

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

MEETING: PLANT LICENSE RENEWAL

U.S. Nuclear Regulatory Commission
Two White Flint North, Room T2-B3
11545 Rockville Pike
Rockville, Maryland

Thursday, July 1, 1999

The subcommittee met, pursuant to notice, at 8:30 a.m.

MEMBERS PRESENT:

MARIO V. BONACA, Chairman, ACRS
ROBERT L. SEALE, Member, ACRS
THOMAS S. KRESS, Member, ACRS
WILLIAM L. SHACK, Member, ACRS
ROBERT E. UHRIG, Member, ACRS

P R O C E E D I N G S

[8:30 a.m.]

CHAIRMAN BONACA: Good morning.

The meeting will now come to order. This is the second day of a meeting of the ACRS Subcommittee on Plant License Renewal. I am Mario Bonaca, Chairman of the Subcommittee.

ACRS Members in attendance are: Drs. Thomas Kress, Robert Seals, William Shack, and Robert Uhrig.

The purpose of this meeting is for the Subcommittee to review the NRC staff's safety evaluation report related to the Oconee license renewal application, crediting of existing programs, and related matters. The Subcommittee will gather information, analyze relevant issues and facts, and formulate proposed positions and actions, as appropriate, for deliberation by the full Committee. Mr. Noel Dudley is the Cognizant ACRS Staff Engineer for this meeting.

The rules for participation in today's meeting have been announced as part of the notice of this meeting previously published in the Federal Register on June 1, 1999.

A transcript of this meeting is being kept, and will be made available as stated in the Federal Register notice. It is requested that speakers first identify themselves and speak with sufficient clarity and volume so that they can be readily heard.

We have received no written comments or requests for time to make oral statements from members of the public.

We will now proceed with the meeting, and I call upon Mr. Christopher Grimes, Chief of the License Renewal and Standardization Branch, to begin.

Mr. Grimes.

MR. GRIMES: Thank you, Mr. Bonaca.

Before the staff resumes its presentation of the Oconee

safety evaluation report, as a scheduling matter I'd like to request because of a number of other schedule demands and interests in the topic related to SECY-99-148 on credit for existing programs that since we're about an hour and a half ahead of schedule, in accordance with the agenda, that we still maintain the one o'clock time to discuss that particular topic so that interested staff members and participants will be available. If that's acceptable to the subcommittee, that will give you more time to discuss the results of the Oconee review and the plans for the full Committee meeting, or an extended lunch, whichever you prefer.

CHAIRMAN BONACA: You would propose that we stay with that discussion.

MR. GRIMES: With the afternoon part of the agenda, starting at one.

CHAIRMAN BONACA: Sure. Yes, and that's the plan, yes.

MR. GRIMES: Okay.

CHAIRMAN BONACA: We'll do that.

MR. GRIMES: Thank you. Then we'll proceed with the staff's presentation of SER Section 3.5 on engineered safety features with a panel led by Stephanie Coffin.

MR. COFFIN: I got my slide on right the first time.

[Laughter.]

My name is Stephanie Coffin, and I am from Materials and Chemical Engineering Branch in the Division of Engineering. I'll be presenting today highlights from two sections from our draft SER, the 3.5, which is the engineered safety features system, and 3.6, which is auxiliary systems. And following the presentations from yesterday we'll be hitting on four topics -- open items, confirmatory items, license renewal issues, and items of interest.

For the engineered safety features systems, I'll skip right to the confirmatory items, and this has to do with the reactor building spray system inspection, which is a one-time inspection of stainless steel components in the reactor building spray system to evaluate the aging effects, if any, of stainless steel exposed to an alternate wetting and drying environment and exposed to borated water. And the applicant is also crediting this same inspection for the nitrogen purge and blanketing system. So the open item or the confirmatory item has to do with the basis for saying the one-time inspection of the reactor building spray system is applicable to the nitrogen purge and blanketing system. And we discussed this on the phone, and it's actually written up -- the basis is written up in the draft SER, and the staff's requesting formal documentation of this.

DR. SEALE: It was written up, but that particular explanation was not in the original submittal to the staff. Is that --

MS. COFFIN: That's right. And we have it documented also in a meeting summary.

DR. SEALE: Um-hum.

MS. COFFIN: But for this particular item we wanted a formal under oath and affirmation documentation.

DR. SEALE: Certainly. Certainly.

MS. COFFIN: License renewal issues, none in this section to

discuss, and for items of interest I brought up the one-time inspection, and I took this opportunity to bring this up because one-time inspections have received a lot of discussion at the staff level, and there was some discussion at the ACRS level, too, for the BG&E application, and these one-time inspections are a little bit -- are a different animal, because they're not really programs. They're not aging management programs. They're more to determine if an aging-management program is needed. So the evaluation of these -- the way the staff approached these was a little bit different, and I just want to point out that we've seen it now in both BG&E's and in Duke's application, so I expect to see more of these types of inspections in future applications.

DR. SHACK: Will this be a visual inspection, volumetric?

MS. COFFIN: I think it's going to be one or the other.

That answers your question. If it's accessible, they're going to do a visual probably from the inside, but --

DR. SHACK: Oh, okay, an inside.

MS. COFFIN: They're probably going to be looking at welds, so they'll probably be doing a UT from the outside I would imagine. But it's their decision to make. I think in the SER it says volumetric, but --

MR. ROBINSON: Greg Robinson. It'll be volumetric, and as you say, anything that is accessible internally, we'll do a visual.

DR. KRESS: Did you give much thought to the timing of a one-time inspection as to when that ought to take place?

MS. COFFIN: We discussed it a little bit in the SER, and there are advantages -- if you do it earlier, sometimes it's nice for the staff, because you have the results. Like if they had done this inspection before they came in, they would have the results to discuss with us. But at the same time, it's nice to put it off as long as possible, because operating experience says that this isn't something that's happening that we're aware of, and the longer you put it off, the more time you give for it to happen. So that would be the advantage of putting it off. So when we can't come to a decision on when to do it, we just let them decide based more on economics, and they have to do the inspection before their renewed license begins. That's the only --

DR. KRESS: That's the only --

MS. COFFIN: That's the only criteria. Right.

DR. SEALE: Could we ask Duke if they have any thoughts on that timing?

MR. ROBINSON: Greg Robinson. Duke. My thought was similar to Stephanie's. We need to be able to characterize any aging that's there, but I don't want to rush out and gather some data. I would like to do it at an appropriate time and make sure that we can understand what we're looking at. I don't feel an urgency to do it in the next two years, in other words.

DR. UHRIG: Suppose there are some consequences of this inspection. Would the corrective systems or whatever you need to do be in place before the license begins, or would this be on an as-feasible basis?

MR. ROBINSON: As far -- Greg Robinson again. As far as the

corrective actions, the one-time inspection is set up to determine if the aging occurs, and if it does occur, then it will instigate through our corrective action program additional programmatic actions. So it's already geared, it will be geared to push toward a program if something formal is needed.

MR. GRIMES: This is Cris Grimes. I'd want to clarify a couple points. The first is upon completion of this review we'll be issuing a new license, so it's a matter of us capturing these commitments to perform one-time inspections in the new license before the end of the 40-year term, so it's a question of making sure that we have an enforceable commitment. But then, as Stephanie mentioned, we'll leave it to the applicant to then exercise its judgment in terms of an appropriate timing for this inspection, and you should recall that yesterday we pointed out that these commitments to do things for nonsafety systems need to be formalized into some kind of change to the QA plan or a change in the FSAR so that Appendix B will apply and all of the attributes of an Appendix B prompt and effective corrective action to evaluate and act on the results of any of these inspections would be also enforceable.

DR. SHACK: Just what's the nature of the visual inspection you do internally. I mean, is it a boroscope down through a thing or a "pig" with a TV camera?

MR. ROBINSON: Greg Robinson again. There's a check valve in the area that we're looking to do the inspections, and we know that the check valves disassemble periodically, and the hope is that we can disassemble the check valve and then either visually or through some type of boroscope do the inspections that way. We wanted to leave ourself the option of being able to do it visually or perhaps even with a combination of U2.

MS. COFFIN: This is the second part that I'll be presenting on auxiliary systems, 3.6. And again I'll touch on the four open items, confirmatory items, license renewal issues, and items of interest.

We have three open items in this section. The first one has to do with aging effects, and the lack of identification of vibrational loading as causing aging effects for the HVAC systems. The second two open items have to do with aging-management programs. The first one is the basis -- we're questioning the acceptability of the scope for the reactor coolant pump motor oil collection system. This is a one-time inspection again that is looking for aging effects, if any, due to corrosion in the reactor coolant pump motor oil collection system due to water contamination in the oil. There are a lot of components, a lot of materials, actually, that the applicant is taking -- is using this program for, not just carbon steel, but copper and stainless and maybe a couple other ones. But they're only looking at one carbon steel tank. And the staff is questioning the basis for the scope of that inspection, is that adequate for what they're trying to do.

DR. SEALE: Your first bullet can be read two ways. Identification of vibrational loading is causing aging effects for the HVA systems. Does that indicate that you have reason to believe that they're remiss in not questioning the existence of vibrational loadings, or is that a statement that says you don't have any?

MS. COFFIN: I'll let Tom Cheng answer that.

MR. CHENG: My name is Tom Cheng, Engineering Division, NRR.

Based on our review of other plant operating experience, some cracking of duct work and also the loosening of fasteners, based on our experience we raised the question. However, the applicant claims that's because they have sound isolator being installed between some equipment-created vibration loads, such as fans. So therefore they thought it's not necessary to include it in the scope. But, however, we did not agree with that, because the isolators, made of rubber or some other kind of soft material, can be degraded because of temperature, pressure, or relative motions. So because of the degradation of the insulations and -- isolations, I'm sorry -- the dynamic load can be transferred to the system. So that's the basis where we cannot agree with the licensee.

MS. COFFIN: The third open item has to do with frequency of oil sampling in the Keowee oil sampling program. The licensee stated that they'll be taking samples every six months, and this is a very simple open item where we're simply asking what the basis is for that six-month frequency. There's sort of a related question to this is that the applicant said that this program is not going to be formalized or instituted until 2013, which is the end of their operating license, which seems somewhat contradictory to the staff, in that here's a program that is such a need that you need to do a sampling every six months, yet you don't need to start doing it until 2000, which doesn't make sense to the staff. So we're also questioning the basis for that.

Under confirmatory items we have a question -- this is documentation again -- we've been on the phone with them. We've discussed either open items that we discussed with them, closed out based on a phone call, but we leave the request for formal documentation in the draft SER. The system performance testing is applied to various systems, raw water systems, to detect fouling and loss of material, and they essentially measure system pressure and flow rates. And we're simply asking for documentation of their operating experience. They've been doing this testing for at least ten years, for some systems since startup, and we're just asking for that to be submitted.

Same thing for the Keowee oil sampling program. They have an acceptance criteria. It's based on EPRI industry standards, which is acceptable to the staff, and we're simply asking for formal documentation.

CHAIRMAN BONACA: Could I go back to the second bullet --

MS. COFFIN: Yes.

CHAIRMAN BONACA: On the -- could you tell me again what is the disagreement on the scope of reactor coolant pump motor oil collection?

MS. COFFIN: Okay. This is a one-time inspection. It's for the reactor coolant pump motor oil collection system.

CHAIRMAN BONACA: Yes.

MS. COFFIN: And most of the components are exposed to oil. Now the oil can become contaminated with water, and you could conceivably get corrosion or even cracking. I'm not sure how far they went in their aging effects. And they state that for carbon steel,

stainless steel, I think -- brass, copper, for all four of these materials they're citing this one-time inspection. And the one-time inspection consists of looking at the bottom of one carbon steel -- at this point one carbon steel motor oil collection tank. Is that correct? That's where the applicant -- and the staff -- it's a very limited scope, and the staff's questioning the basis for that.

CHAIRMAN BONACA: That's a very important system from a fire --

MS. COFFIN: Yes. Yes, that's why they have it included in here.

DR. KRESS: What's the source of the water?

MS. COFFIN: Can you talk to that, Greg?

MR. ROBINSON: Greg Robinson, Duke. It could be building spray, decon, washing things down, it can flood down and then collect in the tank.

MR. GRIMES: This is Cris Grimes. I'd also like to point out the controversy surrounding the value of these license renewal reviews relative to a proposal to institute a sampling for the Keowee oil system, and whether or not it needs to be instituted now or at the end of the 40-year term. It, as Stephanie explained it, this clearly illustrates that there's a question about the discontinuity associated with the adequacy of the existing current licensing basis relative to decisions to change programs or add programs, and it's going to be difficult to judge, you know, whether or not such a commitment needs to be instituted sooner. But it's an issue that needs to be resolved.

DR. UHRIG: But, if it were implemented sooner, it would have to go through the normal procedure for the existing license.

MR. GRIMES: If the applicant chose to insist that they don't -- it's not required today and they're going to put it off until, you know, the end of the 40-year term and begin it at year 40, we would have a very difficult time backfitting that requirement on the current licensing basis. So we're in a rather delicate situation.

DR. SHACK: But it's only that oil sampling system where you have to sample the oil for water in the oil? I mean, why not all the oil systems?

MR. GRIMES: There are sampling requirements for diesel fuel and, you know, there are current license requirements associated with --

DR. SHACK: Oh, it's Keowee's unique status again, you don't have too many hydro --

MR. GRIMES: Right.

MR. ROBINSON: This is Greg Robinson of Duke. May I add, certainly all systems in their hydro stations, particularly hydraulic oil and things, are very important. You can't operate the stations without good, clean oil. And certainly we have a standing program at Keowee.

As Cris has spoken, it is somewhat of a nomenclature issue as to whether we declare that program formally a regulatory license renewal program today, tomorrow, five years from now, or in 2013, and in a lot of cases there's a consistency in our application at establishing, making sure new programs are established at least by the end of the first 40-year period.

So I think we have to work through the issue of when we declare it a real, live program, but in fact it does exist today, and it's very necessary to have it today, and we owe some more explanation of frequencies and some of the basis for those things. But I don't think we're going to run into a real snag on that particular item.

DR. KRESS: Do you have a quick top-of-the-head basis for that frequency. The frequencies are awfully hard to establish a technical basis for, and they usually come about by experience or how -- either experience or how long you can live with a problem if it occurs.

MR. ROBINSON: Greg Robinson again. I do know we've been running hydro stations since 1904.

DR. KRESS: And you've never found a problem?

MR. ROBINSON: And the frequency has probably, as you say, played out by experience over time. I do know we do a full changeout of oil -- at least on our latest hydro station that I'm more familiar with we do a full changeout of oil, purify it, so we have a full reservoir of oil that goes back in while we take the operating oil out and purify it and clean it, because, as I say, it's a very important part of operations. And it's something we don't take lightly.

MR. GRIMES: This is Cris Grimes. I want to reinforce what Greg said. There is nothing magic about 40, but the applicant was very consistent in terms of identifying commitments to do new things and saying they would begin before the expiration of the 40-year term. But what the staff's review has focused on is looking at each of these commitments like the one-time inspections. On each one we've looked to see whether or not there's a technical logic associated with what to do when it's quite conceivable, and actually I don't think this is going to be a toughy either in terms of, you know, if they don't want to formally institute this as a regulatory program until end of year 40, you know, that's going to be more like a minor policy decision, and we're not really going to make a decision like that on, you know, on a technical basis. But we acknowledge that a number of these practices currently exist and that they're now going to be relied upon as aging management programs.

CHAIRMAN BONACA: Before we move from this issue I would like to just go back to the issue of threat to coolant pump motor oil collection system. I'm kind of surprised that -- what this is telling me is that there will be one inspection due to license renewal. That tells me that if we had no license renewal, there would be no inspections in that system? What I mean is that that's a critical system to prevent fire resulting from splashing of oil over very hot components. I mean, that has been the source of events in the past in other plants. The question I have about the collection system, if we had no license extension, would there be inspections planned for that system at all?

MS. COFFIN: I'm not going to speak for Duke, but I would imagine that all these one-time inspections from my read of the application is no, they would not do them unless something came -- operating experience dictated to them that they needed to do this. These are ones developed specifically for license renewal. I don't know if you want to add anything to that.

MR. ROBINSON: Greg Robinson again. I think you're correct. This was an observation we made quite frankly as we developed the license renewal materials that this was an area that could experience corrosion, and we needed to go take a look and convince ourselves it was not corroding, but I don't know any other motivation that would have driven us to do this look-see.

CHAIRMAN BONACA: Because, I mean, if you have a failure there because you don't look at it, you're going to have oil splashed, and you're likely to have a fire. So now you can correct the kind of consequence if you happen to get into that. But that troubles me.

In addition to corrosion, don't you have issues with vibrations in the collection system? You do?

MS. COFFIN: Staff didn't identify any issues.

CHAIRMAN BONACA: You have mounted components on top of reactor coolant pumps and stuff like that.

MR. ROBINSON: This is Greg Robinson again. It's independent of the pump. It's below the pump.

CHAIRMAN BONACA: Okay.

MR. ROBINSON: As of collection.

CHAIRMAN BONACA: Okay. Thank you.

MS. COFFIN: You're welcome.

No license renewal issues, and I point out just one time again that there are several one-time inspections as part of the auxiliary systems aging management. But in general the staff found for both the engineered safety features systems and for the auxiliary systems that the bulk of the aging management programs are very common, standard, existing programs that the staff's very familiar with.

That concludes my presentation. I think we're doing section 3.7 next.

CHAIRMAN BONACA: Okay.

MS. COFFIN: Thank you.

MR. PARCZEWSKI: Good morning. My name is Kris Parczewski. I'm a member of the staff of Material and Chemical Engineering Branch, and I'm going to present today Section 3.7 of the SER dealing with steam and power conversion systems.

The steam and power conversion system consists of four systems -- main steam system, condensate system, emergency feedwater system, and feedwater system. We in our review didn't identify open items, confirmatory items, or license renewal issues.

There is one item of interest. This is erosion/corrosion program. All the aging effects for those systems indicated are due to a different type of corrosion, and erosion/corrosion applies to two systems. It occurs in main steam system and in condensate system.

