regulatory type statutes that exist at the time. We have made those modifications on Unit 2. We have made them on Unit 3, and we are now making them on Unit 1.

The areas of those modifications that affected the license renewal application are called out in the license renewal application in what is called Appendix F, and that lists the differences between Unit 1 versus Units 2 and 3 that will be resolved as part of the licensing renewal process, as part of the restart process, to make the units back so that they have the same current licensing basis.

Now, obviously, we are also in the process of doing the modifications associated with EPU, but these modifications in Appendix F would bring the units back into current licensing basis as far as the equipment that is involved. Then we will proceed onward with the EPU application to uprate the plants.

As part of the review of the license renewal application, we have been in close

communications with the NRC staff, and to date we have received approximately 230 requests for additional information. Of those, 13 were environmental, and the remainder related to the safety evaluation. The responses to those have been provided back to the NRC staff.

DR. LEITCH: Let me just ask, Bill, just to clarify this: There's a couple of places where the statement is made that TVA plans for Unit 1 current licensing basis at restart to be the same as the current licensing basis for 2 and 3.

Now but at restart Unit 1 is going to have the EPU modifications.

MR. CROUCH: That's right.

DR. LEITCH: But I guess what you are saying is -- By that initial statement, you are saying that those modifications don't really impact the current licensing basis.

MR. CROUCH; They will be a further enhancement to the current licensing basis, so that for licensing renewal we are really looking at the Unit 1 plant, if you brought it on line today at 3293, it would match the licensing requirements for Units 2 and 3. We would have the same systems, like for example in Appendix F. You've got things that we are

going to add in such as the hard well vent, MSIV leakage hardened path. All those type of systems will be added into Unit 1 so that it will have the same licensing basis in terms of systems and requirements.

Then all three units are in the process of being uprated to EPU.

DR. LEITCH; So things like the bigger recirc pumps that -- or the bigger reactor feed pumps that will be in place on Unit 1 at restart don't really impact the licensing basis. Is that what I hear you saying?

MR. CROUCH: They don't impact the licensing basis as far as licensing renewal is involved. They will still have the same materials. They will still be pumping the same water. All the environments will be the same.

CHAIRMAN BONACA: The licensing basis -- I mean, the statement made in Appendix F is broader than just purely the - You are making a broad statement of licensing basis. So you are saying the accident analysis is still acceptable, still within the acceptable limits.

MR. CROUCH: That's correct. Obviously, the accident analysis, transient analysis, is being redone as part of EPU.

CHAIRMAN BONACA: That's right, and what you are saying is that you may have analytical results which are slightly different, while within the acceptable bounds of the normal analysis.

MR. CROUCH: That's correct.

DR. LEITCH: I just wonder whether that statement is rigorously still true. I mean, it may have been true when the license renewal application was submitted, but is it still -- It says TVA plans for Unit 1 current licensing basis at restart to be the same as the current licensing basis for 2 and 3 -- at Unit 1 restart.

MR. CROUCH; You are getting to the problem of we were told we cannot address in the licensing renewal application EPU conditions, because that would be an implicit approval of EPU. So we didn't really know how to word it any other way.

They will be the same from the standpoint we will have all the same systems in. They will be performing the same processes but, obviously, we are in the overall process of uprating all three units to 120 percent power. So that was the context that statement was made in.

DR. LEITCH: Yes, I understand. It's just, when you take that statement by itself, it just

looks a little odd. But I understand the way this is being done, it's difficult to explain it in one sentence.

MR. CROUCH: Right. At this point in time, I am going to turn it over Rich DeLong, our Site Engineering Manager. He is going to talk to us about how we did the scoping for the license renewal application for the systems and components. He is going to talk to us about our time-limiting aging analysis that we have done, and then our aging management review and our aging management programs that we've got. So, Rich.

MR. DeLONG: Good afternoon, and thank you again for having us here. My name again is Rich DeLong, Site Engineering Manager, Browns Ferry, and we will begin on Slide 4 with a discussion on scoping for license renewal of Browns Ferry.

Now the scoping basis for our license renewal application included, certainly, our updated final safety analysis report, our safe shutdown analysis calculation, maintenance rule documentation, and also our controlled plant component database which would be our master equipment database.

CHAIRMAN BONACA: Which is for Unit 1 for maintenance rule, you assumed the same scope as the

other units?

MR. DeLONG: That's correct. That's correct. From a scoping point of view, that's correct. And of course, our existing licensing basis -- We talked a lot about licensing basis here in our design basis documents for the units.

From a specific scoping point of view for regulated events, we considered, certainly, fire protection, environmental qualification, ATWS and station blackout.

There are 77 mechanical/electrical systems in scope in approximately 25 structures. Are there any questions about the basic scoping envelope?

DR. LEITCH: I had a question about the non-safety related liquid filled piping. There is a statement on page 2.5-1 of the license renewal application that says that the non-safety related liquid filled piping within these four structures were evaluated, and not to present an issue, I guess -- I don't have the whole quote right here in front of me.

I guess I was wondering specifically about the RHR service water pipe tunnel. That is one of the four structures where liquid filled non-safety related piping was excluded -- not excluded, but judged to be not an impact on safety related piping.

I guess I was wondering how that occurs -- I guess, specifically, what non-safety related piping that we are dealing with in that tunnel. Could it damage safety related piping?

MR. DeLONG: Specifically, I believe that the pipe we are dealing with is raw cooling water piping that runs in those same tunnels with RHR service water. Ken, can you elaborate on that evaluation?

MR. BRUNE: Yes. This is Ken Brune. We were asked about that. We initially did not have some of the non-safety related piping in the service water tunnel in scope, and we were asked by the staff. Since it could pose a water spray effect, all the piping -- liquid filled piping in the tunnel was put in scope.

DR. SIEBER: These are all low energy lines, though. Right?

MR. BRUNE: Yes.

DR. LEITCH: I'm not quite sure I heard the answer. You are saying the non-safety related piping in that tunnel is now in scope?

MR. BRUNE; Yes. The non-safety related piping in that tunnel is now in scope.

DR. LEITCH: Okay. Thank you.

DR. SIEBER: In your station blackout scoping for specific regulated events, do you have non-safety related switchyard type equipment included in that scoping? And if so, what is it?

MR. DeLONG: The answer is, yes, we do. The specifics -- I will defer out to Don for specifics.

MR. ARP: My name is Don Arp, and I am with the Browns Ferry license renewal lead. Initially, you go out to the first breaker, power circuit breaker, in the switchyard into our shutdown boards, and all the buses and cabling in between, and those are non-safety.

MR. DeLONG: Non-safety, but considered.

DR. LEITCH: I guess I had another question about scoping. There is a statement made on page 2.1-9 in the application that says that Browns Ferry did not realign system components. Now I'm not exactly sure what you mean by that, but I guess our previous experience with BWRs like, for example, where they had nitrogen or air piping penetrating the dry well rather than put the whole compressed air system in scope, they actually put that segment of the piping from the endboard valve to the outboard valve -- they've kind of scoped that. They didn't -- What they

called a realignment, and they scoped that with the drywell.

Now I'm interpreting this to mean that you did not do that. How did you deal with that kind of an issue?

MR. DeLONG: Go ahead, Ken.

MR. BRUNE: This is Ken Brune again. We did not realign if we had a partial system of any system. We identified that portion of the system in scope for licensing by itself and did not essentially say it was part of any other system.

DR. LEITCH: Okay. So in the example that I'm using -- for example, that the compressed air system -- than you would say generally not in scope, but this part immediately penetrating the drywell out to both valves was in scope?

MR. BRUNE: Yes, we would, and that would be shown on our boundary drawings as just that portion.

DR. LEITCH: Okay. Thanks. I understand.

MR. DeLONG: Okay. On slide 5, time-limited aging analysis, here we see several things that we considered that were applicable to us in terms of time-limited aging analysis.

The first one, of course, is neutron

embrittlement of the reactor vessel and its internals, and we will talk more about that on the next slide. Metal fatigue, and already have said EQ, environmental qualification; primary containment fatigue; and several plant-specific time-limited aging analyses: Reactor building crane load cycles; radiation degradation of drywell expansion gap foam; irradiation assisted stress corrosion cracking of reactor vessel internals; stress relaxation of core plate hold-down bolts; and emergency equipment cooling water weld flaw evaluation.

On slide 6 you will see specifically the time-limited aging analysis associated with neutron embrittlement. For Unit 1 it is conservatively evaluated at 54 effective full power years, and also at extended power uprate conditions, and that is extended power uprate conditions from the very beginning, not just the period of time anticipated to be at EPU but rather working back all the way to the beginning of operation.

In the case of Unit 1, the actual expected effective full power years at the time of current license period expiration is about 14.2 EFPY. So in fact, about 34.2 if you assume all 20 effective full power years for the extended license, compared to 54

evaluated for effluents.

In the case of Units 2 and 3, it is conservatively evaluated at 52 effective full power years. The assumption for current license period was 32 effective full power years, which was calculated based on 80 percent of capacity factor for 40 calendar years.

DR. LEITCH: Those numbers are obviously quite conservative in either case, but it just puzzles me why you had evaluated Unit 1 for more effective full power years than 2 and 3. I mean, Unit 1 certainly couldn't get to 54, now could Units 2 and 3 get to 52, but I just wondered why you did it that way.

MR. DeLONG: Certainly, we would evaluate it more accurately for the PT curve development, but in this case it was fundamentally the desire to demonstrate that we had significant margin for neutron embrittlement in the station.

MR. CROUCH; The real reason -- The way they calculated it was for Unit 1 they took the first 40 years of operation and assumed an 85 percent capacity factor, and then added 20 more years to it. For Unit 2 and 3 the calculations were just done at a different time, and the person who did it assumed only

80 percent capacity and then added 20 years. So it just came out a different number.

DR. LEITCH: Okay.

MR. DeLONG: And in both cases, you know, these were calculated in accordance with Reg Guide 1.190 and, obviously, meets the requirements of that Reg Guide.

DR. LEITCH: I wonder if there were any cases -- I guess I was just thinking about this when I was reviewing this material. I wonder if there are cases where effective full power years might not be the right metric to use, particularly in the case of Unit 1. You know, if I am trying to evaluate the condition of a used car, for example, I want to know both the mileage and the age. You know, this is a low mileage -- Unit 1 specifically is a low mileage.

MR. CROUCH: Well, from the neutron embrittlement point of view, that's correct.

DR. LEITCH: I guess I am wondering if there are TLAAs that are more directly related to age than to power.

MR. DeLONG: Well, there certainly are. You know, corrosion potentially during layup periods might have an effect as a time-limited aging point of view, but we certainly address later on in the

presentation how we develop what we think is a good defense in depth for understanding the effect of, in the case of Unit 1, the extended layup period on aging and how the aging -- and how we ensure ourselves during the course of the extended period that we continue to work to understand if there is any potential effect associated with the 20-year aging -- or 20-year layup period on aging.

We already, of course, have a significant amount of information in understanding how 10 years of layup period fundamentally has not affected Unit 3 in terms of its aging during its period of operation.

DR. LEITCH: Good. Thank you.

MR. DeLONG: On Slide 7 -- this is a slide you have seen before. Many of you have. There are 39 aging management programs total for Browns Ferry, 38 of which are common to all three units, one of which is a Unit 1-only program. We will certainly talk more about that in a few minutes.

There are 11 existing aging management programs requiring no enhancement, 11 that were revised to include Unit 1 but didn't otherwise require enhancement, and then 11 that required enhancement for all units.

That's slightly different than the last

slide you saw. We did, in fact, move one program from requiring no enhancement down to requiring enhancement. So previously we had 12 up there requiring no enhancement. That's no longer the case. We made a change. So now we are 11, 11 and 11, and six new aging management programs.

DR. LEITCH; I notice that you concluded that an aging management program for fuse holders was not necessary. I guess that is different than a lot of other folks came to that conclusion. Is there something unique about your situation that led you to that conclusion?

MR. DeLONG: Let me defer to Don on that particular item.

MR. ARP: Yes. This is Don Arp again. They went through a pretty good evaluation, I think, of about 14,000 fuses, and based on their location and their function, their duty cycles and the loading, we found that we didn't have aging effects that required management.

DR. LEITCH: I assume by the fact that that is not an open item, the staff has agrees with that position?

MR. SUBBARATNAM: This is Ram Subbaratnam. I think it is not an open item in the staff SER.

Presumably, staff agrees with that position.

DR. LEITCH: I'm still not sure I understand why. I mean, don't we -- aren't most other applicants implementing a fuse holder aging management program?

MR. PAL: I am Ama Pal. -- was the reason why they didn't need an aging management program for the fuse holders. We were satisfied. This is not unique. Others also use that approach.

DR. LEITCH: So the ISG does not require an aging management program, but only the one --

MR. PAL: Yes, it gives the option. Either you provide the aging management program or you can provide the reasons why you don't need a program.

DR. LEITCH: Okay. Thank you.

DR. BARTON: Where did the criteria come from that you only now look at fuse holders that are subjected to frequent mechanical stresses. You identify those as removing a fuse a replacing it at least once a year. Where did that once a year criteria come from, and apparently the staff bought it? Can anybody explain that to me? Your reason for not having a program is you look at all your fuses, evaluate them. I understand all that. Then you said you evaluated the holders subject to frequent

mechanical stresses as those that were fuses that have been pulled and reinstalled at least once a year. Where does that criteria come from?

MR. ARP: This is Don Arp again. Actually, I think what we found is that, of the number of fuses that had a potential of being not located in a piece of equipment, active equipment, we only had, I think --

DR. BARTON: You didn't have many. I remember that.

MR. ARP: Yes. And when we looked at our last five years of operating experience with those fuses, we found that only three, I believe, had been pulled, and those were for some routine maintenance activities. So that criteria was there, but we also looked at what did we really do, and in reality we had only pulled a very few, and that was in maintenance activities.

DR. BARTON: Staff's happy?

MR. SUBBARATNAM: Actually, I am trying to read their section of the SER, what they are trying to say here. I have discovered in Section 2.1185, the applicant developed their process, but I didn't find any evaluating fuse holders as a part of license renewal evaluation -- fuses in the plan, and then

applying a series of evaluation and screening to identify plan fuses, planned operating experience -- They evaluated all the remaining fuses.

DR. LEITCH: I think the key -- The answer I might have expected is that some plants, every time you do a surveillance test, you have to pull switches. Other plants have switches, and you are not repetitively pulling fuses, and I guess, you know, I'm not hearing this answer. Had I heard that, well, Browns Ferry, has been designed with switches rather than having to pull the fuses, that would have been a good justification, but I'm not hearing that. I just don't know what the justification is.

DR. BARTON: Well, their justification is they only pull several of them a year due to maintenance and -- you know. So I don't know. They must have a system where they do calibrations or INC stuff where they don't pull fuses, but it's not clear to me what that is.

MR. DeLONG: Well, I think that's probably an accurate representation. That, in fact, was what the study was, to evaluate fuse applications where there was a significant number of removals and reinstallations, and the way our procedures, processes, maintenance activities ensue, there is not

a need maybe to do it as often as maybe some other plants do. I'm certainly not familiar with all the plant designs out there in terms of how they use the -- I know they are out there, huge fuse holders that tend to put a lot of stress on one or the other of the clips.

