

# NUCLEAR REGULATORY COMMISSION

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Plant License Renewal Subcommittee

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ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

December 1, 2004

The contents of this transcript of the proceeding of the United States Nuclear Regulatory Commission Advisory Committee on Reactor Safeguards, taken on December 1, 2004, as reported herein, is a record of the discussions recorded at the meeting held on the above date.

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

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UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION  
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ADVISORY COMMITTEE ON REACTOR SAFEGUARDS  
(ACRS)  
PLANT LICENSE RENEWAL SUBCOMMITTEE

+ + + + +  
WEDNESDAY,  
DECEMBER 1, 2004

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ROCKVILLE, MARYLAND

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The Subcommittee met at the Nuclear  
Regulatory Commission, Two White Flint North, Room  
T2B3, 11545 Rockville Pike, at 1:30 p.m., Mario V.  
Bonaca, Chairman, presiding.

COMMITTEE MEMBERS PRESENT:

- MARIO V. BONACA Chairman
- RICHARD S. DENNING Member
- F. PETER FORD Member
- GRAHAM M. LEITCH Consultant
- VICTOR H. RANSOM Member
- WILLIAM J. SHACK Member
- JOHN D. SIEBER Member
- GRAHAM B. WALLIS Member

1     ACRS STAFF PRESENT:

2     CAYATANO SANTOS

3     OTHER NRC STAFF PRESENT:

4     GREGORY V. CRANSTON           NRR

5     GREGORY F. SUBER               NRR

6     P.T. KUO                         NRR

7     SAMPSON LEE                     NRR

8     JIM MEDOFF                      NRR

9     REBECCA NEASE                  Region IV

10    ALSO PRESENT:

11    REZA AHRABLI                   Entergy

12    ALAN COX                        Entergy

13    DAVID J. LACH                   Entergy

14    MATTHEW MILLER                 AREVA

15    MARK RINCKEL                   AREVA

16    ROGER RUCKER                   Entergy

17    MIKE STROUD                     Entergy

18    GARRY G. YOUNG                 Entergy

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

1:30 p.m.

1 CHAIRMAN BONACA: Good afternoon. The  
2 meeting will now come to order. This is a meeting of  
3 the Plant License Removal Subcommittee. I'm Mario  
4 Bonaca, Chairman of the Plant License Renewal  
5 Subcommittee. ACRS Members in attendance are Peter  
6 Ford, Vic Ransom, Steve Rosen, Jack Sieber and our  
7 ACRS Consultant, Graham Leitch, is also present. I  
8 believe we will have other Members coming in at a  
9 later time. Mr. Cayatano Santos of the ACRS Staff is  
10 a designated federal official for this meeting.  
11

12 The purpose of this meeting is to discuss  
13 the license renewal application for Arkansas Nuclear  
14 One - Unit 2. We will hear presentations from the  
15 NRC's Office of Nuclear Reactor Regulation and  
16 representatives of Entergy Operations. The  
17 subcommittees will gather information, analyze  
18 relevant issues and facts and formulate proposed  
19 positions and actions as appropriate for deliberation  
20 by the full Committee.  
21

22 The rules for participation in today's  
23 meeting have been announced as part of the notice of  
24 this meeting previously published in the Federal  
25 Register. We have received no written comments or

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

3 A transcript of the meeting is being kept  
4 and it will be made available as stated in the Federal  
5 Register notice. Therefore, we request that  
6 participants in this meeting use the microphones  
7 located throughout the meeting room when addressing  
8 the Subcommittee. Participants should first identify  
9 themselves and speak with sufficient clarity and  
10 volume so that they may be readily heard.

11 We will now proceed with the meeting and  
12 I'll call upon Mr. Kuo of the Office of Nuclear  
13 Reactor Regulations to begin. Mr. Kuo?

14 DR. KUO: Thank you, Dr. Bonaca. Good  
15 afternoon. For the record, I'm P.T. Kuo, the program  
16 director for the License Renewal and Environmental  
17 Impacts Program. To my right, Dr. Sampson Lee, who is  
18 the second chief project management, and to my extreme  
19 right Greg Cranston, who is the second chief for the  
20 section who is responsible for GALL development and  
21 audit review.

22 The staff has completed the safety  
23 evaluation of Arkansas Nuclear One - Unit 2, license  
24 renewal application, and Greg Suber, the project  
25 manager for the application, will lead a presentation

1 today with the assistance from our support, from the  
2 tech staff who are sitting in the audience. And he  
3 will also be assisted by Juan Ayala, who is sitting in  
4 the front there, who is our new addition in the  
5 branch.

6 In addition, Greg Cranston, who is also  
7 the team leader for the audit review at the site, will  
8 provide the Committee a few examples of their audit  
9 findings. And I also would like to note that Arkansas  
10 Nuclear, this is difficult, One - Unit 2 is the second  
11 of a three part program that implemented the audit  
12 review process.

13 We have also invited Rebecca Nease sitting  
14 right there who is the Inspection Team Leader at  
15 Region IV and Rebecca used to be also in the License  
16 Renewal Branch. Welcome back and thank you for your  
17 assistance today. With that, if there's no questions,  
18 I would like to turn the presentation over to Entergy  
19 and then followed by the staff's presentation.

20 MR. LEITCH: P.T., I had just one question  
21 about the methodology. This methodology was the same  
22 as that used for Farley?

23 DR. KUO: Correct.

24 MR. LEITCH: But I noticed in the scoping  
25 and screening inspection that the Farley scoping and

1 screening inspection was after this one. This  
2 predated the Farley inspection. Was there any  
3 significance to that or was that just a scheduling  
4 issue?

5 DR. KUO: It's simply a scheduling  
6 problem.

7 MR. LEITCH: Okay. Okay. But the same  
8 methodology was used?

9 DR. KUO: The same methodology, the same  
10 approach.

11 MR. LEITCH: Okay. Okay. Thank you.

12 DR. KUO: You're welcome.

13 MR. YOUNG: Okay. I'm Garry Young with  
14 Entergy Nuclear and I will make the presentation on  
15 the first section where we talk about the application  
16 that was submitted for Arkansas Nuclear One - Unit 2,  
17 but first I would like to introduce some of the  
18 members of the team that worked on this application.

19 Over here we have got Alan Cox, who was  
20 our technical lead, Mike Stroud, who is our project  
21 manager for the Unit 2 Project. Ted Ivy is our  
22 mechanical lead. Reza Ahrabli is our structural lead.  
23 Roger Rucker is our electrical lead and then Dave  
24 Lach, who is also one of our project managers, Mark  
25 Rinckel with AREVA who worked on the TLAA and Class I,

1 and Matt Miller with AREVA who also worked on the  
2 Class I and TLAA.

3 So we hope we have brought enough people  
4 to answer your questions, and as we go through here,  
5 obviously, feel free to stop us at any time if you  
6 have got a question and we'll try to provide an  
7 answer.

8 Okay. The first, this is the outline for  
9 the presentation and we'll just go through each one of  
10 these and talk about a little additional information  
11 on the background for the application, a little bit of  
12 a description on the Unit 2 as compared to Unit 1,  
13 some operating history, a little bit of discussion on  
14 scoping, the application of GALL and then our  
15 commitment handling process.

16 Okay. On the background, we submitted our  
17 application October 15, 2003. Our original, our  
18 current license expiration date for Unit 2 is July of  
19 2018. With a renewal, this would extend the operation  
20 term to 2038. In addition to using the GALL document  
21 to compare our programs, our Aging Management  
22 Programs, we also did a Past Precedents Review as part  
23 of this pilot effort to find additional matches  
24 between previously approved information that was not  
25 in the 2001 version of GALL, and this was evaluated by

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1 the NRC during the audit process.

2 So as P.T. mentioned earlier, we were part  
3 of that, the three units that were involved in this  
4 pilot use of the new audit process and in the effort  
5 to identify past precedent information in addition to  
6 what has already been provided in the 2001 version of  
7 GALL.

8 Let's see. I'll get this right in a  
9 minute here. This is a description of Arkansas  
10 Nuclear One - Unit 2. It's a combustion engineering  
11 pressurized water reactor. It has a dry, ambient  
12 containment building. Bechtel was the architect/  
13 engineer. The initial operation started in 1978.  
14 It's a 3026 megawatts thermal reactor with 1023  
15 megawatts electric output.

16 Some of the differences between Unit 1 and  
17 Unit 2, as you can see from the photograph here, we  
18 have a cooling tower. That's the Unit 2 cooling  
19 tower. Unit 1 uses once-through cooling and Unit 1 is  
20 a Babcock and Wilcox nuclear steam supply system,  
21 whereas Unit 2 is a combustion engineering unit.

22 MR. LEITCH: Perhaps when you're on that  
23 picture, when that photograph is there, you could  
24 point out a little bit the ultimate heat sink. Is  
25 that --

1 MR. YOUNG: Yes, the ultimate heat sink.

2 MR. LEITCH: -- referred to as a pond or  
3 something?

4 MR. YOUNG: There is a pond back behind  
5 these buildings. It's really not evident in the  
6 picture.

7 MR. LEITCH: Okay.

8 MR. YOUNG: Yes, this is some really just  
9 drainage water here. This is not part of the  
10 emergency cooling pond.

11 MR. LEITCH: Okay.

12 MR. YOUNG: But we have got the intake  
13 structure. The intake canal comes in here, goes  
14 through the plant and this is the discharge for Unit  
15 1. But then, of course, in Unit 2 we have the cooling  
16 tower.

17 MR. LEITCH: Yes, yes.

18 MR. YOUNG: That gets make-up from that.

19 MR. LEITCH: But there is a pond or  
20 ultimate heat sink --

21 MR. YOUNG: Yes.

22 MR. LEITCH: -- capacity behind the  
23 reactors in that picture?

24 MR. YOUNG: Yes, it's behind the buildings  
25 there, behind the reactor buildings.

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1 MR. ROSEN: Which of the units is the one  
2 we're talking about here?

3 MR. YOUNG: This is Unit 2.

4 MR. ROSEN: The one on the right.

5 MR. YOUNG: Yes, this is Unit 1 and this  
6 Unit 2.

7 DR. WALLIS: How many hundred feet high is  
8 that cooling tower, 500?

9 MR. YOUNG: 450.

10 DR. KUO: 450.

11 MR. YOUNG: Around 450. The unit is  
12 located in Arkansas in Pope County in the southwest  
13 part of the country and, in general, this is in the  
14 northwest part of Arkansas. Okay.

15 A little bit on the operating history. We  
16 did a power uprate on Unit 2, a 7.5 percent power  
17 uprate in 2002. This increased the capacity by the  
18 210 megawatts thermal. The steam generators have also  
19 been replaced in 2000. These were Westinghouse steam  
20 generators that were installed. That is just kind of  
21 a brief overview of some of the major changes that  
22 have occurred in recent times to operate.

23 CHAIRMAN BONACA: The steam generators  
24 were identical replacements of the original ones?

25 MR. YOUNG: They are the same design.

1 CHAIRMAN BONACA: Same design.

2 MR. YOUNG: But they were designed for the  
3 higher power rating and with the improved materials.

4 CHAIRMAN BONACA: Yes.

5 MR. ROSEN: What materials are those for  
6 the tubes?

7 MR. YOUNG: Pardon me?

8 MR. ROSEN: What is the tubing material?

9 MR. YOUNG: 690.

10 MR. ROSEN: 690.

11 MR. YOUNG: Yes, Inconel 690.

12 MR. LEITCH: So the head has not been  
13 replaced on this unit?

14 MR. YOUNG: Not yet, no. We do have long  
15 range plans to replace the reactor vessel head,  
16 probably in the next two to three years, in that time  
17 frame.

18 CHAIRMAN BONACA: Is this susceptible?  
19 What is the susceptibility of this plant?

20 MR. YOUNG: It's in the high  
21 susceptibility range.

22 CHAIRMAN BONACA: High?

23 MR. YOUNG: Yes.

24 CHAIRMAN BONACA: Because of high  
25 temperature?

1 MR. YOUNG: I believe so. Yes, it's high  
2 temperature, yes.

3 CHAIRMAN BONACA: Okay.

4 MR. ROSEN: Do you have an equipment hatch  
5 big enough to --

6 MR. YOUNG: I believe, at this time, they  
7 have determined it's probably not big enough, so they  
8 will probably have to cut out some concrete to replace  
9 the head, but I think that's part of the ongoing  
10 studies. Okay. Any other questions on that?

11 Okay. We'll move on to the scoping  
12 method. We used pretty much the standard scoping  
13 methodology that has been used by a number of  
14 applicants, following the 95-10 guidance, as well as  
15 the Standard Review Plan, (a) (2), of course, was one  
16 of those areas where there has been a lot of evolution  
17 as far as the understanding of what's included.

18 We did include a large number of  
19 additional systems under (a) (2) using the latest  
20 methodology information. It was more of a spaces  
21 approach. In other words, if there was a room that  
22 contained safety-related equipment and there were some  
23 non-safety-related systems, we just assumed that it  
24 was all in scope and then kind of worked from there to  
25 do our Aging Management Review. And, of course, we

1 did our screening in accordance with the 54.21(a)(1),  
2 which again is the typical approach that's used with  
3 most of the applicants using 95-10 guidance, (NEI) 95-  
4 10.

5 MR. LEITCH: There are a number of shared  
6 systems for this plant. I noted that there were a  
7 number of Unit 1 systems that were scoped with Unit 2.

8 MR. YOUNG: Yes.

9 MR. LEITCH: I assume that back when we  
10 were doing license renewal for Unit 1, there was a  
11 number of Unit 2 systems that were --

12 MR. YOUNG: Yes.

13 MR. LEITCH: -- scoped along with Unit  
14 1's. I guess what I'm picturing is there may be some  
15 shared systems that are actually scoped with both  
16 units.

17 MR. YOUNG: Yes.

18 MR. LEITCH: Is that correct?

19 MR. YOUNG: Yes.

20 MR. LEITCH: Okay. Did that present any  
21 complications? I think it's a little new for us.

22 MR. YOUNG: Right.

23 MR. LEITCH: I mean, I think usually when  
24 we have done --

25 MR. YOUNG: Yes.

1 MR. LEITCH: -- two unit plants, we have  
2 done them all at once.

3 MR. YOUNG: Right.

4 MR. LEITCH: And I think this is just a  
5 little --

6 MR. YOUNG: Yes.

7 MR. LEITCH: I think this may be the first  
8 case where we have --

9 MR. YOUNG: I think it is.

10 MR. LEITCH: -- reviewed one unit at a two  
11 unit plant.

12 MR. YOUNG: Right. Yes. But for the most  
13 part, the Aging Management Programs we credited for  
14 Unit 1, we also credited for Unit 2. So the program  
15 itself, in general, it's the same program. Now, the  
16 difference is though that, obviously, Unit 2 is a  
17 newer unit and so it, with a renewed license, would  
18 operate for four years longer than Unit 1.

19 So that's why we had to do our review to  
20 include some of these systems on Unit 2 that were  
21 common, because if, for example, we were to shut down  
22 Unit 1 early, we would still have to have these Aging  
23 Management Programs for Unit 2.

24 MR. LEITCH: Okay. Okay. That was really  
25 the essence of my question.

1 MR. YOUNG: Okay.

2 MR. ROSEN: Do you have stand alone  
3 engineering support staff for each unit or is it one  
4 merged group?

5 MR. YOUNG: One merged group, yes.  
6 Generally, the separation between the units is in the  
7 operations area, but maintenance and engineering and  
8 so forth is pretty well a shared resource. Okay?

9 The GALL comparison. Of course, we  
10 focused our review on those Aging Management Programs  
11 and other information to GALL to see what was  
12 consistent and what was not. There were some  
13 material/environment/program combinations that were  
14 not addressed in GALL. And again, this is the 2001  
15 version. But we did do a Past Precedents Review on  
16 those to see if some of that had already been reviewed  
17 and approved in a recent application prior to the Unit  
18 2 application. We do have some plant-specific  
19 programs that we used, you know, as needed. Again,  
20 this is very similar to our Unit 1 application.

21 Now, we provided the past precedent  
22 information as a separate submittal. It was not part  
23 of the application, but that was primarily because it  
24 was part of this pilot activity and, at that time, we  
25 weren't sure how to incorporate past precedent

1 actually into an application, but it was submitted  
2 separately.

3 And a lot of the past precedent  
4 information that we identified during this review we  
5 provided to the NRC staff as input to the revision to  
6 GALL, and we have already seen in the draft version of  
7 GALL that has just come out in September of this year  
8 that a lot of this past precedent that we took credit  
9 for is now being factored into the new version of  
10 GALL. So in the future, we wouldn't have to have so  
11 many places where we don't match at all with the new  
12 version.

13 MR. LEITCH: Now, you also considered a  
14 number of ISGs, Interim Staff Guidances, in your  
15 application?

16 MR. YOUNG: Yes.

17 MR. LEITCH: All those up until the point  
18 that your application was submitted?

19 MR. YOUNG: Right.

20 MR. LEITCH: I guess it was maybe up to  
21 number 10 or something like that.

22 MR. YOUNG: Yes, I can't remember the  
23 number, but we had a section in the application where  
24 we identified the ISGs that we approved, at that time,  
25 and then we dealt with some of the more recent ISGs

1 through the RAI process.

2 MR. LEITCH: Yes.

3 MR. YOUNG: You know, that either came out  
4 or there was additional discussion after the  
5 application was submitted.

6 MR. LEITCH: Okay.

7 MR. YOUNG: Okay. In the comparison with  
8 GALL, this is for our Aging Management Programs, we  
9 had 33 total Aging Management Programs identified in  
10 our application. 15 of those programs we identified  
11 as being consistent with GALL or consistent with GALL  
12 after we implemented some enhancements.

13 A couple of examples of the programs that  
14 we found that were consistent with GALL were the  
15 Containment Leak Rate Testing Program or the Appendix  
16 J Testing and the EQ Program. An example of a program  
17 in which we needed to do enhancements was our Boric  
18 Acid Corrosion Program. It was consistent with GALL,  
19 except it didn't explicitly include electrical  
20 equipment and we add that. We're adding that to the  
21 program, so that it will be consistent with GALL.

22 We had seven programs that were consistent  
23 with exceptions to GALL. For example, our Buried  
24 Piping Inspection Program was consistent with GALL.  
25 However, we added the groupings of buried valves and

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1 buried bolting to the program that was not covered in  
2 GALL, so that was an exception.