What is different about the other programs, management programs for other systems are a common aging management programs and they are described in Section 3.2 which was presented yesterday. What is difficult about erosion/corrosion systems is that the control of the erosion corrosion systems usually -- the systems are controlled by oxygen concentration. The lower the oxygen concentration, the less corrosion occurs.

This is not true for erosion/corrosion. Erosion/corrosion

apparently is higher at the low oxygen concentration. And this is why it is a conflicting requirement to keep the environment to reduce corrosion. And therefore the program for erosion/corrosion, aging program, is not controlled but is monitoring the effect of erosion/corrosion.

There are two ways. One is there is a program, a computer program which predicts the amount of erosion/corrosion, and then there is a process by which the thickness of reduction of the system of the thickness of the wall of the components affected by erosion/corrosion can be measured using either UT measurement, ultrasonic, or by radiography. And this is why this particular program is described in Section 3.7.

DR. KRESS: Is that computer program called Checkworks?

MR. PARCZEWSKI: It's Checkworks.

DR. KRESS: Checkworks.

MR. PARCZEWSKI: It's developed by EPRI.

DR. KRESS: Yes.

MR. PARCZEWSKI: And generally accepted by most of the plants.

This is all I have to present.

DR. UHRIG: Has the power level been increased since the original license?

MR. PARCZEWSKI: Not that I know.

DR. UHRIG: You have no plans to increase -- to ask for an upgrade of power on these units?

MR. ROBINSON: At this point, no, sir. We have discussed power uprate, and it is not currently in our plans for Oconee.

DR. SEALE: There's another question of timing which is always intriguing having to do with the erosion/corrosion program and the in-service inspection activities. As we all know, I'm sure you're aware of the pilots that have been done on in-service inspection with the idea of refocusing inspection sites on the basis of some assessment of risk and so on. Presumably you are not proposing to do that as a part of this process. You're going to essentially continue to do your in-service inspection according to the longstanding rules in the regulations. Is that correct?

MR. ROBINSON: Yes, sir, that is correct.

DR. SEALE: Downstream that of course does not in any way prejudice one way or the other after the license is reissued that you might want to come in and request a conversion, if you will, to an in-service inspection program that's risk-based or risk-informed.

MR. ROBINSON: Duke has actually begun to study that issue, and we're following others in industry that have made further progress on risk-informed inspection, and I suspect as the maturity of the industry moves forward, Duke will be right there.

DR. UHRIG: I have a question for I think Cris here.

Suppose an applicant was awarded an extended license, but before the 40 years was up, they decided to upgrade, and this was approved, upgrade the power 5 percent or something of this sort. Would that 5-percent increase carry into the new license at the end of 40 years, or would there be an additional review of that?

MR. GRIMES: In order to make the point as clear as I can, upon the completion of a license renewal review, there is a new license, and it has a new license basis. If following the granting of a new license for Oconee, assuming that the Commission concludes that one is warranted, they were to apply for a power uprate, then the staff would review the power uprate on the basis of the --

DR. UHRIG: New license.

MR. GRIMES: New license.

DR. UHRIG: Okay.

MR. GRIMES: New licensing basis. So to the extent that I think you're hinting around the potential effects of a power uprate in terms of increasing the potential for erosion/corrosion or other things in the steam and conversion systems, the staff would need to be careful about looking at the programs that are relied upon for aging management as part of the review of a power uprate.

DR. UHRIG: I'd forgotten the small nicety that it is in fact a new license. Thank you.

DR. SHACK: Is the feedwater system all ferritic?

MR. PURCZEWSKI: Well, except for the minor components which are stainless steel, but most of it is.

DR. SHACK: Okay. So they can keep the PH reasonably high?

MR. PURCZEWSKI: Yes.

DR. UHRIG: One last question, you used the term "emergency feedwater system." Is this -- I presume this is what commonly called the auxiliary feedwater system, or is this a separate --

MR. PURCZEWSKI: Yes. This is the same thing.

DR. UHRIG: All right. It is just a matter of terminology.

MR. PURCZEWSKI: Yes. Well, actually, the terminology used in the applicant's application report.

CHAIRMAN BONACA: I have a question regarding scope. Do you have any disagreement on the scope, components in scope?

MR. PURCZEWSKI: Yes.

CHAIRMAN BONACA: You did have disagreement with Duke. Did you -- or you completely agree with the scope?

MR. PURCZEWSKI: Yes. I do agree with the scope presented by the applicant.

CHAIRMAN BONACA: Yes. And the question I had, what about, you know, passive portions of large components like stop valves and steam chest?

MR. PURCZEWSKI: Yes.

CHAIRMAN BONACA: That typically are subjected to force, you know, pretty high solicitation during operations.

MR. PURCZEWSKI: Yes.

CHAIRMAN BONACA: They are included in the scope?

MR. PURCZEWSKI: Yes. They are included in the scope, yes.

CHAIRMAN BONACA: Okay. What kind of inspections are provided for those?

MR. PURCZEWSKI: There is preventive maintenance which includes the inspection.

CHAIRMAN BONACA: Okay.

DR. SHACK: I am curious on the erosion corrosion.

MR. PURCZEWSKI: Yes.

DR. SHACK: Do people see continual losses? I mean, you know, is it something you are going to have to replace piping on a five or ten year basis? Or, you know, does something go wrong and, you know, the pipe looks okay today and you are blowing a hole out in four months?

MR. PURCZEWSKI: Well, this is why you have this predictive checkworks program. It is supposed to predict the rate at which erosion/corrosion damages the component. So, really, if you predict at the very beginning of the cycle that the component wouldn't last till the end of the cycle, you replace it or repair it.

And I think after the program was introduced, there was considerably less failure of the components due to erosion/corrosion, so, definitely, the program works pretty well.

DR. SHACK: But is there regular replacement going on?

MR. PURCZEWSKI: Well, the regular -- yes, most of the plans have erosion/corrosion program implemented. So, yes. But whenever you check all the components -- I mean not all of them, but most of the more susceptible components and then they are replaced if you need it. And usually it is replaced in many cases by the material which is not effected by erosion corrosion like stainless steel or P-22, you know. 1 percent of chromium already completely make it immune to erosion/corrosion.

DR. KRESS: Your question was, has it ever occurred that you had to replace something, a piece of pipe?

DR. SHACK: No, they have to replace it, you know, but I just wondered if it was -- if you actually found it to be sort of a continuous process, you know, in this particular location I lose 1 mil a year and so I know in 20 years, I am going to have to replace this pipe.

DR. KRESS: Checkworks thinks it is continuous.

MR. PURCZEWSKI: Well, this -- all the components are a check, the checkworks which predict which one will have to be replaced.

DR. SHACK: Yeah, and I guess I am asking, do people actually make replacements for these slow continual losses, or does it, you know, when you suddenly blow out the system, yeah, I go in and replace it?

MR. PURCZEWSKI: No, no, no. There is a regular and there is replaced the components which are already --

DR. SHACK: Replaced.

MR. PURCZEWSKI: You know, affected by erosion/corrosion. No, there is a systematic program existing.

DR. SEALE: Well, there are in fact measurements that are made to confirm the predictions of the checkworks analysis.

DR. SHACK: Yeah, but my question is, I mean, you know, am I measuring a half a mil at this location --

DR. SEALE: I understand. I understand.

DR. SHACK: -- and all of a sudden that elbow --

CHAIRMAN BONACA: Well, actually, after checkworks is refined with experience of the unit, after a number of a years, then it prescribes pretty clearly which one you have got to look at, you know, what sections, what locations and so on.

MR. PURCZEWSKI: Well, the rate of erosion/corrosion is not

necessarily constant. So you cannot see -- so this is why the program is used, is being used, you know, which includes the plant operation parameter, so, really, it predicts more or less what would be for different type of operation, operation of parameters. So it is a little bit more sophisticated, just, you know, assuming certain constant rate of the erosion damage to the surface.

CHAIRMAN BONACA: Any other questions?

[No response.]

MR. GRIMES: Are you ready to proceed on?

CHAIRMAN BONACA: Yes, we are.

MR. GRIMES: The next section is Section 3.8, Structures and Component Supports, and David Jeng will make the staff presentation for that section.

MR. JENG: Good morning. My name is David Jeng. I am a member of the Mechanical and Civil Engineering Branch in the Division of Engineering, NRR. This morning I would like to report to you our review of the Section 3.8, Structures and Component Supports.

The structures and component supports basically include the following key structure systems, auxiliary building, earthen embankments, intact structure, keowee structures, reactor building internal structures and vent stock, turbine buildings, yard structures and Class 1 component supports.

Our review has completed with the exception of four open items which I am going to discuss later. We have found that Oconee applicant has properly identified the applicable aging effects and also adequately proposed effective mean of managing those aging effects for the structures I just identified. So we have do have four open items to report to you.

The first items pertains to the spent fuel pool structure water temperature. The licensee in the application indicated the temperature could be allowed to go as high as 183 degrees and yet in the FSAR of the plant, it was indicated that 150 degrees is limited low temperature range. And the staff is concerned about this discrepancy because the temperature going anything higher than 150 for a sustained duration may potentially affect the property of the concrete in terms of its measure of elasticity or its strength characteristics. Therefore, the staff request the applicant to provide additional information to clarify these discrepancies, whether indeed allow the water to go on a constant basis up to 183 degrees, and so this is open item number 1.

A second open item pertains to -- in the applicant identification discussion of the applicable effects, they somehow did not adequately refer to their so-called baseline inspection aspect and, also, their past experience about the unusual event in terms of some degradation discovered. And the staff fears that they should enhance this kind of a discussion and factor it into past experience, including the potential baseline inspection data into their consideration and differentiation of the applicable aging effects. So we did request the applicant to provide additional information in this aspect. This is the second item.

The third item pertains to the monitoring of the precise tendon forces in the secondary shield wall tendons. The applicant did

have some ongoing monitoring system programs, however, they did not specifically commit to monitor the actual forces in the tendons, and the staff considers this as a major important parameter which needs to be monitored to ensure the integrity of the structure system.

The last item pertains to the attributable AMR for the cable trays and conduit supports. The applicant did identify the aging of this system applies to the cable trays and conduit support region of containment, reactor containment system, but for the same cable trays and conduit support, our side of the containment, they determine that the aging management is not required. And the staff maintains there seems to be some inconsistency in the disposition of this particular effect, and we did ask the applicant to clarify this discrepancy and justify as needed.

And these are the four open items which I believe can be readily resolved by the applicant for additional information.

Let me move to the licensing issue item. There are two licensing issue items which I think is of interest, potential interest to you, and the first item pertains to the 98-0057 Maintenance Rule of structures. The issue pertains to whether the ongoing structure inspection monitoring system within the current plant operation should be somehow credited, considered towards the license renewal aging management credits. And the staff is in discussion with the industry about if issue reflected what extent a given program should be provided, given the credit for the consideration as a contributing effort towards the aging management program.

The NEI recently submitted a proposal which came in in a memo in March, early March, and the staff is right now reviewing this proposal and this, in due course, should be resolved and the staff plans to come up with a position.

The second item pertains to the 98-0100 FERC dams. FERC stands for Federal Energy Regulatory Commission. The FERC has been applying some standards of dam construction, design maintenance inspection for a class of dams across the country. There are quite a few dams which are under nuclear power plant jurisdiction, but they happen to be using the FERC's maintenance program, so-called five-year dam inspection maintenance programs.

And the staff did take a close look at the FERC's program contents and with respect to their design standards, their maintenance standards, their inspection standards, and their disposition of the damages if damages were to be determined. And we came to the conclusion that the FERC standards is quite adequate for the purpose to ensure the license renewal goals. Therefore, the staff took a position earlier that any dams which is based on the FERC five-year inspection program standards and implemented accordingly are all sufficient to meet the staff standards for license renewal.

So these are the two license issues. One is the pending review and the other one is resolved and accepted by the staff. This concludes my presentation and I am open to your questions.

DR. SHACK: There are other plants besides Oconee then that have dams?

MR. JENG: Yes, of course. Just I read about some 19 dams

under this category.

MR. GRIMES: There are other plants who have dams in the vicinity of the nuclear power plant site that are regulated by FERC, but not as emergency power supplies. I believe that Oconee is the only plant that relies on a hydro station as an emergency power supply.

But if you -- you know, my experience is with Yankee Rowe, the Harriman dam upstream of Yankee Rowe is a potential flooding source, and so we rely on the -- yeah, we rely on other regulatory functions that tend to maintain the safety of those dams, to the extent that they cause potential impacts on a nuclear site.

DR. UHRIG: I am trying to identify what is called here the secondary shield. What do you mean, is it part of the containment?

MR. JENG: Okay. No. It is within the containment, yeah, the enclosures, primarily made of concrete structures which surrounds the steam generator, the reactor. Yeah.

DR. UHRIG: Okay. That are internal to the containment?

MR. JENG: Yes. Yeah.

DR. UHRIG: And they are post-tensioned?

MR. JENG: Yeah, for this particular plant that happened to use post-tension tendons.

DR. UHRIG: That is not common, is it?

MR. JENG: Sort of uncommon, but -- yes, I agree, it is sort of -- not very common.

DR. UHRIG: Okay.

CHAIRMAN BONACA: Thank you.

MR. JENG: Thank you.

MR. SHEMANSKI: Good morning, my name is Paul Shemanski, I am with the Electrical Instrumentation and Controls Branch, Division of Engineering, and I will be discussing the last two sections of the draft SER, Section 3.9 on electrical components and Section 4.0 on TLAAs.

With regard to electrical components, yesterday you heard the electrical scoping and screening process described by both Duke and the staff, and that scoping and screening process basically resulted in identifying four types of electrical components at Oconee that are subject to an aging management review. And those four component types of electrical buses, these are high voltage electrical buses, and they typically connect the generator to a transformer or a transformer to switch gear and disconnect switches.

The other three components are insulated cables and connections, insulators used for high voltage equipment, and transmission conductors.

Now, the service environments is identified by Duke for these four types of components are thermal, radiation and moisture. They then looking at the bounding environments that these four types of components were subjected to and, based on their analysis, there were no applicable aging effects identified. They did identify aging mechanisms for electrical buses, cables, insulators and transmission conductors, but in all cases the aging mechanisms that were identified did not result in any significant aging effects.

So the overall conclusion for electrical components was that there are no aging management programs required for the four electrical

component types I mentioned.

The Staff agreed with that analysis by Duke. There are no open items or confirmatory items regarding electrical components. We did have one Priority 1 license renewal issue on fuses. This issue went back several years, as NEI 95-10 was being developed, where we were categorizing components as to whether or not they were active or passive.

Fuses were identified as sort of a mystery component. If you look at the intended functions of a fuse, it is put in primarily as a protective device, to protect against electrical overloads. However, it has a secondary function, that of continuity, which we believe was a passive function. The bottom line is that after many discussions in April of '99 the Staff issued a letter to NEI concluding that fuses are considered to be active for license renewal.

We did acknowledge that they do have a passive intended function, but if you read the statement of considerations in the rule, they talk about ancillary or sort of secondary functions, and that is why we dismissed the passive continuity function.

While all this sounds very confusing, the bottom line is fuses are considered to be active when they perform their protective function. It is a change of state, therefore they are out of the scope for license renewal.

DR. SHACK: But they are not exercised very regularly, hopefully.

MR. SHEMANSKI: Well, their intended function is to protect during an electrical overload, and normally they are just sitting there basically in a continuity state. In other words, they are just carrying the rated circuit current and voltage.

DR. SHACK: But I thought the argument was the actively functioning component had a sort of performance indicator that you know, whether it --

MR. SHEMANSKI: Right, and that was why we had this dilemma, because fuses, degradation of fuses --

DR. SHACK: Right.

MR. SHEMANSKI: -- is not readily monitorable. It is a very difficult device to perform an electrical test and determine the amount of degradation that might be occurring. Fuses typically give little or no indication. They just blow due to an overload condition.

DR. UHRIG: You have no way of determining the level at which they blow has changed as a result of aging.

MR. SHEMANSKI: That's correct. It is very difficult to do. The most prudent thing perhaps would be on a periodic basis to replace the fuses if there were an aging concern, but based on our interpretation of the rule and the fact that fuses are put in as a protective device when they perform that intended function they do it in a manner which is a change of state. Therefore they are considered to be an active component outside the scope of renewal, so that is how we left it.

There are some utilities that do replace fuses, selected fuses on a periodic basis, but again they are put in primarily for equipment protection, so we did struggle with this issue for about two

years but right now it has been resolved. That is, fuses have been determined to be active components outside the scope of renewal.

CHAIRMAN BONACA: But it seems that you are presenting the problem as if the issue -- the problem was is it active or is it passive, and I think the problem is is there an aging effect that may disable the fuses in the long term -- I mean then we can decide what it is. I haven't got a clear understanding from you whether in fact aging of the fuses will make them less capable of performing their intended function.

MR. SHEMANSKI: The problem is the fact that it is very difficult to detect that aging. There are not readily or easily monitorable techniques, electrical techniques that you could determine how a fuse might be aging. There are some potential aging mechanisms. Each time a fuse is energized, the wire may become more brittle, possible because of electrical stressors.

Another potential aging mechanism could be a fuse sitting in a holder, maybe subject to corrosion. That could perhaps change its impedance characteristics. It may affect its current-time relationship, that is, when a fuse should actually blow, so there are some potential aging mechanisms, but again, to actually detect these and determine how a fuse is aging is rather difficult if not impossible.

MR. GRIMES: This is Chris Grimes. First of all, I want to compliment Paul on his patience and perseverance as we wound through that issue over the last couple of years. We didn't get to a point of trying to decide whether or not there were, quote, any "applicable or plausible aging effects" associated with fuses because we had to get over that first hurdle -- the sequences, is it passive and long-lived, and then if it is, what are the applicable aging effects?

But we went through it very carefully all the way to the point of do we think that there is any value that is added to nuclear safety by virtue of declaring it a passive device, then nailing the applicable aging effects, but ultimately, as Paul points out, the prudent practice is simply if you are not sure, replace them, but trying to establish that as a regulatory standard is a formidable question, so at this point we approached it, and Paul did this with the other electrical components too, we went through each one of them, and there are other aspects to it like is a fuse a component by itself or is it part of a circuit? Is it a piece part?