MR. PAL: This is Ama Pal again. The concern is the condition of the fuses, and Browns Ferry told us that they are not bringing that. They have some other means to reenergize the circuits, and it is only for some routine maintenance type of work they do, they replace the fuse. A fuse blown, they replace the fuse, which will not cause any loosening of the fuse holders. So that's the reason we accepted that.

MR. DeLONG: If there are no other questions, we will move on to looking at some of the specific aging management programs by category here.

On slide 8, you will see --

DR. LEITCH: Rich, let me just ask one thing about aging management programs that will help me with this discussion as you go forward, and maybe I'm jumping ahead to a later presentation that we will hear about in the inspection report. But in the inspection report of January '05, which is admittedly

now nine months ago, there are statements made in there that a lot of the aging management programs are really just shells, that they are not complete, that they are certainly not implemented.

There is a schedule for implementation in the license renewal application, but all it says is they are all going to be implemented before the end of the current license period. But hopefully, they will be a more aggressive schedule, not only for implementation but also for developing the substance of these aging management programs.

I wonder, has there been a lot of work done since the January '05 inspection?

MR. DeLONG: Yes, sir, quite a bit. In fact, yes, I know you will hear that here in a subsequent presentation on the inspection that just occurred, as a matter of fact was in progress when we were here last.

DR. LEITCH: We have yet to see the results of that inspection. So that's still in the pipeline.

MR. CROUCH: In fact, all of our markups, if you will, for all of the programs that we describe here today is complete. In other words, those programs are all developing in draft form. They are

not approved yet, but developed in the markup phase. They have been developed by the project staff and reviewed by the operating unit staffs for all the program owners in the unit -- have reviewed those and commented on them.

Those were what was the subject of review for this inspection that was occurring a couple of weeks ago when we were here last.

DR. LEITCH: Okay. Thanks. I will probably have some more questions about that when we get into that part of the agenda, but I just wanted to set the stage for this here.

MR. DeLONG: We will talk about that.

DR. LEITCH: Okay. Thank you.

MR. DeLONG: Again on slide 8, these are the programs that are existing aging management programs that required no enhancement for license renewal.

On slide 9, these are the aging management programs that required revision to incorporate Unit 1. In other words, they are programs that were established after Unit 1 was shut down and were not originally developed -- either originally developed with Unit 1 at scope or didn't recognize the existence of Unit 1 when they were developed, because it was

shut down. These have been revised to incorporate Unit 1.

CHAIRMAN BONACA: A question I have with respect to startup. You have -- Take, for example, the first five here. You know, they are impacted somewhat by the BWR VIP program. So you will have to go through those inspections or requalifications or whatever.

MR. DeLONG: Absolutely the case, to conform with the appropriate VIP guidelines for those inspections and ultimately, depending on what is found, may be invoking VIP guidelines for repair.

CHAIRMAN BONACA: So whatever you identify through those inspections and determine to need additional work or whatever, you will put into procedures that deal with all three units now. But you will have differences between the units, won't you?

For example, you are going to replace a piece of piping that -- you know, with chromoly piping. Will you still perform the same level of inspections on that piping that you would do? Okay, so you will have the same commitment?

MR. CROUCH: But when you go and pipe, for example, the chromoly piping in the FAC program, you

will go in and take your baseline measures. Then you will take another set of measurements, and you will project where, going through the check works and the FAC manager and so on.

CHAIRMAN BONACA: Yes. So you will address the differences in that process.

MR. CROUCH; Right. You project when you need to do all your various inspections, but it will be in the program, just the same, even though it will have the chromoly piping.

MR. DeLONG: In the case of vessel internals, for instance, there's certainly going to be differences between the three units in terms of not only their condition but also, in some cases, what components might be in those units, just depending on what you have to do in terms of repair, for instance. All of those things are addressed in the BWR inspection guides and repair guides, and will allow us to make the right decisions based on the inspection results for repair or subsequent inspection.

CHAIRMAN BONACA: All right.

MR. DeLONG: On slide 10, here you see the aging management programs that required enhancement. This is enhancement with respect to the program and its scope and the conduct of the inspections maybe or

even the inclusion of new scope that wasn't originally there in the case of these programs.

Slide 11: These are new aging management programs. As we talked about before, there are five that affect all three units. They are listed there in the first bullet, and then there is one that is Unit 1 only, and that is the Unit 1 periodic inspection program that we will talk about here in a couple of slides.

CHAIRMAN BONACA: Now that -- No, that's fine. Okay.

MR. DeLONG: On slide 12: Our one-time inspection program. It obviously applies to all three units. It verifies the effectiveness of the aging management programs by confirming that unacceptable degradation is not occurring.

Where no aging management program is defined, the inspections confirm one of two things, either that there are no aging effects occurring or that those aging effects are occurring at such a low rate that it doesn't affect the intended function for the extended -- during the course of the extended period.

These one-time inspections are to be completed prior to the period of extended operation,

and as close to the period of extended operation as we can schedule them, given the operating conditions of the station.

Examples of those items: We just picked a few items to give you a sense for what types of one-time inspections we will be doing. There are more.

With that, I am going to turn it over to Bill Crouch to talk about our Unit 1 periodic inspection program, which is certainly unique to Browns Ferry.

DR. BARTON: Before you get onto that, throughout the LRA you talk about one-time inspections. Items are going to be covered by a one-time inspection program, and you see it so many times. It appears almost that the whole site is covered by a one-time inspection program.

I just wonder, is that true, and how do you manage that? I don't understand. Everything is going to be done by a one-time inspection. I don't see a heck of a lot of periodic inspections or other inspection programs discussed or described in the LRA. Everything is a one-time inspection.

I always thought one-time inspection was reserved for selected items that you are going to do before you go into another 20 years, things that --

you know, structures and buried stuff and, you know, there's a handful of those things that don't get inspected very often. So you go and do it as a one-time before you go 20 years. You guys are doing -- everything seems to be one-time inspection program. I'm confused.

MR. CROUCH: A wonderful lead-in to what I was about to talk about.

DR. BARTON: That's why it's a perfect question.

MR. DeLONG: There is confusion in the original license renewal application and the SER, and we are working with the staff to clear that up. Throughout the course of making the license renewal application, we used some terms interchangeably sometimes and realized that it created confusion. So let me explain.

There is actually three different types of inspections that we kind of intermingled, using that one term of one-time inspection. As part of the scoping and recovery for Unit 1 restart, we have performed many, many inspections on piping. We sometimes refer to those as one-time inspections, but they are not one-time inspections.

They are what we are now calling restart

inspections, and they were done purely for the purposes of scoping out how much of the scope had to be included in the Unit 1 recovery. They are also providing a baseline of the current condition of the systems prior to restart.

Then there are other inspections that are being done, and that's the purpose of this next slide, the Unit 1 periodic inspection program; and I will go through it in a moment. But it is basically going and looking at, for all those things that we have not replaced in Unit 1 -- we replaced a large amount of piping and valves and stuff like that. For those things that we have not replaced, we want to do an additional inspection before the period of extended operation so that we know that those components are still good, that they are still similar to the current condition and results of Units 2 and 3.

Then there are one-time inspection programs that are part of the license renewal application, and that was what Rich was just talking about. So we are working to clear up that term.

CHAIRMAN BONACA: Thank you. And now I'm jumping ahead. So you go ahead. I'll ask a question when you get there.

MR. CROUCH: Okay. So Unit 1 periodic

inspection program: We are still working out the details with the staff on exactly the particular items that are within the scope and exactly how we are going to do it. But basically, what it will be, it will be inspections -- Like we said, we are going to perform inspections after Unit 1 is returned to operation to verify that there are no additional aging effects occurred.

We recognize that Unit 1 could potentially be seeing some type of new aging, because of having been shut down and laid up for so many years. So we wanted to perform these inspections to make sure that, once we get back operating, that something new and unexpected is not occurring.

Based upon our operating experience from Unit 3 which had a similar type shutdown and layup of 10 years, we don't expect to see anything, but this will give us this added assurance that nothing is happening.

CHAIRMAN BONACA: Well, no. I mean, Unit 3 was a good example of where restarting, then you found that some of the piping had to be replaced. And I agree that probably that experience is applicable, I mean, with consideration for Unit 1. But I'm saying that you always have surprises in other respects, that

you would have those kind of performance that required replacement later on.

MR. CROUCH: So these Unit 1 inspections will be inspections of non-replaced piping. Obviously, the replaced piping is all brand new, and you would not expect to see any effects of a layup or effects from the previous operation or anything like that. So this is looking at non-replaced piping.

We will conduct these -- The first round of these inspections will be completed prior to the period of extended operation but after several years of Unit 1 operation.

So we won't start the plan up and the next week they will perform an inspection of it and claim that this satisfies this requirement. I don't know the exact number of years that we are going to do it, since we are still working out the details, but we will let the plant operate some time to see if any new type of aging mechanisms show up during this time.

CHAIRMAN BONACA: And you intend to submit the program before the final SER?

MR. CROUCH: Yes. Ken, the program will be finalized before the SER, won't it?

MR. BRUNE; Yes. We have already -- This is Ken Brune. We have already submitted a new

Appendix description of the program. Hope to have everything finalized, staff satisfied.

CHAIRMAN BONACA: And you will have enough detail? That means that I don't expect that you will have the periodicity of the inspections, the timing, before you perform the first inspections, but other elements -- I mean, you can provide them now. So to the degree to which you can provide information, you know, right now the SER doesn't have anything except a quote: There is going to be a periodic inspection program.

MR. BRUNE; Right.

MR. CROUCH: So partially in answer to that question, once we do the inspection after we restart but before the extended operation, then we will do another inspection during the period of extended operation; and based upon those three results, the pre-restart, the post-restart, the prior period and the post-extended operation period, we will then analyze the data and determine what additional inspections need to be performed and at what frequency.

You may find at that point in time that there is no new aging mechanisms occurring and that your results are handled through other existing

programs, and nothing else needs to be done, or you may need to continue monitoring. We will have to look at the results and figure that out.

CHAIRMAN BONACA: Yes, after three points, if we are comfortable.

MR. CROUCH: Right. We will have to be comfortable with it.

DR. LEITCH: And you are going to think about, hopefully, things that might be related more to aging than to where. I mean, I guess -- I can't think of a real good example, but we don't have much experience with this. Perhaps that is why I can't think of an example.

I'm back to my car that has low mileage, and I look at the tires, and I inspect them and say, well, those tires are fine and they still have plenty of tread on them. So I don't replace them, but maybe there's something else, other variables, the sidewalls. The tread will still be fine, but the sidewalls will go, which is more an aging than a wear thing.

I guess the key here is to be thinking about are there those kind of issues that could be related more to age than to wear, and to be sensitive for those types of things.

MR. CROUCH; I think that is precisely what the program is designed to do, is again look for some aging mechanism that is related to this extended layup period that would not otherwise manifest itself, say, in a unit that had been operating fundamentally continuously through its original license period.

DR. LEITCH: Yes.

CHAIRMAN BONACA: And I think the SER has a good discussion there, a quotation for some latent effects and the need for essentially inspecting in order to get a rate of degradation, aging degradation. That is really the intent of the inspection program, because that is a concern there.

MR. CROUCH: We have been talking up to know about the classical license renewal issues of scoping and TLAAs and aging management programs and reviews. Now in response to some of your questions that you had last time, we wanted to transition a little bit and talk a little bit more the Unit 1 layup program.

So on page 14, this is basically the same information you saw before that we -- the Unit 1 layup program, the criteria was the EPRI document, and we had systems that were in dry layup and wet layup. When we maintained the systems in dry layup, the

components were -- Obviously, if they were water-filled components, everything was drained. The system was placed in a condition where you had dehumidified air being blown through the system. The conditions at the outlet end of the flow path were monitored to ensure that the relative humidity was below 60 percent.

We checked to make sure that there was no standing water in the systems. We would go open the low point drains. So we were ensuring that the system was in an environment where you would not expect to experience corrosion or other aging type applications.

The systems that were in wet layup: These systems, the chemistry of the water was maintained within normal operating chemistry for the most part. Systems like the reactor vessel, the water chemistry was maintained in accordance with the tech spec limits, so that you would not expect to see any new aging mechanisms that would exist in a layup system versus what you would see in a system that was in normal operation.

We took the lessons learned from the Unit 3 layup and subsequent restart and applied them to Unit 1 in the way we did the layups, where we did layups, what components we chose, that kind of thing.

So overall, we tried to fashion the program for Unit 1 just like what we had seen in Unit 3, because we knew what the end result would be and the results we expected to achieve.

CHAIRMAN BONACA: But, you know, as you know, the SER has a number of points where it points to an inspection in 1997 or other inspections at that time where they found problems with the layup in the early time, and you recognize that.

MR. CROUCH; Right. There were some earlier problems. Those problems were addressed and corrected, and the overall condition of the system would be monitored as part of these inspections we just talked about to make sure that any shortcomings in the layup program did not adversely affect the system.

Moving on to 15, you see some examples there of the systems that were in layup, both dry and wet. Not much really to talk about there other than just to list the systems.

In all cases, our results of the layup met or exceeded the EPRI guidelines. We saw very good results in terms of the systems when you go and take them back out of layup and do internal inspections of them. The condition, the piping was in very good

condition. We did not see any kind of unexpected degradation in any of these systems.

We performed visual examinations, surface examinations such as PT or MT. We have done ultrasonic examinations and remote inspections using things like boroscopes to asses the condition of Unit 1. Even though we did all of this layup, both wet and dry, we have not relied upon the fact that we've put it in layup as the sole basis for saying that a system is good prior to returning it to operation.

We have performed these inspections as we talked about to go and reverify that our layup was successful such that the systems will be capable of performing their intended design function during the current period of operation, and then we have assessed that for the ability to extend on into the extended period of operation.

CHAIRMAN BONACA: For the record, you use the words that I liked, "as the sole basis." I agree that you didn't do that, because I'm saying that you did take some credit for the layup. Clearly, it was in layup. You are reusing the component. Now you are refurbishing, as you used the expression before, which means OCB testing and all that kind of thing. But I'm saying that, you know, there is some dependency on the

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

MR. CROUCH: Oh, we depend upon it from an economic standpoint. But our point here is not that we didn't depend upon it to maintain the viability of the plant, but when get ready to restart this plant, we will not stand up and say this system has got to be good solely because it was in the proper kind of layup.

CHAIRMAN BONACA: I agree, and you said "solely," and I like that. It's different in the bullet here.

DR. BARTON: Question: The secondary side of the main condensers -- how were they maintained? Was there a dryer or something involved with them?

MR. MOLL: Basically, the condenser -- The steam side of the condenser was open. The air for the layup would have been circulated through it as well as up through the feedwater, that whole chain through the feedwater heater on the steam side.

DR. BARTON: What did you do, block it off at the top at the expansion joint or something? Was it pulled through the turbine? I'm trying to figure out if there is any degradation on the steam side of the main condenser? How did you maintain that?

MR. MOLL: Well, mostly the condenser was

open to the atmosphere. We've had the low pressure turbine and the casings apart on Unit 1. We have re-tubed the Unit 1 condenser, and there will be inspections of the condenser internals as part of Unit 1 restart.

MR. CROUCH; So the steam side of the system was open to the atmosphere. The raw water side, the tubs, they have all been replaced.

DR. BARTON: I understand. Put stainless steel tubes in there.

MR. CROUCH: Stainless steel tubes.

DR. BARTON: I was wondering about the steam side and what kind of corrosion you might have had going on there in the last 20 years. That was my concern.