3 We had 11 programs that were not  
4 consistent with GALL and, therefore, plant-specific  
5 programs. However, 8 of those 11 were programs that  
6 had been previously reviewed and approved by the  
7 staff. They just weren't in GALL, and so we used the  
8 Past Precedents Review to do that comparison.

9 An example of that would be our Heat  
10 Exchanger Monitoring Program, which was a plant-  
11 specific program not in GALL, but it was the same as  
12 the Unit 1 program, which had already been reviewed  
13 and approved and we point to that in our application.

14 MR. LEITCH: You mentioned buried piping.  
15 I noticed some verbiage in the application that said  
16 that the buried components will be inspected only  
17 opportunistically and not at a scheduled frequency as  
18 GALL appears to require.

19 MR. YOUNG: Yes.

20 MR. LEITCH: And I guess that position  
21 was, apparently, accepted by the staff. Maybe this  
22 was more of a question for the staff, but if GALL  
23 recommends a scheduled frequency for inspection, why  
24 was an opportunistic inspection acceptable?

25 MR. YOUNG: Yes, I guess there's two

1 points there. One is that the program that we  
2 credited for Unit 2 was the same as the program that  
3 had already been reviewed and approved for Unit 1, the  
4 opportunistic inspections. But number two is that we  
5 found from operating experience that we tend to have  
6 reasons to dig up piping on a frequency of about once  
7 every 5 to 10 years due to various reasons and, as a  
8 result, we're getting a fair amount of exposure of,  
9 you know, ability to do the inspection.

10 The focus of the Aging Management Review  
11 was to make sure that the coating is intact on the  
12 buried piping, and by using opportunistic inspections  
13 means that we have a less chance of damaging that  
14 coating. But if we were to dig it up solely for  
15 inspection, we would actually increase the likelihood  
16 of an aging effect, rather than reducing the  
17 likelihood.

18 But historically, we have found that the  
19 frequency is, you know, on average about every 5 to 10  
20 years there is some reason that we have to dig up some  
21 piping and, at that point, expose the coating and can  
22 do an inspection to make sure it's not degrading.

23 MR. LEITCH: Yes. And I guess the real  
24 question I have, and maybe this will come up later, is  
25 if GALL recommends this scheduled frequency and we're

1 finding an opportunistic inspection to be acceptable,  
2 are we going to change GALL?

3 In other words, if digging up the piping  
4 at ANO is more likely to damage the coating, isn't it  
5 more likely to damage the coating at any plant where  
6 you would dig up the piping? I mean, is this really  
7 the right thing to do or should we be thinking about  
8 changing GALL or maybe that's part of the GALL  
9 modifications that are in the works. I'm not sure.

10 DR. KUO: Dr. Leitch, the staff will  
11 address your question when they come.

12 MR. LEITCH: Okay. Sure. Thank you.

13 MR. ROSEN: Now, would you also address  
14 what happens if there is no opportunity for  
15 inspection?

16 DR. KUO: Okay.

17 CHAIRMAN BONACA: I have a question since  
18 we're here on the buried piping inspection. You also  
19 include tank inspections in that program and you took  
20 an exception on tanks, that you're able to perform --

21 MR. YOUNG: Yes, we don't have any buried  
22 tanks.

23 CHAIRMAN BONACA: Oh, wait a minute.

24 MR. YOUNG: That's why we took the  
25 exception.

1 CHAIRMAN BONACA: Okay.

2 MR. YOUNG: Because the problem implies or  
3 assumes that you have buried tanks and we didn't have  
4 any.

5 CHAIRMAN BONACA: Okay. That was the  
6 reason why you said that you are not going to inspect  
7 the tanks. Okay.

8 MR. YOUNG: Yes.

9 CHAIRMAN BONACA: All right.

10 MR. SIEBER: And diesel fuel tanks are  
11 above ground?

12 MR. YOUNG: Above ground, yes.

13 MR. SIEBER: And you inspect all --

14 MR. YOUNG: Or in vaults. We have some  
15 that are in vaults, yes, below.

16 MR. SIEBER: Okay. Now, when you do a  
17 piping inspection by digging it up, you're inspecting  
18 the outside surface.

19 MR. YOUNG: Yes.

20 MR. SIEBER: Do you do anything to inspect  
21 the inside surface where a lot of the corrosion takes  
22 place?

23 MR. YOUNG: On the inside, we're crediting  
24 our existing programs, such as our chemistry programs,  
25 depending on what the pipe is, if it's a fuel oil pipe

1 or whatever.

2 MR. SIEBER: Service water.

3 MR. YOUNG: Service water? Yes, then we  
4 rely on our chemistry programs for the internal aging  
5 management.

6 MR. SIEBER: Yes, but you don't treat  
7 that. It's river water or lake water or something  
8 like that.

9 MR. YOUNG: Right. But we haven't had any  
10 aging effects that would require anything beyond what  
11 we're currently doing.

12 MR. SIEBER: No leaks?

13 MR. YOUNG: Well --

14 MR. COX: Internals are covered by the  
15 Service Water Integrity Program, which includes some  
16 chemical treatment, intake and also inspections.

17 MR. YOUNG: Tell them who you are, Alan.

18 COURT REPORTER: And use the mike.

19 MR. YOUNG: Yes.

20 MR. COX: This is Alan Cox with Entergy.  
21 Again, the service water, the inside of the pipe, the  
22 service water is covered by the Service Water  
23 Integrity Program, which includes a limited amount of  
24 chemical treatment in addition to inspections.

25 MR. SIEBER: Okay. Do you have galvanic

1 corrosion protection installed on all this underground  
2 piping?

3 MR. YOUNG: We do, but we don't take  
4 credit for it. It's not part of our Aging Management  
5 Program. We found it's not reliable enough.

6 MR. SIEBER: Okay.

7 MR. LEITCH: I read that the groundwater  
8 at this site is not aggressive, but I was unable to  
9 find specific data, other than just the fact that it,  
10 you know, meets the criteria for being non-aggressive.  
11 But do you happen to know what the data is for the  
12 groundwater?

13 MR. YOUNG: Yes, we have the data, but we  
14 assumed that it was aggressive. We had that  
15 discussion with the staff that historical data shows  
16 it's non-aggressive, you know, based on the 25 years  
17 of operating experience so far.

18 MR. LEITCH: Right.

19 MR. YOUNG: But then the question came up  
20 about well, how do we know it's going to stay non-  
21 aggressive? So rather that deal with that, we just  
22 assumed that it is aggressive.

23 MR. LEITCH: Oh, I see.

24 MR. YOUNG: And we have aging management  
25 on the concrete and the structures as if it were

1 aggressive, and then that way we don't really have to  
2 worry about --

3 MR. LEITCH: Okay. Thank you.

4 MR. YOUNG: -- you know, monitoring of the  
5 groundwater.

6 MR. LEITCH: Yes.

7 MR. YOUNG: Okay. There was one  
8 additional program that we added after the application  
9 was submitted for a one-time inspection, and this came  
10 out during the NRC review process, and this was to  
11 confirm the Chemistry Program effectiveness. So this  
12 was an additional program to the 33 that we had  
13 identified in our application. And again, most of  
14 these programs that we're talking about here are  
15 common between Unit 1 and Unit 2.

16 MR. LEITCH: Is that the same as the  
17 Buried Piping Inspection Program, the one-time?

18 MR. YOUNG: No.

19 MR. LEITCH: Because it says in the  
20 application that the Buried Piping Inspection Program  
21 is a new program.

22 MR. YOUNG: Yes, it's a new program, but  
23 it was identified in the application, so it's one of  
24 the 33.

25 MR. LEITCH: Oh, okay. I understand.

1 MR. YOUNG: Yes, right. But this one is  
2 in addition to the 33.

3 MR. LEITCH: Okay. Got you. Right.  
4 Thank you.

5 MR. YOUNG: Okay. Okay. And then moving  
6 on to commitment tracking. You know, one of the  
7 things that comes out of all of this review is a  
8 number of commitments to existing programs, to enhance  
9 programs and to new programs. These are all  
10 documented in our application and they have been  
11 revised as needed during the RAI questioning and the  
12 audit process, and each time we have had an additional  
13 change or clarification to a commitment, we have  
14 captured that.

15 We track all of this in our Licensing  
16 Commitment Tracking System and we have a little flow  
17 chart here to show that all of our commitments are  
18 documented in either the application or the letters in  
19 which we have responded to questions on the  
20 application. These commitments then go into our  
21 commitment tracking system, and then they will be  
22 maintained, you know, as part of the plant current  
23 documentation.

24 They also, of course, feed into the Safety  
25 Evaluation Report. Any commitment we make will be

1 documented there, and then they are subject to the  
2 audit inspections and to the regional inspections, and  
3 I think there has already been some discussion about  
4 how that's going to be handled in the future during  
5 the regional inspections of our commitments, but this  
6 is kind of a big picture view of how we track and  
7 manage our Aging Management Program commitments.  
8 Okay.

9 MR. LEITCH: Many of these Aging  
10 Management Programs, and you're not alone in this  
11 regard, they commit to implementing these programs  
12 prior to the period of extended operation.

13 MR. YOUNG: Right.

14 MR. LEITCH: And one of our concerns is  
15 always that commitment would allow one to wait until  
16 year 39 and a half and then implement all these  
17 programs, and we're concerned about the bow wave of  
18 activity that that would create at that period of  
19 time.

20 Are you planning to phase in these  
21 programs? I guess a number of them are already in  
22 place.

23 MR. YOUNG: Right.

24 MR. LEITCH: But those that are new, are  
25 you planning to phase those in in a reasonable period

1 of time rather than just waiting until the end?

2 MR. YOUNG: Yes, at least at this time our  
3 plan is that most, if not all, of them would be in  
4 place by at least two years prior to the 40 year term,  
5 but many of them will be implemented or phased in, you  
6 know, as the opportunity comes up.

7 You know, for example, a lot of these are  
8 related to preventive maintenance activities and if  
9 there is an opportunity between now and, you know, the  
10 extended term to go ahead and implement those, because  
11 a lot of them are enhancements, they are not actually  
12 changes to the existing preventive maintenance, they  
13 are additional documentation to ensure that that  
14 existing activity continues.

15 So you know, if we're doing an inspection  
16 in a tank now, today, but we're going to add in some  
17 detail about looking for signs of corrosion or  
18 cracking or whatever to clarify, you know, that would  
19 be what we consider an enhancement. So we could go  
20 ahead and implement that, you know, fairly quickly  
21 and, in some cases, we probably will, but it's going  
22 to be pretty much on a case by case basis as we go  
23 through. And then intent is not to wait until, you  
24 know, year 40 and then do them all at once. Now,  
25 there are some, I think, that we have to wait, because

1 we're waiting on industry data:

2 MR. LEITCH: Industry positions, yes.

3 MR. YOUNG: Like MRP and so forth.

4 MR. LEITCH: Yes, right.

5 MR. YOUNG: So those will have to wait  
6 until this new industry information is available, but  
7 as soon as it's available, then we can start working  
8 on the program.

9 MR. LEITCH: Yes, I understand that.

10 MR. ROSEN: Well, I think your answer --

11 MR. LEITCH: I think the next concern is  
12 just not only, I mean, obviously, the impact on your  
13 staff.

14 MR. YOUNG: Right.

15 MR. LEITCH: But also the impact on NRC  
16 inspection staff. This all hits us at the same time.

17 MR. YOUNG: Yes.

18 MR. LEITCH: It's going to be --

19 MR. YOUNG: Oh, yes, right.

20 MR. LEITCH: -- a difficult chore to  
21 handle.

22 MR. YOUNG: Yes, I agree.

23 MR. ROSEN: Your answer is reasonable, but  
24 it leaves me a little bit uncomfortable about the ad  
25 hoc nature of the incorporation. You clearly said you

1 wouldn't go beyond 2016 without having all the  
2 programs in place, but up until then from now, say  
3 2005 until then, for 11 years you're kind of going to  
4 do it when it strikes your fancy.

5 MR. YOUNG: Yes.

6 MR. ROSEN: And that seems like not a way  
7 I'm used to Entergy running the business. You usually  
8 have a plan for doing things and go ahead and do it on  
9 those dates.

10 MR. YOUNG: Yes. The reason I can't give  
11 you anything more definitive, at this time, is we were  
12 waiting until we knew what all the programs were, you  
13 know, through this review process. And once we got  
14 all that worked out, in other words, by the time we  
15 get the renewed license, we'll have all of these  
16 commitments will be well-defined.

17 And then, at that point, we can go in and  
18 start doing our planning and scheduling to get all  
19 this into our procedures. So we will have -- at the  
20 point of getting the renewed license, that's when  
21 we'll start developing the more detailed  
22 implementation plan and then start the process of  
23 doing the implementation.

24 At this point in time, we don't have that  
25 plan, primarily, because we knew that there would be

1 some changes and additions and clarifications that  
2 came out of the NRC review process, such as this new  
3 one-time Inspection Program that we hadn't originally  
4 planned on.

5 MR. ROSEN: Okay. So sometime after the  
6 license is issued.

7 MR. YOUNG: Right, once we --

8 MR. ROSEN: Should that occur, then there  
9 will be some sort of structured plan put in place?

10 MR. YOUNG: Right. And each one of these  
11 commitments that we have identified for each one of  
12 these programs is assigned to an owner, you know, the  
13 Chemistry Department or the Maintenance Department or  
14 whatever. So we will have to coordinate with each one  
15 of those departments to come up with a schedule for  
16 actually implementing.

17 MR. ROSEN: But it's your plan to do that,  
18 rather than just to let it happen?

19 MR. YOUNG: Oh, yes, yes.

20 MR. ROSEN: Because letting things like  
21 that happen have --

22 MR. YOUNG: Oh, no, no, right. Yes, once  
23 we have a well --

24 MR. ROSEN: -- not a very high percentage.

25 MR. YOUNG: Right. Once we have a well

1 defined scope of what is needed to be done, then we  
2 can work on the schedule and the implementation.  
3 Okay.

4 And just in closing, we found this new  
5 Audit Team approach that was used in this pilot to be  
6 very thorough and rigorous. It also allowed us to  
7 speed up the process of answering questions from the  
8 staff, because they were sitting right there across  
9 the table from us as they were doing their review.

10 We had a much better understanding of what  
11 the question was, and then if the answer to the  
12 question led to another question, we could deal with  
13 it right then instead of, you know, passing letters  
14 back and forth, which normally take several weeks just  
15 to get a letter out.

16 So we really feel like this was an  
17 improvement. It did create a lot of extra effort on  
18 the front end of the 22 month period. In other words,  
19 in the first three or four months we were very intense  
20 with these on-site audits and working with the audit  
21 teams. But in the end, we felt like it was worth it  
22 and it definitely improved the process.

23 We think the Past Precedent Review was  
24 successful and, as I mentioned earlier, a lot of this  
25 information has been passed on to the revision to GALL

1 and much of that work that we did on past precedent  
2 has actually been used to help make the revision to  
3 the draft GALL.

4 So all of this, this pilot effort and the  
5 Audit Team approach, we felt like was an improvement,  
6 and I understand that is going to be continued in the  
7 future and we think that's a good thing.

8 MR. LEITCH: Could you say just another  
9 word about the Past Precedent Review? I think that's  
10 pretty significant, and I'm not sure I quite  
11 understand what you did.

12 MR. YOUNG: Okay.

13 MR. LEITCH: You looked at previous  
14 license renewal applications?

15 MR. YOUNG: Yes.

16 MR. LEITCH: Could you just explain what  
17 you did then?

18 MR. YOUNG: For example, we had a number  
19 of these programs that when we did our review in  
20 comparison to GALL, we either found that we had  
21 exceptions to GALL or that they weren't in GALL. They  
22 were plant-specific. However, the exceptions and the  
23 programs that were in GALL had already been reviewed  
24 and approved on another application. And in many  
25 cases, that other application was Unit 1, Arkansas

1 Nuclear One - Unit 1.

2 MR. LEITCH: Yes.

3 MR. YOUNG: So we provided that  
4 information in this Past Precedent Review to the  
5 staff, so that they could at least look at it and be  
6 aware of that this was a program that had the same  
7 attributes as one that they had already reviewed and  
8 approved.

9 Now, in some cases there were reasons that  
10 that didn't really match up well enough for them to  
11 use it, but in most cases it did, so that would  
12 facilitate their review and especially for the Audit  
13 Team. When they came on-site, they could look at a  
14 program that didn't match GALL, but it matched a  
15 program that had already been reviewed and approved  
16 either at Arkansas Nuclear One - Unit 1 or at another  
17 site like Ginna or North Anna or Surry or whatever.

18 So we searched SERs to find matches with  
19 past precedent and we looked at our Unit 1 application  
20 approval.

21 MR. LEITCH: Yes. I guess the thing that  
22 I still wonder about, just to pick this buried piping  
23 as an example, I guess this again is a question that,  
24 hopefully, the staff will discuss. In other words, at  
25 Arkansas Nuclear One - Unit 1, rather than a scheduled

1 frequency, the opportunistic position was accepted.

2 MR. YOUNG: Right.

3 MR. LEITCH: Now, then you come along with  
4 Unit 2 and the reason the opportunistic position is  
5 accepted on Unit 2 is because it was accepted on Unit  
6 1. In other words, is that the kind of precedent  
7 we're talking about here?

8 MR. YOUNG: Well --

9 MR. LEITCH: And I guess, I mean, I think  
10 the staff is going to get into this issue a little  
11 later.

12 MR. YOUNG: Right.

13 MR. LEITCH: But my question is is it  
14 really okay, we accepted it once. Therefore, it's  
15 cast in concrete and we have to accept it again or do  
16 we really still think that's the right thing to do?

17 DR. KUO: In this particular case, it's  
18 very much on a case by case basis.

19 MR. LEITCH: Yes.

20 DR. KUO: And the staff will address this.

21 MR. LEITCH: We'll talk about that.

22 DR. KUO: Right.

23 MR. LEITCH: It's just another facet in  
24 life.

25 DR. KUO: And also, your staff's

1 presentation who will give the Committee an example  
2 where the applicant claimed a certain program is past  
3 the precedent and we reviewed it and we decided we  
4 disagree.