Even though you don't blow them regularly to test them, the circuits are normally cycled in some way, energized in some way, so there should be some kind of manifestation of operating experience that suggests that there would be an aging concern and we really didn't see any, so we made the determination on the basis of the first requirement of license renewal and that is, is it active or is it passive, but we did very carefully consider all of these other aspects in making that determination for this and other electrical components like this, transformers --

MR. SHEMANSKI: Heaters, heat tracing.

MR. GRIMES: Yes. So I don't want to leave you with the impression that the only thing we got to hang our hat on here is this bizarre explanation of the active nature of a fuse. We put more thought

into it than that.

DR. UHRIG: But isn't a program of replacing electrical components very often counter-productive? The history in the electron tube era of replacing tubes in computers was a disaster because of the bathtub effect with the very high burnout rate in the early stages. Would that not be similar to what you would run into with a fuse replacement program?

MR. GRIMES: Yes. I am familiar with the experience that suggests that preventive maintenance on electrical systems tends to cause more plant transients than the failures that you are trying to prevent by virtue of the aging of the components, and I'll let Paul add, if he feels like it -- that really wasn't a consideration in terms of whether or not we felt it would be prudent and enhance safety by trying to push towards a fuse replacement program.

We never really got to that point of saying whether or not the aspect of a fuse replacement program might be detrimental because of the potential failures introduced by replacing the fuses. I don't think we got there.

MR. COLAIANNI: This is Paul Colaianni at Duke. I am the Electrical lead, and I was involved in some of the discussions, and I just want to back up the Staff's position, also in the letter that they issued.

They are going to be looking at this in Part 50 because if there are some aging problems going on with fuses then they do need to be addressed today, and so they are going to be looking at a Part 50 issue and addressing it that way, which would give us results before the end of the 40-year license.

DR. KRESS: I think it would strike most people as rather bizarre to characterize a fuse as an active component. I think that is going to cause you more problems than you think, because it is going to look like you are hunting for a way to get around the problem, rather than face the problem head-on.

I don't know if that is going to be a problem to you or not, but that is the way it appears to me.

MR. GRIMES: Well, like any of the 108 generic renewal issues, like all of them, we hung ourselves out there and just blatantly put all that thinking out in our letter to NEI and we have shared that with the committee, and if you feel like we are going to damage any public credibility with that cockamamie story -- excuse me, with that technical explanation --

[Laughter.]

MR. GRIMES: -- then by all means I would like the committee's feedback on that because we do not want to damage public credibility by doing something bizarre.

As I said, we wrote up an explanation on the determination of fuses being an active component as well as similar determinations for some other electrical components, and we put that position forward to NEI, and of course they were quite pleased because those positions limited the scope of license renewal, but if the committee feels that that explanation is going to damage the credibility of the program in any way, by all means let me know and we will do something about it.

CHAIRMAN BONACA: The question I have is what does operating experience tell us about fuses? I mean there's been a lot acceptance for 60 years but we have had 20-plus years of operation of power plants. Is their operating experience telling us that there is an issue there?

MR. SHEMANSKI: We have looked at LERs and there is not an overwhelming story with regard to fuse failures. Certainly there have been fuse failures in the past, but we don't have overwhelming evidence that they tend to be a significant problem at least from an aging standpoint.

I will note one more thing. In response to the April letter we sent to NEI, EPRI picked it up and is considering a program involving removing fuses from Big Rock Point, selected fuses which are approximately 35 years old, and EPRI is considering the possibility of doing some selective testing with the focus of determining to what extent aging may be occurring in these fuses, so that was gracious of EPRI to pick up our letter and go one step further with it.

We will be anxious to see if they continue with the fuse testing program on fuses from Big Rock Point.

DR. KRESS: What kind of aging effect can you imagine that would keep a fuse from blowing, which is its basic purpose? Seems to me like it's almost a failsafe device and you could eliminate it on some basis like that.

MR. COLAIANNI: Well, this is Paul Colaianni, Duke, again. The possible or theorized failure modes of a fuse -- you know, one is that it would blow sooner than you need it.

DR. KRESS: But would that give you a problem?

MR. COLAIANNI: Well, it may take a circuit out earlier than you actually wanted it to and that, depending on the circuit, it might cause you a problem, I don't know.

DR. KRESS: That would be inspectable for though.

MR. COLAIANNI: Yes, yes, but as a matter of point, it is not agreed upon in the industry, be it for contractors, vendors suppliers, manufacturers, that these aging effects are really taking place. Some people say they are. Some people say they're really not.

There is not real agreement, and that is something that is still being searched out.

DR. KRESS: My point was even if they are, is it a problem? That would be the way I would analyze it.

MR. COLAIANNI: We haven't seen a lot of indication that it would necessarily be a problem. There is a good bit of doubt in the area to begin with.

DR. UHRIG: The alternative to a fuse, of course, is a breaker system, and how are breakers classified?

MR. SHEMANSKI: Breakers are classified as active components because based on the definition in the rule they have moving parts or they change configuration basically, which is a change in state, so breaker switches, those type of components are categorized as active and as such outside the scope of renewal.

Very few electrical components were classified as passive -- cables and connections, electrical penetrations -- so the scope of electrical components is rather narrow compared to the mechanical list

of components.

The next section is 4.0 on time-limited aging analyses, and during the course of the review, Duke identified 10 time-limited aging analyses which are presented on the next two slides. And then for each of the 10, I have a summary slide which will talk about open items and confirmatory items. But, briefly, let me just run through these 10.

One is on fatigue analyses for containment liner plate and penetration. The next one is the loss of prestress in the containment post-tensioning system. The third one is fatigue and fracture mechanics. Four, the reactor coolant system and Class 1 components.

CHAIRMAN BONACA: Could I interject?

MR. SHEMANSKI: Okay.

CHAIRMAN BONACA: Looking at this presentation, this is the last one for the morning.

MR. SHEMANSKI: This is the last presentation.

CHAIRMAN BONACA: And it is a lengthy one.

MR. SHEMANSKI: It is a lengthy one, that is why we have the people up here.

CHAIRMAN BONACA: So I would propose that we take a break now, and then we do the meeting with this presentation and then continue that. Otherwise, we have to interrupt in the middle probably.

MR. SHEMANSKI: Okay. Fine.

CHAIRMAN BONACA: So if it is okay with you, let's break and resume the meeting at 10:00.

[Recess.]

CHAIRMAN BONACA: All right. Let's begin.

MR. SHEMANSKI: Okay. Continuing on Section 4.0, time-limited aging analyses. As I mentioned earlier, Duke identified 10 TLAAAs. Fatigue analyses for the containment liner plant and penetration. Prestress loss in the containment post-tensioning system. The third TLAA is fatigue and fracture mechanics analyses for ISI reportable indications in the reactor coolant system and Class 1 components.

The fourth TLAA is neutron embrittlement of the reactor pressure vessel, and also inter-granular separation in the heat affected zone for low alloy steel. The fifth TLAA is flow-induced vibration, transient cycle count assumptions and ductility reduction of fracture toughness for the reactor vessel internals.

The next slide shows the remaining five TLAAAs. Fatigue analysis of the reactor coolant pump flywheel. Fatigue analyses of mechanical components. Environmental qualification of electrical equipment. Fatigue analysis of the polar crane and the final TLAA is aging evaluation of boraflex in a spent fuel rack.

Now, for each one of these 10 TLAAAs I have a slide which lists the open items, confirmatory items and license renewal issues, so we will just take these one at a time. And if you have any questions, I will have the appropriate member sitting next to me answer them.

The first one is on containment liner plate and penetrations. The open item deals with the applicant providing a discussion of the cumulative effects of all possible cycles and a fatigue analysis.

CHAIRMAN BONACA: What are the sources of the cycles on the containment anyway?

MR. ASHAR: What is your question? I didn't quite --

DR. KRESS: What are the cycles that cause fatigue on the containment? What creates the pressure side?

MR. ASHAR: Thermal cycles mainly. I am Hanraj Ashar. The number of cycles being considered are mainly thermal cycles.

DR. KRESS: Heatup and cooldown?

MR. ASHAR: Heatup and cooldown, heatup and cooldown, that kind of cycles.

DR. KRESS: How about the summer and winter, is that a cycle?

MR. ASHAR: Summer and winter not affecting liner penetrations as much, no. But it is being considered but does not affect too much the final analysis really.

DR. KRESS: Day and night doesn't affect it either, the temperature variation between day and night? Or is it thermal lag time, too?

MR. ASHAR: Well, because mostly the liner plate and penetrations that are we are looking at from inside, and how much they are going to be affected by the fatigue. The outside temperature for concrete containment like at Oconee will not be of that much.

But they have considered day and night cycles, yes.

DR. KRESS: But it is mostly just heatup and shutdown of the plant?

MR. ASHAR: Heatup, yeah.

DR. KRESS: Thank you.

MR. SHEMANSKI: Okay. There is one confirmatory for the containment liner plate and penetrations. The applicant should note that the performance-based Option B allows the 10 year frequency, if previously leak rate tests had no problems. However, additional leak rate tests may have to be performed after any measure modifications. For example, a steam generator replacement.

There are two items of interest associated with the containment liner plate and penetrations, the first being the containment leakage testing program and the second one is the containment ISI plan.

Are there any questions on the items of interest? If so, Hans could probably speak to them.

CHAIRMAN BONACA: Would you tell us something about these items of interest?

MR. ASHAR: There is more -- the two items of interest.

CHAIRMAN BONACA: The thermal leakage testing program.

MR. ASHAR: Leaking testing program. In yesterday's presentation to you on containment structure, I mentioned to you that in one of the program, that the applicant has considered as a part of the aging management program is the containment leakage testing program. And because the ferritic cycles and the liner plate and penetrations are being affected by containment leakage, or I mean they could be source of leakage, that is why they really want items there so I put that in as a part of items of interest, really want items.

CHAIRMAN BONACA: Right, I understand.

DR. KRESS: The containment thermal cycles, there is not much you can do about those. I mean they are sort of fixed. And there is not much you can do in the way of inspection to see if you have got fatigue damage. The leakage testing is too few and far between to be of much use.

I am having trouble trying to figure out this particular aging management problem, how you are going to manage the aging of this. All you did -- I presume what you did is just calculated it away and said that there is no problem.

MR. ROBINSON: Greg Robinson. Yes. Primarily here we are looking at boundary conditions on the original design and checking the boundary conditions to make sure they would be acceptable for 60 years.

DR. KRESS: For the rest, yeah.

MR. ROBINSON: Not so much aging management.

DR. KRESS: It is not going to be a management program. So I don't understand then why there is an ISI and a containment leakage items of interest up here on the slide. That is what is bothering me. I mean they don't seem to be relevant here to me.

MR. ASHAR: Well, let me answer that question. The reason we just put that as items of interest is because in ISI plan, the containment liner and penetrations will be visually examined. If there are problems, they will be NDE examined. If there any problems due to the ferritic, it will show up during those inspections. Or it may show up during the leakage rate testing. So that is the reason they are being put as items of interest and not really related to the ferritic is particular, but in general basis, you know.

DR. KRESS: Items of interest, when they show up in this SER, have no regulatory requirements or anything associated with them?

MR. ASHAR: That's right, exactly.

DR. KRESS: Okay.

MR. ASHAR: Exactly, yeah.

DR. SEALE: But you already have an ongoing requirement to do the leak rate testing.

DR. KRESS: Yeah, for some other reason.

DR. SHACK: Other reasons, yeah.

DR. SEALE: Obviously, yeah. But you are absolved it once you go to the license renewal.

MR. SEBROSKY: Dr. Kress, this is Joe Sebrosky. Just as a point of clarification, the items of interest were determined by the staff that is something that the ACRS may be interested in. They are not identified in the SERs as items of interest.

DR. KRESS: Thank you very much.

MR. SEBROSKY: It is just the staff thought --

DR. KRESS: That helps me a great deal.

MR. SEBROSKY: Thought you guys would be -- as a matter of fact, we were requested, if we thought that there was a particular item in a section that you would be interested in, to try to identify that. So it is our best guess.

DR. KRESS: Okay. Thank you. That helps a lot.

MR. SHEMANSKI: Okay. The second TLAA involves the

containment post-tensioning system. There is one open item dealing with the trend lines that will demonstrate the adequacy of the existing prestressing forces in the containment tendons have been not been shown by the applicant for the period of extended operation.

There is one license renewal issue involving IWE/IWL for the tendons.

Hans, do you want to --

MR. ASHAR: Yeah. This is what I discussed yesterday when I was talking about the containment structure and there is the temperature effect on the tendon prestressing forces, and that we discussed yesterday. I think you asked me a few questions on that one. So if you want to know a little more about it, I can, but, otherwise that is all

--

DR. UHRIG: What is involved in closing out this item, open item?

MR. ASHAR: The open item, let me -- I think I have got something I can show you. Yeah, I think I have got it. What the applicant has given us right now, this is called a minimum required value. This is required for withstanding the pressure, internal pressure during the LOCA. Okay. What applicant has given me, another line which says here PLL line. PLL line is this line here which -- the one with the dots on it, that is a PLL line.

These are the two items that applicant has given in this particular sketch on which dimension yesterday, in UFSAR supplement, Chapter 16 of the UFSAR supplement.

Now, what they should have done is to add some additional line, not just add it, based on the measure of prestressing forces at various times. They can tell us as to what is the train line of the existing prestressing forces. These are PLL and MRV, all -- both of them are based on the estimated values. During the time of construction or later on, they might have revised them, whatever, but they are estimated values. They are not the actual value existing in the containment.

What we are looking for is that based on their experiences until now, what they have found, and through regression analysis show us that at 40 and 60 years, you are going to meet that PLL and the MRV. MRV is this line, PLL is this line.

Okay. I am showing you two lines here which may go below the PLL line at 60 years.

DR. SHACK: Those are just conjectured lines?

MR. ASHAR: These are conjecture lines. They are conjecture lines, correct. But this is the area we are looking for from the applicant.

CHAIRMAN BONACA: What do you mean conjecture? I mean are they results of calculations or --

DR. KRESS: He just threw them up there.

MR. ASHAR: No, this is just -- I was showing just two lines to show -- I can show you another line from another plant which shows, it shows measure data and how regression in ISI is performed.

DR. SHACK: But I mean even if the line went below that would just be part of your aging management plan, would be to retension

the --

MR. ASHAR: Yeah, there is to be systematic retensioning of the tendons in order to make sure they are in average way, in the whole group of tendons, there will be a certain amount of prestressing force, that compression in the concrete.

Now, this line is from another licensee and this is another plant, not Oconee. But it shows you that how they do the -- these are the measured results. These points are the measured results at various times. At various times they measure the prestressing forces. These are the measured prestressing forces.

Based on these measured prestressing forces, this particular licensee drew the regression line going up to here 30 years. They said that with this data they can go only up to 35 years here. After 35 years, they will have problem. They will have to do something about retensioning the tendons in order to meet 40 years and 60 years if they want to apply for a plant life extension.

DR. KRESS: You have some sort of acceptance value on the regression coefficient for that?

MR. ASHAR: Yes. We have --

DR. KRESS: Because I would have a lot of trouble of accepting that regression line through that data.

The question is, I could draw the line going the other way on this.

MR. ASHAR: No. This line is not the way it was conjectured line last time. This line --

DR. KRESS: I know, it's a regression line.

MR. ASHAR: Regression line.

DR. KRESS: But the regression coefficient must be awfully small.

DR. SHACK: He is saying the data looks like a shotgun blast.

DR. KRESS: The data looks like a shotgun.

MR. ASHAR: Well, first, let me explain to you how the time-dependent losses. I can explain to you maybe a little more than this, okay?

It might seem like it is shorter than that, but it is not. The time-dependent losses in pre-stressing forces has been shown to have direct relationship -- the force versus the time shows a linear relation when the time is log scale, okay? It has been shown.

DR. KRESS: So you know it is linear?

MR. ASHAR: We know it is -- log-normal --

DR. KRESS: Yes, you know --

MR. ASHAR: So that line is a linear line is an assumption in that sense, but it has been shown by a number of other analyses.

DR. KRESS: That I buy, it's just that you still have to accept the slope and --

MR. ASHAR: Well, that comes from the list square, the normalized list square here.

DR. KRESS: That is why they have the problem.

DR. SHACK: If the computer spits out an R, it's good enough.

DR. SEALE: Yes, but I could change my criteria for accepting the validity of one or two datapoints and jack that line almost in any direction I wanted it to go.

MR. ASHAR: Yes, I agree with you. There are a number of manipulations possible in plotting these lines, okay, and this has been discussed in our latest information notice that we issued in March, 99-10, where we discuss these particular items in more detail.

DR. UHRIG: You have labelled those observed forces. Are those measured forces? Were they re-tensioning at each interval the data is taken there, or was that just what it was at that particular time?

MR. ASHAR: There are a number of tendons, pre-stressing tendons. They did the lift-off testing which is measuring pre-stressing forces. They measured the pre-stressing forces at those points and those shown here, for example, it would be 1125 kips they show, then here they must have seen 1240, 1245 or something, so these are the shown measured results of those pre-stressors.

DR. UHRIG: But they did not do any post-tensioning at that time?

DR. SHACK: When he measures 1125, does he say, oh, gosh, that's getting kind of low and inject that --

MR. ASHAR: No, no. That they don't do because the method of lift-off testing is very precise. What it does is it just picks up -- and they have a filler gauge underneath to make sure that it picks up all the tension, and then they measure it on the side of the document somewhere, okay, and at that time they do not re-tension or nothing. They do not add any shims or anything like that in-between. It is what it is at that time, so it stays at that time unless they decide to de-tension that for some other reason, if they find some problem -- they decide they would like to investigate a little more, which they did in Calvert Cliffs earlier, then it would be different. Then they would re-tension again. They could re-tension at different levels, yes.

DR. SHACK: Is this a typical dataset, what this looks like?

MR. ASHAR: Yes. Yes, this is a very typical dataset as far as --

DR. SHACK: My experiments don't look so bad now.

[Laughter.]

MR. ASHAR: You should remember there are so many variables to have measuring this thing -- the calibration of jacks, the way the things are put together, the way the friction plays a part in the whole thing. There are a lot of variables in this one, before you come out with this simplified data even.