MR. CROUCH: Any other questions about the layup? We can give you more detail if you want to know about specific systems or whatever.

The question that came up last time about operating experience and the fact that there is nothing documented in the SER basically about why the operating experience for Units 2 and 3 is applicable to Unit 1: This slide here is basically the same one as what we talked about last time, talking about the requirement for 20 years of operation and that Unit 1

meets this requirement, and it's 20 years since our -- more than 20 years since our original license was granted to us, and that, therefore, we meet the requirement 50.71.

The Unit 2 and 3 operating experience being applicable to Unit 2 and 3: We talked about that some last time, and I have been in the process with my staff preparing a paper, and I've got the draft here that we will be working with the NRC staff to add into the SER. That basically goes through and talks about how we took the lessons learned from Units 2 and 3, both operation and layup, and applied them to Unit 1 in terms of what had to be replaced, what had to be inspected, what we have seen after operation, that kind of stuff that we have incorporated into this.

CHAIRMAN BONACA: And I understand. I mean, I don't -- We are not taking here a legal position. We are talking about the intent of the rule. The statement of consideration of very clear about not so much he 20 years. I mean, we have seen exceptions taken before, and we have supported them. But the substance, which is the intent of the rule, having substantial plant specific operating experience. The statement of consideration is very

clear about that.

You know, again, what we asked for was identified to us. Those compensatory steps that you have made where you think that it may not cover. I mean, you yourself in, if I remember, Appendix B, you are stating that during the performance of the aging management activities, the operating experience of Unit 1 may not be the same as the operating experience of Unit 2 and 3 due to the layup program implemented on Unit 1 during the extended outage.

So there is an issue and, to the degree to which you are addressing it, you know, that is satisfactory to us. I would like to read what it is coming out to be.

MR. CROUCH: So we will provide information to the staff of our basis and justification for why we have taken the information from 2 and 3 and used it to come up with the scoping for Unit 1 restart, as well as the scoping for all the future inspections as we talked about.

CHAIRMAN BONACA: And you talk about, I imagine, the periodic inspections that are also a compensatory step in license renewal. I mean, we cannot ask for more than the inspections. That is

really what license renewal ends up being. You are taking care of equipment by looking at it, identifying aging mechanisms, and fixing them.

So to me, that is a significant step you are taking toward complying with this requirement.

MR. CROUCH: That's correct.

DR. SHACK: I think it goes the other way. I mean, I don't think anybody denies that industry experience in Unit 2 and 3 experience and applicable to Unit 1, and you can take all those into consideration. The question is, is there something plant specific about Unit 1 that isn't covered by that? You know, to me, you've tried to address that with the periodic inspections, you know, that there was something different there.

CHAIRMAN BONACA: Right.

DR. SHACK: But it is really is -- I am all for applying all the experience that you have learned everywhere else, not just on 2 and 3, but every BWR in the United States, and taking that into account. But it's that other converse statement that I thought was sort of indicated by the 20 -- you know, is there something plant specific. So that's really the focus of where the question arises.

MR. CROUCH; Obviously, if we knew up

front what these other unknown aging mechanisms were, we would have put them into programs right now, but --

DR. SHACK: As far as you can tell, all the piping materials are the same -- you know, you haven't --

MR. CROUCH: We have not introduced any new types of materials into Unit 1 that's not already existing in 2 and 3. Now there may be a slightly bigger scope of it or slightly smaller scope of it, depending on what was replaced, like we talked about on the recirc piping.

We will replace all of the recirc piping with 316 MG, whereas Units 2 and 3 have a mixture of 304 and 316, but we've got both materials in 2 and 3, 316 and 304, which are the same as what we will see in Unit 1. We haven't put any new materials in Unit 1 that don't already exist, at least to some extent, in 2 and 3, in the same application and the same operating environment.

On page 17, it's kind of a summary of what we were just talking about, in that Unit 1 has 10 years of operation. Unit 3 was shut down for 10 years. During that shutdown period, we did a layup very, very similar to what we've got or had in Unit 1.

So we know what the expected results of that layup would be. We know what the post-restart results of that layup would be.

During the 10 years of operation that we've had on Unit 3 since the 10 years of shutdown, we have seen no new layup induced aging effects. So we haven't gotten into the period of operation and suddenly discovered something that was a direct result of having been laid up in whatever manner it was.

We took the experience from the layup of Unit 3 and applied it over into Unit 1. A couple of examples we have here are the examples like we talked about before on the RHR service water piping, which is a raw water system. It comes from the intake structure. It is underground piping. It comes up into these RHR service water tunnels that you talked about, which is basically an underground tunnel that the piping is -- It's not buried in the tunnel. It is running above grade but inside the tunnel. Then it goes through the wall into the reactor building.

We saw in Unit 3 that the piping just inside the reactor building was severely degraded. You could go and take wall thickness measurements on it, and the pipe basically had holes in it everywhere.

When we went and cut the pipe off and

looked from the reactor building side into the tunnels, you could look down the pipe about 100 feet or so, and the piping was perfectly intact down through there. We asked ourselves what's the difference.

The difference is that inside of the reactor building the temperature is up. You know, normal reactor building type temperature is 65 to 95 degrees, where over in the tunnel it is an underground type environment, a cave. So it is maintained much cooler. So you did not see this aging mechanism occurring over there.

When we found this problem in Unit 3, we immediately went and did UT measurements on the piping in Unit 2 that was currently in operation to make sure that this wasn't a phenomenon in the Unit 2 piping that was inside the building. We didn't see the phenomenon there at all.

The difference is that during Unit 2 layup -- or during Unit 2 shutdown that piping was maintained full of water the entire time. So it was not in a moist air environment. It was totally liquid filled during the entire time.

When we went over to Unit 1 and looked at it, you saw there we have two sets of pipe that were

in operation for Unit 2 support and two that were in the drained type condition. They followed exactly what we saw over in Unit 2 in that the pipes that were full of water looked very good.

We have since gone and cut those as part of Unit 1 recovery, replacing valves. I looked down those pipes, and they do not have any degradation like what we saw in Unit 3.

Over on the other loop, which was the loop that was drained, it was in the same condition as what we saw in Unit 3. It was severely degraded, and the material was basically nonexistent. It had corroded from the inside out and was gone.

So we took that lesson learned on Unit 3 when we went into the Unit 1 scoping, and applied it directly. We also saw the same kind of thing on some small bore piping in the EECW or raw cooling water systems. We had these lines. They were isolated, but some of the isolation valves leaked through.

So we didn't have the exact same geometry, but you set up the same conditions by having basically an air filled line with a small amount of water in a warm environment, and the piping degraded, and we are having to replace that.

As we talked about, Unit 1's licensing

basis will be the same as Unit 2 and 3 at restart by virtue of the items that are in Appendix F. We didn't re-include a list of the items in Appendix, but there's 13 basic design feature type things in here, such as adding in the hardwell vent, replacing the IGSEC susceptible pipe, different things. It's a whole list of things. We've gone down through there.

DR. LEITCH: While we are talking about licensing basis, there was a note that intrigued me that I didn't understand. There is actually a footnote to page 2.1-2 of the license renewal application that says, "Licensing action is planned to change the license basis from 10 CFR Part 100.11 to 10 CFR 50.67."

I don't know what that is all about. I don't understand the significance of that. Does that apply to all three units? What is the story on that?

MR. CROUCH: Henry?

MR. JONES: This is Henry Jones from Browns Ferry. I believe that refers to AST transition we made just recently where you go to 10 CFR 50.56, I believe it is.

DR. LEITCH; Sixty-seven.

MR. JONES: Sixty-seven? That's what it's referring to, AST.

DR. LEITCH: And that licensing action has been approved?

MR. JONES: That's correct, for all three units.

DR. LEITCH; Okay.

MR. CROUCH: Approved for all three units, and has been implemented on Units 2 and 3, and will be implemented as part of restart for Unit 1.

DR. LEITCH: Okay. Thank you.

MR. CROUCH: Once we get ready to restart Unit 1, we will have the same basic design, configuration, operating procedures, technical specifications, and UFSAR that will be identical to Units 2 and 3, obviously with this discussion like we have already had about EPU, which will affect the UFSAR in some places. It doesn't affect tech spec things, but as far as the basic operation of the plant, Unit 1 will be operationally identical to Units 2 and 3.

We have incorporated our internal and external plant operating experience into the Browns Ferry Corrective Action Program, so that if we have a problem that we know of related to license renewal, some type of an aging mechanism, that is entered into our Corrective Action Program. There is an action

assigned for all three units.

Moving on to page 18, as part of the process of going through the license renewal and discussions back and forth with the staff, we have made various commitments. These commitments are made in the application and in the subsequent request for additional information.

Once we have made the commitment, we have consolidated all of these into one letter so that they are all in one place. Each one of these commitments is also tracked in two places on site. We have a system that we use to track our licensing commitments. We refer to it as TROY.

We also have entered it into the Corrective Action Program as what we call a PER, and each one of these databases has individual steps for each commitment for each unit. There's approximately 114 commitments made to date.

By entering it into the two different tracking systems, we will ensure that the actions get tracked and get implemented on their due dates.

As part of the --

DR. LEITCH: I keep jumping ahead to the inspection report, which we are going to hear about. But there was an indication there that there seemed

not to be a good turnover process to the permanent plant staff. In other words, I got the feeling that there was a license renewal organization, and then there was the permanent plant staff that kind of was a little bit insulated from the license renewal effort.

I just wonder. These commitments -- are these ongoing commitments to carry out the various inspections? Do you plan -- Let me ask the question this way. Do you plan to continue to have a license renewal organization or will all this activity be integrated with the plant staff?

MR. CROUCH: No. All of these aging management programs have a site owner. Every one of the site owners that we have for these aging management programs were involved in this very recent review and comment process for the draft aging management programs that the project team developed, but they are mine. I own them. So I'm in front of you today.

All of those aging management programs are owned by the station, by the operating staff.

DR. LEITCH: Okay. Good. Good. I think that's almost the way that it has to be. There has to be that sense of ownership.

MR. CROUCH; Absolutely. These are ongoing -- Almost all of them are ongoing programs that we will manage through the extended operating period. So they are clearly mine, and I own them.

DR. LEITCH: Thanks.

MR. CROUCH: Moving on to page 19. As part of going through the license renewal application and the RAI, we have currently three open items, the first two related to core plate hold-down bolts and the drywell shell corrosion. Those are talked about in the SER. We are in the process right now of talking with the staff to come up to a resolution on these two items.

The third one, the inspection of the RHR service water piping -- that's a new item that came up during this recent inspection when the Region II staff was in. Once again, we are in the process of discussing it with the Region II staff as to how to resolve this open item.

DR. BARTON: What is that one about?

MR. CROUCH: In the intake pumping station the water that is going to the RHR service water pumps -- it comes in through the traveling screens into a set of sumps that the condenser circulating water pumps take suction off of.

Coming out of that sump, there is three pipes that go -- They are embedded pipes that go through the structure back to another set of sumps where the RHR service water pumps take suction from.

The pipe is embedded. So you can't get to it from an external. During the December time frame, the statement was made that we would perform an inspection of that piping. Our staff interpreted that or intended that to be an external inspection of the piping.

They later realized that the piping was embedded and could not be inspected. The Region II staff would like to have a visual inspection of the internals of the piping. We have been providing justification for them of why we do not think a visual internal inspection is required.

Basically, the system is designed such that immediately upstream of the piping, the piping gets a chemical injection for both corrosion inhibitors and biocides, and the water that has this high concentration of corrosion and biocide goes immediately through that piping, and our basic position is that the injection of the chemicals along with the configuration ensures that that piping remains open, that it will not get blocked up, and it

will continue to pass the water to the circulated RHR service water pumps. So that is still under discussion right now.

MR. SUBBARATNAM: Bill, this is Ram Subbaratnam. While we are on the topic of the open items, because of the enormous interest in this Unit 1 periodic inspection program, we are going to call it an open item, and we will track it that way. I wanted to let you know that. So it is going to be four open items on this now.

MR. CROUCH; Okay.

DR. LEITCH: I suppose, during the staff's presentation, we are going to hear more about these open items?

MR. SUBBARATNAM: That's right.

MR. CROUCH: Page 20, summarizing what we have talked about. We've got a three-unit application at current licensed thermal power, and it takes some understanding of what that means at current licensed thermal power, since we are in the process of transitioning to a new licensed thermal power for all three units.

When we prepared our license renewal application, we used the generic Aging Lessons Learned document, Rev. 0. We used this for preparing our

aging management reviews and programs, and we also use it as a basic guidance for how to do your TLAAs.

The Appendix F, which is the list of the Unit 1 programs where -- programs and modifications that we are making to ensure that Unit 1 will be consistent with 2 and 3. This way we can tell you that the application will be consistent for all three units. And as we talked about, the unit 2 and 3 operating experience is applicable to Unit 1.

So we are comfortable that, when we get ready to restart Unit 1, that we know how this plant is going to operate, and we know how it is going to age, based upon what we have already seen in Units 2 and 3.

Any other questions?

DR. LEITCH: Just a comment. I found two things particularly helpful in the license renewal application. One was Appendix F, and the other was the bold border highlighting to attract attention to the differences between Unit 1 and 2 and 3. I thought both those things were helpful in the review.

DR. BARTON: I have one question. I'm not too clear on -- The maintenance rule has not been implemented on Unit 1, but it will implemented prior to restart. Correct?

MR. CROUCH: That is correct.

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

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

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

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

MR. DeLONG: And also there is a -- A portion of our transition includes establishing the performance criteria for those systems. We will certainly use our experience in Unit 2 and 3 to assist with that, and of course, the PSA results for Unit 1 operating to establish that performance criteria for those systems.

The scoping for Unit 1 is primarily identical to Unit 2.

DR. BARTON: Okay.

CHAIRMAN BONACA: Any other questions for TVA? If not, we will take a break now, and meet again at 2:30 for the staff presentation.

(Whereupon, the foregoing matter went off the record at 2:14 p.m. and went back on the record at 2:32 p.m.)

CHAIRMAN BONACA: Okay. Let's resume the meeting, and now we have the staff presentation of the SER.

MR. SUBBARATNAM: Thank you. My name is Ram Subbaratnam. I am the Project Manager for the Browns Ferry license renewal application. I am being assisted by Yoira Diaz, who is also a PM, and she will be presenting her findings on Chapter 4 following my presentation.

TVA has got three major licensing action requests currently under review with the NRC, namely Unit 1 restart, an extended power uprate request, including this license renewal request.

The ACRS Subcommittee was kind enough, and had previously accepted, TVA's request and toured the plant and the Region II in the month of August of 2005. TVA also appeared to make the presentation to the Subcommittee on September 21, 2005, on all the licensing actions.

As the record with the Subcommittee, this presentation is only related to the safety review matters of the license renewal application. As previously recently stated, this license renewal application request is at the currently authorized power level and does not include the extended power uprate. Next slide.

DR. BARTON: How come you only have two open items on your slide?

MR. SUBBARATNAM: Yes. I think that was -- That is an error. We are going to correct it. There's going to be four open items. In fact, there are only three open items related to the SER. Another inspection had added the fourth one. So we will officially have four open items on this SER which we

will have to close before they come to the final one.