5 MR. LEITCH: Okay.

6 DR. KUO: Okay. So you will see the  
7 example.

8 MR. LEITCH: Okay. That's good.

9 CHAIRMAN BONACA: I have a question on the  
10 O-rings that seal the head. They are not in the  
11 scope. I didn't understand why.

12 MR. YOUNG: Well, they are in scope, but  
13 they are not subject to aging management, because they  
14 are short-lived components. They are replaced.

15 CHAIRMAN BONACA: Could you replace them?

16 MR. YOUNG: Yes.

17 CHAIRMAN BONACA: Because those -- okay.  
18 I was thinking, I mean, first of all, you inspect them  
19 at every refueling outage.

20 MR. YOUNG: Yes.

21 CHAIRMAN BONACA: Okay.

22 MR. YOUNG: Yes.

23 CHAIRMAN BONACA: So that's the reason?

24 MR. YOUNG: Yes.

25 CHAIRMAN BONACA: Well, in the discussion

1 it didn't sound that way. It sounded like we're  
2 relying -- I mean, there is a limited amount of flow  
3 that you may --

4 MR. YOUNG: Yes, that was for the leak-off  
5 tube.

6 CHAIRMAN BONACA: Okay.

7 MR. YOUNG: From the head, but not the O-  
8 rings themselves.

9 CHAIRMAN BONACA: Okay.

10 MR. YOUNG: Not the -- yes, the O-rings.

11 CHAIRMAN BONACA: The O-rings they are in  
12 scope, but they are replaced. I mean, they are not in  
13 scope as in aging management, because you are  
14 replacing them periodically as needed.

15 MR. YOUNG: Right. Yes, yes.

16 CHAIRMAN BONACA: Okay. Regarding the  
17 reactor vessel head penetration you said that they  
18 were inspected, I believe, in 2002, and did you find  
19 there a leakage there?

20 MR. YOUNG: I don't believe we did, no,  
21 not in 2002, no.

22 CHAIRMAN BONACA: And that's the last time  
23 you have inspected the head?

24 MR. YOUNG: Yes, I believe. Okay. Yes,  
25 that was the last refueling outage.

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1 CHAIRMAN BONACA: Okay. All right.

2 MR. ROSEN: Do you have full access to it?

3 MR. YOUNG: Pardon me?

4 MR. ROSEN: Are there limitations on that  
5 result? In other words, you went and looked every  
6 place you could, but you didn't have full access or  
7 can you say something more about how?

8 MR. YOUNG: Well, we did the bare metal  
9 inspection that was, you know, required by the  
10 bulletin or letter. I forget what it was now.

11 MR. ROSEN: 360 degrees around all the  
12 penetrations.

13 MR. YOUNG: Right.

14 MR. ROSEN: So it's --

15 MR. YOUNG: Yes, that's my understanding  
16 is we followed all the guidance. Now, Mark Rinckel  
17 with AREVA can give more detail on that.

18 MR. RINCKEL: This is Mark Rinckel with  
19 AREVA, formerly Framatome ANP, and a long time ago  
20 Babcock and Wilcox. They couldn't do a 360 bare metal  
21 on all of the locations, because some of them are  
22 covered by a shroud. And in that case, they did some  
23 alternate low frequency eddy current tests and they  
24 also did some UT to look in those locations where they  
25 couldn't look at the bare metal inspections. And

1 those methods were approved by the staff. So they did  
2 do bare metal where they could. There are some  
3 locations that they couldn't and they used the  
4 alternate technique.

5 MR. ROSEN: Is there some feel you can  
6 give me for how many, what percentage of the locations  
7 where they had to use an alternate technique?

8 MR. RINCKEL: They have 81 control rod  
9 drive penetrations and eight in-cores. I don't know  
10 the exact number, but I think the periphery ones they  
11 were able to do bare metal, and so I would guess  
12 somewhere around 80 percent they had to use the  
13 alternate technique.

14 MR. ROSEN: They used the alternate  
15 technique for 80 percent?

16 MR. RINCKEL: That would be my guess, but  
17 I don't know the exact number.

18 DR. FORD: Did you say that this was  
19 deemed a high susceptibility plant, because of  
20 temperature time?

21 MR. YOUNG: Right. Yes.

22 DR. FORD: I thought the high  
23 susceptibility plants had to have 100 percent  
24 volumetric? Is that not true?

25 MR. RINCKEL: Well, the --

1 DR. FORD: Whatever bulletin that was.

2 MR. RINCKEL: The volumetric was done of  
3 the welds, the partial penetration weld, so they did  
4 all of that.

5 DR. FORD: Okay.

6 MR. RINCKEL: This is the -- they are  
7 talking about the bare metal on the external surface  
8 and looking for boric acid. And Entergy, because of  
9 the configuration of the shroud, was not able to do  
10 that. And that's why they use the alternate technique  
11 of an eddy current combined with UT.

12 DR. FORD: Okay. But the volumetric which  
13 was done on the welds --

14 MR. RINCKEL: Yes, almost 100 percent.

15 DR. FORD: -- showed no cracking?

16 MR. RINCKEL: That's correct. Yes.

17 DR. FORD: So this must be one of the few  
18 plants which is a high susceptibility plant which has  
19 not seen cracking?

20 MR. RINCKEL: Correct. Yes.

21 MR. ROSEN: On the other hand, we're  
22 relying on the volumetric to tell us that rather than  
23 the visual inspection?

24 DR. FORD: Exactly. Exactly.

25 MR. ROSEN: By and large.

1 CHAIRMAN BONACA: Yes, which gives us more  
2 comfort.

3 DR. FORD: But one presumably with time,  
4 you will see cracks.

5 MR. YOUNG: Right. And that's why we've  
6 got a long range plan to replace the head, because we  
7 expect eventually there will be cracking.

8 DR. FORD: Okay.

9 MR. YOUNG: Okay. Well, that's all I had  
10 for my presentation. Any other questions?

11 DR. FORD: I have a general question, but  
12 you can be the estoppel answer that maybe you could  
13 comment on. I noticed in some places that you claimed  
14 AMP was not applicable. For instance, baffle bolts,  
15 because you don't have baffle bolts. But that is just  
16 transferring the problem to now the question of  
17 cracking of the weldments. Did you do that transfer  
18 of thought process that okay, we don't have to worry  
19 about baffle bolts, because I don't have them. What  
20 do I do about the welds?

21 MR. YOUNG: Well, using the Reactor Vessel  
22 Internals Program we consider all the aging effects  
23 applicable to the internals whether it is bolting or  
24 welds.

25 DR. FORD: All welds?

1 MR. YOUNG: Yes.

2 DR. FORD: Okay.

3 MR. YOUNG: Yes.

4 DR. FORD: Okay. So we'll talk about that  
5 later on.

6 MR. YOUNG: Okay.

7 DR. FORD: Good.

8 MR. LEITCH: I noticed that in a number of  
9 places you used, and again this is one that I'm not  
10 sure if it's a staff question or a question for you,  
11 but you assumed 48 equivalent full power years at the  
12 end of the 60 year period. It's my recollection that  
13 most of the previous applicants we have seen assume 54  
14 equivalent full power years. That is an overall  
15 capacity factor of 90 percent. And you are assuming  
16 an overall capacity factor of 80 percent.

17 MR. YOUNG: Yes.

18 MR. LEITCH: I just wonder about the  
19 rationale for that number. I believe your capacity  
20 factor has been about 80 percent through the first 29  
21 years or so of operation. Would you not expect that,  
22 therefore, the overall capacity factor over the whole  
23 60 year period would be something considerably greater  
24 than 80 percent, perhaps approaching 90 percent? And  
25 if that is the case, then I wonder about some of the

1 nil-ductility numbers and so forth.

2 But I guess my question first of all is  
3 could you discuss the rationale for the 80 percent  
4 capacity factor over the 60 year period?

5 MR. YOUNG: Yes, I'll ask Mark Rinckel.  
6 He is our -- he did the fluence analysis for the  
7 project.

8 MR. RINCKEL: Again, Mark Rinckel. The  
9 use of 48 EFPY we were consistent with ANO - Unit 1.  
10 ANO - Unit 1 also used 48 EFPY. 60 years times 80  
11 percent capacity factor. You are correct in that ANO  
12 - Unit 2 through 25 to 27 years has a capacity factor  
13 of .8 and so we use that as a rationale that that was  
14 reasonable to go on to 60 years of operation. We also  
15 rely on the Reactor Vessel Integrity Program to make  
16 sure that those numbers are going to be consistent for  
17 60 years.

18 In other words, we're going to look at the  
19 fluence and update the fluence evaluation as we pull  
20 capsules out. Then there will be another fluence  
21 update extrapolation and then we will compare it to  
22 the one that we use now. So it's not as if it's a  
23 snapshot here and it's never updated. So our Reactor  
24 Vessel Integrity Program will ensure that the fluence  
25 values that we use for 60 years in this calculation

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1 will remain valid.

2 MR. LEITCH: Yes, I guess we'll talk about  
3 it later on when we get to TLAAs, we may talk a little  
4 more about that.

5 MR. RINCKEL: Yes.

6 MR. LEITCH: But I think there is a lot of  
7 areas where you assume an equivalent capacity factor  
8 over the period of time, and I guess 80 percent to me  
9 seems just to be a little on the low side. In other  
10 words, if you've been 80 percent for the first 25  
11 years, I think most plants would expect maybe  
12 something like a 90 percent capacity factor for the  
13 remaining life which would make the overall average  
14 considerably more than 80 percent.

15 MR. RINCKEL: Well, I think, they would  
16 hope for that.

17 MR. LEITCH: Yes.

18 MR. RINCKEL: But again, you know, based  
19 on 25 years of experience, that's the data point that  
20 we had. With regard to this particular vessel, their  
21 PTS value limiting is 127 degrees. We could have  
22 probably doubled the fluence and still shown  
23 acceptable results. The Upper Shelf Energy value  
24 maximum was about 58 foot-pounds. Again, we could  
25 have gone to 54 and maybe even higher.

1 Part of what prompted this was back when  
2 we first started doing license renewal. ANO had done  
3 power uprate and they had actually calculated all of  
4 these values to 48 EFPY. We saw no reason to revisit  
5 it and redo it at that time. They are very expensive  
6 analyses to do, so we felt that it was a reasonable  
7 approximation, based on an 80 percent capacity factor  
8 through the first 25 to 27 years of operation.

9 MR. LEITCH: So the USE, I guess, I wasn't  
10 sure how USE was related to the EFPY. What you're  
11 saying is -- in other words, I wasn't sure about the  
12 sensitivities there. But what you're saying is you  
13 feel quite confident that even if had you used 54, you  
14 would have still satisfied the USE.

15 MR. RINCKEL: I think we could have. We  
16 probably could have used 60 and still satisfied the  
17 Upper Shelf Energy. And certainly the PTS at 120 some  
18 degrees is 200 and some odd below.

19 MR. LEITCH: Yes.

20 MR. RINCKEL: So there's no question PTS  
21 wise.

22 MR. LEITCH: PTS.

23 MR. RINCKEL: You know, absolutely.

24 MR. LEITCH: It was the USE.

25 MR. RINCKEL: Yes, the Upper Shelf Energy,

1 I believe, the max was 58 foot-pounds, so I believe  
2 that was for the weld and not the plate.

3 MR. LEITCH: Okay. Thank you.

4 MR. RINCKEL: Yes.

5 MR. ROSEN: Well, is staff going to  
6 address that point?

7 DR. KUO: Yes.

8 MR. ROSEN: Okay.

9 MR. YOUNG: Okay. That's all. That's all  
10 I have.

11 CHAIRMAN BONACA: Do we have questions  
12 from Members? If not, I thank you for the  
13 presentation.

14 MR. YOUNG: Okay.

15 CHAIRMAN BONACA: And now we hear from the  
16 staff.

17 MR. YOUNG: Thank you.

18 DR. KUO: Thank you. Greg Suber, Project  
19 Manager, for the subrogation.

20 MR. SUBER: Good afternoon. My name is  
21 Gregory Suber and I am the lead project manager for  
22 the ANO-2 license renewal. Sitting to my left is  
23 Rebecca Nease and she was the lead, the team leader  
24 for the license renewal inspections for ANO-2. The  
25 Safety Evaluation Report or SER for ANO-2 was issued

1 on November 5, 2004. This SER reflects the staff's  
2 review of the license renewal application, responses  
3 to requests for additional information, audits,  
4 inspections and supporting documentation submitted by  
5 the applicant up to October the 15<sup>th</sup>.

6 The SER for ANO-2 was completed with no  
7 open or confirmatory items. As a result of the  
8 staff's review, five components subject to an Aging  
9 Management Review or AMR were brought into the scope  
10 of license renewal. In addition, a one-time  
11 inspection AMP will be added to manage the aging  
12 effects associated with various (a) (2) components.

13 Three license conditions are being  
14 proposed for the new license. The first is for the  
15 applicant to update the FSAR upon issuance of the  
16 renewed license. The second is to complete future  
17 activities described in the FSAR supplement prior to  
18 entering the period of extended operation. And the  
19 third is to submit it for NRC review and approval any  
20 changes to the Reactor Vessel Surveillance Program.  
21 The third license condition is identical to the one  
22 that was issued for Farley and has been placed on  
23 recent applications.

24 The ANO-2 License Renewal Review was the  
25 second of three pilot programs implementing the

1 revised review process. As seen on this slide, the  
2 revised process consisted of a mix of technical  
3 reviews, on-site audits and on-site inspections. For  
4 ANO-2, the audits took place on the weeks of December  
5 1, 2003, January 20, 2004 and February 9, 2004.

6 The scoping and screening inspection took  
7 place on March 5, 2004 and the results were documented  
8 in an inspection report issued on April 19, 2004. The  
9 Aging Management Inspection took place this past  
10 November. Consequently, the inspection report has not  
11 yet been issued.

12 MR. LEITCH: Gregory?

13 MR. SUBER: Yes?

14 MR. LEITCH: These various inspections,  
15 are we going to hear others speak about those or are  
16 you the proper one to ask questions about these? I  
17 have a couple of questions and I'm just wondering when  
18 is the right time in the presentation to get into  
19 that?

20 MR. SUBER: Yes, Mrs. Nease is going to do  
21 the presentation for the regional inspections, which  
22 is the scope and screening inspection.

23 MR. LEITCH: Okay.

24 MR. SUBER: And Mr. Cranston and other  
25 staff members are going to talk about the other

1 inspections.

2 MR. LEITCH: Okay. Good. Thank you.

3 MR. SUBER: I will now discuss the staff's  
4 review of the scoping and screening as documented in  
5 Section 2 of the SER. In Section 2 of the SER, the  
6 applicant describes -- oh, excuse me, in Section 2 of  
7 the LRA, the applicant describes the process used to  
8 identify the structures and components subject to an  
9 Aging Management Review. In Section 2.1, the  
10 applicant describes the methodology used to identify  
11 structures, systems and components for SSCs that are  
12 within the scope of license renewal and subject to an  
13 AMR.

14 The staff reviewed the LRA and conducted  
15 an on-site audit to verify that the methodology met  
16 the rule. The results of the audit were published in  
17 an Audit Trip Report issued on October 7, 2004. The  
18 report identified areas where additional information  
19 was needed to complete the staff's review. The staff  
20 issued RAIs, evaluated the application and the  
21 applicant's responses and documented its review in the  
22 SER. The staff concluded that the applicant's  
23 methodology was consistent with the requirements of  
24 the rule in the staff's position on the treatment of  
25 non-safety-related SSCs.

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1           In Section 2.2 of the SER, the staff  
2 performed plant level scoping to determine that the  
3 applicant included the appropriate mechanical systems,  
4 electrical systems instructions within the scope of  
5 license renewal for ANO-2. The staff found no  
6 omissions for plant level scoping.

7           In Section 2.3, the staff documented the  
8 results of its review for the scoping and screening of  
9 mechanical systems. One component, a feedwater  
10 outboard isolation block valve was added to the scope  
11 as a result of the staff's review.

12           In Section 2.4, the staff documented the  
13 results of its review for the scoping and screening of  
14 structures and structural components. One component,  
15 the intake canal was added to the scope of license  
16 renewal. Actually, that's in error. It was already  
17 in scope, but there was no AMR for the intake canal.  
18 And what the staff did is identified aging effects  
19 requiring management, and consequently, an SMP which  
20 was a Structural Monitoring Program, and we'll discuss  
21 that later, was added by the staff's review.

22           MR. LEITCH: Now, the spent fuel cooling  
23 pumps.

24           MR. SUBER: Yes, sir.

25           MR. LEITCH: Were added as a result, I

1 guess, of the scoping and screening inspection?

2 MR. SUBER: Yes, sir.

3 MR. LEITCH: And I thought as I read  
4 through that, there was still a little confusion in my  
5 mind as to whether the pumps are now included or just  
6 the pump casings.

7 MR. SUBER: Okay.

8 MR. LEITCH: Which is the case?

9 MS. NEASE: From what I understand, the  
10 pumps are included in the scope, but they would be  
11 screened out and just the casings would be the  
12 passive, long-lived component that would be in the  
13 scope.

14 MR. LEITCH: So the pumps themselves do  
15 not provide a safety-related function? It's just the  
16 pressure boundary?

17 MR. SUBER: The pressure boundary for the  
18 casings. Yes, sir.

19 MS. NEASE: It's the pressure boundary.

20 MR. SUBER: Yes.

21 MR. LEITCH: Right. They are active.  
22 Yes, I understand. Okay. I understand. And I guess  
23 you also -- while you're talking about structures, I  
24 noticed too that the -- on the emergency cooling pond  
25 the riprap and the riprap liner are not included in

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1 the scope. Perhaps I'm not picturing this thing  
2 properly. I guess it's like an earthen dike, an  
3 earthen structure. I would have thought that in order  
4 to maintain the integrity of that structure, the liner  
5 and the riprap would have to be there. But evidently  
6 that's not included in the scope. Why was that not  
7 included?

8 MR. SUBER: Correct, it's not included in  
9 the scope, because they don't take credit for it for  
10 maintaining the integrity of the emergency cooling  
11 pump.

12 MR. LEITCH: I'm not sure I understand  
13 that answer. I would think the liner would be  
14 important to maintain the integrity of the emergency  
15 pond. Not so?