DR. SEALE: That's what I said. If you change the criteria for selecting a datapoint or two --

MR. ASHAR: No. As far as what we have in the Regulatory Guides and subsection IWL of ASME Code, we considered them adequate enough to get the gross area, gross item. If something goes wrong, we will be able to figure it out. That is the idea.

DR. SHACK: Yes, I guess that is a code-minimum value.

MR. ASHAR: That is the code-minimum value.

DR. SHACK: Already got a safety factor on it.

MR. ASHAR: That is correct.

DR. UHRIG: The force on an individual tendon?

MR. ASHAR: The crosses you are seeing are the forces on the tendon that they pulled.

CHAIRMAN BONACA: But each time it measured a few tendons, right?

MR. ASHAR: Each time you measure a few tendons, right --

CHAIRMAN BONACA: And you get that kind of spread.

MR. ASHAR: Normally we call them randomly selected tendons. That is the way the word is used but many times "random" doesn't work but we tolerate that within certain bound of certain certainty, you know?

DR. UHRIG: What is the typical diameter of a tendon here? Half an inch, three-quarters of an inch?

MR. ASHAR: This one I don't remember. On Oconee I think there are 95 tendons -- yes. In Oconee plant there are 95 tendons with a force close to over 700 kips or something like that.

CHAIRMAN BONACA: The conjectured curve by Oconee doesn't look that bad anymore.

MR. ASHAR: Well, Oconee, as you mentioned, it was conjectured lines. They were not based on any measured data. I wanted to show that this thing can happen. It can go below 60. It can stay above 60. You never know, but that plain line has not been shown by the applicant to us, based on the measured data. That is what we are asking them to do.

MR. SHEMANSKI: Okay. There is one item of interest regarding the containment post-tensioning system that deals with the containment ISI plan.

MR. ASHAR: Containment ISI plan. This item of interest, because it is related to the post-tensioning system -- yes.

MR. SHEMANSKI: We will move to the next, TLAA, which is on fatigue analysis of the reactor coolant system. There are two open items. The first one deals with the reactor coolant system is not adequate to address fatigue concerns for operation beyond 40 years. This is basically GSI-190.

The second open item deals with the corrective actions regarding the Section XI flaw evaluation. Any questions or comments on the open items?

DR. SHACK: I thought yesterday that the Framatome people told us they did go back and re-analyze the things, the limiting locations, and found that they were okay.

MR. FAIR: This is John Fair, with the Division of Engineering. Framatome was talking about the vessel evaluation.

DR. SHACK: The vessel?

MR. FAIR: And they had done an evaluation of the vessel using the data that was available a couple of years ago. The new stainless steel data that we are concerned with in this evaluation didn't impact those points we were concerned with in the vessel.

MR. SHEMANSKI: Okay. There is one confirmatory item dealing with the completion of emergency feedwater nozzle analysis -- actually three confirmatory items. The second one is Class I analysis

of the attached piping to the first isolation valve and the third item is the revised response to NRC Bulletin 88-08, looking for the revised response by July 1, the year 2000.

DR. SHACK: Now what are you expecting them to do on the 190, for example, to look at some limiting locations in the piping system?

MR. FAIR: That is what we would like them to do. Yes. That was our recommendation in the SECY 95-245, and so far I haven't seen anything from B&W plants on this evaluation.

DR. SHACK: The flaw evaluation, that is the reportable indication that they have in the vessel, is that the one we are talking about here?

MR. FAIR: I think there are several locations where they have reportable indications. I am not the reviewer on this particular issue, but I believe they have -- the open item is just some discussion of what kind of evaluation they did and what they are cranking into the analysis. It really came up late in the review and the licensee didn't have a change to respond to the issue.

DR. SHACK: Okay, but it doesn't seem to be a critical problem?

MR. ELLIOT: Not really. We talked about this yesterday with respect to the vessel. There are flaws in other locations in the plant. This covers all of those locations rather than just the vessel.

MR. SHEMANSKI: There is one license renewal issue regarding the fatigue of metal components?

MR. FAIR: John Fair again. This is just the same open issue on the environmental data.

MR. SHEMANSKI: There are no other items of interest on fatigue of the reactor coolant system.

The fourth TLA deals with the reactor neutron embrittlement and underclad cracking. There were no open or confirmatory items identified. However, there is one license renewal issue regarding vessel surveillance.

MR. ELLIOT: Vessel surveillance was discussed yesterday. They have an integrated surveillance program.

DR. SHACK: I mean it is a larger issue because not all plants may be as well off as Oconee. I assume that is why it is a generic issue.

MR. ELLIOT: We just put this down so that if you wanted to discuss it here we could discuss it some more.

MR. GRIMES: This is Chris Grimes. The larger generic issue from the standpoint of renewal is the extent to which the Staff can clearly identify on the standard review plan the expectations for an adequate vessel surveillance program. As Barry pointed out yesterday, each of the owners' groups has got a vessel surveillance program and so it is just a matter of us capturing those things and integrating them into the review plan.

MR. SHEMANSKI: We listed four items of interest regarding the reactor neutron embrittlement and underclad cracking. One deals with pressurized thermal shock. The next one is Charpy Upper Shelf energy. The third one is underclad cracking. The fourth one is

pressure temperature limits.

MR. ELLIOT: These all relate to neutron irradiation embrittlement, pressurized overshock -- there is a screening criteria which we discussed yesterday and may satisfy. The Charpy Upper Shelf energy and the underclad cracking were also embrittlement issues discussed in BAW-2274 and BAW-2275. We discussed those yesterday.

Pressure temperature limits are also -- it's an embrittlement question. Appendix G of 10 CFR 50 establishes limits for pressure temperature limits. The licensee has looked back and is submitting new curves right now. I think it is for 33 effective full power years, and we are reviewing it at this time.

The 48 effective full power years they say that they can generate sufficient curves. A concern here was would there be an operating window between the pressure temperature limits and the reactor coolant pump pressure suction limit, and they have looked at that and they said based upon the new regulatory requirements coming in from the ASME Code and NRC, they will have an operating window to operate at 48 effective full power years.

MR. SHEMANSKI: If there are no questions, then we can move on to the next, the fifth TLAA, which deals with the reactor vessel internals. Two open items have been identified. The first one deals with -- a plan must be submitted and approved by the staff which develops data to demonstrate that the internals will meet the deformation limits. And the second open item, the applicant did not address the applicability of flaw growth acceptance in accordance with the ASME B&PV Code, Section 11, ISI requirements.

MR. ELLIOT: Barry Elliot again. The deformation limits, there is a deformation limit in the code. When you do seismic evaluation you must have certain amount of deformation allowed. And the question is, when you get embrittlement, do you have that -- do you still have that deformation limit? Is there sufficient ductility remaining after embrittlement that you can still make the deformation limits of the ASME Code?

And this next question has to do with flaw growth. If you have flaws in the internals, how are you going to evaluate them?

DR. KRESS: What is this plan to develop the data? The first item.

MR. ELLIOT: They have a reactor vessel internals program and they have -- this is sort of an industry-wide program on internals in which they are going to look at embrittlement and see what the impact on the fracture-resistance of the stainless steel --

DR. KRESS: The question is just not Oconee-specific?

MR. ELLIOT: No, this is not Oconee. But this is -- for Oconee they have to -- they are part of that program, and when they make that program, they should take into account that they have to satisfy the deformation limits of the code in their program. The industry program should be able to answer that, whether it has enough ductility, at the end of 48 years -- 40 effective full power years, based upon embrittlement.

DR. KRESS: Is that different than -- as long as they know what the fluency is, don't they have enough data to determine that, know

what the materials are?

MR. ELLIOT: I don't think there is a lot of data in this area. We haven't gone -- this is, I mean we don't have a plan yet, so I mean --

DR. KRESS: Okay.

MR. ELLIOT: We are going to have to look into this with them and this is -- we want to the industry to kick this off and start telling us what they are going to be doing. I don't know at the moment --

DR. KRESS: It is a new embrittlement issue that I hadn't encountered before.

MR. ELLIOT: This is an internals issue.

DR. KRESS: Yes, it is an internals.

MR. ELLIOT: Most of our work in the past in the NRC has been the vessel.

DR. KRESS: The vessel itself, yeah.

MR. ELLIOT: The internals are really getting more attention now than in the last couple of years, and this is part of that attention.

DR. SEALE: Could I go back to an issue? You guys have been dropping shoes up there so fast, I am having a hard time keeping up with you. You were talking about the metal fatigue issue back in 4.2.3. And, finally, the rust got off of my brain and I realized that there is a related problem that has been nagging at us now for a long time, a little thing called GSI-190. And I think these are kind of related to each other, and I wondering does the July 1, 2000 which is in fact a year to the day from today, does that suggest we may get GSI-190 done by about that time, too? And glory hallelujah if we do.

MR. FAIR: This is John Fair again. The dates are not coupled. The July 2000 date that you were looking at was a commitment for the licensee to complete a reevaluation of HPI.

DR. SEALE: I appreciate that. I am grasping for straws on 190.

MR. FAIR: I believe that they are pushing hard to get some resolution of GSI-190 done. I don't want to make commitments for our fellow research people, but I believe they are pushing hard to get that completed.

MR. GRIMES: As I recall, the last time we had a conversation with the Office of Research, they were talking about updating an action plan and getting the industry involved in the action plan to try and bring a timely resolution to GSI-190. And the extent to which the industry can support the action plan with dictate what the end point is, but they are currently scheduled to complete their activities by the end of this year.

DR. SEALE: Thank you very much.

MR. SHEMANSKI: Okay. The next TLAA, number 6, deals with the fatigue of the reactor coolant pump flywheel, and there are no open items, confirmatory items, no renewal issues or no items of interest. So that one is --

DR. KRESS: That takes care of that one.

[Laughter.]

MR. SHEMANSKI: So that one is no problem.

DR. SEALE: Nolo contendere.

MR. SHEMANSKI: As a matter of fact, the next one is the same category, nothing --

DR. KRESS: Well, before you leave that one, when you are talking about fatigue of the reactor coolant pump flywheel, are you including the axle that it is mounted on? I mean I wouldn't think the flywheel would have a feed problem, but the thing it is mounted on, the pump axle, pump shaft. Is it mounted on the motor or the pump?

MR. SHEMANSKI: It is on the shaft, I assume.

DR. KRESS: It is on the shaft.

DR. SEALE: He is asking, when you do the fatigue analysis, is it the whole unit?

DR. KRESS: Do you do it on the shaft?

DR. SEALE: Is it the shaft that is included in there?

MR. WESSMAN: This is Dick Wessman from the staff.

Unfortunately, the lead reviewer for this area is not here, and maybe the Duke Power folks can help us out, but that flywheel is mounted on the end of the shaft I think above the motor. But I think the focus is on the flywheel and not the shaft. Sam.

MR. LEE: Yeah. This is Sam Lee, I am from License Renewal Branch. And the way I understand this is that the flywheel is mounted on the shaft through a keowee. So that is fatigue analysis on the keowee.

DR. KRESS: The keowee itself.

MR. LEE: Yes, on the keowee itself, that is the way I understand it.

MR. SHEMANSKI: The seventh TLAA deals with the fatigue analysis of Class II and Class II components and, again, nothing has been identified.

Okay. TLAA Number 8 is on environment qualification of electrical equipment. We did not identify any open items or any confirmatory items. However, regarding this issue, there is a priority -- this was identified as a Priority 1 license renewal issue on EQ. And, basically, the question was whether or not the EQ Rule, 10 CFR 50.49, could be found acceptable as an aging management program, that was the issue, and we have since resolved that issue on the basis that we before EQ Rule 50.49 is or can be an acceptable management program for long-lived electrical equipment for the period of extended operation.

As part of the EQ qualification program it does include qualification testing for thermal and radiation aging prior to LOCA testing, so there is an element of the 50.49 EQ program that does consider the effects of aging of electrical components. And during your discussion this afternoon on credit for existing programs, I am sure EQ will be discussed as an example.

DR. SEALE: Could I ask, yesterday we heard something about concerns for the generic nature of the resolution of items as they take place with respect to Calvert Cliffs and Oconee. You said this is an issue that has been resolved. Is that in the narrow sense of Oconee and Calvert Cliffs, or is that in the more generic sense of the whole works?

MR. GRIMES: This is Chris Grimes. This is in the narrow sense that we drug the details of how the environmental qualification life-limited analysis are going to be managed for the period of extended operation, we drug that from these two applicants kicking and screaming, and that is what kicked off and stimulated this entire issue about what -- how credit for existing programs can be manifest in an application.

After getting the information from both of the first two applicants, we concluded that the programs were adequate without the need for any modification, not so much because they would continue to comply with 50.49, but that we could point to specific aspects of the programs that constitute the basis for compliance with 50.49. And so now we are going to deal with it in the much broader context of credit for existing programs.

But Paul put a particular item of interest up there and that is the two applicants approached this set of time-limited aging analysis very differently. Oconee actually went through and categorized the analysis in accordance with which of the analysis is already qualified for 60, which have been updated to 60, and which ones are left to be managed for the period of extended operation. Calvert Cliffs threw all of the EQ analysis into the managed for period of extended operation bin.

MR. SHEMANSKI: That is exactly what I was going to say.

[Laughter.]

MR. SHEMANSKI: We did find both approaches acceptable. As Chris mentioned, Oconee basically did the evaluation upfront. For the large majority of equipment on the master list, they actually did the calculations extending the qualified life from 40 to 60 years, primarily for -- well, for cables, they did that for all cables. And they do have a number of items which they will evaluate later on and either extend the qualified life or replace those items.

And the difference is that BGE basically deferred their evaluations. They will at some point prior to the expiration of qualified life of the electrical components, BGE will then at that point assess whether or not they could extend the qualified life or have to replace the components.

So, again, we did find both approaches acceptable even though there is a large difference between how they were actually conducted.

The ninth TLAA is on the fatigue of the polar crane and there were no items or confirmatory items, no renewal issues or no items of interest identified during the review of this TLAA.

The final TLAA is on the aging of Boraflex in the spent fuel racks. There were no open items, confirmatory items or license renewal issues. However, there was one item of interest and the item of interest was focusing on the Boraflex monitoring program involving the visual inspection of the Boraflex coupons, monitoring gap information the Boraflex panels by blackness testing, and the final item of interest dealt with the monitoring future performance of Boraflex by measuring the silica in the spent fuel pool and using the RACKLIFE computer code.

Are there any questions on any of these items of interest?

DR. KRESS: Have you evaluated RACKLIFE? Is this a good

code?

MR. SHEMANSKI: Kris Parczewski will --

DR. KRESS: -- SCR on it or anything like that?

Kris Parczewski will speak to that question.

MR. PARCZEWSKI: My name is Kris Parczewski for the Material and Chemical Engineering Branch. Please repeat the question.

DR. KRESS: My question has to do with what do you know about RACKLIFE? Have you evaluated it and written an SER and said it's adequate for this application to determine the Boraflex condition?

MR. PARCZEWSKI: Well, usually we actually run the tests for each -- we have a coupon. There are coupons in the spent fuel pool which we examine visually, so that's one way of doing it and we can predict future degradation of Boraflex by using this procedure mentioned in the last item.

DR. KRESS: RACKLIFE is an EPRI code?

MR. PARCZEWSKI: Beg pardon?

DR. KRESS: RACKLIFE is an EPRI code?

MR. PARCZEWSKI: Yes, this is EPRI-developed.

DR. KRESS: You have reviewed it and written an SER on it?

MR. PARCZEWSKI: No. We just are familiar. We didn't review it formally, but we have all the information and we know the technical bases for the program. We reviewed it.

DR. UHRIG: What are the physical characteristics of Boraflex in terms of its potential damage? Does it swell?

MR. PARCZEWSKI: It actually has two effects. In the radiation field, the Boraflex shrinks. If it breaks and gaps are formed, those gaps are determined by --

DR. UHRIG: Radiation meaning gamma?

MR. PARCZEWSKI: Yes.

DR. UHRIG: Gamma?

MR. PARCZEWSKI: Yes, it is gamma. The second part is it degrades and boron carbide, which is a constituent of the Boraflex is actually lost, is removed from there, so this has got two effects really which affect.

DR. UHRIG: Does that go into the water? Does that dissolve in the water or does it fall to the floor?

MR. PARCZEWSKI: It falls to the very bottom of the pool, yes. This is why it can't be measured. This would be measured for silica.

DR. UHRIG: It does not dissolve?

MR. PARCZEWSKI: Yes.

DR. UHRIG: It does not dissolve.

MR. PARCZEWSKI: It is heavier than water so it drops down, but silica stays and we correlate the amount of silica released to the amount Boracarbide released, so if you measure silica you know how much boron is lost from the panels.

CHAIRMAN BONACA: So the applicant is planning to keep the Boraflex to the end of 60 years?

MR. PARCZEWSKI: It should stay, yes, it should stay for --

CHAIRMAN BONACA: Is the spent fuel pool at Oconee, are the spent fuel pools fully racked?

MR. GILL: This is Bob Gill with Duke. Several years ago we racked the pools, probably for the second time, to put the high density racks in there, so they are replaceable components but for the purpose of license renewal it is an ongoing program. We monitor it. If they degrade far enough, there are other actions you can take by checkerboarding the assemblies, replacing the racks --

CHAIRMAN BONACA: But you have already racked the whole pool?

MR. GILL: Yes, sir.

CHAIRMAN BONACA: Okay, so you are going to have an opportunity to put new material in some new racks?

DR. SEALE: Of course the technical requirements for quality of the borax don't cease at the end of 60 years.

CHAIRMAN BONACA: No. It's just that if you have continuous degradation like this and these cracks and openings exceed certain sizes, then you may have some issue about managing this.

DR. SEALE: Well, really the issue is that the license you are running under is a 60-year license and so the period covered is 60 years, but the post-operational license, the license at that point then is still going to be worried about the quality of the Boraflex, so it is a much longer lifetime concern than -- or it is a longer lifetime concern.

DR. KRESS: Yes. You need that spent fuel stored somewhere.

DR. SEALE: Yes.

DR. KRESS: And we were wondering about whether it should be 60 years or longer.