Section 2.1, scoping and screening methodology - seismic anchorage. The applicant performed a detailed review of the seismic qualification documentation to identify the non-safety related piping, supporting heat coolant anchors or other components within the scope of license renewal for 54.4(a)(2) for the cases where the non-safety related piping or components are directly connected to safety related piping or components.

This review included the identification of each seismic class boundary identified in the current licensing basis. As a result, from the expanded scope to satisfy the refined criteria, the applicant brought two new portions of piping, components of existing systems, and two additional structures were added to the scope of license renewal. These structures were the rad waste and service buildings. Next slide, please.

DR. LEITCH: I don't think this is necessarily a TVA matter, but I was wondering about the turbine electrohydraulic control system, as far as scoping. I guess we generally consider that to be active, and so that's the reason it is not in scope. I notice the TVA application indicated that it was not

in the scope, but there are things that can happen to the turbine EHC system that certainly affects safety related equipment.

I am thinking about not so much the electronics, which are clearly active, but the hydraulic portion of those systems. I guess they have always been excluded, have they not?

MR. SUBBARATNAM: That's right. I think, typically, they are excluded, but I can ask staff for mechanical scoping if they would like to take that.

DR. KUO: Any staff member has anything on it or have knowledge about that? We will take this under advisement. We will get back to you on that.

DR. LEITCH: It's not really related to this application. It's more just a general curiosity question.

DR. KUO: Okay.

DR. LEITCH: But there can be significant plant transients caused by -- and have been significant transients caused by rupturing of that piping or vibration in that piping, the piping hangars not properly set and so forth.

MR. SUBBARATNAM: So why could not be included in the (a)(2) classification of NSR affecting safety related components? Okay.

DR. LEITCH: Yes. That's the essence of the question.

DR. BARTON: Browns Ferry -- does 1 have an EHC system or does it have a mechanical system?

DR. LEITCH: No, they do have an EHC system.

DR. SIEBER: Yes, that's the right age for it. The insurance company pays a lot of attention to the EHC systems, but the safety function is performed by the main steam isolation valves.

DR. LEITCH; Well, if the bypass system fails. I mean, when I'm saying the EHC system, I'm including the turbine bypass system and so forth.

MR. SUBBARATNAM: Okay. Section 2.1: Scoping and screening methodology secondary, containment integrity: This item pertains to seismic qualification of containment penetration seals and the associated piping and supports outside of the secondary containment.

The staff wanted information how Browns Ferry assured these seals remain seismically qualified and remain functional if a potential age-related degradation occurred on the non-safety related piping attached to it.

After the plant walkdown, the applicant

verified that the few mechanical systems required system boundary changes that affected either the scoping and screening or AMR review results, and that there were no new components added. These boundary changes were duly incorporated because of this walkdown.

Section 2.4 --

DR. LEITCH: Just before you move on, something I read indicated that the containment atmospheric dilution system was just a post-LOCA system. I was wondering, were the Browns Ferry containments required to be inerted at power or is it indeed only post-LOCA?

MR. SHACK: I think they are. Aren't all BWR?

DR. LEITCH: Far as I know they were. That's why I was surprised. It doesn't really affect the scoping. It's just some of the wording there, and maybe I was just misreading it, but it had the implication -- It didn't clearly state, but it had the implication that it was only a post-LOCA requirement. It's just a curiosity question. Thank you.

MR. SUBBARATNAM: Section 2.4 on scoping and screening of containments, structures and supports: Open item 2.4-3 on drywell shell corrosion.

During the review of this system, the staff identified a concern that any water leakage resulting from a potential failure of the drywell to reactor building refueling cavity seal leakage potentially degrades the inaccessible surface of the drywell.

In discussing this issue with the applicant, the staff reports two options to the applicant: One, to include the aging of the refueling cavity seal into the scope of license renewal, so that that will assure that the potential degradation of the inaccessible side of the drywell is monitored and managed; or, alternately, the staff would also like to return an option to periodically monitor the degradation, if any, of the inaccessible side of the drywell by some suitable testing matters, such as ultrasonic testing.

This item is still open. We are still in dialogue with the applicant how to approach the solution for this item.

DR. LEITCH: Reading between the lines, it sounds like this is kind of a hard spot. Right? I mean, I think we are at sort of an impasse here, are we?

MR. SUBBARATNAM: Well, actually, the

thing is that the licensee is arguing the refueling cavity seal strictly is used only for doing the pool transfer. It is not --

DR. LEITCH: Well, that's where they leak.

MR. SUBBARATNAM: Yes. Well, even the leak, yes, that is true. So that's why we are still working with them, but we will resolve one way or the other, and we will get it in the scope, unless the applicant will like to make a solution right here.

Section 2.5: Scoping and screening of electrical and I&C systems. The applicant performed scoping and screening of I&C components using the spaces approach. The applicant had excluded the source vent monitor and the intermediate monitor instrument cables from the scope of license renewal, because these systems were designated non-safety related in the plant specification.

After dialogue with the staff, since the intermediate monitor circuits were part of the surveillance specification, they were eventually brought back into the license renewal scope. The applicant also agreed to bring the IRM circuits to be managed by appropriate aging management program.

MR. LEITCH: That same discussion also referred to the APRMs?

MR. SUBBARATNAM: The discussion was only about SRMs and IRMs. SRMs clearly were not in the plant spec. So we couldn't get it in. The IRM also was disconnected as not in the tech spec, but we could go back in the surveillance specifications where we found a linkage where the IRMs were required, and the licensee had to agree to bring it into scope or at least to put them in.

2.6: Integration of Browns Ferry Unit 1 restart activities and license renewal activities: The element unique to Unit 1 is that the restart activities include modifying the Unit 1 licensing basis to make consistent with the current licensing basis at Units 2 and 3.

The applicant identified 13 Unit 1 differences that will be eliminated when restart activities are completed. The license renewal application review is performed under a regulatory framework that ensues as each activity item defined in the license renewal application Appendix F is completed. The corresponding highlighted or the bold bordered text in the license renewal application will apply to Unit 1.

The only change to the application will be to the bolded border. No changes are required to

scoping and scanning results, the aging management review results or the TLLS.

The staff reviewed all the bold bordered items in the LRA as they will exist when Unit 1 restarts. That is focusing on the material, the aging effect, and the aging management program of components and piping as they exist in Units 2 and 3. This answers to an earlier question.

DR. LEITCH: Yes. Thank you.

MR. SUBBARATNAM: Next slide, please. 2.7: Conclusion for scoping and screening: ON the basis of its review, the staff concluded, pending resolution of the open item 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 subjected to an AMR, as required by 10 CFR 54.21(a)(1).

Section 3.0 on aging management program: Basically, it is a same repeat of the slide what the TVA projected. There are 39 aging management programs. Thirty-eight of them are common for all the three units. One is specific to Unit 1, which is the Unit 1 periodic inspection program. There are six new programs, and four plant specific programs.

We will talk about a few highlights or the exceptions which staff agreed during review of these aging management programs. This is an exception to the inspection of overhead heavy load and light load handling systems program.

The applicant requested an exception to the overhead heavy load and light load handling systems program, such that it may not monitor for crane fatigue. The staff evaluated the reactor building crane fatigue as a TLAA.

This TLAA analysis remains valid for the 60 years with 7,500 cycle estimate, which is a very small fraction of a 100,000 cycle design. Hence, the staff concurred with the applicant that the fatigue monitoring program is not required for the extended duration of operation.

Section 3.0 on buried piping and tanks inspection program: The applicant relies solely on opportunistic inspection to check buried piping. If there are not any opportunity inspection, the buried piping will not be inspected. However, staff deliberated with the licensee, and finally the applicant agreed to inspect the buried piping within the 10 years after entering the period of extended operation, unless conclusive opportunistic inspections

that provide that a representative sample have occurred within the 10 year period. If that didn't happen, then the licensee agreed, they committed to perform a focused inspection.

If no inspection is conducted, then we will pull up a little of those piping, and they are to come back and show us. We do a focused inspection to see why the piping was not inspected.

CHAIRMAN BONACA: Consistent with GALL.

MR. SUBBARATNAM: Yes. Section 3.0: Aboveground carbon steel tanks program: The staff identified the aging management program does not perform thickness measurements of fuel oil tanks' bottom surfaces. We identified this to the applicant, and finally the applicant revised the one-time inspection programs to require ultrasonic thickness measurements of the fuel oil tank bottom surfaces to ensure that significant degradation is not occurring.

This is again one of those GALL confirmations.

Confirmatory Item 3.3.2.35-1 on auxiliary systems. Loss of preload and cracking of bolting in the aux system.

This confirmatory item pertains to the loss of preload due to stress relaxation and cracking

of carbon steel bolting of used in auxiliary system. The staff required an inspection team confirmation through the plant regards the results of any self-assessments, inspections or maintenance activities on proper bolting and procedures.

Staff requested the Region II AMR inspection team to verify this is a part of the AMR inspection confirmation. I am sure Cahill will make a reference to this in his presentation. The team verified the confirmatory item in a recently concluded inspection, and this will be dispositioned in the inspection report to be issued in November 2005.

Section 3.5, the aging management review of civil structures and components: Inspection of inaccessible concrete structures, primarily of the intake structures, are not performed due to hazardous conditions for the divers.

Staff needed historical site groundwater chemistry test results, groundwater sampling, and testing frequency to conclude if indeed the environment at Browns Ferry was nonaggressive. As seen from the table of data, TVA verified this conclusion and provided the data as shown in the table and, as you can see, it is nonaggressive.

Section 3.7 on aging management review of

Unit 1 systems in layup: In describing the wet layup methodology, the applicant stated that TVA did not solely rely on Unit 1 layup program, like Bill Crouch described, during the extended outage. Staff, however, in reviewing this, especially in Section 3.7 of the SER, needed additional information from the applicant to conclude that no new degradation have occurred in the extended outage.

Specifically, the staff wanted to find out that (1) severe aging did not occur during the extended outage; (2) additional aging properly identified, evaluated and managed; and to report the aging management can distinguish the aging due to the extended period from the aging due to future operations. They wanted that confirmation.

The result was that Browns Ferry committed to the Unit 1 periodic inspection which will be conducted through the extended period of operation.

CHAIRMAN BONACA: Now before you move on, is this going to be a confirmatory -- No?

MR. SUBBARATNAM: No. To open item category, no, because we have too many items to be resolved on this, and staff is going to need more expanded scope of the elements. So we are going to basically an open item, because also we don't have the

staff evaluation per se in the aging management program part of the section of the SER. So we think it is proper we can make it an open item.

CHAIRMAN BONACA: And if I understand it, to try to have it in the final SER.

MR. SUBBARATNAM: Yes, we will have it in the final SER.

Section 3.7. This is the Unit 1 periodic inspection program. Browns Ferry submitted the Unit 1 periodic inspection program. The staff needed additional information of the program elements, which involved scope, the sampling basis, detection of aging effects, monitoring and trending, and suitable operating experience.

So once we complete all of this information and when we update our SER, we will bring it back to the Committee again.

DR. KUO: Now this is an open item, is it?

MR. SUBBARATNAM: Yes, this is an open item.

DR. KUO: No longer confirmatory?

MR. SUBBARATNAM: No, it is no longer a confirmatory item.

Section 3.8: Conclusion of the aging management reviews and the aging management programs.

On the basis of its review of the AMR results and the AMPs, with the exception of the open item on the Unit 1 periodic inspection program, the staff concludes that the applicant had demonstrated the aging effects will be adequately managed so that the intended functions will be maintained consistent with the current licensing basis for the extended period of operation, as required by 54.21(a)(3).

DR. BARTON: Got a question for you. In the SER on fire protection programs, the applicant proposed 18-month inspection interval on carbon dioxide fire suppression systems?

MR. SUBBARATNAM: Right.

DR. BARTON: GALL suggests or recommends 12-month, and you gave in to the 18-months. Is the GALL wrong, or what?

MR. IQBAL: I think that 18 months is the licensing basis. That's why we accepted that frequency. GALL recommends 12 months. Right. But their licensing basis is 18 months.

DR. BARTON: So are you guys going to fix GALL? Has this come up? I don't remember this coming up before.

DR. KUO: We will take this as a takeaway action here.

DR. BARTON: Pardon?

DR. KUO: I say we will take this away for action, because it has to be consistent. Right.

DR. BARTON: Recommended 12, and their basis is 18. You are going to accept the 18, and you got to do something to GALL.

DR. KUO: We will have to go over this. GALL is our standard requirements -- not the requirement, the recommendations, but the guidelines for the staff unless they are citing a justification. So we are going to look at it.

DR. BARTON: Okay. Thank you.

MR. SUBBARATNAM: Is there any other question on this section?

Well, then Yoira will present the Section 4 on the time limited aging analyses.

MS. DIAZ SANABRIA: Yes. Good afternoon. I am Yoira Diaz Sanabria. I started working as project manager for the Browns Ferry license renewal application since January 2004. Today I will be discussing the time limited aging analyses, known as TLAAs, contained in Section 4 of the Safety Evaluation Report.

These TLAAs included reactor vessel and

internals neutron embrittlement, metal fatigue, environmental qualification, primary containment, and other plant specific analyses.

The applicant provided the analysis of the upper shelf energy thermal shock and adjusted reference temperature contained in the reactor vessel, internal neutral embrittlement TLAA. No open issues were identified in these sections.

For open shelf energy, the applicant performed a plant specific analysis that satisfied 10 CFR 50, Appendix G criteria of 50 foot-pounds. The applicant evaluated the fracture analysis by using the equivalent margin analysis methodology, which is based on copper and fluence values.

In our independent review --

DR. SHACK: Why would they assume it to be less? I mean, did they calculate them to be less when they did the upper shelf?

MS. DIAZ SANABRIA: Ganesh?

MR. CHERENKI: I am Ganesh Cherenki from the Materials Branch. The upper shelf, actually, they used because they don't have the original upper shelf background materials. So they have to use the -- report which is approved by staff, BWR Reactor 74, and based on that, we did the analysis, and all the

analysis in the background region involvement were bounded by the topical report.

DR. SHACK: Hasn't there been some dispute recently about how fluences are computed in BWRs?

MR. IQBAL: Lambros.

DR. SHACK: That's Lambros? Okay.

MR. IQBAL: I'm not quite sure what the dispute was about.

DR. SHACK: I just thought there was some dispute over how the fluences were calculated, that the codes were under discussion. Maybe I'm just wrong.

MR. IQBAL: Okay. There were some limitations in the code, but G has been approved about three years ago, four years actually, and we were trying to resolve those issues, which have been successfully resolved. I'm not sure the thing has gone out, but at least we have it on my desk.

DR. SHACK: Okay. So everybody agrees on the fluence now?

MR. IQBAL: Yes. Yes. Actually, there was never a disagreement.

DR. SHACK: There was never a disagreement.

MR. IQBAL: -- on the specific steps in

the methodology, which we have resolved.

MS. DIAZ SANABRIA: In an independent review, the staff found that all building materials met the acceptance criteria specified in the staff approved boiler water reactor vessel and internals project, BWR VIP 74, and confirmed the applicant's conclusion, answering your question.

The analysis projected through the end of the extended period of operation remains valid in accordance with 10 CFR 54.21(c)(1)(ii).

Continuing with Section 4.2, here is the data for the adjusted reference temperature parameter and the use factor value for each unit. The ART for Unit 1 is 159 Fahrenheit. For Units 2 and 3 it is 157. The corresponding USE factor is 45 foot-pound for each unit.