16 MR. SUBER: Is Mr. --

17 DR. KUO: Let me see if any --

18 MR. SUBER: Yes.

19 DR. KUO: -- tech staff can answer the  
20 question.

21 MR. SUBER: That would be Mr. John Ma,  
22 presumably.

23 MR. YOUNG: We've got our structural lead  
24 here that can give you a little more information.

25 MR. AHRABLI: My name is Reza Ahrabli,

1 introduced as the structural lead. The question you  
2 have is regarding the liner in the emergency cooling  
3 pond. Is that correct?

4 MR. LEITCH: Yes.

5 MR. AHRABLI: Okay. The emergency cooling  
6 pond is not lined. The only portion that's got a  
7 riprap is around the overflow. So it's just like an  
8 earthen structure, which is just like a pond and we  
9 monitor by the structural monitoring and also by the--  
10 which is on the -- of course, we have the program  
11 described in the LRA and also by the ponding, which is  
12 the level of the emergency cooling bob is monitored.

13 MR. LEITCH: Okay. So there's no liner in  
14 the pond?

15 MR. AHRABLI: No.

16 MR. LEITCH: It's just an earthen pond?

17 MR. AHRABLI: That is correct.

18 MR. LEITCH: And the --

19 MR. AHRABLI: Only riprap we have is  
20 around like an overpath, overflow.

21 MR. LEITCH: Like a spillover?

22 MR. AHRABLI: Correct, spillaway.

23 MR. LEITCH: Okay. And that spillover has  
24 a liner?

25 MR. AHRABLI: That is correct.

1 MR. LEITCH: That's not in scope, that's  
2 just an overflow?

3 MR. AHRABLI: That is correct. That's  
4 correct.

5 MR. LEITCH: Yes, okay.

6 MR. AHRABLI: The level is monitored by  
7 the structural monitoring.

8 MR. LEITCH: Yes, okay. Because there is  
9 no liner in the emergency pond.

10 MR. AHRABLI: That is correct.

11 MR. LEITCH: Okay. Thank you.

12 MR. AHRABLI: Okay.

13 DR. FORD: Could I return to the question  
14 of the what is in scope in regards pumps? Pump casing  
15 is in scope and the rotating or active part is not?  
16 This is an issue that has come up time and time again.  
17 And we have expressed some wonderment as to why we  
18 don't look at the whole unit that's within the scope.  
19 Is there any thought that's been taken by the staff?  
20 Not necessarily because of this particular  
21 application, but this issue in general? Is there any  
22 more thought that's been given as to the logic behind  
23 that?

24 MR. SUBER: To include active components  
25 in the scope of license renewal?

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1 DR. FORD: Within that component. Within  
2 the pump or whatever.

3 MR. SUBER: Okay.

4 DR. KUO: Dr. Ford?

5 DR. FORD: Yes?

6 DR. KUO: When we established the rule  
7 that basic principle was that the maintenance rule  
8 would take care of the active parts of the pump and  
9 then but the casing, being a pressure boundary, a  
10 long-lived passive, so that is within the scope of  
11 license renewal. But, you know, we noticed based on  
12 our past experience that all these active components  
13 are properly -- are being properly taken care of by  
14 what we have now. There is no need to add anything  
15 there. But pressure boundary is something that we  
16 need to have taken care of. That's why we scope in  
17 the pressure -- the casing of the pump.

18 CHAIRMAN BONACA: Why was the intake canal  
19 structure not included in the scope by the applicant?

20 MR. SUBER: Excuse me, sir. I misspoke  
21 when I said that the intake canal was included in  
22 scope.

23 CHAIRMAN BONACA: Okay.

24 MR. SUBER: But they did not -- they  
25 failed to identify any aging effects requiring

1 management.

2 CHAIRMAN BONACA: Yes. Okay.

3 MR. LEITCH: I also noted that there is a  
4 system called diesel fuel services that was not in  
5 scope. And I guess anything related to diesel sounds  
6 to me like it ought to be in scope. Maybe I don't  
7 understand what the diesel fuel services system is.  
8 Is it just a bedplate drain kind of a system or what  
9 is it?

10 MS. NEASE: Ted can answer that.

11 MR. IVY: Ted Ivy, I'm with Entergy. The  
12 diesel fuel services system only contains two  
13 components, and those two components are some drains  
14 from a berm that protect the day tank for the diesel  
15 fuel storage tank. They are not required to have any  
16 safety function. Originally, when the plant was split  
17 up with various systems, they had some components in  
18 there that were safety-related. However, all those  
19 components were moved to the fuel system. So the only  
20 two remaining were these two components, which that's  
21 why the system wasn't included. We probably could  
22 have just got rid of the system, but it took a lot of  
23 paperwork to do that, so we just evaluated it the way  
24 it was.

25 MR. LEITCH: Okay. Thanks.

1 MR. SUBER: In Section 2.5, the staff  
2 documented the results of its review for the scoping  
3 and screening of electrical instrumentation and  
4 controls. One commodity group, power transmission  
5 conductors was added to the scope by the staff's  
6 review.

7 We will now move to the discussion of the  
8 license renewal inspections. Ms. Rebecca Nease, the  
9 License Renewal Inspection Team leader for ANO-2, is  
10 here to discuss the status of ANO-2 review, licensing  
11 inspections.

12 MS. NEASE: Thanks, Greg. Like Greg said,  
13 my name is Rebecca Nease. I'm a team leader in the  
14 Plant Engineering Branch in Division of Reactor Safety  
15 in Region IV, and as a team leader I lead team  
16 inspections, not just license renewal, all sorts of  
17 engineering team inspections. But I was there with  
18 the team leader, the team leader for ANO-1 inspections  
19 back in 2000, and I'm the team leader for the ANO-2  
20 inspections.

21 As was discussed earlier, ANO-2 is part of  
22 the pilot program. And because of that, we scheduled  
23 our inspections to support that pilot review program.  
24 We've scheduled our scoping and screening inspection  
25 in March and we moved back our Aging Management Review

1 inspection to November until we had the SER. And as  
2 yet, we have no determined whether we need that third  
3 optional inspection.

4 Next slide, please. The objective of the  
5 scoping and screening inspection is to confirm that  
6 the applicant has included six structures and  
7 components in the scope of license renewal as required  
8 by the Rule Part 54. My scoping and screening  
9 inspection team included three regional inspections.  
10 There we go. Three regional inspectors, one resident  
11 inspector and we also have help from Greg Suber on the  
12 side. This inspection was one week in length and we  
13 were on-site the first week in March.

14 Did I skip a slide? The order was  
15 different. Okay. What's the next slide? That's all  
16 right. The results of our scoping and screening  
17 inspection are documented in Inspection Report 2004-  
18 006 dated April 19, 2004. In this inspection, we  
19 concluded, in general, that the applicant's scoping  
20 and screening process was successful in identifying  
21 those system structures and components requiring an  
22 Aging Management Review. I think we're on the wrong--

23 DR. WALLIS: Excuse me. Did you evaluate  
24 the quality of these programs it has implemented or  
25 plans to implement, which always sounds good? But how

1 good are those programs themselves?

2 MS. NEASE: We didn't look at -- in the  
3 scoping and screening, we didn't look at the Aging  
4 Management Program.

5 DR. WALLIS: But did you at some time  
6 evaluate how good the programs are?

7 MS. NEASE: We looked at the quality of  
8 the programs. That was in the next inspection.

9 DR. WALLIS: Are you going to tell us  
10 about that later?

11 MS. NEASE: Yes.

12 DR. WALLIS: Okay. Thank you. I'll look  
13 forward to it. It always concerns me. There's a long  
14 list of all the things which are going on.

15 MS. NEASE: Right.

16 DR. WALLIS: But there isn't a sort of an  
17 evaluation of how good they are.

18 MS. NEASE: Well, yes, we do look at the  
19 quality of those programs and I can talk about it now  
20 if you want to or move on.

21 DR. WALLIS: Well, whatever is convenient  
22 for you.

23 MS. NEASE: Well, I can't -- the  
24 inspection report is not out and so the information is  
25 predecisional, but I can tell you that when we do look

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1 at those -- we look at the -- especially for the  
2 programs, Aging Management Programs that are in place  
3 and doing their job right now, we look at how  
4 effective they have been in doing that job. And to do  
5 that, we look at some of the past Condition Reports  
6 that might have been issued and failures that might  
7 have come up as a result of aging.

8 DR. WALLIS: An action should be taken.

9 MS. NEASE: And we also do walkdowns.

10 DR. WALLIS: Perhaps, yes.

11 MS. NEASE: And, yes, that's one of the  
12 things we look at and that's why it's important to  
13 look at current programs that are actually doing the  
14 work so that we can be sure that the ones that they  
15 are going to take credit for are actually doing the  
16 work for them.

17 MR. LEITCH: Rebecca, I had a question  
18 about this scoping and screening inspection report  
19 dated 4/19/04. I think we are all talking about the  
20 same one here. Attachment 2 of that report, there was  
21 a tabulation some systems saying yes in scope, some  
22 no.

23 MS. NEASE: Yes.

24 MR. LEITCH: And I guess my question is  
25 were all the yes systems reviewed or just a sample of

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1 the yes systems? It wasn't entirely clear to me.  
2 There were some -- many of them said yes and there  
3 were a few that said no, not in scope. But were all  
4 the ones that were in scope reviewed? And if not,  
5 then what was the sample size of the ones that were  
6 reviewed?

7 MS. NEASE: These are the systems and  
8 structures that we chose to review. An inspection is  
9 always a sampling. We don't -- in an inspection, we  
10 don't do a 100 percent. We don't have the staff to do  
11 that. So what we did is we picked a number of system  
12 structures and components that the licensee/applicant  
13 had determined was in the scope and we reviewed that  
14 to make sure that the components and that they drew  
15 their boundaries in the right way, in the right manner  
16 in accordance with the rule of their application and  
17 the SER.

18 We also picked some that they had  
19 determined were out of scope to make sure to test  
20 their thought process on how they determined that was  
21 out of scope to ensure that they were doing that in  
22 accordance with the rule, the SER and their  
23 application.

24 MR. LEITCH: Let me ask my question a  
25 different way. In other words, those systems that are

1 listed there in Attachment 2, page 1, where it says  
2 "yes," did you look at every one of those systems or  
3 just a sampling of those systems?

4 MS. NEASE: For instance, the first one  
5 listed is the aux-steam, auxiliary steam system.

6 MR. LEITCH: Yes.

7 MS. NEASE: We looked at the license  
8 renewal application, their method. We looked at the  
9 methodology, their number of background documents. We  
10 looked at for how they performed the scoping and  
11 screening on that system. Obviously, that system is  
12 in scope. And we looked at how they determined to  
13 draw the boundary of that system.

14 MR. LEITCH: Okay.

15 MS. NEASE: We also walked down any  
16 accessible portions of that system to make sure that  
17 it made sense, that where they drew the boundaries  
18 made sense with respect to license renewal. Again, I  
19 can't say --

20 MR. LEITCH: Let me ask you, maybe I'm not  
21 asking my question very well. Were there other  
22 systems that were in scope that you did not look at at  
23 all?

24 MS. NEASE: Yes, there are.

25 MR. LEITCH: Okay.

1 MS. NEASE: Yes, there were. These are  
2 not all the systems that the applicant has determined  
3 are in scope.

4 MR. LEITCH: Then can you give me some  
5 idea for the percentage of the ones that you looked  
6 at?

7 MS. NEASE: Oh, let's see. They have --  
8 Garry had a slide earlier that said how many systems,  
9 how many mechanical systems you have in the scope.  
10 There were 33?

11 MR. YOUNG: Yes, this is Garry Young.  
12 There were 33 Aging Management Programs.

13 MS. NEASE: Oh.

14 MR. YOUNG: I don't know the number.

15 PARTICIPANT: Around 30.

16 MR. YOUNG: Yes, there are around 30  
17 mechanical systems.

18 MS. NEASE: That they had determined were  
19 in scope. It looks like we have 30 here.

20 MR. LEITCH: Yes.

21 MS. NEASE: But some, a number of those we  
22 chose as out of scope systems to just test their  
23 thought process in eliminating those systems.

24 MR. LEITCH: So I'm not necessarily  
25 looking for an exact number, but just a kind of a feel

1 for what you did. I guess, what I'm hearing is that  
2 you looked at a very high percentage of the ones that  
3 they felt were in scope.

4 MS. NEASE: A high percentage, yes.

5 MR. LEITCH: Okay. And another question,  
6 I guess, in that same area, the next page in that  
7 attachment talks about electrical systems. Now, there  
8 are no electrical systems listed that are not in  
9 scope. And I guess, again my question is did you not  
10 look at -- were there no electrical systems that were  
11 not in scope or did you just not look at electrical  
12 systems not in scope? In other words, in the  
13 mechanical systems certain things were not in scope  
14 and you looked to be sure that you agreed with that  
15 determination. In the electrical area there is  
16 nothing listed not in scope. So how did you do that  
17 kind of review with electrical systems or did you not  
18 do that kind of a review?

19 MS. NEASE: Well, we didn't have to,  
20 because all of their electrical systems were scoped  
21 in.

22 MR. LEITCH: Okay.

23 MS. NEASE: And so they sort of made it  
24 easy. We didn't have any to choose that were not in  
25 scope. They were all in scope.

1 MR. LEITCH: Okay. Thanks.

2 MS. NEASE: Okay.

3 MR. ROSEN: Could you hold it there for a  
4 minute, 13? You brought two items into scope,  
5 including the switchyard control house.

6 MS. NEASE: Yes.

7 MR. ROSEN: Tell me more about that, the  
8 switchyard control house.

9 MS. NEASE: Okay. When we were doing our  
10 walkdown in the switchyard, we were doing the  
11 electrical system walkdown in the switchyard and we  
12 noticed that the startup-breaker control cables had  
13 come up and were supported in a -- they were supported  
14 by the slab of this control house in the switchyard.  
15 The startup-breaker control cables are in scope,  
16 because they are part of station blackout coping. But  
17 the structure holding up the cables were not. So when  
18 we brought that up to the applicant, they agreed that,  
19 you know, the support system for those cables should  
20 be in scope and therefore they just scoped the entire  
21 building into the scope of license renewal.

22 MR. ROSEN: And there are no components  
23 within the switchyard control house that are within  
24 scope? It was just the support function for the --

25 MS. NEASE: Well, the breaker, the control

1 cables were in there. They included all the  
2 electrical in scope.

3 MR. ROSEN: Oh, I see. That went into the  
4 switchyard control house.

5 MS. NEASE: And we went into the control  
6 house and we looked at the cables, we were walking  
7 down the system and we asked the question, this  
8 building is not in scope, why not, because it actually  
9 supports supporting systems and cable trays and  
10 whatever to hold up the cables and they agreed.

11 MR. ROSEN: Well, it would seem to be  
12 obvious to that if there were electrical components  
13 within the switchyard control house that were in  
14 scope. Is that what you said? That the building and  
15 the slab supporting it would be in scope.

16 MS. NEASE: Yes.

17 MR. ROSEN: Not because of a set of cables  
18 that came up and went through another transformer.

19 MS. NEASE: Yes, but the cables were in  
20 scope because of station blackout.

21 MR. ROSEN: Yes. And the components in  
22 the switchyard house were in scope because of?

23 MS. NEASE: Station blackout. They were  
24 the control cables.

25 MR. ROSEN: Yes, we're going around

1 circles here.

2 MS. NEASE: Sorry.

3 MR. ROSEN: I'm forgetting about the  
4 cables that were found to -- I'm just thinking about  
5 things inside the switchyard control house. For  
6 example, batteries.

7 MS. NEASE: I don't think there were any  
8 batteries in there, but anything that -- maybe Garry  
9 can help.

10 PARTICIPANT: There's got to be.

11 MR. YOUNG: Yes, there was nothing in that  
12 building that was in scope for license renewal, except  
13 this control, one control cable or cables and they  
14 were just -- we knew the cables were there and they  
15 were in scope. But at the time, prior to the  
16 walkdown, we didn't realize that they ran through this  
17 building. So by the fact they ran through the  
18 building, we brought the building in scope, but  
19 nothing else in the building serves to function  
20 (a) (1), (a) (2), (a) (3) function.

21 MR. ROSEN: All right. That was what was  
22 confusing me.

23 MS. NEASE: Okay. Any other questions on  
24 what we --

25 MR. LEITCH: Yes, I had one other on that

1 scoping and screening inspection report. Part of the  
2 report says "The applicant excluded portions of  
3 systems that were not housed in safety-related  
4 structures on the basis that no safety-related  
5 components are housed in non-safety-related  
6 structures." And I guess my question really is are  
7 there no situations where safety-related systems  
8 extend into non-safety-related structures?

9 MS. NEASE: I think --

10 MR. LEITCH: I can picture stubs, let's  
11 say, in safety-related systems up to a valve or some  
12 other isolation point extending out of a safety-  
13 related structure into a non-safety-related structure.  
14 That does not happen?

15 MS. NEASE: In our inspection, we didn't  
16 identify any.

17 MR. LEITCH: Yes.

18 MS. NEASE: But I think the applicant --  
19 if the structure housed a safety-related component, I  
20 believe, am I correct, Ted, that they scope that  
21 structure in for that one safety-related component  
22 that happened to be in the structure. That was their  
23 methodology. We didn't find any exceptions to that in  
24 the inspection.

25 MR. LEITCH: So every safety-related

1 component is in a safety-related structure, so far as  
2 your inspection?

3 MS. NEASE: An in scope structure.

4 MR. LEITCH: In scope structure, yes.  
5 Okay.

6 MS. NEASE: As a matter of fact, I think  
7 in ANO-1, correct me if I'm wrong, Garry, but I think  
8 in ANO-1 the staff way back in 2000, the staff  
9 identified some cabling in the turbine building and  
10 that brought -- determined to be in scope. Isn't that  
11 right, Garry?

12 MR. YOUNG: Yes, that's right. There were  
13 some. I think it had to do with station blackout or  
14 ATWS and yes, we did bring the turbine building in as  
15 a result of that.

16 MS. NEASE: Okay. Like I said, we just  
17 finished the Aging Management Review inspection. We  
18 were on the site the first weekend, the third week of  
19 November. The objective of the Aging Management  
20 Review inspection is to confirm that the licensee has  
21 implemented or plans or has plans to implement Aging  
22 Management Programs that will manage the effects of  
23 aging for the in scope system structures and  
24 components. This was a two week effort and the  
25 results will be summarized in a future report. The

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1 Inspection Report No. will be 2004-007.