CHAIRMAN BONACA: The reason why I asked the question is some licensees that have the opportunity to re-rack, they typically put the very old fuel in areas where there is Boraflex and they use new material where they have new upflow to the core, fuel, but evidently you have racked the whole pool so --

MR. GILL: Right, and we also have an independent spent fuel storage facility on Oconee 2 that with real old fuel we could --

DR. KRESS: You could get that stuff out of there if you had to.

MR. GILL: Obviously, we want the back end of the high level waste cycle to be taken care of by the Department of Energy but, you know, but we have a lot of contingencies underway to handle it.

DR. SEALE: Like GSI-190.

MR. SHEMANSKI: Okay. If there are no further questions, that concludes the Staff presentation for the draft SER.

CHAIRMAN BONACA: I have a question regarding your mechanical components evaluation.

You divided the presentation into Class I and Class II and III components, but if I remember, is that separation appropriate also for Oconee? I know they have a QA program and they have a lot of different categorization of components or --

MR. FAIR: This is John Fair. I don't think the reviewer on that section is here but I believe the issue, and maybe Duke can help out, is that for Class II and III they don't -- components, they don't have formal fatigue analyses. What they have is a set of stress

criteria that's applicable for a certain number of cycles and the TLAA is simply confirming that you don't exceed that number of cycles.

CHAIRMAN BONACA: But has the Staff reviewed what that means, what this family of components consists of versus the scope issue that we discussed yesterday?

MR. GRIMES: This is Chris Grimes. I will attempt to field that in context. I think that that is going to be implicit in our resolution of the scoping issue in terms of how they have applied -- how they have used this suite of events in order to make sure that they capture all the intended functions, and then from that you get all of the systems, structures and components that are subject to license renewal, and so we attacked it from the other end.

We are going to make sure that we cover all of the appropriate systems, structures and components irrespective of whether or not the quality assurance system designates them as Class II or III or some other class.

CHAIRMAN BONACA: The only reason I asked that question is that in fact you confirmed that there are different criteria being applied for fatigue analysis monitoring to Class II and III. All right. I understand. I have no further questions. Any other questions from members?

[No response.]

CHAIRMAN BONACA: Thank you.

MR. GRIMES: Thank you.

CHAIRMAN BONACA: Does this complete your presentation?

MR. GRIMES: That's correct, Mr. Bonaca. That completes the Staff's presentation and I'd be pleased to entertain any questions you might have or any instructions you might have about how we can prepare for the full committee and what information you found most interesting and would like us to present there.

CHAIRMAN BONACA: Okay. A couple of things.

First of all, regarding the afternoon meeting, there has been a request from the Staff that we view or attend the address from the Chairman.

MR. GRIMES: That is correct.

CHAIRMAN BONACA: And that is at one o'clock, which means it would push back a little bit the other presentations we have scheduled, you know. To the degree to which we can accommodate that we will accommodate it.

DR. KRESS: We can view that on this screen.

CHAIRMAN BONACA: Yes, they have got it on the screen now. The only thing I wanted to make sure is that if this lasts a very long time that bump into some of the schedules of some of the members. They have travel later in the day, so we will try to monitor that.

The intent is to see this address from the Chairman and then to get into the meeting no later than 2:00 p.m. and then to try to contain those presentations within the one hour and 45 minutes that we have scheduled for those. We will try to do that.

Second, now regarding the items for the September, 1999 ACRS meeting, I understand that is when you are going to have the actual presentations from the Staff.

It seems to us that there should be a brief presentation from Oconee, maybe 20 minutes, and I think that a summary of the more significant points from your presentation that you had yesterday that simply -- I thought it was a very well put-together presentation and I think some highlights of the approach you took, particularly where it differed from the BG&E applications for Calvert Cliffs, that the committee is familiar with, it would be helpful because I think you proposed a new process or a different approach. That is my thoughts about what would be useful and also will provide the full committee with an introduction to the Oconee stuff to do.

Second, for the Staff I think it would be important for us to have a summary of the results of the Staff's evaluation of BAW-2251, reactor vessel and associated evaluations, a discussion of open items associated with identified program weaknesses or controversial. I wouldn't go into every open item. I would just focus on those which have to do with programmatic issues, open issues, and also an identification of maybe unique plant configurations that have made the review of Oconee unique, different from -- so that would tend to bring to the ACRS lessons learned. These are just some thoughts.

DR. UHRIG: Will we have a session later on where the Staff will present a comparison of the two and what they are going to recommend in terms of the future applicants, this type of thing?

MR. GRIMES: At this point we are continuing to work with NEI to try to get the industry to choose on a preferred format for the application. We have provided the industry with an explanation of what is convenient for the Staff, what will help us, and now we are trying to get them to achieve a consensus on how the industry wants to package the application most effectively and efficiently.

Then we are going to move from there into a plan for conforming and updating the standard review plan and continue to work with NEI for them to incorporate the resolution of the generic renewal issues into NEI 95-10, but at this point we are not trying to say that we prefer one thing or the other, and as a matter of fact I invite the committee to offer us any suggestions you have about what works well for you that we could roll into that dialogue.

DR. UHRIG: Do you have a time schedule on the decision? Is it a month or three months or six months away?

MR. GRIMES: It is probably a month or so. We are going to have a meeting in July. I think by the time of the September full committee meeting we should be able to report on where we stand.

CHAIRMAN BONACA: We discussed about a month ago the possibility of having in fact a subcommittee meeting with the Staff, just to look at lessons learned. That may be something we want to schedule at a later time for the subcommittee.

DR. UHRIG: That would be before the September meeting?

CHAIRMAN BONACA: No. I don't think it can be done that way. It would be more after the September meeting because it would be really more focusing on the SRP and lessons learned for process improvement.

DR. KRESS: I think it would be nice if the Staff could be sure to focus on some of the items we might want to include in our

interim letter. It would behoove us to try to identify those.

CHAIRMAN BONACA: Yes.

DR. KRESS: They might also, you know -- it would be an incomplete list probably, and they may want to think about what they think might be an interim letter also.

CHAIRMAN BONACA: I think at this point we could talk about some of these items now.

DR. KRESS: Because we are going to put them in the letter. The full committee needs to debate them and hear about them.

CHAIRMAN BONACA: Sure. Do you want to move on to discuss that now?

DR. KRESS: Of course, we can't do anything on the existing program.

DR. SEALE: The September meeting presentation?

MR. GRIMES: -- sir, I think I understand what you want. We are going to go through and we are going to screen the open items and confirmatory items to pick out the ones that are programmatic and we'll have a Staff presentation on that. We will also provide you with an update of what progress has been made since the subcommittee relative to how we came up with that set of open items.

CHAIRMAN BONACA: Before we move on to this discussion of the interim letter, let's just talk about the logistics for the July meeting.

We are going to have a presentation on credit for existing programs. It is on the schedule, and that is pretty simple. I think that this should be almost a repetition of what we are going to hear today.

We will have essentially from Staff presentation of the proposed options and NEI will provide a summary of it's proposed approach.

MR. GRIMES: That is about the same time on the full committee agenda? It is 12:30 to 2:00, I believe?

CHAIRMAN BONACA: Let's see -- correct. It is one hour and a half.

MR. GRIMES: So it will be about the same presentation as this afternoon.

CHAIRMAN BONACA: And I think that would be of interest to the full committee.

DR. SEALE: Will you wish to have us then write a letter on that topic following that presentation or should we wait until we hear a little bit more?

MR. GRIMES: As I understand the timing of that issue, the Commission will hear the issue the day before the full committee, and then the Commission is expecting a letter from you because you said in your interim letter on Calvert Cliffs that you wanted to review the issue, so I think --

So the Commission is expecting you to write a letter --

DR. SEALE: So we should plan to have a letter coming out of that meeting?

MR. GRIMES: Yes, sir.

DR. SEALE: Just wanted to confirm that.

CHAIRMAN BONACA: Okay, so let's move on to discuss some of the subjects to include in the interim letter.

You picked up a number of significant points from the discussions we had over the two days. Do you want to go over those, to start with? You can read them over and then we can further the discussion.

MR. DUDLEY: There are points that came out of the discussion at the end of yesterday's meeting. I will just go ahead and go over the issue and then if there's any discussion about what I was trying to capture, I think it would be worthwhile to make sure that it is really what the committee was talking about, that it did not get garbled in the translation.

Management consideration of past plant performance, present risk profile and quality of assessment process during the deliberation on renewing a license.

MR. GRIMES: I would suggest that rather than pick on Duke in terms of the extent to which those things should be considered and the process for deciding on a renewed license, I think you want us to focus on that at a more policy level.

DR. KRESS: That's a generic -- yes.

CHAIRMAN BONACA: It's more of a generic issue, I agree with that.

DR. SEALE: Yes.

MR. DUDLEY: This is another generic issue that I don't know whether you want to get involved in the letter -- the importance of one-time inspections at a 40-year timeframe and an efficient and an effective regulatory process to identify and mitigate emerging aging effects. Again, that is generic across the board, but an issue that the committee seemed to be very concerned about.

DR. UHRIG: Were there more one-time inspections in the Duke application than were proposed in BG&E, or is it about the same?

MR. GRIMES: It's about the same.

DR. UHRIG: Then it is a generic issue not directly relative to Duke?

MR. GRIMES: Well, not solely applicable to them.

DR. UHRIG: That is what I meant to say.

DR. KRESS: I don't think the wording should be "importance of" here. I think the words should be what are the criteria for one-time inspection versus no inspection or how periodic inspection is computed.

CHAIRMAN BONACA: I think that -- I mean my thought would be that the letter would discuss this issue, because several of us have had some questions regarding this one-time inspection that we must so preciously weigh when we apply it and, you know, again it's a long future and it may be totally adequate in some cases but still it is an issue that seems to be deserving consideration. That is for sure.

MR. GRIMES: Mr. Bonaca, from my perspective, I look at how would I respond to you in terms of the action that we would take on the Oconee safety evaluation, as distinguished from the generic issues where I can address those as policy and process matters, and so in this case the unique thing about Oconee is that they proposed one-time inspections

and they said they are going to complete them before the end of the 40-year term, whereas Calvert was already chomping at the bit to get them all completed so that they could have a clean new license.

So we know that we need to address the issue about what is the appropriate time for a one-time inspection, but we need to do that in a generic way, and I don't know how I would respond to you any differently.

MR. DUDLEY: This could be presented as an observation by the committee on the Oconee license application and approach?

DR. SEALE: I guess my comment would be is the committee prepared at this point to make a comment about the relative desirability or merits of those two approaches? If we are, maybe we ought to say something. If we are not, we probably ought to wait to hear what staff has to say so we can second-guess them.

[Laughter.]

MR. GRIMES: Which we are fully prepared for.

CHAIRMAN BONACA: To me there are -- I mean my own thinking was, one, yes, we may express an opinion on whether it should be done now or 40 years. That is one issue.

The second one is in general the adequacy in all cases of one-time inspection --

DR. SEALE: Yes.

CHAIRMAN BONACA: -- still lingers in my mind and maybe I don't know enough about it but I certainly want to --

DR. SHACK: Well, I think it's Tom's point that sometimes one-time inspections are justified, sometimes periodic inspections are, you know -- and what are the criteria for choosing between them?

DR. KRESS: How we decide, yes.

MR. GRIMES: I would like to emphasize that on the Calvert Cliffs safety evaluation we specifically identified a set of proposed one-time inspections which we said we weren't satisfied that once was enough and that they ought to be designated as periodic, and we'd leave it to decide what the appropriate period is.

On the Oconee application we did not identify any of the proposed one-time inspections that we felt warranted such treatment. We were prepared to support -- I am not sure whether I want to say it that way -- we are prepared to support once as good enough.

I think I would prefer to say we don't see the need to try and justify establishing periodic inspection requirements for those particular things, and so that is the way we have presented the Oconee safety evaluation to you and now I am asking you to second-guess this if you see any one of those one-time inspections that crosses your discomfort level to pass the threshold of writing it down and I encourage you to put it in the letter and we'll specifically decide whether or not we want to reconsider.

At least that way we clearly understand, both of us, where we are going to go with any of these particular questions.

DR. SHACK: Well, I don't see that we can't consider both questions here, the more general one of need for criteria and the specific instances in the Oconee case.

MR. GRIMES: Yes. I fully intended that we would continue

to pursue the broader generic question about criteria and the process aspect, and that is part of the lessons learned that we have seen that became readily apparent, but the immediate need is for the purpose of an interim letter on Oconee if there are any of the one-time inspections which the Staff is saying we are prepared, subject to resolution of the open and confirmatory items, to accept a one-time inspection that may or may not result in a need for further actions beyond that point, and so if any of them cause you discomfort, then you should tell us that they cause you discomfort and then we will look at them harder.

DR. SHACK: -- or if we feel any are unnecessary --

MR. GRIMES: Yes.

We will contrast in the presentation this afternoon -- we ran into a few of these existing program areas where one applicant offered to do something and the other applicant chose not to do something, and now we are trying to find what is the right regulatory line, where is the balance.

So we have tried to do that. We were conscious about consistency but fairness as we went through the Oconee safety evaluation and to a certain extent that is reflected in these open items. There were issues that came up that we identified as inconsistent treatment between the two applicants and they ended up as open items on Oconee that we'll have to reconcile.

DR. UHRIG: But isn't that usually due to some difference in the plants?

MR. GRIMES: No.

DR. UHRIG: No?

MR. GRIMES: In this instance --

DR. UHRIG: Maybe it's not.

MR. GRIMES: -- it was a matter of inconsistent treatment with respect to managing aging, not plant design differences -- like, you know, we didn't try and make sure they were using exactly the same steam generator inspection program, but we accounted for the fact that there are plant design differences, but past that we saw that there were different treatments of aging effects that are applicable to both plants.

CHAIRMAN BONACA: Okay. I think we understand where we have to go. Still, I mean I think we will have to discuss this issue of inspections because I think it's a critical item. I mean in part, from what I understand, the inspections oftentimes are driven also by the accessibility to certain components irrespective of whether or not you have a bigger concern in a certain area. Since it is inaccessible you limit the way you look at it and you emphasize some of those where it is easy to access, and this becomes more of a concern as the plant ages because you are not seeing -- so, anyway, we will have to look at it ourselves as a committee and when we think about the issue of inspections in general.

I wasn't impressed, I must say, about the issue of the oil collection system on the pumps because it tells me that there wasn't a plan to inspect and then we will have extended the life with just one inspection and yet that is certainly a source of fire concern inside the plant.

MR. DUDLEY: Another issue that the members discussed yesterday was an unsettling feeling about how to handle emerging events, and that is the next bullet there, that there be increased pressure on the regulatory process to identify and mitigate emerging aging mechanisms.

DR. KRESS: Of course, that could be part of the inspection. The staff can address that particular issue. That may be a point that we want to emphasize, how important the inspection program is again. We did that with the other letter, and that is one of the reasons. So this is actually a carryover from our interim letter on Calvert Cliffs, I believe.

MR. DUDLEY: Okay.

DR. SEALE: Yeah.

MR. DUDLEY: The next bullet is more specific. Appropriate treatment for addressing the possibility of void swelling and core shroud bolts.

MR. GRIMES: It is void swelling for reactor vessel internals. The core shroud bolts was a BG&E issue.

MR. DUDLEY: Okay.

MR. GRIMES: And Framatone commented specifically yesterday that void swelling is an interesting research project. We explained that we could not conclude that is -- we couldn't dismiss it as an aging effect, and this is one where we are on the ragged edge of -- are we chasing a ghost or not? But we couldn't dismiss it and so we are going to address it. And if you have a view about whether or not this is not worth chasing, or worth chasing, you can share that with us.

CHAIRMAN BONACA: This issue very much depends on whether the routine inspections that are performed of internals would detect swelling in all locations where it may be significant and important. I can't answer that question by myself. Certain areas will be accessible.

MR. GRIMES: Yes. The nature of the controversy is we have not seen it. We don't expect to see it. You haven't proven that it is something that is worth inspecting, and we can't prove it is something that won't happen, and therein lies the dilemma. And, certainly, we are going to -- as Barry explained a little bit earlier, we are going to continue to pursue the broader generic, you know, vessel internal program activities, and that this issue would probably eventually work itself out there.

But in the meantime, we have to make a decision about whether or not this is an applicable aging effect, and we could not conclude that we could dismiss it based on what we don't know, which is essentially where we stand today. The industry has the view that says there isn't sufficient evidence that it isn't -- it warrants concerns, and why don't you go put it in a research program.

DR. SHACK: I mean there is also the question of whether, in fact, it warrants any action beyond what you need to address the degradation mechanisms that you are more confident are active.

MR. GRIMES: Yes.

DR. SHACK: That if you -- you know, if you are inspecting for IASCC, you know, will you -- you know, is there something unique about void swelling that you are not going to detect in your other

inspection programs? You know, does it really need to be singled out.

MR. GRIMES: Yes. But that would entail the applicant and/or the staff going to the trouble of trying to articulate the basis upon which a program that has not yet been developed, that is predicated on random sampling of particular locations in the vessel internals, might be attentive to the potential void swelling phenomena that we don't understand. So it is -- you know, that still entails some work.

DR. SHACK: No, but to the extent that all these degradation mechanisms are involved with high fluence components, --

MR. GRIMES: Yes.

DR. SHACK: -- you know, you are looking --

MR. GRIMES: Or you are trying.

DR. SHACK: -- for various reasons at sort of similar places.

MR. GRIMES: Yeah. We could and put together an argument that says, no, we can't dismiss it, whatever it is, and wherever it might occur, bounded by the high fluence and the high fluence region.

MR. DUDLEY: The last bullet --

CHAIRMAN BONACA: One thing that -- yeah, just to complete at least what I am wrestling with is, if you look at the area of high fluence, and below, that happens to be the area which is very hard to inspect. Okay. So we do have, you know, I think the B&W topical report was a very good report in my judgment, but much of is analytical and it is extrapolation to project that there will be no problems to the 60 year life.

I am trying to understand the relationship between inspections which are difficult to make below the beltline and inside the reactor, and the issue of swelling. You know, these are two issues we discussed, one is inspections and the other -- and I don't know if we know enough or if there is anything else that should be done.

Anyway, that is more something I am wrestling with.