Section 4.3 of the SER discussed the reactor coolant environment effects TLAA, among others. I am just going to point out one of the TLAAs.

The applicant stated that cumulative usage factor, CUF, of some components are projected to exceed the ASME Section III Class 1 limit before the end of the period of extended operation. The staff found the applicant's environmental fatigue effects

assessment acceptable, and also the applicant's commitment to use the fatigue monitoring program to assure that the CUF of the critical locations will not exceed the limiting CUF value in accordance with 10 CFR 54.21(c)(1)(iii).

Section 4.7 of the SER included other specific plant -- other plant-specific analyses for reactor building crane load cycle, dose to seal rings, radiation degradation of drywell expansion gap foam, irradiated assisted stress corrosion cracking, stress relaxation of core plate holddown bolts, which we have an open item, emergency equipment cooling water weld flaw evaluation.

DR. LEITCH: Where are these seal rings in the HPCI and RCI? Just go back to that previous slide, please, the second bullet that says dose to seal rings. What seal rings are we talking about there, HPCI and RCI?

MS. DIAZ SANABRIA: On the high pressure, yes.

DR. LEITCH; I'm not sure I understand what seal rings are involved there.

MS. DIAZ SANABRIA: David Jeng.

MR. JENG: This is not the one -- That's the expansion gap form. This is the dose to seal

rings. I am David Jeng. The seal ring I am covering is the one up by the containment in the building seal. This is for the high pressure coolant ejection and vessel core.

MR. SUBBARATNAM: TVA would like to address this? Ken?

MR. BRUNE: Yes. That particular item, according to the SER also, is no longer a TLAA, because that portion basically has tests on it to check to make sure there is no unacceptable degradation. So there was originally a calculation which was used for the design purposes, but it is not the -- the calculation is not relied upon for operation.

MR. SUBBARATNAM: Okay.

DR. LEITCH: This is more fundamental than that.

DR. BARTON: Pump seal rings or something?

MR. SUBBARATNAM: No, it's not a pump seal ring. These are the valve seal rings, basically.

DR. BARTON: Valves?

MR. SUBBARATNAM: Yes, valves. As a matter of fact, then what we did, the licensee proposed it, and then we went back to the staff and checked with them. They said that we don't do -- the

old system typically is not one of those plant-specific TLAAs. Staff had previously done it. So this was probably a little bit of an overcautious inclusion. This is the valve seals, basically, valve seal rings.

DR. LEITCH: Valve seal rings. The HPCI and RCI?

MR. SUBBARATNAM: Yes.

DR. SHACK: But are they elastomers?

MS. DIAZ SANABRIA: Actually, this TLAA was withdrawn by the applicant.

MR. SUBBARATNAM: This was not a typical--

MS. DIAZ SANABRIA: Section 4.7.7 provides the stress relaxation analysis of the core plate holddown bolts. The loss of preload of the core plate holddown bolts due to thermal and irradiation effects was evaluated in accordance with the requirements of 10 CFR 54.21(c)(1)(ii).

The applicant specifies that the analysis was evaluated at the assumed expected loss of preload of 20 percent which bounds the original BWRVIP-25 value.

The applicant indicated that core plate holddown bolts will maintain sufficient preload to prevent sliding of the core plate by friction under

normal or accident conditions. The bolts also meet the ASME Section III, Class 1, Level D service limits at the end of the period of extended operation.

After the staff reviewing the method of analysis based on the General Electric's plant-specific stress relaxation analysis on irradiated stainless steel materials, requested additional information to address the following: Horizontal and vertical loads for all operating conditions; sliding of core plate from core plate rim; axial and bending stresses.

The staff has not yet received the information above-mentioned. However, the applicant is still ongoing on its review. Therefore, this issue remains unresolved, and identifying the SER as open item 4.7.7.

DR. BARTON: This has to do with the holddown bolts. Has the applicant found any cracks in this plate -- core plate? Are there any cracks in the Browns Ferry upper core plates?

MR. DeLONG: This is Rich DeLong. The answer is no.

DR. BARTON: Thank you.

MS. DIAZ SANABRIA: Based on the staff's review and subject to resolution of open item 4.7.7,

concluded that the applicant has provided an adequate analysis of the TLAAs.

If you don't have further questions, I would like to turn over the presentation to Caudle Julian and Steve Cahill.

CHAIRMAN BONACA: Any questions from the members? No questions. So we will move on to the inspections. Thank you. Appreciate it.

DR. LEITCH: Just a question about that core plate and your hydrogen water chemistry program. You do have hydrogen water chemistry on the two units and plan to have it on the third, but is your hydrogen water chemistry program aggressive enough that it protects the core plate?

MR. BRUNE: My name is Ken Brune. I'm with TVA, Browns Ferry Engineering.

Currently, we are using noble metals with hydrogen water chemistry. So we maintain a certain level of noble metals deposition to protect the core plate. We are also implementing the BWRVIP-2.0 program to be able to show that we are keeping the ECP values below the -230 millivolt level to mitigate IGSEC for the core plate and the other vessel internal components.

DR. LEITCH: Okay, good. Thank you.

DR. BARTON: You guys are trying to protect all the core internals then. Right?

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

DR. BARTON: Got you.

MR. JULIAN: Good afternoon. My name is Caudle Julian. I work with NRC in Region II, and I have been the team leader on many of the license renewal inspections, including the Browns Ferry inspection which we just completed here a couple of weeks ago.

This slide you have seen before. So I won't dwell on it. It tells you that we have written a manual chapter and inspection procedures for doing license renewal inspections. Site-specific inspection plans are developed, and we are scheduling our inspections to support NRR's review.

We try to keep a consistent team of the same five inspectors, and the training program to replace any that fall out due to retirement, which has happened to us a couple of times.

DR. LEITCH: Caudle, now this inspection that has just been completed -- has a report been issued? I don't think we have seen it yet.

MR. JULIAN: Not yet. Not yet. We are writing the report, but I will give you the results in

just a moment of what we have done.

DR. LEITCH: Okay. Thanks.

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

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

MR. JULIAN: Are you speaking Browns Ferry specifically?

CHAIRMAN BONACA: Yes.

MR. JULIAN: Only Browns Ferry?

CHAIRMAN BONACA: Yes.

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

Separate from that, Steve Cahill will tell

you all about his inspection program, which includes the Division of Reactor Projects and support from DRS.

MR. CAHILL: I'll get into what our folks do. What Caudle does is a niche, and he deals with the same subset of licensee personnel at each site. So, really, I mean the residents help him out to give him some insight into the things that are going on, but generally, he really doesn't -- We don't cross paths too much.

CHAIRMAN BONACA: Okay. Very focused on the license renewal.

MR. CAHILL: Because he is inspecting programs mostly.

CHAIRMAN BONACA: Okay.

MR. JULIAN: Right. The only thing on this slide to note is that we have made a revision to cut back on the scoping and screening inspection and focus primarily on the (a)(2) situations as far as scoping and screening goes, and Browns Ferry was used -- we did use that process at Browns Ferry.

The aging management programs inspections: The objective here is to confirm that AMPs are working well, the existing ones, and to examine the applicant's plans for establishing new AMPs.

The slide is pretty much standard. We

told you what we had done before. We examined records of past tests, verified inclusions of future tasks in established site task tracking system, and verify the material condition of the plant is being adequately maintained by going out and looking at equipment.

If we need it, we have in our procedures the option to do a final wrap-up inspection. That usually has been two to three days in length, and we perform -- look at any open items from previous inspections, any items requested by NRR, and verify again that the applicant has loaded future actions into their tracking system, and we are looking for a transition plan of some sort where, as was discussed earlier, the efforts of the license renewal aging management programs are transferred to someone to own them at the plant in the future.

The first inspection we did at Browns Ferry, the aging management program inspection, was November 29 through December 27. We concluded that the existing programs to be credited as aging management programs for license renewal were generally functioning well, based on looking at past results.

The inspectors observed the applicant had not yet begun the implementation process for new and enhanced aging management programs, and some of the

AMP procedures have yet to be defined and composed. Next slide, please.

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

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

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

DR. BARTON: Good. Thank you.

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

MR. JULIAN: I'm sorry?

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

MR. JULIAN: On this slide?

CHAIRMAN BONACA: Yes. My question was: What is your expectation? I mean, when are you expecting to have to perform an additional inspection? Bullet Number 2, I am left with the question, is it going to be six months from now? Is it going to be six years from now before they walk into license renewal?

MR. JULIAN: This slide is perhaps a little misleading. We went to do the aging management program inspection in November-December time frame. It was two weeks in length, and we anticipated that would be the major portion of our work.

We found that they really weren't ready for that inspection. So we went back for an additional week, the week of September 19, and we still have some issues. So we have decided we are going to do still another inspection down the road.

CHAIRMAN BONACA: So that would be before the SER is issued?

MR. JULIAN: Yes. The timing of that will support the schedule for issuing the SER. I'm not sure -- We haven't decided whether, before the SER is issued versus after, but it will certainly before the end of the process, certainly.

CHAIRMAN BONACA: I mean, we approve these applications -- from previous applications we have some expectation of what you expect to see by the time you have to report an SER. I mean, you cannot just have empty shells of programs. You have to have something more than that.

MR. JULIAN: That is correct. Well, let me tell you what we saw this time, and I'll tell you where we are at.

CHAIRMAN BONACA: Okay.

MR. JULIAN: The next slide. The second inspection we did September 19-23. We reviewed a sample. I've counted 40. They say 39, a discrepancy in the number of implementation packages, and they contain marked-up procedures, proposed procedure changes to be made, changes to be made to the plant -- or the operating procedures or maintenance procedures for the plant.

The packages contained some errors and were not meticulously reviewed, in our opinion. We could find some errors in these packages, and the applicant initiated a problem evaluation report, a corrective action document, a PER, for this corrective action.

We took a look at -- Let me stop there and

amplify a little bit on the question you asked. They have something now. They have an implementation package for each aging management program. It contains the basic elements we think would do the job.

They have got marked-up procedures the way the propose to change them. There are details in some places that are not there yet. We found a couple of errors in things. We think that some of the dates that were in there were wrong. There were things that were marked as needing to be done prior to the period of extended operation when indeed they need to be Unit 1 restart items.

They are going to fix that as a result of the PER that they initiated, and we think that, going back through these packages again and correcting errors in it, that they will look broader than we looked. We looked at a sampling. If they will look broader than we looked and look at them all again and get them shaken out, we think that they will be acceptable.

DR. LEITCH: These programs theoretically don't have to be implemented until just prior to entering the period of extended operation.

MR. JULIAN: That is correct.

DR. LEITCH: But, hopefully, an applicant

would have a schedule for more prompt implementation of these programs. But in the material I have, the only commitment is the one that is required. It says they will do them before the period of extended operation. Is there any informal schedule for when these programs might be implemented? Maybe that's not a question for you, Caudle, as much as it is for the applicant.

MR. DeLONG: This is Rich DeLong. The schedule for implementation for the AMPs is in development. It's not complete. Matter of fact, it is not even ready for my review yet, but the intent is, in fact, to use a schedule to support dealing with all the 114 commitments that we have made that are all related to implementing the aging management program, to make sure we get it all done in the right refueling cycles. There's a lot of inspections to do. In fact, all of that will be back-reflected in our long range planning process, not only for on-line activities but for outage activities.

DR. LEITCH; Yes. We have been concerned with a few applicants where the commitment is basically only to do it prior to the beginning of extended operation, and we are concerned about the bow wave of work, the high peak load of work that that

would push forward, plus the fact we think it's just good practice to begin the implementation of some of these AMP programs as soon as you possibly can.

MR. JULIAN: I think that's a valid concern, and it is certainly a management concern also, not only because of the amount of workload but also because of the cash flow issue that comes along with that big workload. But you know, we also believe that it makes sense for a more staged implementation around the refueling, as we have between now and the beginning of the extended operating period, and factoring that in with the workload associated with other initiatives.

DR. LEITCH: That high peak workload is not only for the applicant but also for the NRC staff to inspect those activities and so forth. So we are just concerned with flattening that peak as much as we possibly can.

Do you think, when we come back for the final meeting, you could give us some indication as to what that schedule might be?

MR. DeLONG: It depends on when that final meeting is you referred to. March of 2007?

MS. DIAZ SANABRIA: The full Committee meeting is March '06.

MR. DeLONG: By March of 2006 we ought to be able to certainly provide you with some -- a draft of that. It may not be final at that point.

DR. LEITCH: I realize that is not a commitment. I'm just looking for some kind of a signal as to what your plans are in that area.

MR. DeLONG: We'll do that. We will bring a draft schedule to give you some sense for how we are going to lay these out within our own long range planning process.

DR. LEITCH; Okay, good. Thank you.

MR. JULIAN: Let's see. Next slide concerning future actions. We reviewed their plans for tracking future actions using their TROI system. It is a computerized system they have used for years and years to keep up with licensing commitments, I believe, primarily, at TVA. It is used throughout TVA.

When we got there to the site, the aging management program implementation packages, their record number essentially, was not linked to the tracking system and TROI, but they quickly corrected that within a day or so.

The inspection samples that we selected, the commitments were indeed included in TROI, and we

could find them, but it was hard. There was much duplication within the package that we got from TROI, and varying format of putting things in. There were examples where they had an entry for Unit 1, entry for Unit 2, entry for Unit 3, and then examples where they said implement the aging management program for all three units with just one item, and it was a random search, flipping through a stack of paper, and it was hard for us to figure out if they had captured everything.

We did not find anything missing, but it wasn't a user friendly effort. We were told at the exit interview that, to back this up, the applicant has decided to track the future actions using their standard corrective action program system to write a PER on this, which is what many of the applicants are doing. Nearly everyone we have seen is doing that, because that is a system that will stay with us and, if it needs to change, it will change, and everything will go with it. It won't be lost anywhere.

We have decided that Region II will follow upon these issues during a future inspection, as we have discussed. We would like to go back and see the further implementation of the corrective actions on the aging management program packages. We would like

to see the results of loading things into the PER system, and generally get a feel that everything that needs to be tracked is tracked.

DR. LEITCH; Now, Caudle, your inspection report of January 27, '05, the one that you have been -- the original one -- indicated that there was no implementation plan to transition responsibility for implementing license renewal of the plant operating staff.

I talked to the applicant earlier about that. They seemed to feel that that was coming along pretty well. Did you confirm that in this inspection?

MR. CAUDLE: No, we did not. We did not. That is one thing we would like to go back and look at. We didn't have a good understanding of that program, and so we would like to do that during the next inspection to understand what the transition program is.

When you talk to people, the system engineer for service water system, they are aware of license renewal. They are aware that they will catch the load for the program down the line, but they are not sure what it is yet. That was our experience during the first inspection, certainly.

DR. LEITCH; Yes.

MR. JULIAN; And we didn't take the time to go sample that again two weeks ago. We are going to do that during the third inspection.

DR. LEITCH: Okay. So that it is not that you looked at that area and found it deficient on the second inspection. You just didn't really concentrate on that area.

MR. JULIAN: We didn't have the time to look. We kept ourselves busy looking at the implementation packages and the commitment tracking aspects. So that is something that we have to do down the line.

DR. LEITCH: Because our experience indicates that that plant staff ownership of the program is a very important comment -- a very important component, I should say, to the long term viability of the program.

MR. JULIAN: We certainly agree with that. That's one of the criteria that we are looking for in each of the inspections, as I have shown on the slide earlier.