2 We talked a little bit earlier about some  
3 of the -- I can talk a little bit about the reasons I  
4 chose the programs we chose or I can talk about the  
5 inspection process itself, but the results are  
6 predecisional.

7 DR. FORD: I would like to put off on  
8 Professor Wallis' question later on about the quality  
9 of the Aging Management Programs and how they are  
10 carried out. For instance, was the flow-assisted  
11 corrosion Aging Management Program audited?

12 MS. NEASE: Excuse me, I didn't understand  
13 the what?

14 DR. FORD: The flow-assisted corrosion.

15 MS. NEASE: No, I did not audit that  
16 program. What program? That was not chosen.

17 MR. YOUNG: The FAC Program.

18 DR. FORD: It wasn't. As you know,  
19 recently, the last few months being accidents in  
20 Japan, five flow-assisted corrosion. I'm just  
21 concerned at the quality of those programs as to  
22 whether we could be heading for a problem. And I'm  
23 just trying to push you a little bit to find out how  
24 well these programs work.

25 MR. ROSEN: Peter, I think you're on to

1 something very good here. Maybe what we should do is  
2 ask the staff outside the license renewal contacts to  
3 give us a briefing on that subject.

4 DR. FORD: Yes.

5 MR. ROSEN: Maybe the industry reps might  
6 want to participate as well, given the accident that  
7 you pointed out.

8 PARTICIPANT: Can we?

9 MR. ROSEN: Sure.

10 DR. FORD: But could you give a feeling as  
11 to -- I know there's a report in the future, but to  
12 give us some reassurance, if you like, as to the depth  
13 of which you examined these programs?

14 MS. NEASE: Sure.

15 DR. FORD: What sort of questions are  
16 asked and what are the answers you get?

17 MS. NEASE: Well, what we did is we had a  
18 team about the same size and we used the same members,  
19 except we were lucky to talk Caudle Julian, which you  
20 all know from Region II, to come in on the inspection.  
21 What we did was we picked the Aging Management  
22 Programs that -- what I had done earlier before I  
23 started these inspections is I observed some of the  
24 audit efforts at the site. And what we tried to do,  
25 because this is a pilot and they were at the site

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1 auditing certain systems and programs, what we tried  
2 to do is not duplicate efforts so much.

3 Now, I did choose some other programs and  
4 some of the systems and structures and components that  
5 were audited, but for the most part, I tried to stay  
6 away from the ones that the audit teams had looked at  
7 in depth on the site. What we did is we picked Aging  
8 -- I talked with Greg Suber and he had some ideas on  
9 what the staff had had some difficulties in their  
10 review or a lot of questions and we hit those programs  
11 up. If we had certain programs that might have had  
12 some questioning effects or abilities of the program  
13 to perform, what they were supposed to do, then we  
14 looked at those programs.

15 We tried to hit the high level risk  
16 significant type programs. Fire protection, for  
17 instance, we picked that system and then we looked at  
18 the programs that managed the aging for that system,  
19 because we know fire protection is a real high  
20 significant event, and so we picked those Aging  
21 Management Programs.

22 DR. FORD: That's a very good example,  
23 fire protection system. The many carbon steel pipes,  
24 they are fairly stagnant. They do corrode and the  
25 corrosion product will block up nozzles. Now, that

1 sequence of statements, were those examined,  
2 quantitatively?

3 DR. KUO: Dr. Ford?

4 DR. FORD: Yes?

5 DR. KUO: If I may, I think this is a  
6 little confusing here. The process that the staff  
7 uses is that the headquarters staff is going to do the  
8 review of the acceptability of an Aging Managing  
9 Program. It could be review the in-house. It could  
10 be done, the review could be done at the site. As far  
11 as the quality of the program is concerned, either the  
12 headquarter staff or the audit teams will be assessing  
13 the quality of the program. But the region of  
14 function here is that they are going to make sure the  
15 program is implemented or will be implemented as  
16 described, as committed by the applicant.

17 So in the later presentation by our Audit  
18 Team leader, he will talk about a little bit on this  
19 audit, you know, as far as the quality is concerned.

20 DR. FORD: Today?

21 DR. KUO: Today.

22 DR. FORD: Okay.

23 CHAIRMAN BONACA: The reason why these are  
24 good questions, however, about the quality of the  
25 programs is that I would have raised this issue myself

1 if you had not. In this application, for example, if  
2 I go to Appendix B, there is a description about every  
3 program, but it's very skimpy. There isn't much  
4 information. I imagine this is the same information  
5 you receive up front, so you are left with questions  
6 in your mind about the quality, in the sense of, you  
7 know, what's in it. There is some description of it.  
8 You are left with a number of questions in your mind  
9 about that.

10 So I tend to then go to operating  
11 experience, which is under those programs. Even that  
12 is very briefly described. Now, you have the  
13 advantage, you go to the site. So are you using, for  
14 example, operating experience to understand, you know,  
15 to see how effective a program was? Because, I think,  
16 that's the most important thing to see. Is the  
17 correct program effective in dealing with events they  
18 have identified and resolving them in a permanent  
19 fashion? That's really the advantage you have over us  
20 and that I would like to hear about that, I mean.

21 MS. NEASE: Yes, we do consider operating  
22 experience. Again, we are looking on a sampling  
23 basis.

24 CHAIRMAN BONACA: Yes, no, I understand.

25 MS. NEASE: So we can't look at everything

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1 and all of the experience.

2 CHAIRMAN BONACA: Yes.

3 MS. NEASE: But we do consider that.

4 CHAIRMAN BONACA: For example, let me give  
5 you some other trouble I have, okay? I go to B.1.2 in  
6 the Appendix and I find the statement that says that's  
7 bolting and torquing activities. It says "repetitive  
8 occurrences of deficient bolting and torquing  
9 activities are identified by the Arkansas Staff." And  
10 then it says "corrective action." So I'm left with a  
11 question that's is this the action that they are going  
12 to take? Which is if there are repetitive  
13 occurrences, the corrective action programs will  
14 identify them and deal with them, which is a promise  
15 or is it a statement of something that has happened?  
16 That they identified the repetitive occurrences of the  
17 deficient bolting and identified them to the  
18 correcting action program, which proves that the  
19 program is corrective.

20 You see what I'm trying to say? I could  
21 read these words in two ways and that's what I'm left  
22 with. That's why I ask you these questions, because  
23 you have been at the site and I haven't.

24 MS. NEASE: We would be able, if we chose  
25 the Bolting and Torquing Program.

1 CHAIRMAN BONACA: Yes.

2 MS. NEASE: We would be able to inspect  
3 CRs that happen to be written.

4 CHAIRMAN BONACA: Okay.

5 MS. NEASE: Condition Reports that happen  
6 to be written. We would look at -- we also walkdown.

7 CHAIRMAN BONACA: Yes.

8 MS. NEASE: The system structures and  
9 components, we look for aging effects that might not  
10 be managed now.

11 CHAIRMAN BONACA: Yes.

12 MS. NEASE: To give us an indication of  
13 how those programs are working. We do have an  
14 advantage of being at the site and we have a lot more  
15 documentation we can review. And we do an in depth  
16 review of those.

17 CHAIRMAN BONACA: Okay. Yes.

18 MS. NEASE: If we choose that program to  
19 look at.

20 CHAIRMAN BONACA: Okay. I just wanted to  
21 -- I know you have the same experience when you look  
22 at, you know, those Appendices at the beginning. But  
23 that's really what I'm left with. Now, that was  
24 interesting, you know, like take the boric acid  
25 corrosion prevention says Arkansas Two has five

1       pressurized heater sleeve leaks throughout this  
2       program. Okay. And then it says this proves that the  
3       program is effective. I'm saying wait a minute now.

4                If, in fact, the program was supposed to  
5       prevent leakage, it would not be effective. If the  
6       program is, in fact, you know, depending on  
7       identifying this before something else, that is  
8       effective. So the same phrase could support the  
9       effectiveness and ineffectiveness and that's why I  
10      think these questions are valid, because we are left  
11      here with those judgement to make from the basis of  
12      just very skimpy writing that can be interpreted.

13               DR. WALLIS: You have to also, I think,  
14      evaluate the people not just the program. Do you go  
15      there and say you pick the Bolting and Torquing  
16      Program, I want to see whoever is in charge of this  
17      program and whoever may be an engineer and who knows  
18      what's going on. And the first thing you ask them is  
19      a question to find out if they know that they are in  
20      charge of the program. Once you have determined that,  
21      then you can start asking them technical questions.  
22      You do this sort of thing?

23               MS. NEASE: Absolutely. It's a big part  
24      of our inspection. And as a matter of fact, when we  
25      go, when we do our walkdowns the program manager

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1 usually goes with us or the system engineer goes with,  
2 but we're -- interviewing the people responsible for  
3 the program is a very big part of our inspection.

4 DR. FORD: Could I just follow-up? You  
5 said just a sample of the 33 AMPs audited. How many  
6 were, in fact, audited? Three or four? Four?

7 MS. NEASE: Oh, no. Gee.

8 MR. SUBER: No, you said -- she said a  
9 sample of the mechanical system.

10 MS. NEASE: No, we're talking about the  
11 Aging Management Program.

12 MR. SUBER: Oh, okay.

13 MS. NEASE: And I don't have that. We  
14 have it written in the report.

15 DR. FORD: Okay.

16 MS. NEASE: Right off the top of my head,  
17 I think, we reviewed 10, 12 of them.

18 DR. FORD: Oh, okay.

19 MS. NEASE: I didn't bring my inspection  
20 plan with me. I'm sorry.

21 DR. FORD: And you mentioned in passing,  
22 you chose those because of risk?

23 MS. NEASE: Well, some of it based on  
24 risk. Some of it based on the fact that we wanted to  
25 have a sampling of programs that were in place and

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1 working now, programs that they are going to enhance  
2 and then we wanted to look at the attributes of  
3 programs yet to be implemented. So we chose a mix of  
4 those.

5 DR. FORD: Okay.

6 MS. NEASE: And of the programs we chose,  
7 we based some on risk, some on some feedback from Greg  
8 and the staff on some programs they wanted us to look  
9 at in depth. We used all of that in our choosing of  
10 our programs, in our selection.

11 DR. FORD: Okay.

12 MR. LEITCH: Page 6 of the Audit and  
13 Review Report dated 7/29/04 says that 26 of the Aging  
14 Management Programs were examined.

15 MS. NEASE: That was the audit.

16 PARTICIPANT: The audit.

17 MS. NEASE: That's not the inspection.

18 MR. LEITCH: I understand, yes.

19 MR. YOUNG: Rebecca, your initial list  
20 that you sent to us had 23 programs on it.

21 MS. NEASE: Okay. Thank you.

22 DR. WALLIS: Did they all get As?

23 MS. NEASE: It depends on your definition  
24 of A. We'll know soon when I get that report out.

25 DR. WALLIS: Okay.

1 MS. NEASE: Okay.

2 MR. SIEBER: It's digital, zero and one,  
3 right? You either did it or you didn't.

4 MS. NEASE: By statement. Go or no go?  
5 We pulled this off the website. This is to give you  
6 all an indication of the current performance at ANO  
7 and this is performance indicators. And as you can  
8 see, there are -- you know, all these are green, at  
9 this point. Here is another slide.

10 But to give us another data point for  
11 current performance, also on the website you can pull  
12 up inspection reports, and we issued a mid-cycle  
13 performance review letter. We issue an end of cycle  
14 and we issue a mid-cycle review performance letter.  
15 And I looked at the last mid-cycle performance letter  
16 that was issued by Region IV. It's dated August 30,  
17 2004.

18 And in that letter, it says that the  
19 licensee, it's licensee or applicant if you want to  
20 talk about licensure, is in the regulatory response  
21 column of the NRC's action matrix, and that is due to  
22 a white finding we had in fire protection. We issued  
23 that white finding in the spring of this year, so that  
24 throws them into the regulatory response column. It  
25 requires us to do a special inspection.

1 MR. ROSEN: Isn't it contradictory to the  
2 slide you just showed us with the all green?

3 MS. NEASE: No, those were performance  
4 indicators. So if you go back to that slide, if you  
5 look at that slide, unplanned scrams, emergency AC  
6 power, all these little squares are not inspection  
7 findings.

8 MR. ROSEN: Okay.

9 MR. SIEBER: No, they are performance  
10 indicators.

11 MS. NEASE: This is performance at the  
12 plant.

13 MR. ROSEN: But now, you got a white  
14 finding in fire protection.

15 MR. LEITCH: It's an inspection finding.

16 MS. NEASE: Yes, it was an inspection  
17 finding.

18 MR. SIEBER: It's the Inspection Program.  
19 It's on the other side of the matrix.

20 MS. NEASE: Actually, if you go to the  
21 website and you go down a page, you will get another  
22 chart with these greens and that is the inspection  
23 performance chart.

24 MR. SIEBER: Yes, right.

25 MS. NEASE: Go back to the next one.

1       Okay. Also in this annual assessment letter, we noted  
2       that there was a substantive cross-cutting issue  
3       concerning problem identification and resolution. And  
4       this was identified earlier in the annual assessment  
5       letter, but it was also mentioned again in this mid-  
6       cycle performance letter.

7                   MR. ROSEN:    This white finding in the  
8       action matrix, is that the only one they have got?

9                   MS. NEASE:    Yes.    Well, we have green  
10       findings, but it doesn't actually -- green findings  
11       don't actually take you into a response column.

12                   CHAIRMAN BONACA:    Could you tell us a  
13       little bit more about this substantive cross-cutting  
14       issue?    I mean, that's in the Corrective Action  
15       Program.

16                   MS. NEASE:    Right.  It's in the Corrective  
17       Action Program and it was the result of a number of  
18       findings that we had identified and accumulated to a  
19       little of a concern.  But recently we have noted there  
20       are some improvements in the PI&R Program, but we  
21       continue, and you can pull this letter up and read it,  
22       but the letter states that they are going to continue  
23       to focus on problem identification and resolution.  We  
24       are going to focus in our inspections.

25                   We all have a little bit of problem

1 identification and resolution required to look at in  
2 each inspection, so we're going to focus on looking at  
3 prioritization, implementation and effectiveness of  
4 the Corrective Action program.

5 MR. ROSEN: That wasn't much of an answer,  
6 I'm afraid, Rebecca, to what was the substantive  
7 cross-cutting issue?

8 CHAIRMAN BONACA: Yes.

9 MS. NEASE: Well, problem identification  
10 and resolution.

11 CHAIRMAN BONACA: Yes.

12 MS. NEASE: Corrective Action Program  
13 errors and because we found them across the board at  
14 the plant and in all organizations of the plant or  
15 most, and it also crossed the cornerstones, mitigating  
16 systems, barrier integrity. We saw the issue in all  
17 of the cornerstones, so they call that a cross-  
18 cutting.

19 MR. ROSEN: And the issue was those three  
20 things you just mentioned? Go over them for me one  
21 more time.

22 MS. NEASE: Prioritization, implementation  
23 and effectiveness of corrective actions, and that's  
24 all mentioned in this letter dated March 3, 2004.

25 MR. SIEBER: There isn't much else, I

1 mean.

2 CHAIRMAN BONACA: So their program --

3 MS. NEASE: Well, root cause analysis  
4 would be part of it.

5 MR. SIEBER: Yes, right.

6 MS. NEASE: Extent of condition would be  
7 part of corrective action.

8 MR. ROSEN: So you have got an important  
9 issue on their PI&R Program, I think, and this white  
10 finding in the area of fire protection, what was that  
11 underlying substantive issue there?

12 MS. NEASE: We actually identified the  
13 finding several years ago and it's a fairly political  
14 issue. It has to do with taking credit for manual  
15 actions.

16 MR. ROSEN: I don't know a thing about  
17 that.

18 MS. NEASE: It's not aging management.

19 DR. WALLIS: Well, that is something,  
20 which is universal, isn't it, as a problem?

21 MR. SIEBER: Go get 'em, Steve.

22 MS. NEASE: Yes. Yes, it is. Yes, it is.

23 MR. ROSEN: So this is a case of whether  
24 to credit for operator manual actions?

25 MS. NEASE: Yes, sir.

1 MR. ROSEN: And the post fire shutdown  
2 response?

3 MS. NEASE: Yes, sir.

4 MR. SIEBER: Without --

5 MR. ROSEN: Without prior approval of the  
6 staff?

7 MS. NEASE: Yes, sir.

8 DR. WALLIS: Everybody does it and some  
9 people get a white finding.

10 MR. SIEBER: No, not everybody does it.

11 MR. ROSEN: Not everybody does it.

12 DR. WALLIS: Well, many people do it.

13 MR. SIEBER: No, some people do it.

14 MS. NEASE: But they did not get this  
15 white finding as a result of not managing aging of the  
16 Fire Protection Programs.

17 MR. SIEBER: Eight people did it.

18 CHAIRMAN BONACA: The reason why we have  
19 an interest in this PI&R, of course, is that it seems  
20 to me that the whole Aging Management Program globally  
21 depends on the effectiveness of the Corrective Action  
22 Program.

23 MS. NEASE: Right.

24 CHAIRMAN BONACA: So many of the  
25 commitments end up there, so I imagine that you have

1 noted at the site a commitment to improving the  
2 Corrective Action Program?

3 MS. NEASE: Yes, I can't speak to this,  
4 but I would just assume that this Condition Report is  
5 written and that they are -- and we did note in this  
6 letter, on the document, that we have noticed some  
7 improvements. Okay. Anything else? That's the last  
8 slide.

9 DR. WALLIS: Well, you have got a summary  
10 slide.

11 MS. NEASE: No, that's it.

12 DR. WALLIS: That was it.

13 CHAIRMAN BONACA: That is the last slide.  
14 I think this is a good time for a break.

15 MR. SUBER: Well, can I do the summary  
16 slide?

17 CHAIRMAN BONACA: Oh, please. Sorry.  
18 Okay.

19 MR. SUBER: So to summarize Section 2,  
20 scoping and screening methodology is adequately  
21 described and justified in the license renewal  
22 application and satisfies the requirement of 10 CFR  
23 54.4 and 10 CFR 21(a)(1). Scoping and screening  
24 review results found that the SSCs within the scope of  
25 license renewal, as required by 10 CFR 54.4(a), and

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1 those subject to an AMR, as required by 10 CFR  
2 54.21(a)(1), have been identified. And that concludes  
3 this part of the presentation.