MR. DUDLEY: Well, certainly, the one thing that is left off your list on the items to include in the interim letter is the nice compliment you gave us in a BGE letter about what a wonderful job the staff did.

DR. KRESS: Yeah, definitely.

CHAIRMAN BONACA: It hasn't been typed yet.

MR. GRIMES: I just want to make sure you don't lose an important detail.

[Laughter.]

DR. KRESS: Well, there are some other items I would add to this list we have, too. I would add the fuses, active versus passive components.

CHAIRMAN BONACA: Yes.

DR. KRESS: I would probably add something about rack life, some sort of validation, acceptance. I would -- and as part of that, I would include the 60 years versus longer for boraflex because of the spent fuel pool, and that is going to go on longer. And the fact that they have got an interim dry storage facility helps that a lot.

I probably would add something on trendline, utility of the trendline for tendon prestressing. And I would probably go along with

you on your oil collection inspection.

CHAIRMAN BONACA: What about GSI-190, any thoughts about it?

DR. KRESS: I don't know, ask Bob.

DR. SEALE: Well, you know, we are beating a dead horse in a way. It is not really an item that these guys have a lot to do with at this point. On the other hand, they are interconnected and consistency is ultimately -- well, let's say if they are not consistent between what the ultimate resolution on 190 is and the effect of the treatment on the license renewal, it is going to be a source of real embarrassment.

So what we may be in the process of doing is resolving 190 without an important subset of the people that are involved being here. Because what you come up with is something that is going to have to be within the ultimate resolution of 190. And I guess it might be worthwhile saying something to the Commissioners to the effect that we really ought to try to push to make sure that there is consistency with what comes out of this review and what the ultimate disposition of 190 is.

MR. GRIMES: Dr. Seale, we have attempted to build that in by virtue of constructing a staff position that basically says that there is a feasibility to account for these environmental effects of fatigue by virtue of either monitoring or reanalysis. And in either case, those approaches can be replaced with a generic resolution that says you don't need to do anything more.

So in that way we have tried to make sure that we don't slam the door or misdirect the solution of the problem.

I think the frustration that the industry has, has had ever since ALAB 444 said you have got to address how unresolved generic issues are going to be resolved, is the time and effort that they have to expend explaining how they will solve it when it gets solved.

DR. SEALE: And then you come along and say, well, there is always the possibility we will say there is no-never-mind after all because it is a generic resolution.

MR. GRIMES: Yes, but that is --

DR. SEALE: And that just makes the frustration even more acute.

MR. GRIMES: Yes.

DR. SEALE: So all I am saying is if we can get there, we ought to try to.

MR. GRIMES: Yes. And we will agree. We will simply say we would like that solution as much as the industry.

DR. SEALE: So I think now we ought to craft something on 190.

DR. KRESS: At this point I don't see anything in our interim letter that is sufficient magnitude to consider the derailment of this process of licensing. I don't see anything that is really earthshaking in what -- these are just -- most of them are sort of generic like issues for the lessons learned as we go on, I think.

DR. SEALE: Well, you expect the first two to be pretty rich in that area.

DR. SHACK: Except maybe for the scope issue.

DR. KRESS: Scope is the only one. But, you know, that is

an item that --

CHAIRMAN BONACA: Yeah, I think still we should put something about maybe the scope issue, because it is still open. Most of all because it is going to be an item that may occur again, it will occur again.

One thing that, you know, I feel -- again, I noted yesterday, I was impressed by looking at how many programs are in place now, that have been put in place at the plants in the past 10 years.

DR. KRESS: That is impressive.

CHAIRMAN BONACA: And such that almost the -- you know, plants are positioned right now for license renewal because they have these problems. And, you know, when you begin to make a head count, identification of the programs, you realize what kind of -- you know, how much the plants have grown in the past ten years.

Clearly, the Maintenance Rule and preventive maintenance and things like that have helped there. But that is an observation that we may want to consider.

DR. KRESS: Be careful. We will have to pull out our shot to clear in that area.

[Laughter.]

MR. GRIMES: Actually, I would like to suggest you -- that is a thought you really want to include in the response to the existing program issued to the Commission, because that at least sets the stage for -- for why do we need to do anything more for license renewal? Which is the fundamental question.

CHAIRMAN BONACA: Well, I am not sure how much it goes into that issue in my mind. The question is how applicable is this explanation so we can get to hear that.

Any other thoughts about --

[No response.]

CHAIRMAN BONACA: Well, that is pretty much what right now it seems like. But we meet in two weeks anyway, and I think we will have an opportunity to talk about it again, that letter.

Okay. Any other comments? Points from anyone? Are we done with this? I think we are.

MR. DUDLEY: We are.

CHAIRMAN BONACA: So, in that case, I think we are going to take a long recess here. We are going to adjourn the meeting for the time being.

DR. SEALE: Recess.

CHAIRMAN BONACA: Recess. Thank you. We are going to recess the meeting until 1:00, and at 1:00 we will be here, we will give the address to the Commissioner -- or the Chairman.

MR. GRIMES: The staff will come here at 1:00.

CHAIRMAN BONACA: Yeah.

MR. GRIMES: Mr. Matthews and some others who wanted to attend are going to be in the Commission hearing room, but we will let them know that as soon as the Chairman's address is completed, that we will begin the staff presentation on the existing program issue.

CHAIRMAN BONACA: Okay. Thank you. With that, we will take recess now until 1:00 p.m.

[Whereupon, at 11:25 a.m., the meeting was recessed, to reconvene at 1:12 p.m., this same day.] .

AFTERNOON SESSION

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[1:12 p.m.]

CHAIRMAN BONACA: We are resuming the meeting of the Subcommittee on Plant License Renewal, and for this afternoon we have two presentations, one from the NRC staff regarding options for crediting existing programs, and then we will have a follow-up presentation on the same subject by NEI. So with that, I turn to Mr. Christopher Grimes.

MR. GRIMES: Thank you. As you know, on June 3rd of this year, the staff sent a memorandum to the Commission on a policy issue associated with crediting existing programs for the purpose of the license renewal review, and this paper was stimulated by issues that were raised going back to a January Commission meeting on regulatory improvements concerning the scope and depth of the staff's reviews and the basis for developing findings related to the demonstration of effectiveness of aging management programs. And that issue is described as best we could in SECY-99-148.

And so we are going to basically summarize the material covered in that Commission paper and present the basis for the staff's recommendation on how to treat this matter for the purpose of at least in the ongoing -- or excuse me, the current generation of license renewal applications.

And the presentation is going to be made by Dr. Sam Lee, who is a Senior Materials Engineering in the License Renewal and Standardization Branch. He brings to bear a wealth of experience in the development of the Standard Review Plan, as well as the review of the industry reports related to aging management programs.

DR. KRESS: Are we talking about programs that are both required by the regulations and voluntary also?

MR. GRIMES: We are going to explain that in the context of the scope of the rule.

DR. LEE: Like Chris indicated, my name is Sam Lee, I am from the License Renewal and Standardization Branch. I am going to talk to you about the issue of credit for existing programs for license renewal.

Okay. This is the issue statement. To what extent should the staff review the existing programs relied on by the license renewal applicant to manage aging for license renewal? And NEI submitted letters in March and in May on this issue, and NRC license renewal steering committee have met with NEI to discuss, and NEI is going to make a separate presentation after the staff's presentation today. And this is the issue the way we understand it.

DR. KRESS: Just to what extent you should review these programs?

DR. LEE: That's correct. That's the way we understand it. And NEI indicates that existing programs are subject to the regulatory oversight and NRC inspections, and the staff should not review existing programs for license renewal to any extent. And the staff has evaluated this issue and have prepared SECY paper 99-148 to discuss options and we

made a recommendation, and that is the subject of today's presentation.

MR. GRIMES: Sam, before you leave that slide, I would also like to emphasize that we are going to use the term "manage aging effects" or "aging management" in a shorthand way and it will represent this statement that talks about reasonable assurance that programs will be effective in managing the effects of aging on functionality of structure systems and components for the period of extended operation.

It is hard for us to say that over and over again, but it has to be understood that it is in that context that we talk about aging management.

DR. LEE: During the license rulemaking the Commission determined that license renewal is based on two fundamental principles. And the principles says the process is adequate and the current license basis will carry forward into license renewal, with an important exception, which is the effects of aging on function of equipment in the period of extended operation. Basically, aging management, like Chris indicated, this is a long -- long term, but it is basically aging management.

DR. KRESS: Is that quoted directed out of the statements of consideration?

DR. LEE: Yeah, this is quoted right from the SOC except I truncated it, it goes on a little about safety and public defense and all of that over here. And then there is a little more about, to the same extent, about the -- you know, regarding the current operating term. So it is a little abbreviated.

So, based on the principle, now the license renewal rule focuses on aging management. And in the rulemaking, the Commission determined that the functions are active and are short-lived, the equipment is assured by the existing process and existing programs, and they are not subject to aging management review for license renewal. So the Commission took this off the table.

But then the Commission also said that for the aging effects on the passive long-lived structures and components are less apparent and they are less monitoring experience with this equipment. So the Commission said the license renewal rule requires an aging management of passive, long-lived structures and components.

And if you look at the SOC, it will talk -- it will have places where talk about the process is adequate, the existing program is adequate. But if you look into it, it regards the active or short-lived structures and components.

Based on the rule, this is what the staff sees its jobs to be, is to review the applicant's demonstration that aging is being managed for passive and long-lived structures and components. And to do this, the staff, reviewed the programs relied on by the license renewal applicant to manage aging, and that includes existing programs.

But when the staff review existing programs we find additional activities need to be performed for the license renewal period, for the period of extended operation, which is between 40 and 60 years, which are not required for 0 to 40.

This creates a logic situation, where some activities are required after 40 years, but not required for the first 40. However,

aging is a continuous process. So, there is a little discontinuity there based on the review.

And I will show you some examples of what we found in terms of the aging management program's activities. These are the aging management programs identified by the first two license renewal applicants.

This is Calvert Cliffs, this is Oconee, and this is a pie chart of the aging management's programs activities that the applicant's rely on for license renewal. And this piece here is the existing program, 70 percent. So for Calvert Cliffs, about 70 percent of existing programs do not require any modification for license renewal. However, there lie 30 percent, they represent existing programs that need to be modified or new programs.

And for Oconee, the numbers are 60 percent or so for existing program that don't require modification, and about 40 percent of programs that require modification or new programs. The numbers inside the pie chart, these are the actual kind of programs activities and you will see that they kind of, you know, differ quite a bit from plant to plant.

It is because in part Calvert Cliffs counts a lot of procedures and Oconee tends to count at a high level in terms of programs. So you see a high count from Calvert Cliffs. And another thing I see is when certain things are identified for -- in terms of aging management for license renewal, Calvert Cliffs tends to modify existing programs to address those issues. So you see a bigger chunk of modified existing programs, a small chunk of new programs. But go to Oconee, when they fact the same situation, they tend to call them new programs. They tend -- but which is -- it is a matter of how, you know, which bin you put it into.

But if you look at this, there are several observations you can make. The first observation is most of the programs, almost all the programs relied to manage aging for license renewal are existing programs. That is one observation. And the other observation is that there are about 30 percent or 40 percent of the programs, existing programs that require some modification or new program. This is the contribution of the license renewal effort. And there is, however, there is 70 percent over here on this side. These are existing programs that do not require any modification. Okay. So, but to get to this 30 percent, you have to review the whole, to decide, you know, which is the 30 percent.

MR. GRIMES: Sam, I would also like to point out that yesterday, you know, Mike Tuchman raised the point about some of their new programs are one time inspections, and they contrast very differently in terms of one program may be something that is done on a daily basis over the life of the plant, and, you know, these license renewal activities may be one time inspection during the entire life of the plant or a 60 year period.

So, trying to count programs can be misleading if you don't understand what you are counting.

And one other thing that I want to emphasize is that these program counts do not align themselves to systems or structures or

components, or aging effects. What constitutes an existing program for the purpose of taking credit for managing effects means different things to different people, and by itself is a difficult thing to articulate.

DR. LEE: From now I will use numbers like 30 percent, I will mean the chunk here, and then 70 percent will be the existing program that do not require modification.

Here are some of the examples of acceptable programs we found from the Calvert Cliffs and Oconee review. We put it in the three categories, the existing program not requiring modification, existing programs requiring modification, and new programs.

After we reviewed the application, okay, we found programs that are acceptable without modification. And EQ is a particular example. In this case we have extensive interaction with the applicants. We have asked for additional information and they have submitted it. And then we look into that program into great detail, and then we finally came to the conclusion EQ program would manage aging for license renewal. And there are other examples, and I will go into this in more detail in the next couple of slides.

Some of these existing programs require modification, just simple administrative controls. That is programs are not formally controlled, they are just modified to be controlled. But I will show you some other more technical programs here.

Okay. This is the small bore piping example. In the inservice inspection program, the ASME does not specify inspection for small bore piping for internal cracking. And there is ongoing industry initiative to address this issue, and the code has activities going on, and the staff had generic activities going on to try to address that. And in particular, some of the staff activity related to the high pressure injection line crack due to thermal fatigue.

In license renewal, we are looking for a program to manage aging for the equipment. So in this case we have small bore piping and there is no existing program that would -- the existing program does not really address that. So we asked the applicants to provide us a program so that we can determine that the cracking of the small bore piping would be managed.

And one applicant proposed a one time inspection to verify that that the integrity of the small bore piping will be maintained and the staff has accepted that, and we are resolving this open item with the other applicant.

These are examples on the reactor vessel internals. The code does not specify inspection of the internals to detect cracking and there are ongoing activities, especially at the boiling water reactor owners group, the BWR owners group. They have a very active program to address the internals, but in this case the staff needed to determine how the internal cracking will be managed, so the staff has proposed a program similar to the owners group to managing aging, and we are resolving the open item with the applicants.

And our example is the pressurizing, the inside of the pressurizer is clad and their operating experience at one sight that it could crack and penetrate into the base metal. And Section XI does specify inspection for the cladding for cracks. So both applicants have

proposed a one time inspection for the cladding and the staff has accepted that.

This is the reactor vessel surveillance program to monitor the extent of neutron embrittlement of the vessel and Appendix H and 50.60 requires monitoring, and it references a standard. However, the standard is designed for 40 year plant operation. It says you put so many capsules, you take them out at certain times, but they all key into 40 years of operation.

So both applicants have proposed modifying the surveillance program to collect data through 60 years of fluence and the staff has accepted that.

Here is an example of a new program. Buried piping coated and they are wrapped in protective, I guess, adhesive tape before they are buried, however, they might still be subject to corrosion. So one applicant has proposed to sample some locations by actually digging up the buried pipe to look at how good is the coating, the wrapping, and the we are resolving the open item with another applicant.

So, based on what we looked at in terms of pie chart before, there are like 70 -- actually, almost all the programs are existing programs for license renewal. Okay. So, there is efficiencies to be gained in the license renewal process if we can credit existing programs. So the staff and industry are in agreement in terms of somehow providing credit for existing programs to improve the process.

In SECY-99-148, the staff described three options. Okay. The first option is the staff would not review existing programs. NEI indicates that this option is consistent with the rule. However, the staff believes that this option does not give us a basis for concluding that action should be taken to manage the effects of aging. So because of this option, the staff believes you need a rule change.

Okay. Under this option the staff would rely on the current record of the process.

DR. SHACK: Does OGC concur with that opinion?

DR. LEE: That is OGC's opinion. I have OGC present if you want to direct questions.

DR. KRESS: The whole department?

[Laughter.]

MS. MOORE: OGC does concur with that. It is our opinion.

DR. LEE: That is Janice Moore from OGC.

So we go with this option, then we will be relying on the current record of the process to address the 30 percent, so to speak. Okay. And if we do it this way, then one of the things that we have is that we would have removed the discontinuity at year 40. Okay. So we go -- so we identify issues in the operating reactor, you just carry forward into license renewal, so it is just a continuous process, no discontinuity of, you know, new aging management programs that suddenly appears at 40, at year 40 with this option.

Under this option --

DR. SHACK: In this case all potential new aging management programs would have to go through the backfit rule?

DR. LEE: That is correct, in the zero to 40 years. If we identify issue like -- take small bore piping. Okay. If the staff

decides to have a one time inspection for small bore piping because there are cracks, or potential for cracking, that may go for a backfit analysis for 0 to 40. Okay. To make our opening, we have to do it, and then we will carry that into the license renewal period as part of CLB, the current licensing basis.

The other way we are doing it for license renewal is we identified for year 40 and beyond and then we do backfit the other way to set -- tend to inspect small bore piping for 0 to 40.

Under the option the applicant will identify a component and then they will state the existing program. But then the staff would not review their existing program.

Okay. So in the application, the applicant would still say here is a component, it is subject to aging, and here is the existing program, okay, but the staff is not to challenge that program.

And we said earlier is there are 30 percent of these additional activities. Okay. Under this option, you might not get there, for license renewal, under the license renewal review. Okay. You will try to get it through the process for 0 to 40 and then carry forward into license renewal.

Okay. With this option, okay, I think we would significantly reduce the staff and the applicant's effort, the burden for the license renewal review, because the great majority of programs, existing programs, the staff would not review it. There won't be much left for license renewal review, so the burden would be greatly reduced. However, now you are relying on the regulatory process to catch up with aging effects and management, and the process, the regulatory process is more reactive, so you want for something to fail or degrade and then you take backfit action to try to address that, and then you carry that into license renewal. So you might not get all 30 percent that is I indicate.

The second option is to actually amend the rule, to exclude structures and components subject to existing program from the rule itself. So you go to rulemaking and clearly state that if you have a component that is subject to existing program, and the rule it defines what they are, and then they are out of the scope of license renewal or they are not subject to aging management review.

So if you contrast these with option one, option one the applicant in the application would say I have these components and they are subject to aging, these aging effects, and here is my existing program, okay, in the application. The staff does not review it, but in the application, they still say that.

In here, Option 2, the applicant does not say that because that component is subject to the existing program, so they are not in the scope of the rule or they are not subject to aging management review for license renewal. So if the staff is not to review the existing program anyway, why do we need the applicant to send it in? So Option 2 just said don't even bother sending it in.