DR. LEITCH: Good.

MR. JULIAN: Two issues -- we'll just stay with this slide, if you would, please. Two issues that came up that I ought to cover. Ram mentioned

about the confirmatory item, I believe, that NRR had, the bolting issue. This had to do with concern that there would be high strength bolts in use out in the plant, in the balance of plant that could crack over time.

We looked at -- We had some extensive discussions with TVA about their efforts here, and they have gone to great lengths to show that these type of high strength bolts could not be in the plant, because they were not purchased for Browns Ferry.

In addition, they showed us a PER that they had worked a couple of years ago on a Diablo Canyon issue, I believe it was, where they had done a similar, earlier search of that records to find this out, and we think we have the information to close that item here to NRR's satisfaction. We are working with NRR staff to make sure that we've got all the stuff we need.

The issue that Bill Crouch brought up on RHR service water piping is one that we need to resolve. During the first inspection we did, we looked at the construction of the intake structure and recognized that there are three pipes that are 24 inches in diameter and about 40 feet long. I think it says it's cast iron, I believe, and they are cast into

the concrete structure. So you end up with essentially three pipes that provide the safety related water supply for the RHR service water pump.

This is different than most intake structures. Most intake structures would have the safety related pumps taking suction some way on an unobstructed ultimate heat sink source.

We raised the question of wouldn't it be a good idea to do an inspection on these pipes to see that they have not corroded away or they have not corroded or fouled to the point that they are choking down, the surface area is going down, or any other aging effects are happening on it.

We thought we had an agreement that they would do a one-time inspection. They have widely used, as you've noticed, one-time inspection at Browns Ferry, many, many things to be done, more than most people have.

When we came back this time, we understood that they have changed their mind when they recognized what we were asking to be done. They are saying that they don't want to do it, because they don't think it needs doing, and it is too hard. That's what it comes down to.

They have a good point, that one way would

be to send divers into the pit behind where the safety related pumps are continually working. They can't do that without shutting -- They can't shut all the pumps down without taking a three-unit outage, and the divers have been in there before cleaning up debris and so on, but it's very hazardous, and we agree. We don't want to put people in jeopardy.

Our point is that we think that there are now remote inspection techniques, TV cameras, things that can be done to take -- use best efforts to take a look at the piping as a one-time inspection.

Right now, TVA has written a PER on this. The way out of this quandary is they have written a PER to say that we had a misunderstanding, and the NRC thought we are going to do this inspection, but we are not. And they are working now on their explanation, written explanation for this, and we will continue to work that in the future and, when we come back for the third inspection, surely we can be at some point for settling that.

DR. SIEBER: Are you working on your rebuttal?

MR. JULIAN: Yes. I'm going to get Ram to help me.

Let's go ahead. We put here the

performance indicators, since you all usually ask for them. But as they have said earlier -- go ahead to the next one, please -- they are green for Browns Ferry Units 2 and 3 as of right now. The next slide, please.

Region II concluded that the NRC will perform another inspection when the applicant has progressed even further with AMP implementation. And in walking down plant systems and examining plant equipment, the inspectors found no significant adverse conditions, and it appears to us that the plant equipment was being maintained adequately as of today.

That concludes what I have to say. Any questions for me?

DR. LEITCH: There was one intriguing thing. I'm not sure that it is a license renewal issue. Perhaps it's a current operating issue where the emergency equipment cooling water -- sounds like some grate or something was plugged with debris.

I guess I'm having trouble understanding what was the significance of that? Are we doing something to prevent recurrence of that situation?

MR. JULIAN: When we were there the first time, we got involved in this thing about the emergency equipment cooling water catch basins. There

are three of these things, one for each unit, and the water -- a portion of the water coming out of the plant after it has done its function, headed back to the river, goes into these catch basins, and they look just like a storm drain. They look like a cast concrete box with a steel grate over the top of it.

The water comes into the basin, and then exists the basin in a -- I think it's a clay-type, I believe, and the issue of concern was that the goes-out pipe might be crushed, might be affected by an earthquake or something of that nature.

So these basins are there, such that the EECW water coming into the basin could overflow the basin and just run across the asphalt. So we went looking for these things, and we had a tough time finding them, because they haven't been looked at for years back then.

They were partially plugged. Unit 2 particularly was kind of bad. It had plastic that had been pushed over it, and a lot of gravel and stuff on it.

We concluded that they would have still done the job. There's enough driving head, we think, in the water coming into the basin that the water would have found its way out. So we didn't think it

was an operability issue.

TVA wrote a PER on it and was going to get it corrected. When we went back this time, we followed up on that matter, and we found that the corrective actions -- they had listed several corrective actions, one of which is very effective, that the young lady who is a system engineer for that system goes out weekly and walks it down and, if she sees excessive buildup of gravel and debris, she calls the maintenance folks to come clean it off, and she is still doing that forever. I guess there is no end to that commitment. She has other things to do, but that's one that she does.

One thing that we didn't see was that there was a corrective action that said post these things. Put a sign out there. It says this is a safety related thing; do not block. That had not been done. They had written a work order back in December, but they hadn't done it.

So we pointed that out to them, and they had the sign up within a couple of days. So it now has a sign, and those basins are still there. They have not changed the configuration of them any, but we think that they continue to be operable.

DR. LEITCH: Okay. Thank you.

MR. JULIAN: Any other questions for me?

DR. LEITCH: You are not discussing the audit report, are you? That's a separate presentation?

MR. JULIAN: No. Do you have a presentation for the audit?

DR. KUO: Audit report -- We have the audits leader here, if you have questions. I think Mr. Greg Cranston can answer the question.

DR. LEITCH; Okay. I have a couple.

MR. CAHILL: My name is Steve Cahill. I am the Division of Reactor Projects Branch Chief down at Region II. I have the routine oversight for the TVA sites, which includes the Browns Ferry Unit 1 recovery.

I was originally going to talk about our routine oversight of all three units, but as you saw by the performance indicators that Caudle had up there, there is really not much to discuss on Units 2 and 3.

Ever since we implemented the revised reactor oversight process in the year 2000, the operating units 2 and 3 have never had anything greater than a green finding or performance indicator. So they have been, in our mind, relatively a good

performing site that has not really gotten any increased regulatory attention.

So I am going to focus mostly on Unit 1, and I have talked to most of the ACRS members here before on our visit to the site and when they were in Atlanta in August. So I'll try not to be too redundant in some of the stuff that I talked to you about before.

I just want to give you a little perspective when we set up the framework for oversight of Unit 1. This was back when Luis was running the region. This is the third unit TVA was recovering, and they had pretty good success in recovering the other two. So there's some credibility and a good track record in our mind.

It was a very similar effort. I mean, TVA's approach has been this is a unit that's licensed; it's been in the shutdown; we've just to get it back up to current licensing and design basis. They were very quick to lay out their approach to be essentially operationally identical. That term has been around since they first talked to us.

TVA had a desire to do this in a predictable manner. They actually came in originally asking us to do this using the ROP, because of the

predictability nature of that.

DR. SHACK: Now when Unit 3 came back on line, they did that same thing? So they came back with identical units? That was a goal for that restart?

MR. CAHILL: Yes. They never wanted to have anything different between the units other than just the normal out of sequence things you are going to get with the outages. I mean, that's in their best interest, too, and it make sour job a lot easier, because you are not trying to -- It's almost like dealing with separate plants if you do it any other way.

DR. SIEBER: Well, the driving force is the operator licenses. If the plants are different, then the operators have to be licensed for each plant.

MR. CAHILL: At the Browns Ferry units, the operators have always been licensed -- They have one license which is good for all the units.

DR. SIEBER: For all three units.

MR. CAHILL: It's always been that way, and there is nothing that we have seen that is going to make that change.

So anyway, our perspective is that we did not perceive the need for the same significant scope

of oversight that we had done for the first two recoveries. I mean, we were doing individual SERs on the Unit 2 recoveries for every program, and that was pretty labor intensive, and there was a lot both in the region and the headquarters working on it.

So we launched an approach on what we are going to do with Unit 1. We realize there's a lot of stuff, though, that is different now, and Unit 1 did present some challenges, because of things that had changed, most significantly the reactor oversight process.

That had been implemented in 2000, and that was after the Unit 2 and 3 recoveries. So we did not have that challenge with them.

TVA, like I said, initially requested that we use the ROP. They were using their normal design change process, which we were used to in the operating units, and they tried to lay out the concept that this is just a long refueling outage. We are just going to be doing a bunch of modifications to get everything up to current speed.

Now that was a bit of a simplification, and I think they knew that, but I can understand why that they would want to use the ROP, because of the predictability. But it also complicated a lot of

things on our side.

The enforcement basis for the ROP is based on the significance of termination process or risk informed process. When you are looking a de-fueled unit that is basically in a somewhat construction state, that is not really applicable. So that gave us the challenge as far as how we would be able to follow up on any findings we had.

Also the report documentation: The ROP has a very high threshold for report documentation. You basically don't write about anything other than the scope of what you did unless you have a finding, and that did not suit our needs either.

There's a lot of effort that was done with all the operating units that rolled them into the reactor oversight process in 2000. There's a lot of verification inspections and establishment of performance indicators, which again had never been done for Unit 1.

The whole basis for our assessment program, the action matrix, really -- you couldn't apply that to a shutdown, de-fueled unit like Unit 1 was. So we came to the conclusion very early that we needed to device a unique oversight process, and we were going to do it via authoring a manual chapter.

One tool that was available to us that we have used, and you have probably heard this many other times with Davis-Besse and others, is the manual chapter 0350 process, which is the oversight.

We decided very early that that was not something that we were going to use. One, there is a stigma associated with that. It's only done for plants that are in trouble and down, and TVA had long since gotten past the 1985 issues that shut them down. Also, there is a lot of onerous oversight that is required with that, that the five-year project TVA was laying out, we did not want to apply those resources early in the project. We didn't feel that it was warranted.

Also one other consideration we had was they had fixed a lot of these special programs, the things that were applicable to all TVA and all Browns Ferry. They had fixed those programs on the Unit 2 and 3 recovery. We know we didn't need to reverify the fixes to those programs. The programs were fixed. All we really needed to do was check on implementation of those in the Unit 1 recovery.

Also one other consideration we had when looking in the manual chapter: I mentioned before the documentation. We knew we needed to have a clear

documentation trail for anything we did on Unit 1, just to be able to resolve things at the end, be able to respond to questions like you folks might ask, as I've noticed you like to do, and basically be able to track down anything that -- you know, that there was nothing, no loose ends, that we didn't touch for Unit 1 aside from what TVA laid out for us.

We wanted to incorporate the lessons learned. We had a lot of core staff, like Caudle said. He uses the same group of folks for license renewal. We had a lot of folks that were involved in Unit 2 and 3 recovery in the region. They were very familiar with what the issues were, what TVA's corrective actions were, and there's some efficiencies to be gained from that. So we wanted to take advantage of that.

So we developed a manual chapter, Manual Chapter 2509. It was issued in August of 2003. It was jointly developed by folks in the region and the Inspection Program Branch up here in NRR. It is a specific manual chapter specific to just the Unit 1 recovery effort.

There was a conscious decision we had in the beginning not to test out new construction approaches. Once headquarters got wind that Unit 1

was going to be coming back up and we were going to be doing something like this, I'll be honest, my door was getting beaten down with everybody trying to figure out how to test out all the different ways we had for possibly inspecting construction of new power plants, and we would use Browns for Unit 1 recovery as a test pilot for that.

That really -- With the perspective I laid out before, that was not compatible with what we needed to do, and we did not go down that path.

The one thing also -- I mean, that would have required a lot more, I guess, onerous and system specific oversight that we did not plan to do, and that would have been a significant impact on TVA, which they obviously were trying to avoid.

DR. SIEBER: It looks to me like there's a lot of construction either going on or will go on. So why is this different than building a new plant?

MR. CAHILL: From my perspective as a person that's dealing with operating reactors, TVA is using their normal modification process. Now, granted, this is a very long outage, but their argument that this is a long refueling outage has some merits, because they are using the process that my residents and the regional inspectors look at every

day when they go out for inspections. They are just using them for a more significant scope of activity.

They are mostly staying within the original design basis. With construction, you are looking at a lot of things for the first time, and you are looking at them against their design basis and doing verifications.

We are looking more that they are just doing modifications which are a small subset of a system, not an entire system, even for things as major as some of the piping replacements that they have done, and we are just verifying they are staying within their design criteria that already existed.

So it's a lot less of a scope of inspections from our point of view. There's a lot less to verify. I'm not that familiar with all the new construction, possible oversight approaches, but I heard some pretty novel concepts on how we were going to do it, and we just didn't have the resources to be doing it in a whole different way.

We've done this two times before, and Luis painted a clear picture that, you know, we had tested out our processes for overseeing TVA, and we wanted to stick with what was tried and true.

DR. SIEBER: Okay.

DR. LEITCH: Did you feel any differently about that with respect to the reactor water cleanup system? I guess that one system seems like it is almost -- almost completely new.

MR. CAHILL: Reactor water cleanup? The recirc? Talking about the recirc?

DR. SIEBER: No, the reactor water cleanup. It's different.

DR. LEITCH: Pumps are in a new location. The heat exchanger is new.

MR. CROUCH; Steve, this is Bill Crouch. On reactor water cleanup, we did replace a major portion of piping, but there was another major portion of that system that was not replaced, and the portion that we did replace we put it in, in the same configuration, same materials as what we had already done on Units 2 and 3.

So we were just implementing the same kind of mod on Unit 1 as what we had already done on 2 and 3, just like Steve was talking about, the sequences and mods from unit to unit.

DR. LEITCH: Unit 2 and 3 already has the cold pumps?

MR. CROUCH; Yes. Already has the same material, cold pumps, everything.

MR. CAHILL: We have looked at the new heat exchangers they put in, and from my resident's perspective, it wasn't a whole lot different. I really didn't get into much discussions with them, because TVA just recently did the turnover of that system, and we were looking as they went through that process, and it really was really straightforward from our perspective.

So to answer your question, no, I wouldn't change my mind based on that system.

DR. LEITCH: Okay. Thank you.

MR. CAHILL: Anyway, the final draft of the manual chapter was issued as a public document. We had had some interactions with TVA. We put a draft out there for public comment so we could also interact with TVA, so they understood the approach we were using.

Just some key attributes I am going to point out in this manual chapter that's very germane to our oversight.

We had a different open item closure criteria. We are basically allowing our inspectors to close a restart item if the identical solution that was done on Units 2 and 3 is being done by TVA. In other words, we are not going to wait and keep the

thing open until the very, very end, until the last bolt is tightened and the last thing is in there.

We have inspected their processes, and we will do spot checks on their processes, have confidence in TVA's processes; and if there is nothing different that they are doing on Unit 1 from the other ones, we are not going to basically give that same level of onerous oversight all the way until the very end. That was a conscious decision that was laid out in the beginning.

The other thing the manual chapter laid out was a lot of public communication expectations, very similar to the stuff that would be on an 0350 type process, public meetings that we were going to have interactions with TVA and let the public observe and comment.

It kept oversight at the regional level until about the final 12 months before restart. So we are not going to establish a formal restart oversight panel until approximately 12 months before TVA's startup date.

So that kept the restart oversight at my level and another branch chief, Mark Lesser in the Division of Reactor Safety, responsible primarily for keeping track and scheduling all the inspections and

the activities associated with Unit 1.