4 CHAIRMAN BONACA: Okay.

5 MR. LEITCH: Rebecca, could you make any  
6 comment regarding the material condition of this  
7 plant?

8 MS. NEASE: Oh, yes, actually I could.  
9 When we walkdown the plant, a lot of times we will  
10 choose fringe areas, areas that don't get walked down  
11 a lot, and some of these areas don't get entered very  
12 often. And I have to say that the material condition  
13 of the plant was very good.

14 We noted only a few exceptions where we  
15 saw some rusty base plates and they were at a scope of  
16 license renewal anyway, but the material condition of  
17 the plant was very good. And I had just led the  
18 training of fire protection inspection, so I had  
19 walked down a lot of the fire protection system and I  
20 didn't notice any aging effects in any of those  
21 systems.

22 MR. ROSEN: Is there a service water  
23 intake structure?

24 MS. NEASE: We did go into the service  
25 water intake structure.

1 MR. ROSEN: Is it separate from the main  
2 cooling?

3 MS. NEASE: Yes, it's separate from the  
4 main buildings, yes.

5 MR. ROSEN: And what does it look like in  
6 there?

7 MS. NEASE: Well, it's a little messier  
8 than the rest of the building, because it's the  
9 service water.

10 MR. ROSEN: It's wet.

11 MS. NEASE: It's wet, but the Unit 2, I  
12 didn't go into the Unit 1, I don't think, I might have  
13 gone through the Unit 1 in my fire protection  
14 inspection. I'm getting mixed up, but it looked  
15 pretty good for a service water intake structure, and  
16 they had identified, we noted that they had identified  
17 some corrosive piping and they were in the process of  
18 replacing those. You could tell where they had  
19 replaced some piping that had corroded.

20 MR. ROSEN: It's carbon steel?

21 MS. NEASE: Yes.

22 MR. ROSEN: Tell me one more time about  
23 the reactor vessel head. Was that going to be  
24 replaced?

25 MR. SIEBER: Yes.

1 MR. ROSEN: Maybe the applicant.

2 MS. NEASE: Yes.

3 MR. ROSEN: When is that scheduled for?

4 MR. YOUNG: Yes, we're still working on  
5 the schedule, but in the long range planning we do  
6 show the reactor vessel head replacement. It's a  
7 matter of timing and when we do it, but I think right  
8 now the budget process would indicate probably in the  
9 next two to three years, but that is still being  
10 evaluated.

11 MR. COX: There is also a modification  
12 that is being worked on right now to modify the shroud  
13 that Mark was talking about to improve the  
14 accessibility for visual inspections. That should  
15 happen at the next outage or two outages.

16 MR. ROSEN: Is that going to be done prior  
17 to the replacement of the head?

18 MR. COX: Yes.

19 DR. WALLIS: Is head replacement time  
20 limited by budget or availability? I mean, if so many  
21 people are replacing heads, I wonder if there are  
22 enough heads to go around.

23 MR. YOUNG: Yes. I mean, certainly, the  
24 lead time for ordering and receiving a head is  
25 significant.

1 DR. WALLIS: Yes.

2 MR. YOUNG: And it's also a significant  
3 budget item, and it is a high susceptibility item for  
4 cracking, so we expect it, but we haven't had it yet.  
5 So we're in the planning to ensure that prior to  
6 getting into a lot of, you know, well repairs or  
7 things like that, we will have everything lined up.

8 DR. WALLIS: When you have the money to  
9 buy it, will it be available or will you have to wait  
10 some time? How long will you have to wait?

11 MR. YOUNG: Yes, we will have to wait.  
12 The manufacturing time is like a couple of years.

13 DR. WALLIS: Several years.

14 MR. YOUNG: A couple of years.

15 MR. ROSEN: Yes, I think some of the  
16 things you say here are a little inconsistent. I  
17 think you said you were going to replace the head in  
18 the next two to three years and you haven't ordered it  
19 yet?

20 MR. YOUNG: No, we haven't.

21 MR. ROSEN: So how are you going to do  
22 that?

23 MR. STROUD: Let me give you some  
24 information. I looked at the long range plan. My  
25 name is Mike Stroud from Entergy Nuclear. In our long

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1 range plan, we have money approved for the head  
2 material and to place the order for the head. In the  
3 long range plan right now, it's scheduled for 2008 at  
4 the earliest. It could go past that, but right now  
5 the schedule says 2008 is the earliest.

6 MR. ROSEN: So 2008 and in between now and  
7 then, you are going to make some modifications to the  
8 existing head configuration to allow better access.

9 CHAIRMAN BONACA: For inspections.

10 MR. ROSEN: For inspection. Will you be  
11 able to do bare metal visual on the majority of the  
12 surface?

13 MR. COX: That's the intent of the  
14 modification, is to modify the shroud to allow better  
15 access. I don't know if that is going to allow 100  
16 percent. I just know that that modification is being  
17 worked on.

18 MR. ROSEN: We'll come back to this when  
19 we --

20 CHAIRMAN BONACA: Okay. For all of those  
21 anxious for a break, raise -- no, you don't have to  
22 raise your hand. We're going to have a break now and  
23 be back here at 3:25.

24 (Whereupon, at 3:10 p.m. a recess until  
25 3:25 p.m.)

1                   CHAIRMAN BONACA:    Let's get back into  
2 session and the next presentation has to do with Aging  
3 Management Review.

4                   MR. SUBER:    Okay.  Thank you.  Now, we're  
5 going to move on to the Aging Management Reviews.  As  
6 mentioned previously, the applicant submitted its  
7 application using the standard LRA format.  In  
8 preparing its application, Entergy credited the GALL  
9 report and submitted supplemental information  
10 containing previously approved staff positions.  In  
11 Section 3, the staff documented its review of the  
12 Aging Management Programs and evaluation of Aging  
13 Management Review results that were submitted by the  
14 applicant.

15                  MR. LEITCH:  A question about that.

16                  MR. SUBER:  Yes, sir.

17                  MR. LEITCH:  We received a supplement, a  
18 supplemental SER section, 3.0.3.1., reactor vessel  
19 head penetration.

20                  MR. SUBER:  Yes, sir.

21                  MR. LEITCH:  We got that at a different  
22 time than the rest of the draft SER.  Is that an  
23 integral part of the SER or is that proposed or what  
24 is the status of that supplemental document?

25                  MR. SUBER:  Yes, sir.  That is an integral

1 part of the SER. It was inadvertently omitted from  
2 this section.

3 MR. LEITCH: Okay.

4 MR. SUBER: From 3.0.

5 MR. LEITCH: Okay.

6 MR. SUBER: Yes, sir.

7 MR. LEITCH: I noticed a couple of typos.  
8 Would you be the right one to discuss those with? I  
9 just want to --

10 MR. SUBER: Yes, sir.

11 MR. LEITCH: -- talk about those offline.  
12 When we're done here, we can talk. It's nothing  
13 significant.

14 MR. SUBER: Okay.

15 MR. LEITCH: It's just a couple of word  
16 processing things.

17 MR. SUBER: Yes, sir.

18 MR. LEITCH: Okay. We'll talk about that.

19 MR. SUBER: Okay. In this part of the  
20 presentation, I will briefly summarize the staff's  
21 findings for the sections that are displayed on this  
22 slide.

23 In Section 3.1, the staff documented its  
24 review of the reactor vessel, internals and reactor  
25 coolant system. As discussed previously, a license

1 condition is being issued for the Reactor Vessel  
2 Surveillance Program. This license condition is  
3 similar to the one issued for Farley and, essentially,  
4 requires the applicant to submit changes to its  
5 capsule withdrawal schedule or storage requirements to  
6 the NRC for review and approval.

7 Three AMPs had commitments added to them  
8 as a result of the staff's review. The Alloy 600  
9 Program, the Reactor Vessel Internals Cask Program and  
10 the Reactor Vessel Internals Stainless Steel Program  
11 all have commitments for the applicant to submit the  
12 programs to the NRC for review and approval 24 months  
13 prior to entering the period of extended operation.

14 DR. FORD: Excuse me. Will this be the  
15 only time we talk about Section 3.1?

16 MR. SUBER: Pardon me?

17 DR. FORD: Is this the only time we will  
18 be talking about Section 3.1?

19 MR. SUBER: Yes, sir.

20 DR. FORD: Could I ask a question about  
21 the welded core barrel? You mentioned earlier on or  
22 you intimated earlier on that there was a question  
23 about the inspectability of those welds. Is that  
24 correct?

25 DR. KUO: Jim Medoff.

1 DR. FORD: When you were talking about --  
2 when Mr. Rosen asked a question about the vessel head,  
3 you said it would be a few years away and you also  
4 said it would be at that same you will be looking at  
5 the question of the inspectability of the welded core  
6 barrel. Did I hear you right?

7 MR. YOUNG: This is Garry Young. The  
8 Inspection Program for the core barrel is part of the  
9 Reactor Vessel Internals Program.

10 DR. FORD: Yes.

11 MR. YOUNG: And that's one of those  
12 programs that's still being developed based on  
13 industry guidance. So there is some issues about what  
14 type of inspection and, you know, what's going to be  
15 an acceptable inspection and what will be an  
16 acceptable methodology, but that's part of these  
17 industry efforts to come up with an Inspection  
18 Program.

19 MR. COX: This is Alan Cox. The comment  
20 I made earlier was dealing with the inspection or the  
21 inspectability of the outside of the reactor vessel  
22 head, the penetrations.

23 DR. FORD: Oh, okay.

24 MR. COX: There is a shroud. There is a  
25 shroud around the outside of the vessel.

1 DR. FORD: I misunderstood.

2 MR. COX: That restricts the access to  
3 that.

4 DR. FORD: But getting back to your  
5 comment about the core barrel, you know, as you know,  
6 at the high fluencies that we might expect during  
7 license renewal period, it is perfectly possible for  
8 you to get cracking of that highly radiated stainless  
9 steel component. So we are going to wait. You had a  
10 commitment, I guess, to wait until MRP or somebody  
11 comes out with an Inspection Program for that  
12 component?

13 MR. YOUNG: Well, part of the issue here  
14 is that we don't have any specific guidance on what is  
15 an acceptable method for doing the inspection, the  
16 inspection technique. So through the industry effort,  
17 such as the Material Reliability Program and the  
18 owners groups, they are working to come up with this  
19 and then to work through the NRC to get agreement on  
20 what is an acceptable method and inspection technique,  
21 and that is what hasn't happened yet. That is still  
22 being developed.

23 DR. FORD: And is the staff asking a  
24 commitment from the licensee to adhere to such a  
25 program?

1 DR. KUO: Dr. Ford?

2 DR. FORD: Yes?

3 DR. KUO: Jim Medoff, staff of Division of  
4 Engineering, will answer the question.

5 MR. MEDOFF: This is Jim Medoff of the  
6 Materials and Chemical Engineering Branch. I was out  
7 on materials engineering and I was one of the  
8 reviewers for the Arkansas application, including the  
9 two RV Internals Programs.

10 Because the RV Internals Programs have not  
11 yet been developed and finalized, what we requested  
12 from the applicant was some commitments on it. The  
13 commitment that we received from the applicant and we  
14 agreed upon was a commitment to submit both of the  
15 Internals Programs to the staff for review and  
16 approval 24 months prior to entering the period of  
17 extended operation, and that program is to include the  
18 inspection plan for all their RV internals, so it will  
19 allow us to get -- we figure two years should be a  
20 sufficient time to review the programs.

21 DR. FORD: Thank you.

22 MR. SUBER: After reviewing the LRA,  
23 responses to staff RAIs and supporting documentation  
24 submitted by the applicant, the staff concluded that  
25 the aging effects of the reactor vessel internals, RCS

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1       pressurizer and steam generator components will be  
2       adequately managed for the period of extended  
3       operation.

4               In Section 3.2, the staff documented its  
5       review of the Engineered Safety Features System. The  
6       staff concluded that the aging effects of the  
7       emergency core cooling system, containment spray  
8       system, containment cooling system, containment  
9       penetration system and hydrogen control system will be  
10      adequately managed for the period of extended  
11      operation.

12              In Section 3.3, the staff documented its  
13      review of auxiliary systems. As a result of the  
14      staff's review of (a)(2) components, a one-time  
15      inspection AMP was added to the applicant's Aging  
16      Management Program. The one-time inspection will be  
17      consistent with the GALL one-time inspection AMP  
18      XI.M32.

19              In addition, in a Fire Protection Review,  
20      the fire protection system for ANO-1 and ANO-2 are  
21      common systems and a 100 percent review was performed  
22      to determine its adequacy. The staff concluded that  
23      the aging effects of the auxiliary systems will be  
24      adequately managed for the period of extended  
25      operation.

1 DR. FORD: We brought this question up  
2 before about the fire protection, and I gave the  
3 question about corrosion of the carbon steel piping,  
4 but the answer, I wasn't too sure as to what that  
5 answer was. The question was how effective is the  
6 fire protection system if you have corrosion of the  
7 carbon steel piping, which will clog up and does clog  
8 up the nozzles? When you say the fire protection  
9 system is adequate, does it take into account those  
10 physical phenomena?

11 MR. SUBER: Okay. I would have to defer  
12 that question to Mr. Richard Difert.

13 MR. DIFERT: I'm Richard Difert. I'm fire  
14 protection on staff and I did perform the review for  
15 ANO Unit 2. The programs will determine whether or  
16 not there is corrosion in there. If there is, then it  
17 will be treated and managed. I guess in my 20 plus  
18 years of experience in fire protection, I really  
19 haven't seen corrosion in systems that are being  
20 serviced that will go to that extent, sir.

21 MR. SIEBER: Maybe I could add a little  
22 bit to it.

23 DR. FORD: Please, Jack.

24 MR. SIEBER: The sprinkler loops are,  
25 basically, static systems. There is no flow.

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1 DR. FORD: No.

2 MR. SIEBER: And so when you fill them and  
3 put water in them, there is oxygen in the water, but  
4 that is immediately or not immediately, but soon eaten  
5 up in the process of developing a fine film of  
6 corrosion and then the oxygen is gone, and so there is  
7 no mechanism to generate more oxide films.

8 Where you find a fair amount of corrosion  
9 is in systems that leak like your yard loop piping  
10 where you have bushings and so forth, and there you  
11 are replenishing that oxygen supply, and so you get a  
12 larger corrosion build-up. And usually, a hydroflush  
13 once a year or twice a year is sufficient to remove  
14 that kind of corrosion.

15 DR. FORD: The reason why I bring the  
16 question up, and I have brought it up before on other  
17 license renewal applications, Jack, I agree entirely  
18 with the physics of your observation. However, I have  
19 heard from some operators that they do see clogging of  
20 the fire sprinklers by that same phenomena.

21 And so I'm getting two inputs and I'm  
22 trying to work out, you know, which is the more  
23 general observation. I hear two of you saying it  
24 never occurs and, yet, I have heard someone say it  
25 does occur. But anyway, I have brought the question

1 up and you guys have got no problem with it. Okay.

2 MR. SUBER: In section 3.4 --

3 MR. YOUNG: Yes, I can offer a little  
4 addition on that. This is Garry Young again. The  
5 part of the Aging Management Program that we credit  
6 for the fire protection system is a periodic flushing  
7 checking of the system, so that if there were a  
8 situation where the corrosion products were breaking  
9 loose and building up such that you would have nozzle  
10 clogging, that would be identified during this  
11 periodic testing and then corrective action would be  
12 taken to address that.

13 DR. FORD: Okay.

14 MR. YOUNG: So we do. In fact, that is  
15 part of the consideration of the aging management.

16 DR. FORD: Okay. Is this service water  
17 that is used in the fire protection?

18 MR. SIEBER: No.

19 DR. FORD: No?

20 MR. YOUNG: It's the same water. It's  
21 lake water.

22 MR. SIEBER: It just comes out of the  
23 river or a lake.

24 MR. YOUNG: It's not actually --

25 DR. FORD: Oh, so you could have things up

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1 coming --

2 MR. YOUNG: It's not in our service water  
3 system, but it is lake water, which is the same water  
4 in the service water system.

5 MR. SIEBER: Yes.

6 DR. FORD: Okay.

7 MR. CRANSTON: This is Greg Cranston.  
8 Also, as a general comment in conjunction with our  
9 reviews for operation experience, which we cover for  
10 all the Aging Management Programs we look at, we do  
11 look at their Condition Reports that may have surfaced  
12 in that area to see if there has been any past history  
13 of problems, which would pick up things like, you  
14 know, the plugging of sprinkler heads and things like  
15 that. So that is part of our general review that we  
16 do in conjunction with our on-site visits.

17 DR. FORD: Okay.

18 MR. SUBER: In Section 3.4, the staff  
19 document is reviewed of the steam and power conversion  
20 system. The staff concluded that the aging effects of  
21 the main steam, main feedwater and emergency feedwater  
22 systems will be adequately managed for the period of  
23 extended operation.

24 In the review of Section 3.5, the intake  
25 canal's structure was in scope for license renewal,

1 but had no aging effects requiring management. In the  
2 course of the staff review, the staff did identify  
3 aging management effects requiring management, and the  
4 applicant proposed the Structural Monitoring Program  
5 to manage the aging of the intake canal structure.

6 MR. ROSEN: And I think you said it  
7 correctly. I think the slide needs a little bit of  
8 word editing.

9 MR. SUBER: Yes, sir. This is something  
10 that has been brought to my attention. Okay.

11 With respect to the aging management of  
12 inaccessible concrete, as was discussed earlier, the  
13 soil/water environment at ANO-2 is non-aggressive.  
14 However, the applicant has elected to use the  
15 Structures Monitoring Program to manage the aging  
16 effects as if the environment were aggressive.

17 DR. FORD: What does that mean physically?  
18 Going back one slide, what does it mean when they say  
19 they are going to manage it as if it were aggressive?  
20 They are going to inspect or what physically does it  
21 mean?