Here is Option 3 and this is the staff recommended approach. We will focus the guidance in the Standard Review Plan for license renewal and with this option we don't need a rule change, and the Standard Review Plan will focus on the 30 percent. There is no benefit

gained repeatedly, you know, reviewing that 70 percent, going over every plant that comes in.

And then based on the lessons learned and then we are going to improve the Standard Review Plan. Okay. This is more like as we learn, we built in more efficiency. We put all that into the Standard Review Plan. And we will involve the public in terms of developing the Standard Review Plan and all the supporting documents so people know, you know, where we are coming out and they can participate.

The staff has started called a Generic Aging Lessons Learned, GALL, it is to evaluate the existing program. This is basically -- this is a generic evaluation of the whole pie, if you remember the pie chart. Okay. And it will come out and then they will say, okay, for this 70 percent, they will manage aging and here is the basis. It lists the evaluation. And they will point out this is the 30 percent that you need some modification or new program, and the Standard Review Plan will reference GALL and actually provide guidance in terms of how to look at the 30 percent. Okay. So the reviewer will not spend time on the 70 percent, other than to check, make sure that the applicant is actually referencing the relevant program.

In this way the safety is maintained with a focused review for license renewal. You actually look at all the programs and then you go right after the 30 percent.

And this will reduce the unnecessary burden because the staff focus is really on the 30 percent, not on the 70 percent which will probably come out okay anyway. And then the GALL report and SRP will point out where you need to augment or the 30 percent. With this option you have the discontinuity at year 40, okay, because you do identify 30 percent of the programs are such that need additional activities after year 40. Okay. And then we have to deal with that in terms of backfit to see what we want to do between 0 and 40. Okay. So that is a distinction between this and Options 1 and 2.

We just want to show you a page of the draft GALL report. This is in your handout but you can read it. But I just wanted to indicate what was going on here. Here we start with a component, in this case is the reactor coolant pump, and then the aging effect is loss of material due to boracic erosion and the existing program is the applicant's response to NRC Generic Letter 88-05. And the staff has gone through and reviewed the attributes of the program in accordance with Generic Letter 88-05, and then we match the program attributes, and then with the evaluation, this is basically a generic evaluation of the program.

And then we come to a conclusion, say this adequate and no further evaluation is needed. So the intent is to capture this in the Standard Review Plan. So in the Standard Review Plan, when you come to this component, that aging effect, and if the applicant references this program, there is no further evaluation needed.

However, he also shows in our component, this is actually the same component, the pump, and the aging effect is thermal aging of clad stainless steel and there is no generic existing program. So now you need to do further evaluation. So this is the -- in the 30 percent part. Okay. And the Standard Review Plan will lay out what you would

look for, okay, to manage thermal aging of clad stainless steel.

Okay. So the review effort would be up here and not here. So the 70 percent, the staff will not spend the resources chasing after the 70 percent, but you will be focusing on the 30 percent.

DR. KRESS: There was no Option 4?

DR. LEE: Right now? Not in the SECY paper.

DR. KRESS: To include that 70 percent if needed. I mean that is a viable option, isn't it?

DR. LEE: Yes. Yes. We discussed that too, yes.

Basically, that is what we are doing right now. We are doing the -- for BG&E Oconee, we look at all the programs. That is Option 4.

DR. KRESS: You are looking at all of them, right now for the specific ones.

DR. LEE: Right now we are doing Option 4. Yes. Yeah. For these two plants.

Okay. Here is the staff recommendation and the staff will review the existing programs, okay, the whole pie. Okay. And we believe this will maintain safety because you look across all the programs and this is workable because we already have done BG&E Oconee this way and it is workable.

And we recommend Option 3 to develop the GALL report and improve the Standard Review Plan. This will focus the staff, you know, resources on the 30 percent where you get most of the safety gain.

And right now we have done a B&W plant and we are doing a B&W and a CE plant, we will, and we still haven't seen a border yet, and the other window. So we suggested we will revisit this issue after we review more plants and we will propose additional process efficiencies at that time. So when we see opportunity to improve and we will factor that into the SRP, cover the learning process.

That concludes my presentation.

DR. KRESS: In order to determine the 30 percent, you have to review all the programs, decide which ones --

DR. LEE: That's correct. Yes.

DR. KRESS: -- need modification?

DR. LEE: Yeah. And we are recommending do a generic review through GALL to determine that.

DR. KRESS: You think you can do that with a generic review as opposed to plant-specific?

DR. LEE: We think we can, for certain existing program, if they are standardized. Okay. If not, then we will put in the 70 percent bin -- I mean we will put in the 30 percent bin, yes.

DR. SHACK: The review is actually by system component and degradation phenomenon, right?

DR. KRESS: That is what I was --

DR. LEE: That is correct.

DR. SHACK: I mean that is the way -- and then this --

DR. LEE: From system and then you go down to structures and components, you manage --

DR. SHACK: So you are really going through everything.

DR. LEE: Yeah.

DR. SHACK: And then you go over, you look it up in your

GALL table to see whether it is adequately addressed or not. So in a sense --

DR. KRESS: It is a review of everything.

DR. LEE: That's correct. Yeah.

DR. SHACK: -- it is a review of everything.

DR. LEE: I guess, Dr. Kress, the way I understand it is what happened, the programs are not generic across the industry. Okay.

DR. KRESS: Yeah, that was the other part of the question.

DR. LEE: Then in that case then you just put in the 30 percent bin and then you look at it on an individual basis, until we can figure out, you know, what was the best way.

CHAIRMAN BONACA: But the option you recommend would encourage in fact treatment of issues under certain programmatic similarities, I guess.

DR. LEE: Yeah, we are looking for program attributes. Not really how you enter, what procedure you use and such-and-such. So we don't get into that detail.

CHAIRMAN BONACA: So it would encourage a more standardized approach to the applications and to the review?

DR. LEE: That is correct, yeah. I guess if you look forward to what we are looking for in the 30 percent, then ask the applicant to design the programs.

DR. KRESS: So your recommendation is that you feel that Option 3 is a good balance to be sure you capture all the needed reviews that would not provide undue burden.

DR. LEE: Yeah, like we reviewing the same program, you know, the hundredth time and the hundredth applicant comes in.

DR. KRESS: Just wasting -- just wasting your time.

DR. LEE: That's right. Yes.

CHAIRMAN BONACA: But you should have included Option 4.

DR. KRESS: Well, it ought have to be in there.

CHAIRMAN BONACA: Not just to have a spectrum of understanding. All right. Now, we are operating on Option 4.

DR. LEE: We are doing Option 4 right now for BG&E Oconee, yes. Yes. I understand.

DR. SHACK: Yeah, but plant 25 though, Option 4 starts to look --

DR. KRESS: Starts to look pretty dreary.

[Laughter.]

DR. KRESS: Are we supposed to write a letter?

DR. SEALE: We are supposed to write a letter on this.

CHAIRMAN BONACA: Yes. We have a second presentation on this issue now from NEI.

DR. KRESS: We are going to hear it from NEI's viewpoint. Good.

CHAIRMAN BONACA: Okay. Any further questions for Dr. Lee?

[No response.]

CHAIRMAN BONACA: Thank you for your presentation.

DR. SEALE: Don't go away.

CHAIRMAN BONACA: Stay around.

MR. WALTERS: Good afternoon. My name is Doug Walters, and

I am with the Nuclear Energy Institute and I have responsibility for license renewal. I don't have a formal slide show for you, but I did want to just hit a couple of salient points. I will use a couple of overheads that you have already seen in Sam's presentation.

I think, first of all, this issue of existing programs, in our view, needs to be segregated. I think there is a technical aspect of the question and I think there is a process aspect of the question, and in our view -- let me talk briefly about the industry process.

You heard a lot of discussion about this 30 percent of programs that have been identified. What this is intended to show is the process that BG&E and Duke used, and the process that is outlined in our document NEI 95-10 starts with the entire plant. And you take the plant systems, structures and components, and then you apply the scoping and screening criteria that are delineated in the rule. And out of the bottom of that hopper you get the long-lived passive structures and components that require an aging management review.

The next step in that process is to identify the functions of those long-lived passive structures and components and the aging effects that could be detrimental.

The next step, and I think this is the one that is not understood is that the applicant will identify programs and activities that manage those aging effects to ensure functionality. That is a very rigorous, thorough review.

I think you may have heard yesterday, as part of the discussion on the Duke application, 60,000 man-hours. So this is not an exercise of the industry wanting to say I have an existing program, thank you very much. There is a very robust process that takes place, either at the plant site or at the corporate office that looks at existing programs and activities, and we call it mapping, and mapping that program to that aging effect to ensure the functionality of the long-lived passive structure and component.

Now, when you do that mapping, there are likely to be three results. One will be that the program already exists and it is adequate as is. An example of that might be implementation of the EQ rule. You may find that you have to modify an existing program, and you may find, in fact, that you have to establish a new program.

Let me talk a little bit about that. You have seen this pie chart before, mine is not quite as detailed, but this is the typical results. Obviously, we are finding the majority of the programs and activities credited for renewal already exist. There is a certain piece of the pie that is modified programs, and then, of course, we have some new programs.

You heard a lot about that 30 percent. Let me talk to that issue for a sec. because I think that is a tad misleading. The reality is that the modified programs are existing programs. And I think you will find if you look hard at the details of the BG&E and the Duke application, that the modification was merely to put into an existing program some language that captures what the licensee was already doing. And they did that for completeness or because they thought that is what the reviewers would want to see.

It is not a modified program in the sense that the program

was deficient, it is a modified program in the sense that verbiage was added. Maybe the scope was increased, maybe there are some components that were not covered by an existing program, that have aging that needs to be managed, and the applicant said, well, gee whiz, that is no different than this other component that is covered by program X, I am going to put that in program X.

The point is the adequacy of the program is not challenged. It could be in some cases, I can't say that 100 percent of that area called modified is not in that latter category, but I will submit to you that the majority -- and in BG&E's case, that number is about 101 -- I will submit to you that a majority of those 101 programs are already existing. They adequately manage the aging and the modification was nothing more than the addition of some language to capture an activity that is already being done.

The new programs, let's not be misled on those either. A lot --

DR. KRESS: Suppose the review that NRC is talking about is just to validate that statement. I mean that is the extent of it, just to look --

MR. WALTERS: Right.

DR. KRESS: -- and see that, yeah, that is adequate.

MR. WALTERS: Fine.

DR. KRESS: Fine?

MR. WALTERS: Yeah. That is a good point. I don't -- I want you to, I hope, get from my remarks that the review, and you saw the language, it says we need to -- should the NRC do a review, they can do the review. Our point is that our process, the applicant has already done that review, and it is robust and it is thorough. Why do we need to now have another review?

And I say that with the -- at least our interpretation of the rule language, that you saw in one of Dr. Lee's slides, that said the regulatory oversight process is adequate, ensures that the CLB continues to protect public health and safety.

The 30 percent, again, I don't think we are challenging the technical adequacy or the adequacy of that program to manage the aging, it is already doing that. We are merely adding scope or we are putting -- we are putting language in there to tell the, let's say the operator that when they walk, do their walk-around, look specifically at valve X. Whereas, it might -- the procedure might say, go into the room and look. Those are the kinds of changes that represent modified programs.

And our paper, which is included in the SECY, I think would support what you are saying and that is, if it is a modified program, yeah, you need to provide more detail in the application and maybe there is a little more information that is needed on the adequacy of the program, because you are adding scope.

Similarly, though, on the new programs, I think as you heard, those are one time inspections. And we agree that -- and our paper I think supports this, that if you are in that yellow piece of the pie, that is where the real focus is. What is new?

Presumably, if it is a new program, it means there is some aging effect that is not currently being dealt with, or the aging effect

has somehow been determined to be different. The rate of the aging perhaps is shown clearly to be different in years 41 and beyond, and you need a new program. That is where the focus ought to be, that is where we ought to provide the most information, because the staff has not seen that before.

But to say that -- and, again, the point is these 30 percent were identified by the applicants. So our process identifies that 30 percent. Now, I might stand corrected and say it was 25 percent, there might be 5 percent of the 30 that the applicant decided for expediency's sake it was the right thing to do, but it is not like our process only looked at the 70 or 90 -- this piece. Our process identified those things. So the review is robust.

And the important point I think in that statement is that if you then say that 70 or more of those programs already exist, and they are part of the CLB, why doesn't the CLB make the conclusion that they are adequate? And we think it does. We think that is what the CLB does.

CHAIRMAN BONACA: Just another question, however. Clearly, you are referring to two reviews which went under Option Number 4 that Dr. Kress identified. So now I am trying to understand what will happen if we said, okay, you are right. So, therefore, an applicant will come in and probably would not go through the review of all those processes that are already existing. And so this extensive review would be significantly reduced.

MR. WALTERS: No, this would not change. The difference would be how much information do you put in the application. You saw that environmental qualification was a program that was found acceptable. That is true. You may want to go look at the BG&E application and look at the significant amount of information that needed to be provided to quote-unquote "demonstrate" that a program that is implemented to comply with a regulation is adequate, and they said there were no changes needed.

So to --

CHAIRMAN BONACA: So the issue is demonstration?

MR. WALTERS: I'm sorry?

CHAIRMAN BONACA: So the issue really is demonstration?

MR. WALTERS: Well, that seems to be the word that is hanging a lot of us up is, how do you make that demonstration? And I think, simply stated, our view is that if it is a CLB program, that demonstration has already been made.

Now, the staff might tell you, well, we don't know how you implement 50.49. Well, I would submit to you that is a bigger issue than just license renewal. And if, in fact, that is the case, we ought to see some action so we can right that -- r-i-g-h-t.

This process will not change. We think this is the right process. We think that you have got to go through this mapping and assure yourself that in fact an existing program is managing the aging, even though you know that it is.

We have an example in our paper on Generic Letter 89-13, heat exchanger fouling. The Generic Letter provides a program that the agency says is acceptable for managing the fouling. My question is, we

will go back and do this process if we elect to include heat exchangers in the scope and we identify fouling as the aging effect, and we will do this mapping.

But I should not have to regurgitate my response to the Generic Letter. I should be able to just say I have implemented a program consistent with that which you said was okay in Generic Letter 89-13.

And so that, you know, to me that is the issue that we have. We are not trying to get rid of the process that we do. And I think if you read the SECY, all the examples -- and some of those were touched on in Dr. Lee's presentation, small bore piping, et cetera, the SECY suggests that all those additions were identified by the applicant, that the applicant said they needed to do the one time inspection. So the process gets you the 30 percent.

CHAIRMAN BONACA: Would Option 3, however, bring some -- you know, come close to what you are proposing?

MR. WALTERS: Well, it interesting to me that Option 3 is already in place. If it is an option, why is the GALL activity underway? I don't know, maybe -- I raise that because maybe there is some other purpose for doing that.

It could, but I think what you see in the GALL report, if you -- the sample, I think we would agree with what is in there, except when you look at the column that says "technical evaluation" or "justification." I don't have it in front of me, but I would -- I think our view is that that column is really completed because it is part of the -- because the program is part of the CLB. That is what we think the Commission found when they promulgated the '95 regulation, was that the CLB will take care of it.

And, again, I go back to our paper that is in the SECY, we do believe there is some graded approach there. I mean clearly you have got to do the mapping and make sure that the program does in fact cover the aging. But if it is part of the CLB and it is required that I implement that program because of a regulation, let's say, what is difference about renewal?

Again, if you look at the examples, there is a lot of language that says you have got to do this for renewal. And our question is -- why? What is the standard that was applied that now says this is a problem for renewal, but it is not a problem today? There may be situations like that, but I don't think that should be the going-in-assumption. Our going-in-assumption is that we do a very good job of managing aging today.

CHAIRMAN BONACA: Of the existing -- of the modified programs, how many were they modified because the staff reviewed and proposed changes that were accepted?

MR. WALTERS: I don't know the answer to that. But I would -- I don't think it is -- if you consider the BG&E breakdown and there were 101 modified programs and 16 new programs, my sense is that a majority of those, if that is a total of 117, I would say a majority of those were identified by the applicant. I could be wrong, maybe the staff has got a different --

MR. GRIMES: This is Chris Grimes. Those were all

identified by the applicant and for those, the staff identified 48 issues that either had to be resolved or confirmed.

DR. KRESS: Let's consider this GALL report, the first item on there was the reactor coolant pump, and the issue was thermal aging causing embrittlement. And it says that there is a plant-specific aging management program, which implies to me that the different plants may treat this in a different way with their management program. Not only that, if we are talking about thermal cycling aging, thermal aging, the number of insults that thing gets over its lifetime depends on its lifetime. So the aging management program that a plant may have had, there may be something magic about 40 years, if -- you know, if the 40 years was where you counted the number of cycles it got, too.

So, the question I would have is, there is possible something magic about 40 in terms of passive long-lived components that may require things to be looked at and reviewed.

MR. WALTERS: Yes.

DR. KRESS: But that is what you do when you go through the screening process.

MR. WALTERS: You just did it. So if you were the system engineer at the power plant, and I was responsible for renewal and I asked you that question, -- hey, how are we looking here? Do we have something that is going to manage this effect?

DR. KRESS: The managing may very well be, well, our calculations say that it can't stand this for another 20 years or whatever, so we are going to either reduce the cycles, replace the pump or we are going to watch it very closely or something to manage.

MR. WALTERS: Right.

DR. KRESS: You know you have got a problem and you manage it.

MR. WALTERS: Yes.

DR. KRESS: And that will come out in your application.

MR. WALTERS: Right. I would call that probably a modified.

DR. KRESS: That would be a modified.

MR. WALTERS: Yeah. And I would have an obligation to talk about that in the application and say what I am going to do.

DR. KRESS: It seems to me like the staff would have an obligation to look at it and say, yeah, we think that will probably do it for you.

MR. WALTERS: I agree.

DR. KRESS: I mean they would have to review that to some degree.

MR. WALTERS: I agree.

DR. KRESS: Okay.

MR. WALTERS: I agree. And I would also clarify that we don't object to the staff looking at any program.

DR. KRESS: Yeah.

MR. WALTERS: But I think the difference is, if it is a program that is existing, that I implement, let's say, because the regulation says I need to do that, then ask me the question under Part 50.