Also, this was very important to me, that it allows us to use the pre-ROP report documentation guidance. It allows us basically to write whatever we want. We can have a very detailed discussion of what we looked at, what we found, what we thought, and it should be very easy for somebody to come back and follow our paper trail to understand the basis for why we closed something out and said it was okay for restart.

Having been involved in an 0350 plant at Crystal River and previously at Watts Bar with Caudle when they were coming up and getting initially licensed, I knew that was very important to be able to recreate that decision making process. So our reports -- I know some of you have read them -- are, hopefully, very conducive for that.

Another thing that I mentioned before, the ROP was a challenge, and we came up with a framework on here that -- This might have some applicability to new construction, because we have had people asking about it, but figuring out how you are going to transition this plant into the ROP, there's a lot of challenges about getting all the different cornerstones and all the things that are -- you know,

the inspection procedures we normally use, the performance indicators, getting those established.

It's not something you can just say, when the plant starts up, that it is instantly in effect. There has to be a transition, and we laid that out in the manual chapter. As Bill mentioned before, we actually did it the end of last year.

So actually, effective the beginning of 2005 four of the seven ROP cornerstones were transitioned over and are basically being monitored, as Bill said, under the ROP. So emergency preparedness, the two health physics areas, and security -- we give Browns Ferry one just baseline inspections just like the other two units get, because there is nothing left unique to the Unit 1 recovery in those areas.

We are also using traditional enforcement, like I said. The STP isn't really conducive. So we are using the traditional enforcement and the construction supplements, where they are applicable. Next slide. I'm sorry, you are on the right one.

TVA established a regulatory framework with us early. They submitted a series of letters in 2002 and '03 to update their Unit 1 restart scope. This is something that they had done before with Units

2 and 3, and they just wanted to update it for the lessons learned and the current status of where they were on all the items that they had on their plate that they considered that they had to have resolved for Unit 1 to start up.

So in August of 2003, we issued a final regulatory framework agreement, which basically, after some interaction, agreed with what TVA had submitted as far as what the scope of list of items was for restart. It includes their special programs that I mentioned before that they laid out back in the Eighties from when they were shut down, and it also included a lot of generic items, things that had come up since the '85 shutdown of Unit 1 that had to be resolved before Unit 1 could start up.

Another thing we also did in the region was do a very thorough scrub of all the databases we've had, all the inspection reports going back particularly to Unit 2 and 3 ones, to make sure we didn't miss anything. I like to use the phrase, we looked under every rock to make sure that there is no open item out there that was not really actually resolved for Unit 1.

Typical of these is that you find something that was -- Unit 1 was discussed, but it was

really actually closed for 2 and 3, and you can't really discern from reading the report write-ups whether Unit 1 was addressed or not.

If there was any doubt, we would throw it on our list, and we resolved it and closed it clearly in the report, to make sure it was clearly resolved for Unit 1. So I am optimistic that nobody is going to find any open item or generic issue out there that we haven't addressed.

Manual chapter 2509 required us to lay out an inspection plan, and this is a key point. I sort of made this before, but this is a question. We were getting some questions from the ACRS about the construction applicability to the Unit 1 recovery.

A key point of difference in our inspection plan versus a construction one is our inspection is primarily based around the regulatory framework, the list of items that need to get resolved for them to be able to recover and restart this already licensed unit.

So it's based on the regulatory framework and our recovery issues list. Those are what drive our inspection plan; whereas, a construction plan would be more on a system by system basis. So there's a different framework we are working off of as we

going forward.

Our inspection plan -- I'll give you the main parts of it. The schedule right now is primarily being driven by the recovery issues list status. Our original inspection focus was to look at things like the demolition of equipment that TVA was doing and the initial engineering they were doing. But now that we've got -- They are in a closeout items mode, and so are we.

So we issued our recovery issues list as a public document after the last restart meeting we had with TVA in July of this year. It was a public meeting in Atlanta. That's a detailed list, and it has a lot of inspection scheduling information.

TVA issues us a quarterly update report where they go through every single item on their regulatory framework. There's a few extra things that we have thrown onto ours that were not in their initial one, but they give us their update, and we compare that against our list, and that's a key basis for our scheduling.

When TVA considers themselves pretty much done with a special program or an issue, we try to lay out the schedule of the inspections to coincide with that.

So we issue a detailed schedule to TVA every six months. We do that along with our reactor oversight process assessment schedule that we send out for all the plants in the country. We just include Unit 1 in that for efficiency. So TVA knows what our schedule is.

To be honest, a lot of this -- With the activities and the nature of what is going on with Unit 1, the schedule is somewhat fluid. So we do move things on Unit 1 around a lot just as their activities change to be as efficient as we can, and to deal with the limited resources that we have.

Our preliminary work-off projects are -- They are shaping up well now, because we are on a good track. This year we have been closing a lot of items, particularly over the last couple of months. So we are looking to get the items closed ahead of TVA's projected restart date.

So right now we don't see that as a challenge, and TVA has not expressed it as a challenge.

Another primary thing that is driving our schedule is TVA's systems turnover process. They call it SPAE for System Plant Acceptability Evaluation, and SPOC, System Plant Operability Checklist. That's a

process that they use to take each system on a system by system basis to basically verify that it's been put back together, everything is in the appropriate condition for its design licensing basis, and they do the appropriate testing to actually get it ready to go, make sure the procedure is in place, and they turn it over to the operating side of the staff.

It is the same process TVA has used for Watts Bar licensing and Unit 2 and 3 recoveries. So we are very familiar with it, and it's a system that we understand and have some confidence in.

TVA has tested out the system on a couple supports systems, and we have inspected that already. But this is a primary job that has fallen to my resident inspectors. As TVA starts turning over some more safety significant systems through this process, we are going to be following along.

Like I said, we already inspected to validate the process. We are not going to look at every single system. We are going to do a risk informed sampling.

Obviously, if we found problems with the process that we hadn't identified before, our risk informed sampling would go up. But we are going to, obviously, pick the most safety significant systems,

and those will be the ones high on our list to verify this process. But it's not going to be every single system.

TVA has given us a detailed list for when they are going to be doing all their system turnovers, and we are arranging that schedule now. But the approach for this, we are going to look at the package that TVA lays out that has all the design licensing basis in it, all the modifications, and we are going to verify that that system does fall within its licensing and design basis.

We are going to do a walkdown, and we are going to really focus a lot on the end results. We are going to do a lot of observation of the testings and the reviews that they do before they turn the system over. We are going to verify that the procedure is in place. That is a standard approach we have used for the other units and the Watts Bar recovery.

There's been a question a couple of times and, for those that haven't heard before, people ask what consideration we give to the layup process. I'll say just what TVA did. There is no credit given to anything that was layup.

Going through this process, TVA doesn't

credit it, and it doesn't really impact our inspections. We are still looking to make sure that it meets all the requirements, that the system is functional, and that it is going to go through the testing that's going to verify that all these design basis assumptions are valid, and we are going to make sure it meets that.

After that is all done, we have high confidence that it is operable and ready to perform its safety function.

Another main thing that drives our inspection plan is the ROP cornerstone transition. I'm not going to go through the details of this. I mentioned before that we transitioned the four cornerstones already, but we do have a detailed matrix that we have laid out for each of the cornerstones.

I guess the primary thing I wanted to point out was we do transition inspections. Those are driving a lot of our current upcoming inspections. We are looking at program areas that we normally do that ROP based our inspections on, and making sure that the Unit 1 programs are up to the same speed.

A good example, I think, before that was mentioned about maintenance rule. We have a maintenance rule inspection coming up. It is the

first time we are going to look at maintenance rule on Unit 1, very similar in scope to what we did when we initially implemented the maintenance rule, which was never done on Unit 1. But that is not driven by anything on our restart list. It's not driven by something on the regulatory framework. It is being driven primarily because we know we need to have a maintenance rule implementation in effect, and we are going to be doing routine inspections on that.

The final transition of the Unit 1 to the ROP and the other remaining cornerstones will not happen until after startup and after the performance indicators get established.

The last part of our plan is just significant modifications or verifications, the term I used. We are looking for any design work that they have done that doesn't fall under one of the special programs. It is not being driven by something that is already on our list. We are including those design change modifications on our list to take a look at.

Similarly, when they do verifications such as the reactor vessel in-vessel inspections that they are doing -- they have been doing all summer -- that is not something that is specifically driven by anything on our list, but obviously it is important.

Obviously, it is something that the NRC should have an understanding of what they do, what the results are. So we put those things on our schedule.

Often those things partially overlap with some of the things on the restart list, but we have been able to work that stuff out pretty well.

So the picture I wanted to paint here was our inspection plan and the approach we are taking to Unit 1 is somewhat of a patchwork. I mean, there's different things. We are working off of a list. We are looking at the design work that they have done. We are looking on a system by system basis at the important ones that they are turning over, and we are looking at how we are going to get this plant rollover into the ROP. Next, inspection approach.

The last thing I just wanted to talk about was the inspection approach. The ownership of the recovery items: Every issue that is on our list, everything that we have scheduled for inspection, has an inspector assigned as a lead owner.

We are trying to factor in new inspectors to get them up to speed, because a lot of our folks are close to retirement. So we want to basically have another core group of people with this knowledge for the next time we need something like this.

The owner develops the inspection plan. I've had some questions from some of the ACRS members about how we go about doing this, and it does vary. It depends on what the issue is.

The owner looks at what the issue is. If it's a special program that the TVA has resolved long ago, there's probably only some very basic verifications to look at what was different from Units 2 and 3, and maybe not a lot of paper review. Sometimes if there is a new approach they are taking, it is going to take more.

So each plan varies, but it is reviewed by either myself or Mark Lesser before the inspector goes out and does it.

Is there any questions? You did ask some before, and people were wondering how we did it.

We issue quarterly integrated reports. I'm glad to see some of you are reading them. We started issuing those in the second quarter of 2003. So all the Unit 1 inspection efforts are contained in the quarterly integrated report with the lower documentation threshold that I mentioned.

The focus of our inspections -- It's not really a cookie cutter process either, as I mentioned before. We are going to look at all of the procedures

that we have for reference.

The Manual Chapter 2509 I laid out lists a lot of procedures, and a lot of them go back to the old engineering procedures, old construction procedures, old restart test procedures. We use those for reference to make sure that we understand all the insights that would have been done back then, and use those on a case by case basis to apply any applicable things to the activity that we are inspecting to make sure that we have the plan that the inspector lays out covers all the bases for what we need to look at.

We are going to review any differences in detail on the site. So this is not just paper review. Inspectors look at the packages TVA puts together, looks at the differences, but then there is always on-site inspection to sample TVA's implementation in a final form.

This is the last bullet up here. I mentioned the final phases of recovery. As we get through closing a lot of the items, we are going to be looking primarily at the system adequacy testing. We are going to be looking at risk informed sample to make sure that we understand everything that TVA is doing to turn over their systems and make sure that we are as confident as they are that they are ready to

perform their safety function.

At the end we are going to be doing fairly standard oversight. We are going to be having an operational readiness assessment team inspection. The scope of that is yet to be determined, and we will probably be applying our normal oversight, because the plant has been shut down for a while, some 24-hour coverage, some constant oversight and review of the self-assessments that TVA is doing on themselves.

The current plans we've got going forward: The restart oversight panel that I mentioned wasn't going to be established until the last year is just about to be formed. The charter is drafted. It is ready for final signature, and our intent was to have it in place at the beginning of this fiscal year.

So the next time I would anticipate that there will be a restart panel formally established. It really should be any day now. Then there is planning already in progress for the initial meeting of that panel.

We are still planning for the sampling inspections, like I mentioned, of the SPAE-SPOC process. So the TVA system recoveries, now that we have their detailed schedule, we are trying to lay out our resources.

This next bullet is an important one. We are still working closely with Ram and the project managers. If there's anything that comes out of their Unit 1 reviews on license renewal or the extended power uprate that is something that they need to have resolved to have before the Unit starts up, something they are basing their decision on, we laid out in the beginning years ago when we started planning meetings for these that we would take anything from them and put them on our restart recovery list to make sure that it was resolved before the unit starts up, if it is important to their efforts.

TVA formally submitted a restart test program to us, and review of that is underway, both in the region and in headquarters, to understand the scope of what TVA plans to do and what oversight we are going to have for that.

That was the end of what I had to talk about. Any questions?

CHAIRMAN BONACA: Very good.

DR. LEITCH: It may sound like I am going to ask about EPU, but I'm not. You were just coming up to the current license power level on number 1. Are there any large transient testing? Is there any large transient testing planned?

MR. CAHILL: Planned?

DR. LEITCH: Yes.

MR. CAHILL: If they were just coming up?

DR. LEITCH: Yes.

MR. CAHILL: No. It's a licensed unit. All that has been done, and they are not changing anything.

DR. LEITCH: I mean, I know we may have some discussions beyond that point, but what I'm saying is up to the current licensed power level.

MR. CAHILL: There is nothing from what I know that would warrant us trying to get TVA to do that.

DR. LEITCH: Okay. Another question I had: It just rattled through my mind as you were talking there. It may not be directly on the point, but what is the source of the fuel for Unit 1 restart? Is it all new fuel?

MR. CAHILL: It's not.

DR. LEITCH: Equilibrium core?

MR. CAHILL: You want to talk to that, Bill? He can give you the specifics.

MR. CROUCH: Yes. The Unit 1 core is going to be G.E. fuel type. A large majority of it is G-14 new fuel. However, we are reusing some once and

some twice burned fuel that comes from Unit 2, you know, to round out the core.

DR. LEITCH: Okay. So it would kind of approach an equilibrium core then with some new, some once burned, some twice burned?

MR. CROUCH: That's correct.

MR. CAHILL: They are switching fuel vendors on the other of the operating units, and they can use the old fuel that they used with G.E.

CHAIRMAN BONACA: I am surprised, because I thought that to support the power uprate, you needed to have the new fuel with a larger number of rods. You can use the old fuel?

MR. CROUCH: You can use the G.E. fuel. That was not the reason for the fuel switch. The EPU was not the reason for the fuel switch.

CHAIRMAN BONACA: Okay.

MR. CAHILL: Okay. Anybody else?

CHAIRMAN BONACA: Well, thank you for the presentation. Yes, questions? Okay. No questions. So we will thank you for the presentations. They have been informative.

What I would like to do now is to do two things, actually. One is to go around the table and get some views and thoughts after the presentation we

had today, and the second is talk about tomorrow's presentation to the main Committee and the issues that we should recommend to put on the agenda.

DR. LEITCH: Mario, just before we get into that summary, I had a couple of questions for Greg.

CHAIRMAN BONACA: Please go ahead. Good.

DR. LEITCH: Greg, I was wondering, on page 13 of the audit report it speaks about operating experience.

MR. CRANSTON: Yes.

DR. LEITCH: And it says a review of the prior five to 10 years of operating and maintenance history should be sufficient.

I guess I was just wondering how you did that with Browns Ferry Number 1, what was done.

MR. CRANSTON: My name is Greg Cranston. We looked at what they had there for each of the aging management programs that we looked at. We looked at 26 of the 39 programs, and they prepared design basis books and information for each of those.

Included in that was operating experience for each of the systems where they had collected information, either based on just in-plant operating experience or even outside operating experience. So

we had those books available to us to go back and look at those. We could also look at their PERs or whatever we thought that was appropriate to look into that deeply to see --

CHAIRMAN BONACA: Would you speak into the microphone? It's hard to listen.