22 MR. SUBER: John, can you explain the  
23 Structures Monitoring Program?

24 MR. MA: The reason they could not --

25 DR. KUO: Give your name, please.

1 MR. MA: My name is John Ma from Division  
2 of Engineering. I'm a structural engineer.  
3 Originally, they tried to monitor. We want them to  
4 monitor the water and they told us they plugged all  
5 the wells already, so they cannot really monitor the  
6 water anymore, so they just assume the water is  
7 aggressive, so they try and use the Structural  
8 Monitoring Program to manage it.

9 Now, how they do that is actually their  
10 Structural Monitoring Program normally is a visual  
11 inspection. So you inspect the concrete. If the  
12 concrete has cracking or scaling, then it's an  
13 indication of bad environment effect. That's what it  
14 is.

15 DR. FORD: Okay. So it's just looking at  
16 the concrete to see if it is spalled off the rebar or  
17 whatever?

18 MR. MA: Right.

19 MR. ROSEN: This is subsurface monitoring?

20 DR. FORD: No, it's just --

21 MR. SIEBER: The subsurface is usually  
22 opportunistic.

23 MR. ROSEN: Where do they monitor, right  
24 at the surface or do they dig down some?

25 MR. MA: I believe mainly it's the

1 surface, but underground if they do excavation for  
2 some other reasons, they will do the inspection as  
3 well.

4 MR. ROSEN: See, if you're just monitoring  
5 at the surface and you're worried about aggressive  
6 groundwater, it sounds like you're not going to see it  
7 at the surface. You have to go down some way below  
8 the surface to the water table. Now, I understand the  
9 water table is probably fairly high at this site, but  
10 maybe somebody from the applicant can expand on that.

11 MR. AHRABLI: My name is Reza Ahrabli with  
12 Entergy. As Mr. John was mentioning, that we did  
13 choose to go ahead and set up our -- we will assume  
14 that water will become aggressive in such a way that  
15 we will go ahead and monitor that for the aging  
16 effect.

17 We already have a program in place, which  
18 is structural monitoring, and the fact that this  
19 subsurface or below surface, the water content,  
20 whatever the content of the water actually is similar  
21 of what we have in the lake water and we do have the  
22 bays, the service water bays, which were all concrete,  
23 reinforced concrete, so they are exposed to similar  
24 kind of water that they would have been exposed if it  
25 is sub, below ground level.

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1           So indication of that condition and also  
2 the existing like, Mr. John was mentioning,  
3 opportunistic inspection, if it becomes available,  
4 then that will give us an indication as to if you have  
5 any aging effect or not.

6           MR. ROSEN: So basically, you are going to  
7 use the condition of the concrete in the service water  
8 bays below the level of the service water itself as a  
9 surrogate for subsurface structure condition unless  
10 you have an opportunistic inspection, you have to dig  
11 down for some other reason. Is that correct?

12           MR. AHRABLI: Correct. However, again, we  
13 feel like we have enough evidence by condition of the  
14 bays, which is exposed just about to similar kind of  
15 water, that would give us an indication or clue that  
16 we are having a difficulty or not.

17           MR. ROSEN: How often do you water those  
18 bays and get down?

19           MR. AHRABLI: Just about every outage, not  
20 necessarily all the bays, but one of the bays at least  
21 gets to be looked at.

22           MR. ROSEN: By de-watering?

23           MR. AHRABLI: That's correct, by de-  
24 watering actually, pumping it out and then channel to  
25 the other bays and then doing an actual visual

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1 inspection, correct.

2 MR. ROSEN: Okay. Thank you.

3 MR. AHRABLI: Thanks.

4 MR. SUBER: As a result of the review, the  
5 staff concluded that the aging effects for structures  
6 and structural components, of course, will be  
7 adequately managed for the period of extended  
8 operation.

9 In Section 3.6, the staff documented its  
10 review of the electrical and instrumentation and  
11 controls. Power transmission conductors were added by  
12 the staff's review. However, no aging effects  
13 requiring management were identified. Consequently,  
14 the staff concluded that the aging effects of the  
15 insulated cables and connections, phase bus  
16 switchyard, high voltage insulators and power  
17 transmission conductors will be adequately managed for  
18 the period of extended operation.

19 As previously mentioned, the ANO-2 license  
20 renewal application review was conducted as part of a  
21 pilot program for the revised safety review process.  
22 Entergy was the first applicant to fully utilize  
23 previously approved staff positions in its  
24 application.

25 Mr. Greg Cranston is here to discuss the

1 audit and reviews associated with the new process and  
2 describe how the staff evaluated the previously  
3 approved staff positions cited in the ANO-2 license  
4 renewal application. Mr. Cranston?

5 MR. CRANSTON: Thank you. In looking at  
6 the Aging Management Program, we did this at the site,  
7 and what I have identified on the slides are the four  
8 main categories. In conjunction with the numbers that  
9 were brought up earlier about the number of Aging  
10 Management Programs with a total of 33, in the other  
11 report, as was pointed out, we looked at 26.

12 Those are the 26 that the Audit Team on-  
13 site reviews. The remaining seven were also looked at  
14 and they were looked at by the Division of Engineering  
15 here in headquarters. So basically, all the Aging  
16 Management Programs were, in fact, reviewed by staff.

17 Also, previous questions related to the  
18 flow-accelerated corrosion in the Buried Piping Aging  
19 Management Programs, I wasn't intending originally to  
20 talk about those, but I will talk about them at the  
21 appropriate spot in my presentation today to give you  
22 some information on those.

23 DR. FORD: Thank you.

24 MR. CRANSTON: The applicant had briefly  
25 discussed the use of NRC previously approved

1 precedents. We used that information as supplementary  
2 information that is provided by the applicant. We  
3 used it as a road map or a reviewer's aid. And as was  
4 mentioned previously, it is not part of the license  
5 review, license application, and we have to review the  
6 basis.

7           What we find is when we're given the  
8 information at the site as far as why the applicant  
9 has cited a particular precedent, we also have the  
10 basis documents associated with it and tables, which  
11 cross-reference their past precedent codes with the  
12 specific plants or their bases as far as where they  
13 obtained that information.

14           And then we can look at that information  
15 and make sure that it's appropriate for the particular  
16 AMP we're looking for, that the program is bounded by  
17 the conditions for which we're evaluating and  
18 approving, and then we also look at the program as a  
19 whole using the past precedent information, as well as  
20 what is provided in the Aging Management Program  
21 itself to make sure that it meets the Standard Review  
22 Plan program elements.

23           So that's how we use that information, and  
24 we really kind of review the Aging Management Program  
25 the same whether or not past precedent information is

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1 used or not, except we do verify that the past  
2 precedent information is applicable and appropriate  
3 for that particular Aging Management Program.

4 The first category is are Aging Management  
5 Programs consistent with GALL? The example up here,  
6 I'll get to this in a minute. Before I do that, the  
7 Flow-Accelerated Corrosion Aging Management Program  
8 was also an example of an Aging Management Program  
9 that was consistent with GALL.

10 What we do as a team is we do talk to the  
11 applicant's technical staff. We look at their  
12 engineering programs and this is an existing program,  
13 and we looked to see how they are currently managing  
14 it. For example, what my project team did in this  
15 case was looked at over 30 examples, we picked the  
16 main feedwater system, 30 examples of feedwater system  
17 components for which wall thinning is predicted using  
18 an EPRI-approved Flow-Accelerated Corrosion Program  
19 software.

20 We also look at the results of ultrasonic  
21 testing that they have done in conjunction with actual  
22 measurements to verify that the predicted values are  
23 conservative in relation to the actual measurements  
24 that they have perceived. So we actually do get in  
25 and verify that things are working in those areas.

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1           We also look at operating experience and,  
2           in this particular case, we noticed that where they  
3           did have wall thinning concerns, they had replaced the  
4           pipe with materials that are resistant to flow-  
5           accelerated corrosion. So it looked like their  
6           program was effective from that standpoint, too, that  
7           they are finding and fixing areas and maintaining the  
8           systems, and this was in conjunction with a review of  
9           their Corrective Action Program in the areas of flow-  
10          accelerated wall thinning and corrosion to make sure  
11          that it looked to us like the program was being  
12          effectively managed.

13           The example that I have up here is another  
14          example of an Aging Management Program that is  
15          consistent with GALL, structured monitoring of masonry  
16          walls. It's consistent with the GALL AMP, the Masonry  
17          Wall Program. One thing we noted here, the reason I  
18          wanted to point is out, is, again, as we started to  
19          talk to the people involved with the program and see  
20          what was going on, we noted that they had committed to  
21          an initial baseline examination, but it had not been  
22          documented.

23           And as we dug into it more, we found out  
24          that the first five year reexamination had not been  
25          performed, and that they did not have any records to

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1 verify that the people doing these walkdowns had  
2 training.

3 So the applicant immediately generated a  
4 Condition Report to identify the issue and resolve it  
5 in conjunction with their Corrective Action Program.  
6 So occasionally, when we do some digging, we do find  
7 some discrepancies even though this is relatively  
8 rare.

9 MR. ROSEN: Did they identify the cause,  
10 the root cause of that deficiency?

11 MR. CRANSTON: That would be done in  
12 conjunction with their Corrective Action Program.

13 MR. ROSEN: Did they identify it?

14 MR. CRANSTON: I would have to defer that  
15 to the applicant.

16 MR. AHRABLI: I can address it. Again,  
17 this is Reza Ahrabli. This year was presently just to  
18 re-identify the fact that we missed a first five  
19 years' re-exam, and as far as what was the root of  
20 missing that inspection was the inspection was  
21 performed at the five years interval. But the time  
22 that the front cover sheet of the calculation, there  
23 was the engineering report was signed. The program  
24 owner, at the time, he had calculated his time from  
25 the time that that thing was signed, the front cover

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1 sheet. But the front cover sheet was signed actually  
2 two years later after the inspection was performed.

3 So by just a simple mathematical error  
4 assumption by that date, they were under the  
5 impression that the inspection will not come due for  
6 another few months. So once we looked at that, we  
7 realized that it was a mistake, so realistically  
8 should have been performed. So it was a matter of  
9 just a wrong date picked up for adding values to it to  
10 come up with the next inspection time, so that's how  
11 it was missed.

12 DR. FORD: Could I just go back to the  
13 FAC?

14 MR. CRANSTON: Yes.

15 DR. FORD: Because I assume you're not  
16 going to talk about FAC again.

17 MR. CRANSTON: Yes.

18 DR. FORD: It's rather high on my  
19 observation list because of this Japanese incident.  
20 And my question really is to what depth do you look at  
21 how well they are performing their procedures? For  
22 instance, I have been told when using CHECWORKS, you  
23 know, you examine the wall thickness and then, at some  
24 later date, you measure the wall thickness again to  
25 see whether the predicted versus observed thinning has

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1 occurred.

2 I am also told that, in some cases, they  
3 don't always measure the wall thickness in the same  
4 spot. Now, I'm sure that must be a very odd  
5 occurrence. It's not a general occurrence. But would  
6 your examination of their procedures detect such a  
7 thing? To what depth do you examine their procedures,  
8 their actual operating procedures?

9 MR. SUBER: Okay. That is probably more  
10 of an implementation question than it is a procedural  
11 question.

12 DR. FORD: Well, it has a big impact when  
13 we're talking about the effectiveness of a program, an  
14 Aging Management Program. I don't care whether you  
15 talk about it as implementation or whatever the word  
16 you use is. Is the program that is spelled out in  
17 black and white on some SOP, is it, in fact, done that  
18 way?

19 MR. CRANSTON: I think the general answer  
20 would be in conjunction with implementing procedures,  
21 we do that on a sample basis. We don't do every  
22 implementing procedure for every program that we look  
23 at.

24 In this particular case, we did decide to  
25 dig a little bit deeper. As I said, we looked at more

1 than 30 examples of components where they had had  
2 predicted values and they had measured values.  
3 Specifically, I don't know if we verified that the  
4 measured locations were exactly the same. Robert Hsu  
5 was part of the Audit Team. Do you have any  
6 additional information?

7 MR. HSU: Yes. Usually, the applicant --  
8 this is Robert Hsu, okay, Audit Team. The applicant  
9 doing the FAC Program, they have agreed, every 1 inch  
10 is agreed, so they always measure on the same point,  
11 an agreed point, and they use the CHECWORKS to do the  
12 prediction. And as far as their operating, they put  
13 an extra 10 percent.

14 Like if they measure this, the first point  
15 and the second point, they calculate the wear rate,  
16 and in that prediction trending, they add extra 10  
17 percent as their wear rate, and then they trend. And  
18 we did ask for the effectiveness, to ask them to show  
19 us what is still effective. They always show us that  
20 the trend value is conservative. And we did verify.  
21 They did present that main steam system data to us.

22 DR. FORD: Okay.

23 MR. SIEBER: One of the interesting things  
24 is when CHECWORKS says you have to do an examination  
25 in this area, they do lay out the grid in the process

1 of doing it. You have to remove insulation, do a  
2 surface prep, lay out the grid, make the examinations,  
3 which may be 100 points, and then they re-insulate and  
4 maybe they examine it at the next interval.

5 And when you take the insulation off, that  
6 grid is gone. On the other hand, it's such a fine  
7 grid that you aren't missing anything. You know, you  
8 know where you are from the weld joint to the  
9 measurement area, and you end up with a profile as  
10 opposed to a single point.

11 DR. FORD: Okay.

12 MR. SIEBER: And I always considered that  
13 as adequate.

14 DR. FORD: Okay.

15 MR. CRANSTON: Now, the next category, the  
16 Aging Management Programs that are consistent with  
17 GALL with exceptions. The AMP that's up there is  
18 diesel fuel monitoring. And again, before I get into  
19 that, buried pipe was also in the same category and a  
20 question came up, I think, from Dr. Rosen in  
21 conjunction with that.

22 As you pointed out, as we discussed  
23 earlier rather, there was a couple of exceptions to  
24 that particular Aging Management Program. One had to  
25 do with tanks, because they didn't have any buried

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1 tanks, and the second exception that was taken was  
2 that the buried components would only be inspected  
3 when excavated during maintenance activities, rather  
4 than on a periodic basis.

5 As stated earlier, the basis for that was  
6 that we looked at the operating history for both units  
7 and noted that they had quite a history of doing  
8 excavating such that there was enough inspections to  
9 show that they were getting a good sample, and the  
10 results of those inspections showed that there was no  
11 significant degradation for the buried piping. And  
12 also, the concern was that if we required just digging  
13 periodically just to see what was going on, you could  
14 actually do more harm than good with the excavation  
15 that was going on.

16 The second part of the question was is  
17 that being addressed in the GALL update, and the  
18 answer is yes, that that is being factored into the  
19 GALL update to not require only -- to take advantage  
20 of the fact that opportunistic inspections are  
21 adequate in order to verify that your buried piping is  
22 holding up properly as far as that's concerned.

23 MR. ROSEN: See, that wouldn't be my  
24 preference. That wouldn't be the way I would prefer  
25 to do it. I would prefer something like if you think

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1 buried pipe inspections are necessary, you just say in  
2 GALL you must expose X number of feet of pipe in X  
3 number of locations every Y years, and you may take  
4 credit for opportunistic inspections if they occur  
5 within the interval and meet these criteria.

6 DR. KUO: Right.

7 MR. ROSEN: Rather than the other way  
8 around, which is kind of like more permissive.

9 DR. KUO: I understand, and that's why I  
10 said earlier that it's on a very case by case basis as  
11 far as opportunistic inspections are concerned. In  
12 this case, our team reviewed their operating  
13 experience and, apparently, they had many times that  
14 they are digging out these things.

15 MR. ROSEN: Yes, I heard that, P.T.

16 DR. KUO: Yes.

17 MR. ROSEN: I'm just saying if you're  
18 thinking about rewriting that section, you might think  
19 about the other way around. I think the other way  
20 around is more certain and more -- well, it's just  
21 more certain.

22 DR. KUO: Okay. We'll take that into  
23 consideration.

24 MR. CRANSTON: The example that's on the  
25 slide is the diesel fuel monitoring. The exceptions

1 that the applicant have taken was that they used fewer  
2 additives. They had used only the ASTM Standard D  
3 1796 and not 2709. They used a smaller filter pore  
4 size in conjunction with filtering the fuel, and they  
5 did not do ultrasonic measurements of tank bottoms.

6 We reviewed those exceptions and found out  
7 that they used the vendor-recommended additive  
8 package, which has proven to be quite effective for  
9 them and it does include biocide and oxidation  
10 inhibitor additions, and they have shown no evidence  
11 of any problems with the fuel based on using the  
12 vendor-recommended packages. As it turns out, the  
13 ASTM 1796 applies to the viscosity of the oils used at  
14 Arkansas Unit 2, but the second standard does not.  
15 The smaller filter pore size we found acceptable,  
16 because it was more conservative.

17 In conjunction with the tank bottoms, they  
18 are mounted on a raised concrete foundation and  
19 sealed. Actually, there is a seal between the tank  
20 bottom and the concrete to prevent water intrusion.  
21 And in conjunction with that, the accessible tank  
22 external surfaces are visually inspected and they do  
23 drain down the tanks periodically and do a complete  
24 internal surface inspection. Based on previous  
25 experience that we looked at, there was no tank bottom

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1 problems indicated, so we felt that that was an  
2 acceptable exception to take.

3 MR. SIEBER: Does that mean that the GALL  
4 AMP should be modified, because the wrong standard is  
5 referenced?

6 MR. CRANSTON: Well, in this case, we're  
7 looking at the specific plant as far as the exceptions  
8 where they had used a vendor-recommended package.  
9 Other plants may or may not use these particular  
10 additive packages.

11 MR. SIEBER: I'm speaking directly to the  
12 ASTM standard that is referenced.

13 MR. CRANSTON: We have found that, based  
14 on viscosity that other plans have used, that only one  
15 of those standards applies, but I would have to check  
16 to see if there are cases where some plants do use the  
17 other standard, the 2709, so I will have to check into  
18 that. I don't know if that's consistent for all  
19 times.

20 MR. SIEBER: Okay.

21 MR. COX: Greg, this is Alan Cox. I think  
22 on the standards, if I recall correctly, the two  
23 standards that are referenced in GALL are for  
24 different viscosity ranges of fuel oil and one or the  
25 other applies. The way GALL was written, it used an

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1 "and" between them.