DR. KRESS: Well, what I would have said was Option 3 sounds

pretty good to me, but what NRC needs is a screening process on Option 3 that asks the question -- why was this program modified, or to what extent was it modified? And then grade my review based on that. And that may get you all the way down almost to looking at just new programs.

DR. SHACK: But the staff also has to verify that your mapping is correct.

MR. WALTERS: Sure.

DR. KRESS: Well, yeah, they will do that as part of the licensing renewal application, I think.

MR. WALTERS: Sure. We agree with that. They have to be satisfied that you have mapped correctly, you have captured everything. But they -- maybe I am leading you, I don't want to do that, but let's use another example.

I mean the heat exchanger example, I think, you know, we would still go back and do the mapping. We have got fouling, you know, you can pick whatever aging effect. You know what the function is. Okay. I would go back and look at the program that I said I was going to implement in my response to that Generic Letter, and I would -- I have the obligation under this process to ensure that that program is managing the aging.

I would look at maybe the operating experience of that program. I am sure the NRC has inspected it somewhere along the line. And I would ask the heat exchanger engineer, okay, how do we look? Are we managing the aging, and is that going to be good enough in the 40 year -- excuse me, in the renewal period? The answer is yes. One outcome, the answer is yes. Fine. I will continue to do my Generic Letter 89-13 program.

Why do we have to go back and revalidate or rejustify that program merely because we are going to operate one more year? We think that is what the CLB does. That is why the Generic Letter was issued. There was a concern about the fouling. It didn't say we are only concerned for the remainder of the life, or for the remainder of your 40 year license.

Part 50 doesn't expire at any given time, it expires when you shut down, I suppose. Some might, you know, argue that. But -- so when the Generic Letter was issued, it wasn't issued with, well, we only are concerned about from now until you reach the end of your 40 year license. We are concerned about the aging, and the effect of that aging on the heat exchanger performance and here is a program that will take care of that. And that program should be sufficient whether I operate 30 years, 40 years or 60 years.

And if we are not satisfied with that when we go through the process, then we ought to say that in the application. If the agency believes that that program is no longer the appropriate program, -- maybe they have new information that suggests the aging is somehow different. Okay. Come back to me under Part 50 under my current license and tell me that.

Why are we using 54 as the arena to showcase these enhancements are needed? I mean in some cases that may be true, but I think in that example, ask me question under Part 50, don't make me do

something different for renewal.

DR. SHACK: That is almost inherent in an aging process, is that you can ignore aging processes for a certain amount of time, say 40 years, and, you know, they just -- of their nature, they become more important after a certain amount of time. And so, you know, there is no magic about 40 years.

MR. WALTERS: No.

DR. SHACK: But it is certainly true they do become more important with more service.

MR. WALTERS: Sure, no question aging can be cumulative. All I am saying is that when I implemented that program in response to the Generic Letter, I did it to take care of an aging concern on the heat exchanger. And if my judgment is, in going through this process and talking to the heat exchanger engineer, that that program is doing an adequate job of managing the fouling, why would I do anything different?

DR. SHACK: You presumably wouldn't.

MR. WALTERS: Right.

DR. SHACK: You would have to just convince the staff that that is true.

MR. WALTERS: Well, what would the standard be that they would use to determine that it is not?

DR. SHACK: Whatever you used to conclude that it was fine. If it was good enough to convince you, it is presumably good enough to convince them.

MR. WALTERS: Well, I would submit to you that if they want to ask that question, they certainly can. But --

DR. SHACK: Well, the question is, how much do you need to demonstrate and how much do they need to inspect, I guess?

MR. WALTERS: Well, they can inspect all they want.

DR. SHACK: They can inspect all they want. But how much do you need to demonstrate?

MR. WALTERS: I ought to be able to say what I just told you. I looked, I asked, and my conclusion is that the program that --

DR. SHACK: Trust me.

MR. WALTERS: No, it is not trust me. No. It is not. It is trust me if it is a program that I implemented because I have a plant-specific problem. But if it is a program that the agency has said, you ought to implement this, and we would find that acceptable, I don't think it is -- I don't think it is good regulatory practice to come back and say, just because you are going for a renewal, that program is now suspect and you have to come in and tell me why it is okay.

Why do I have to do that? I will tell you that I looked at it. I will tell you that I did the mapping. I will tell you that the operating history shows that the program has been effective. What more do you need to know?

You told me to implement the program. You identified the concern. You said that the fouling was a concern for heat exchanger performance, and you even gave me the program, thank you very much, in the Generic Letter that you said would be adequate for dealing with that

aging. I have done that, I have implemented that.

DR. KRESS: This seems to tell me that all of the plant programs, aging programs or whatever, are there because they are required by some regulation. I was under the impression that a lot of those were done by the licensees just because they thought they were needed, they weren't required by regulation.

MR. WALTERS: I agree.

DR. KRESS: If the program has to be of that nature, then it seems like NRC has some sort of obligation, since they haven't specified the program, and it may be different for different plants, it may be plant-specific. They seem to -- in that case, it is not a "trust me," it is a "trust me" in that case. And for those, if it is not required by the regulations, the program, then they probably have an obligation to come look at it, or at least see if it is adequate or something.

DR. SEALE: And that is disturbing, because what that -- the message there is that if you volunteer some action that will respond to your perception of an aging problem, I am going to put some hurt on you.

DR. KRESS: That is always a problem with volunteer programs.

DR. SEALE: Yeah. Yeah. It is kind of interesting to me. It strikes me that we could in all candor accept the idea that the original version of NRC generated requirements, memoranda, messages about aging were all initially put together under the limitations implicit in a 40 year license lifetime as being a measure of what the objective of the aging program was.

And it doesn't seem to me unreasonable to make the case that those programs, those measures all should be scrutinized when one moves one site objective to 60 years. I mean 40 and 60 is, under the regulatory process as it exists in this country, a discrete watershed between the two.

The thing that bothers me is, you say, well, do it under Part 50. I can imagine the hue and cry we would hear if, as a result of going through ten of these license renewal processes, the NRC, in its desire to collect and learn from the lessons that were in those first ten, suddenly came out with another five requirements under Part 50 for license holders to do some aging management programs, and then those utilities who said, I am not going for licensee renewal, and here you are, you are hanging this new aging management program on me. I can hear that response too.

You know, there is a little bit of wanting it both ways here.

MR. WALTERS: Well, I appreciate that feedback. I hope we are not trying to get it both ways. I think all we are trying to do is say, you know, we need to focus renewal on the right thing. And if the result is that 70 percent -- and I would argue that it is even higher than that when you include the modified programs, are already existing and that, certainly, a large portion of those are CLB programs that can be tied to some -- not reason necessarily, but some regulatory document that we have had in place for, you know, for a long time and we have relied on it, and it works today. I am not sure I understand what is so magic about moving into a year 41 or 42 that now should call that

program into question.

And I don't see that. I mean we know there is programs I think that were implemented in year 5 of operation of my plant, that in year 10 I decided I needed to change.

So I think all we are trying to say is we shouldn't use renewal as a playground for imposing new requirements that otherwise can't be imposed in the current term.

And I will tell you, I would think that the industry, if there is an aging effect that somebody believe is somehow different or unique in the renewal period, I would like to know about that now, and I would like to take care of it today.

But the results say we are not finding that.

CHAIRMAN BONACA: Let me ask a question now. The staff indicated that there are three options, and Option 1 and 2 would involve a change to the rule in order to accommodate your perspective. Okay. And the reason is that they feel that under the kind of interpretation that you are providing, a demonstration is not possible on their part. Do you agree with that?

MR. WALTERS: No.

CHAIRMAN BONACA: Okay. I would like to hear that.

MR. WALTERS: Well, I think we interpret the principle, the rule, which is on Slide 3, that says, "with the possible exception of detrimental effects of aging." What does that mean?

Plants -- you know, the functionality of certain plant systems, structures and components. Well, the certain plant systems, structures and components are those that are long-lived and passive. We agree with that.

The regulatory process is adequate to ensure the licensing basis provided an acceptable -- I think it is provides an acceptable level of safety. So we think that means that the CLB is adequate if you can show, and do a mapping that says it is managing the aging today.

And --

DR. SHACK: The commission concludes that a generic exclusion for passive structures and components is inappropriate at this time.

MR. WALTERS: Right. And that is why you do this, because if you had the generic exclusion, you wouldn't even do this.

DR. SHACK: No, the generic exclusion is for active components for which you assume the CLB does in fact cover all the aging.

MR. WALTERS: I understand that. I agree with you. What I am saying is -- our interpretation is that it is not a generic exclusion of passive long-lives. We are still -- they are still in the scope. That is where the exclusion is. Well, the exclusion is actually down here.

CHAIRMAN BONACA: And so you feel that even under the approach you are proposing, you feel that the staff can perform a demonstration for all components?

MR. WALTERS: Yeah, I think that -- I mean I am not an attorney, but I think that it is the demonstration as well, you will see that in the SECY.

CHAIRMAN BONACA: No, I know you are not an attorney, but you are proposing that the staff would not review certain things, okay, that they seem to feel necessary to review to say, yes, this program exists and, in fact, is adequate to manage between 40 and 60 years.

MR. WALTERS: Right.

CHAIRMAN BONACA: That is the statement that they expect to be able to be -- what? They expect to have to do, state. Okay. I believe that the staff believes that they have to say that. And to say that, they cannot rely solely on the applicant's statement. I think that is the crux of the issue. They have to look at it. They have to say, well, show me, explain to me why, I can agree with you or not.

I understand how, you know, --

MR. WALTERS: Okay. And what I meant to say is that that gets to the 54.29 finding, which says actions have been or will be taken. And I would submit that the principle of the rule says, well, we have already taken that action with regard to programs that are part of the CLB, that clearly manage aging today. We are still going to do that, but if they clearly manage aging today, and they are part of the CLB, why can't the finding in 54.29 be that they are part of the current licensing basis, and this program manages corrosion or whatever?

CHAIRMAN BONACA: Now, let me say, there are -- you know, I can see both sides. But isn't there something attractive about an Option 3 where you have a Standard Review Plan which, in fact, will take most of existing programs and declare them acceptable because in the application it has been seen -- and also identify where in fact there is some need for modifications and things of that kind?

What I mean is that it seems to me that would be attractive for -- almost like for fleet of applicants of a certain design to rely on a document of that nature.

MR. WALTERS: On the surface, yeah, that appears attractive. Our concern, and we still have to I think study it and come up with some examples, but I will give you one -- IWE/IWL. 1996 the Commission adopted a '92 version of ASME, and in the statements of consideration for that rulemaking, it says, "We believe that the detrimental effects of aging will be managed in the current term and the license renewal period."

There is also a NUREG dated September of '97 that the renewal staff wrote that says they don't agree with that. Now, we could debate that and I don't want to mischaracterize it, it is related to the IRs. But the bottom line is there is a regulation that says IWE/IWL is okay for renewal. Implementation I think is the word it uses.

Option 3 allows for that kind of approach, and I don't think that is right. If the Commission found that IWE/IWL is acceptable for license renewal, and that is what the SOC says, we shouldn't just arbitrarily say, well, I don't agree with that and here is the additional, the enhancement, which is what Option 3 is supposed to focus on.

Now, if there was a way to have that kind of review to ensure that we are not -- because I would submit to you, that if we have these enhancements and they are touted as, well, you need to do that for renewal, it is going to come back into current space. The applicants

today that, on the modified or new programs, they are going to implement those today. They are not going to wait till year 40. And that is not right.

So I think the concept of Option 3 is reasonable. I think the details of it, we would need to work on. But that is the concern, that here is the enhancement you need to make and how -- you know, who is the judge and jury of that enhancement?

That concludes what I had planned to say, and I would be remiss if I didn't conclude by saying that, despite the fact that we are having this discussion, the industry is I think more than pleased with the way that renewal has gone to date. There is no question that the process has been extremely stable, at least through the first two applications. The staff has met all the milestones. I think that is commendable. We have proven we can get through the process, and it is probably going better than people thought it would.

You are probably aware that there has been a number of recent announcements of people lining up to pursue renewal. So I don't want to leave this with, you know, we have got real problems here. This is an important issue to us because of the future applications. We want to make sure that future applicants have the same success that both Duke and BG&E are having and will have.

And we can't let -- you know, we sometimes look at this the way we look at SARs and tech specs, improved tech specs. If we don't put some controls and guard rails on this, this is how we grew from four volume SARs to 30 volume SARs, and we don't want that to happen.

We are enjoying, you know, the way it is right now, and we would like to keep it that way. And so we think this is an important issue for maintaining that stability and predictability in the process. But I don't want to leave you with the idea that we are not happy with what the staff has done to date. I think they have done a great job in the first reviews here and we would just like to see that continue.

CHAIRMAN BONACA: To help myself to understand, you gave us an example about heat exchanger fouling, okay. And I agree that, you know, that is an issue where if you have a program, you have a program, you have a program, until the heat exchanger is there fouling. You identify, you clean it up and you go.

But there are other issues to do with aging of component for which you may not have a timely meta-analysis of 40 years, but simply you have -- you know that there is some, I don't know, material growth or there is something that happens with age. And there was -- you know, there is a program in place to do some monitoring. Okay. But there wasn't a timely meta-analysis on the basis of that. Now that you go to longer life, in fact, you may identify that you need something different, okay.

Now, in that particular case you would ask the staff to believe in faith on the statement from the applicant that the program will just end, we will take care of it. That is really what -- and the staff may be concerned about it because they are looking at the specific issue, they are saying, wait a minute now, this is one where you have no time-limited analysis, but you have a concern with growth, for example, okay, and the only way I can get you to change it is to go to a backfit

rule. I mean isn't there -- because there are some examples of that which are not as simple as the heat exchanger fouling, I think.

MR. WALTERS: Yeah. There are. And, again, let me make sure that it is clear, we are not proposing in the application that it is one or two sentences. We have to provide enough information in the application to show this mapping. And I think what you -- the way you just described it is what I would have put in the application. Hey, I found this aging effect. I think somehow it is going to be different in the renewal period, and here is why. And I might base that on operating experience, I might base it on industry operating experience.

And then, you know, I will say, here is how it affects the function. And then I will have to describe what I am going to do about it.

Our point is that if it is an existing program that is part of my current licensing basis, and we think that it adequate for managing that aging, -- that is not a good example because I would submit that if in fact I identified that the aging is somehow different, I probably don't have an existing program. I might have to modify an existing program. And I would have to explain that in the application. And I think that is the area where certainly the agency should say, okay, do I think that is correct? Do I agree with that? And we have to provide sufficient information for them to make that determination.

So I would agree with your example, yeah. And I hope that is what our paper says that is in the SECY. I think it does but maybe it doesn't.

Thank you very much for the opportunity. I appreciate it.

DR. SEALE: Thank you.

CHAIRMAN BONACA: Thank you very much. Appreciate it.

Any other thoughts?

DR. UHRIG: There will be a review of this at the next meeting?

CHAIRMAN BONACA: Yes. At the next meeting we will have pretty much the same presentations.

DR. UHRIG: The same review.

CHAIRMAN BONACA: I would expect that, you know, we have allotted one-and-a-hour to the full committee meeting, and this is pretty much the time it took today. So, I would propose that we just go through this presentation as is.

DR. KRESS: I don't see where you can cut it back any.

CHAIRMAN BONACA: No.

DR. KRESS: It was a pretty concise presentation.

CHAIRMAN BONACA: And they were both very clear presentations. I want to say that at least I got an understanding of the issue, a better one than I had before. So --

MR. MATTHEWS: Mr. Bonaca.

CHAIRMAN BONACA: Yes.

MR. MATTHEWS: Hi, I am David Matthews, the Direct of the Division of Regulatory Improvement Programs. I just wanted to make just a minor concluding remark from the staff perspective's. I don't think I could improve on Dr. Lee's presentation with regard to the clarity of the issue as far as the staff sees it.

I just would remark that the reason that we are bringing this issue to the Commission is because the staff is of the belief that the literal wording of the regulation, as backed up by the principles that Dr. Lee described, obligate the staff to conduct the review within the scope of what we have described, and we don't believe that we can carry out that mandate under the manner in which NEI has proposed that they believe we could interpret the rule to allow.

So, that is the reason we raised it to the Commission, because we feel we are carrying out their policy, and if we were to do differently, we would need their agreement and direction to do it differently. So that is why the issue is before them.

With regard to the absence of an Option 4, the paper was drafted with an Option 4, but it became clear that we had never intended Option 4 to continue, even though it describes how we are doing the initial reviews.

We had already initiated efforts to move to something looking like Option 3 by our initiation of the GALL effort and our efforts to improve efficiency and effectiveness and reduce regulatory burden, unnecessary regulatory burden. So we had already moved in that direction. The groundwork was in place. So Option 4 really wasn't a realistic option for any extended period of time as far as the staff was concerned.

CHAIRMAN BONACA: I understand the reason why, on the other hand, if you put it on the table, then you realize that all Options 1 and 2 and 3 are in the direction of efficiency and reduction. So, and it put current reviews in the proper context.

MR. MATTHEWS: Yeah. You know, it would have demonstrated some contrast, that is for sure. Anyway, that is all I wanted to offer. Thank you.

CHAIRMAN BONACA: Are there any other remarks from anyone? Any of the members have anything else they would like to ask right now?

DR. SEALE: Well, I would just remind everyone that we are being asked to write a letter on this question at our next meeting.

CHAIRMAN BONACA: Right.

DR. SEALE: And I urge you to think very judiciously about the questions and be prepared to help us put together as succinct and useful a response to the Commission as we can. I have been asked to sort of herd that letter and so I am deeply concerned -- I am deeply concerned about removing as much of the fog from this particular issue as I can.

DR. KRESS: We will send you some e-mails.

DR. SEALE: Fine.

CHAIRMAN BONACA: I just changed my reservation, I will be here on the 13th in the morning, so we can stew on that.

DR. SEALE: Yeah.

CHAIRMAN BONACA: Okay. So if there are no further comments at this time, I would proceed to adjourn the meeting. And with that, this meeting of the subcommittee is adjourned. Thank you very much, everybody.

[Whereupon, at 2:40 p.m., the meeting was concluded.]