MR. CRANSTON: We also looked at their PERs to determine -- in some cases, to determine what type of corrective action they might have taken or what they may be doing in conjunction with the operating experience they have gained. So that was our main source of information.

In some cases, we followed up with conversations with the engineers at the audit.

DR. LEITCH: Okay. The other question -- Well, I guess we sort of heard the answer to this one. It says -- I guess, on page 253 talking about commitments, it says "Any AMP credited for license renewal that is also required to comply with the current licensing basis for Unit 1 at restart will be in place at restart."

I guess I was concerned about whether that would really happen, based on what we heard about the AMPs not coming along as fast as we might have thought. But I guess in the meantime we've heard now

that this more recent inspection indicates sufficient or at least significant progress in that area.

So, you know, that statement, I guess, was just kind of worrying me, whether that would really come to pass or not, but it sounds like we are on track -- the licensee is on track to make that happen. That's really all I had.

CHAIRMAN BONACA: Okay. Any other questions for the staff? If not, I will go around the table. We will start with you, Graham.

DR. LEITCH: Well, I think, as has been said before and a number of people have made this comment, we need better justification as to the applicability of Unit 2 and 3 experience to Unit 1.

My own feeling is that that justification can be made. I just don't think that case has been made as strongly as it could have been made, and we have talked about that ad nauseam, I guess. So that's not really a new issue.

I think it is important to understand more clearly -- and I think again it would help to clarify -- which version of the plant we are really approving when we approve the license renewal application, because it is kind of a dynamic thing.

We have talked about it before here, and

we have talked about it a couple of times at this meeting, and it is not that I have a serious concern about it. But I think it does need some clarification, because the plant design is changing as we speak, and it has changed considerably since the license renewal application freeze state in July of 2003.

CHAIRMAN BONACA: And we see that very much in the SER. I mean, you can see from the REI, etcetera, that there is an evolution of changes in the plant also.

DR. LEITCH: And the last point I had was I still have concern, and Caudle mentioned it, but I think we need to take a hard look at the plan to transition this license renewal program to the permanent plant staff.

I think TVA feels that that is well underway, and we got a good positive answer from TVA. I think the staff just has to follow up and confirm that that is indeed the case; because I think that is very, very important.

If the plant staff doesn't really own this thing, if it is like somebody else off on the side is telling the plant staff, well, this is a good idea, you ought to do this, why those kind of commitments

don't really get carried out near as enthusiastically as ones where there is a real sense of ownership, and I think we just have to be sure there is that sense of ownership, and I sense that from TVA today, but I think the staff just needs to -- the regional staff just needs to confirm that.

CHAIRMAN BONACA: And it is a legitimate concern, because assuming that they got an SER early next year in March or whatever, from that point to the moment of restart everybody will forget about license renewal. I mean, it's life. They are going to have something so much more massive in front of them. That's going to happen.

DR. SHACK: Except that a lot of those programs are needed for restart.

CHAIRMAN BONACA: Well, not really. License renewal program?

DR. SHACK: Your aging management programs.

CHAIRMAN BONACA: Okay, yes.

DR. SIEBER: For a restart? Not all of them.

CHAIRMAN BONACA: Not all of them.

DR. LEITCH: Well, you know, TVA is still working on a schedule for when to bring those programs

to implementation, and so we hope to hear more about that.

CHAIRMAN BONACA: Any other comments?

DR. LEITCH: No, that is basically it.

CHAIRMAN BONACA: Do you want to comment now on what we should talk about tomorrow?

DR. LEITCH: Tomorrow there is -- what? -- an hour on the agenda, an hour and a half or something?

CHAIRMAN BONACA: One and a half.

DR. SIEBER: Talk faster.

CHAIRMAN BONACA: Well, clearly, we know some of the issues here today for the members. I mean, you know, we talked about them. One is the applicability of operating experience, and then the program modifications. So those will have to be on the table, I would say, to the level or to the degree to which we saw a presentation today.

They were addressed by the licensee, and they can be presented with the same slides there, but simply a condensed version of what we have seen today?

DR. LEITCH: I think so. I think there are a number of the Committee members who may not have heard what I would call the strategic discussion about how this whole thing is going to proceed -- that is,

the restart, the power uprate, the license renewal.

I think it is going to be -- I think we have to focus tomorrow's discussion on license renewal, but I do think a preamble, a very brief preamble perhaps, to bring those on the Committee who have not participated in these discussions to bring them up to speed with the interrelationship between these various licensing activities. But we cannot let that dominate tomorrow's meeting, because that is not the purpose. I mean, we are dealing with license renewal tomorrow.

CHAIRMAN BONACA: Well, let's remember that if we didn't have the uniqueness of the combined actions, the issue of restart and operating experience, we would not be having a meeting tomorrow. Normally, we don't have a meeting like that. We would just bring this to the final Committee at the time of the SER, final SER.

So we have to focus on really the reason why we have this committee, is to address all the concerns of the Committee, with the fact that the plant did not run for 23 years and, therefore, there are issues of layup, how are they being addressed. Operating experience is one issue, and the initiative, particularly the inspection program, that are supposed

to compensate for those issues.

So those should be the emphases of the meeting tomorrow, or at least be prepared to answer the questions in those areas.

DR. SHACK: Now who is presenting tomorrow?

CHAIRMAN BONACA: That's another question.

DR. SHACK: Just the licensee or the staff and the licensee?

CHAIRMAN BONACA: I would say that we probably should have the staff.

DR. SIEBER: Yes, that is what I would recommend.

CHAIRMAN BONACA: Because they have the SER. The licensee is going to be present and, if there is a need, then you can get up and give your view.

DR. SHACK: And straighten things out, right.

CHAIRMAN BONACA: Yes.

DR. SIEBER: I don't want to jump in out of turn, but I heartily agree with what Graham said, that you have to start right off making the distinction that there's three different things going on: License renewal; the restart; and a potential

power uprate. And the only thing we are going to deal with is license renewal.

I would think that the key document that explains everything that is going on is the SER, and any letter we write will be written against the SER.

CHAIRMAN BONACA: That's right.

DR. SIEBER: So that is what we ought to talk about tomorrow.

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

DR. KRESS: I agree with the statements already made in terms of what we should cover tomorrow. I particularly think it is important to get the regional view on the inspections. I thought that was very useful to me, and I do think we need the discussion that talks about those three things going on, and we are concentrating now on license renewal.

I suppose issues with respect to license renewal -- I don't think there are any showstoppers. I think we are in pretty good shape with respect to license renewal.

Now I think they have identified the right aging management programs and followed the GALL report. So I don't have any real issue there right now to bring forth.

CHAIRMAN BONACA: Okay, thank you. Jack?

DR. SIEBER: Contrary to what I just said about the focus being on license renewal, I feel this tremendous impulse to talk about the restart, because I've thought a lot about it, and what's the right way for the licensee to do it, what's the right way for the staff to do it. I have really wrestled with it and tried to keep my mouth shut.

There's a good reason for that, because I really looked at the various kinds of inspection programs and construction programs that licensees have used in the past, for one reason or another.

For example, new construction which has a lot of inspection effort going into verifying the craft skills, verifying designs and so forth, is that appropriate? Pieces of it are. Other pieces of it are not.

If I look at the 350 process, Browns Ferry 1 didn't end up where they are under a 350 kind of a situation. So the 350 process is overkill and really doesn't address a lot of these modifications. It addresses programmatic improvement, which apparently is already in reasonable condition, and a restart conducted under the ROP, to me, particularly with the plant shut down and all these modifications going on,

is inappropriate, too.

So after having wrestled mightily with my personal decision as to what to do, I conclude that what Region II is doing is the right thing. So that's a lot of words to say that I think that all of that is appropriate.

As far as license renewal is concerned, I agree that there does not appear to be showstoppers involved, but I also agree with the issues that Graham brought up. How do you establish the degree of operating experience, which to me means experience with the materials and construction of the plant as far as aging is concerned? How do you do that for Unit 1 when Unit 1 has such little operating time?

From the standpoint of the SER, that needs to be strengthened, as far as I'm concerned. And I think that is important.

I think the SER has to be consistent with the state of what is being done right now and, in some cases, that is probably not fully the case.

I would concentrate tomorrow's presentation on, not exclusively but to some extent, the open items, explaining what they are and why they are important, so there is a decent understanding of those kinds of issues.

CHAIRMAN BONACA: Yes. I wouldn't worry too much about all the list of items and scoping and other things.

DR. SIEBER: No.

CHAIRMAN BONACA: Some of that will be sufficient. I think the important thing is to say what open items remain, to recognize that some of them have grown. The numbers actually go up from two to four, dealing with some of the issues we raised, and put them in context.

Any other comments, Jack?

DR. SIEBER: Well, I said I wasn't going to talk about EPU, and I'm not. On the other hand, it is lurking in the grass out there, and when we get there, it will be, I think, demanding on all of us to get it right. So that's it. That's my opinion, but overall I think everyone has done a pretty good job.

CHAIRMAN BONACA: Bill?

DR. SHACK: You know, the uniqueness of this license renewal again is the fact that we are dealing with a plant that was shut down and doesn't have the amount of operating experience.

I thought they made a pretty good case of the applicability of the operating experience from 2 and 3 and the fact that they had the restart

experience from the one unit that is, in many ways, not quite as extensive here, but it's been laid up for quite sometime. They have had an experience with that restart and aging and experience with it.

So I think they can make a pretty good case out of that, and I'm sort of like Tom. I really don't see any showstoppers to the license renewal.

CHAIRMAN BONACA: It has to be developed.

DR. SHACK: I would disagree. Tomorrow, you know, this presentation until we get up to Steve's, which isn't really related to license renewal, looks like every other license renewal presentation from the staff. You know, they are going through their thing.

The picture, to me, that gives you a better picture of what is different about this is actually the licensee's presentation, although --

DR. BARTON: Thank you. I agree.

DR. SHACK; You know, if I was looking at somehow giving the big picture to the Committee tomorrow, I think the licensee's presentation gets closer to it, although as Jack says, we write our letter based on the SER, but you know, if I had to pick 15 slides to give tomorrow --

DR. BARTON: If we want a crisper

presentation that's going to lead to a lot less questions, if you don't understand what's going on, I would have the licensee do it.

DR. SIEBER: I agree with that.

CHAIRMAN BONACA: Yes. You may be right. I mean, I wasn't intending that the staff would have the same presentation they gave us today.

DR. SHACK: I don't think they really want to rewrite it.

CHAIRMAN BONACA: I think you are right. Browns Ferry can go through this, and then the staff could simply address the issues that we have -- which have the open items, including the ones of the operating experience and the periodic inspections.

MR. CROUCH; Dr. Bonaca, what if we offered to make the presentation tomorrow, basically using this same package, and we will skip some pages as we go along, but present the package for all the members so that, if they have some questions, they can ask them. But we will pick out the salient points through here to get through this in much less than an hour so that, if there are questions that we need to bring in the staff or the region, we'll do that.

CHAIRMAN BONACA: Yes. I think it's good to do that, and then the staff could just simply

address the open issues, open items, among the open items, you know, and there I go back on operating experience. That is an issue that the whole Committee has raised. They want to hear about that. And of course, the periodic inspections.

DR. SHACK: One thing I think we should hear -- and it is a bit disturbing -- is the fact that the inspections sort of show the slow coming up to speed in the AMPs. I think that point -- You know, I was feeling pretty good up until the presentation, and then things went south again a little bit. I think it is sort of important to bring that up.

CHAIRMAN BONACA: Good comment, Bill, actually, about tomorrow. That's good.

Okay. John.

DR. BARTON: Having screwed up your whole train of thought, what you want to do tomorrow --

CHAIRMAN BONACA: No, actually, it was a good suggestion.

DR. BARTON: I think it makes sense to have the applicant to do it, because the points I made like what's different about this application -- you got restart, EPU, license renewal -- and how is it being handled, I think it's best for the applicant to handle.

What are the issues to close open items? You know, anybody can do that. Maybe the staff can do that, but I think for the overall Committee, I think the committee needs to hear that. All right? What are the open issues?

Now I guess I counted up to five now. We started out the day with two. I think we got five. So what are they and, you know, what is it going to take to close?

The aging management programs, the status and --

CHAIRMAN BONACA: What is the question here? What do you see as the fifth one? Something new that they have just added?

DR. BARTON: What's that? I counted five when we were all done here. Now there's only four? All right.

MR. CROUCH; There's the core plate holddown bolts, the drywell steel, the drywell shell corrosion, inspection of the RHR service water piping, and then the Unit 1 periodic inspection program.

CHAIRMAN BONACA: Yes.

DR. BARTON: That's five. That's five. No, it's four.

DR. CROUCH: Core plate holddown bolts,

drywell shell inspection, RHR service water inspection, and the Unit 1 one-time inspection. And the periodic inspection?

DR. BARTON: Yes, okay. There's five. All right, aging management program status and what they are, Graham's issue on operating experience, inspection programs, one-time and periodic -- describe that -- and I'm hung up same as Graham is. I just heard the NRC say no transient testing either, and I am baffled.

You know, they did it all before going up to this power level, etcetera, etcetera, but now I got new feed pumps, I got new equipment, I got new instrumentation, la-de-da, la-de-da. Why aren't I doing any SCRAMs and runback transients?

You know, I had an old plant. It was built in '69, and we changed that kind of stuff out, and we did transient testing up the ying-yang, but we had been up and down a zillion times from zero to 100 percent. We had new equipment, new procedures. You got to prove that this thing is going to run back like it's supposed to or, you know, it's going to scram from a higher power level and fall apart. I don't know how the hell you are not going to prove that. That, to me, is basic.

DR. SIEBER: Did you do your transient testing intentionally?

DR. BARTON: Did we do a what?

DR. SIEBER: Your transient testing intentionally?

DR. BARTON: Intentionally? Yes. It was laid up in the startup program.

DR. SIEBER: Well, the point is -- That sounds funny, but the point is, if you are going to do it, the question is are you going to do it --

DR. BARTON: Well, you should do it intentionally, because then you are planning for it.

DR. SIEBER: Or is it going to happen?

DR. BARTON: And if it happens? You don't want it to happen. You want to plan for it.

DR. SIEBER: That's right.

CHAIRMAN BONACA: Okay.

DR. BARTON: That's my input. So far as tomorrow's presentation, we already agreed to what it is going to contain.

My views: You know, I think what we have seen -- I think we raised the right issues. We are going to hear about those. The reason why it is so important is that the gut reaction of everybody who looked at the plan was, hey, I mean, what would you

do, first of all, in the power uprate, your restart power uprate, and then license renewal. That seems to be the right order.

That is why it is important for the members who are not here today and were not here on the 21st to understand the context in which there is alternatives, and they are being presented.

I tend to agree that I don't see showstoppers if the program inspections, periodic inspections, are properly developed in a way that satisfied the need for those systems which are not being replaced.

So with that, you know, I think we pretty much saw the significant issues, and I don't have anything else to add, really, to whatever has been said already here.

So with that, I'll go around here asking if there are any further comments from the staff or the licensee or the public. No further questions?

DR. KUO: We don't have any comments right now.

CHAIRMAN BONACA: Okay. If not, then the meeting is adjourned, and we will see you tomorrow.

(Whereupon, the foregoing matter went off the record at 4:26 p.m.)

1