2 MR. CRANSTON: Yes.

3 MR. COX: You said since we don't use one,  
4 we only use the one that applies to our fuel, that we  
5 took an exception. We tried to be conservative in  
6 most of these cases when we identified things that  
7 might be construed as exceptions even though, I think,  
8 the intent of GALL was that you use the one that  
9 applies for your fuel oil. I guess if there could be  
10 a clarification, it would be to make that a little  
11 plainer, that one or the other of those standards  
12 should apply.

13 MR. SIEBER: That would be a change the  
14 staff might want to consider.

15 MR. COX: Yes.

16 CHAIRMAN BONACA: Just in order to repeat,  
17 you say an ultrasonic measurement of tank bottoms is  
18 a program exception. It's not an exception, I mean,  
19 if there are no buried tanks, right?

20 MR. CRANSTON: Well, the words of the GALL  
21 don't differentiate between buried or not buried.

22 CHAIRMAN BONACA: I understand that, but  
23 that's why, for example, I got tricked by reading the  
24 SER into asking the question, because I read that's an  
25 exception we're making to GALL. I don't think it's an

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1 exception in the sense that if you have no buried  
2 tank, you know, you don't inspect.

3 DR. KUO: It's not applicable. It is not  
4 applicable.

5 CHAIRMAN BONACA: That's right. No, I'm  
6 saying that at times, you know, and I see it here now  
7 again as a program exception. Well, it's not. It's  
8 not applicable. All right.

9 MR. COX: This is Alan Cox again. I think  
10 we're mixing programs up. The Underground Tank  
11 Program --

12 MR. SIEBER: That's EPA.

13 MR. COX: -- is a different program. The  
14 Fuel Oil Program is what I'm talking about here, and  
15 it actually does call for a UT examination of the tank  
16 bottoms in the GALL Program.

17 CHAIRMAN BONACA: So this is not the  
18 B.1.4. This is the B.1.7.

19 MR. COX: Right.

20 MR. SIEBER: Right.

21 MR. CRANSTON: Okay. The next example is  
22 an Aging Management Program consistent with GALL with  
23 enhancements, and looking at the fire water system,  
24 the enhancement was that the sprinkler head inspection  
25 would be revised to be consistent with the NRC Interim

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1 Staff Guidance.

2 I know the question came up earlier, are  
3 those used in conjunction with, basically, a precedent  
4 approach? And this is a case where, basically, they  
5 have deviated from the GALL, as far as the frequency  
6 of inspection, but it's consistent with the NRC staff-  
7 approved Interim Staff Guidance and that ISG 04 has  
8 been deemed appropriate under the GALL update. So for  
9 future plants, this would become inconsistent with  
10 GALL Aging Management Program. But for the period of  
11 time that we looked at it, it had to be considered  
12 consistent with enhancements.

13 The final AMP I was going to discuss is  
14 based on previously approved staff positions. This  
15 is, basically, a plant-specific Aging Management  
16 Program. Initially, the applicant had characterized  
17 the cast austenitic stainless steel AMP as a  
18 consistent or rather as a plant-specific --

19 MR. SIEBER: Precedent.

20 MR. CRANSTON: Plant-specific based on  
21 precedent. It was a new program. When we took a look  
22 at it and the past precedent that was cited, we felt  
23 was inappropriate. That had been used at a previous  
24 plant for a unique situation, but we didn't feel it  
25 was applicable to the components for Arkansas Unit 2,

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1 so we had -- and this is another advantage of having  
2 the audits on-site where we can sit down and discuss  
3 the situations face to face.

4 After discussing it, we reached a mutual  
5 agreement that this would -- that they would modify  
6 their program to be consistent with GALL and,  
7 therefore, it shifted from being a plant-specific to  
8 a consistent with GALL Aging Management Program. So  
9 they would do either the volumetric examinations or  
10 flaw tolerance evaluations in conjunction with this  
11 particular Aging Management Program for cast  
12 austenitic stainless steel.

13 MR. SIEBER: Is volumetric examination of  
14 cast austenitic stainless steel improved any in the  
15 last 10 or 15 years? I mean, it used to be that you  
16 didn't get very good definitive results, that's why  
17 the visual was always coupled too.

18 MR. CRANSTON: There's a lot of industry  
19 activity now to determine what is the best way to  
20 actually implement this program.

21 MR. SIEBER: Right.

22 MR. CRANSTON: I guess, you could almost  
23 say under development to a certain extent as far as --

24 MR. SIEBER: Okay.

25 MR. CRANSTON: -- whether they are going

1 to pick volumetric or flaw tolerance and exactly how  
2 they are going to do it.

3 MR. SIEBER: Okay.

4 MR. CRANSTON: The program has to be  
5 submitted to us prior to the extended period of  
6 operation when they make their final decision as to  
7 which direction to go.

8 MR. SIEBER: Okay. So this is under  
9 development?

10 MR. CRANSTON: Yes.

11 MR. SIEBER: Okay.

12 DR. KUO: And, Dr. Bonaca, I thought you  
13 earlier had a question about this previous established  
14 position. I thought this example demonstrates that.  
15 How we review this type of programs.

16 CHAIRMAN BONACA: Okay.

17 MR. CRANSTON: The AMP that is a  
18 previously approved staff position of plant-specific  
19 that I have cited here is wall thinning. The  
20 particular staff position that was previously approved  
21 here was based on the programs that -- at Unit 1. So  
22 what we did was we reviewed the Unit 1 Program. We  
23 also reviewed their Aging Management Program against  
24 the elements in the Standard Review Plan to ensure  
25 that they were completely consistent. And based on

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1 that, accepted this as a plant-specific Aging  
2 Management Program.

3 MR. LEITCH: Now, Greg, I guess, what I'm  
4 hearing is when we find these past precedents, you  
5 examine them on a case by case basis to see if they  
6 are applicable to the case you are presently  
7 reviewing.

8 MR. CRANSTON: Yes.

9 MR. LEITCH: We're not into some kind of  
10 a backfit rule here expressed or implied where well,  
11 you approved this for this plant, now, we need the  
12 same kind of relaxation for a different plant. In  
13 other words, if there is good justification for it,  
14 that's one thing.

15 MR. CRANSTON: Right.

16 MR. LEITCH: But if there's not, we're not  
17 somehow committed to a particular action, because we  
18 took that action for a specific reason on a previous  
19 plant.

20 MR. CRANSTON: That's correct.

21 MR. LEITCH: Okay.

22 DR. KUO: If we could go, previously, we  
23 had a question about the fluence level and all that.  
24 We have Jim Medoff here. I think he would like to  
25 answer or explain the issue.

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1 MR. CRANSTON: P.T., can we wait until we  
2 get to the TLAA?

3 DR. KUO: Until the TLAA?

4 MR. CRANSTON: Yes. TLAA, yes.

5 DR. KUO: Okay, we can wait.

6 MR. SUBER: We're almost there. Okay.  
7 After reviewing the Aging Management Review results  
8 and Aging Management Program activities, the staff  
9 concluded that the applicant has demonstrated that the  
10 aging effects can be adequately managed so that the  
11 intended functions will be maintained consistent with  
12 the current licensing basis for the extended period of  
13 operation.

14 Now, we move on to time-limited aging  
15 analyses.

16 MR. LEITCH: Just before you get into the  
17 TLAA's, I had a couple of questions about the Audit and  
18 Review Report.

19 MR. SUBER: Okay.

20 MR. LEITCH: Is that --

21 MR. SUBER: That would be --

22 MR. LEITCH: Yes. I guess at one place  
23 there on page 5-2 it speaks about the heat exchanger  
24 acceptance criteria. I guess, this is for the Heat  
25 Exchanger Monitoring Program. It says "Less than 60

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1 percent acceptance criteria is less than 60 percent  
2 through-wall." Is that -- I mean, that just kind of  
3 surprised me that 60 percent through-wall was  
4 acceptable.

5 MR. CRANSTON: I can't speak to that  
6 particular number.

7 MR. SUBER: Okay. Well, that I can. That  
8 was actually consistent with a previously approved  
9 staff position for Unit 1 and we used the same  
10 acceptance criteria for Unit 2 that was used in the  
11 Unit 1 Aging Management Program.

12 MR. LEITCH: Well, you know, I guess  
13 that's kind of the issue I'm concerned about. One  
14 place we say 60 percent through-wall is acceptable,  
15 therefore, we say it's acceptable in other places.

16 MR. SIEBER: Yes.

17 MR. LEITCH: I just wondered whether 60  
18 percent through-wall is acceptable in any case really.  
19 But, I mean, after having said that once, we just  
20 seemed to follow along.

21 MR. SUBER: Okay. Well, what we could do  
22 is we could go back and find out what the original  
23 acceptance criteria was based on, because I'm sure --  
24 unless the applicant already knows. But we can find  
25 out what the original criteria was based on. But that

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1 was why it was approved for Unit 2, because it was a  
2 past precedent accepted for Unit 1.

3 MR. LEITCH: Greg, Robert has some  
4 comments.

5 MR. HSU: You're talking about 60 percent  
6 through-wall.

7 MR. CRANSTON: Right.

8 MR. HSU: If you go through the ASME  
9 Section 11 Code, you go to I think it's 1989 Code in  
10 Appendix C, you can find they are allowing when you  
11 calculate a pipe, you can have maximum up to 60  
12 percent. In the 1992 Code, I think, '95 Code they  
13 changed to 75 percent.

14 MR. LEITCH: Really?

15 MR. HSU: Yes. You can look in Appendix  
16 C of Section 11. But that's based on the calculated  
17 value. So I think they should meet that based on the  
18 calculated value, based on the pressure and loading  
19 for that tube.

20 MR. LEITCH: Okay. Okay. Thanks. I just  
21 found that number surprising, but I appreciate that  
22 clarification. Now, the other question I had was with  
23 non-EQ cables, page 5-2 of the report. It says "They  
24 are inspected where accessible and prone to adverse  
25 environment." I guess, you know, that's fine if they

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1 are accessible. But how about if they are not  
2 accessible?

3 In other words, how are these areas with  
4 adverse environments determined? Do you look at  
5 suspect areas or is it a random sample? I guess I'm  
6 just not sure how you go about carrying out this  
7 program. Is the key whether it's accessible or the  
8 key whether it's an adverse environment?

9 DR. KUO: Dr. Leitch, can we come back to  
10 you on this one?

11 MR. LEITCH: Yes.

12 DR. KUO: The person just --

13 MR. LEITCH: Yes, it's in the Audit and  
14 Inspection Report page 5-2.

15 DR. KUO: Okay. Thank you.

16 MR. LEITCH: Yes.

17 MR. SUBER: Okay. Well, we can go on, but  
18 Mr. Knotts is here and he was part of the Audit Team.

19 DR. KUO: Yes, he will come up.

20 MR. SUBER: Okay. All right. Thank you.

21 MR. LEITCH: That's fine.

22 MR. SUBER: Okay. Okay. Now, we can move  
23 on to time-limited aging analyses. Entergy identified  
24 11 TLAAs, 6 of which were plant-specific. The TLAAs  
25 listed in NUREG 1800 included reactor vessel neutron

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1 embrittlement, concrete containment tendon prestress,  
2 metal fatigue, environmental qualification of  
3 electrical equipment, container liner and penetration  
4 fatigue analyses.

5 Next slide. It kind of speaks for itself.  
6 For the five TLAAAs that were identified from Table  
7 4.1-2, which are the five that I just read, and  
8 actually 6 other plant-specific TLAAAs were identified  
9 by the applicant. For the reactor vessel and  
10 internals neutron embrittlement, three analyses were  
11 identified as TLAAAs. The Upper Shelf Energy, the  
12 pressurized thermal shock and pressure-temperature  
13 limits.

14 Next slide. For the Upper Shelf Energy  
15 TLAA, the staff performed an independent calculation  
16 of the Upper Shelf Energy values for the reactor  
17 vessel beltline materials through 48 effective full  
18 power years.

19 Next slide.

20 MR. ROSEN: Hold up.

21 CHAIRMAN BONACA: Yes, wait a minute. Go  
22 back.

23 MR. SUBER: Okay. Go back.

24 MR. ROSEN: I guess I'm not persuaded that  
25 the use of 80 percent capacity factor is appropriate.

1 MR. MEDOFF: I'm going to address this.  
2 This is Jim Medoff again. We based our evaluation in  
3 the current licensing basis for the plant, which is 48  
4 EFPY.

5 MR. ROSEN: Current licensing basis?

6 MR. MEDOFF: Right. That's what the rule  
7 is based on. So the current licensing basis for the  
8 current term is 80 percent capacity factor and so if  
9 you look at the PT limits or the PTS criteria, it's  
10 for 32 EFPY. When you take that up to a 60 year  
11 license period that makes it 48 EFPY.

12 But to address your concern, what I did  
13 today was I punched in my estimate for 54 EFPY value.  
14 I took a ratio of 54 to 48, multiplied the fluence and  
15 saw where the values came out for, at least for,  $RT_{PTS}$   
16 and all it did was add 2 degrees. Now, they are low  
17 copper. They have low copper welds, so they are  
18 limiting materials for  $RT_{PTS}$  as one of the plates.

19 MR. ROSEN: How worried about  $RT_{PTS}$ ?

20 MR. MEDOFF: Yes, worried about Upper  
21 Shelf.

22 MR. ROSEN: Okay.

23 MR. MEDOFF: I forgot to look at that, but  
24 I'll punch back the numbers and I'll get the Upper  
25 Shelf value for you, my estimate. If they don't meet

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1 Upper Shelf and that the next surveillance capsule  
2 pulled, they have to increase the capacity factor and  
3 they don't meet 50 foot-pounds, they will have to come  
4 into the staff for an equivalent margin analysis.

5 MR. ROSEN: Is it just the process of just  
6 taking the ratio of --

7 MR. MEDOFF: I'm going to let Lambros Lois  
8 address that question.

9 MR. LOIS: Regarding the fluence  
10 calculation, the fact we have experience so far in the  
11 early years, the plants maybe did not have more than  
12 80 percent. So it shouldn't have 32 for the first 40  
13 years. Then the remaining to 54 will be 22, which is  
14 impossible to achieve, obviously. So, therefore, even  
15 at 90 percent, they can't get more than 58 effective  
16 full power years. They are only 2 effective full  
17 power years away from the assumed 48 EFPY.

18 The differences are small and negligible,  
19 in addition to which the rule provides that if they  
20 exceed the projected exposure and come back to us for  
21 readjustment of all parameters.

22 MR. ROSEN: And do equivalent margins  
23 analysis?

24 MR. LOIS: Yes.

25 MR. ROSEN: Well, why wouldn't we get the

1 numbers right up front? I agree, let's see, they've  
2 got the first 30 years with 80 percent capacity  
3 factor, I think.

4 MR. LEITCH: They say they have 26 years  
5 with 80 percent.

6 MR. ROSEN: So you can figure out what  
7 that is, something like 24 EFPY or 25. And then you  
8 can do the remaining years at 90 percent and figure  
9 out what that is. Tell us what the Upper Shelf Energy  
10 foot-pounds are relative to the 50 foot-pounds  
11 screening criteria, rather than make us do all that  
12 work and figure it out for ourselves and come up  
13 likely with the wrong answer or the wrong conclusion.

14 MR. LOIS: That is the choice of the --

15 MR. ROSEN: That's why we leave it to you.

16 MR. LOIS: That is the choice of the  
17 licensee.

18 MR. ROSEN: Choice of the licensee?

19 MR. LOIS: The 48 EFPY, yes. They choose  
20 to have that number, so eventually if they exceed that  
21 number, they are required by the rule to come back and  
22 explain what they are doing.

23 CHAIRMAN BONACA: Before they exceed it.

24 MR. SIEBER: If they get to the number,  
25 then they have to tell you.

1 MR. LOIS: Two years before they get the  
2 number.

3 MR. ROSEN: Right. Well, that may be, but  
4 I would like to see what the calculation is no matter  
5 what the licensee -- what if the licensee chooses 20  
6 percent?

7 MR. MEDOFF: Mr. Rosen, I'll tell you what  
8 I'll do for you. I'll put a 25 percent conservatism  
9 in the 48 EFPY fluence, which should account for  
10 anything they are going to get at 54 EFPY. I'll see  
11 where the Upper Shelf Energy falls.

12 MR. ROSEN: Well, you've got to come back  
13 on, what is it, Friday. We're going to have an  
14 interim report on Friday.

15 MR. MEDOFF: I'll have that value for you  
16 by tomorrow morning.

17 MR. ROSEN: Maybe you can do that for --

18 MR. MEDOFF: It will take me two seconds  
19 to punch it out.

20 PARTICIPANT: But the thing is that before  
21 our meeting.

22 MR. ROSEN: Yes, the important thing is to  
23 have it before we act, but I'm going to have -- we're  
24 going to have an interim briefing for the full  
25 committee on Friday and I would kind of like to know

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1 the answer.

2 MR. MEDOFF: You'll have the value before  
3 that.

4 MR. ROSEN: Okay.

5 MR. SUBER: Both the applicant and the  
6 staff's calculation demonstrated that the USE  
7 acceptance criteria for the RV beltline will be met  
8 through 40 EFPY. Excuse me, 48 EFPY. The staff  
9 concluded that the TLAA is acceptable in accordance  
10 with 10 CFR 54.21(c)(1)(ii). With respect to --

11 MR. LEITCH: Another issue that I have is  
12 with this environmentally assisted fatigue. We're  
13 coming up with numbers on shutdown cooling and  
14 pressurize the surge line that are considerably above  
15 1.0. In fact, they are like 15 or something like  
16 that. And I guess this is not the first time this has  
17 come up. I realize there is a lot of conservatism in  
18 these numbers, but what's wrong here? How come we  
19 keep coming up with these numbers that are so high and  
20 we say well, don't worry about it, not to worry. But  
21 is 1.0 the wrong number or is our methodology wrong or  
22 what's going on here? It's not really an ANO  
23 question. I mean, this question comes up repeatedly.

24 MR. SUBER: Mr. Hartzman did that part of  
25 the review and I think he's about to step up to the

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1 mike.

2 DR. KUO: Yes, Dr. Hartzman. Dr. Hartzman  
3 is the staff in Division of Engineering.

4 DR. HARTZMAN: My name is Mark Hartzman.  
5 I'm with the Mechanical and Civil Engineering  
6 Department. The problem is that there are -- when one  
7 accounts for environmental effects, the fatigue curves  
8 become effective and, therefore, we get such large CUF  
9 numbers. Ordinarily, what we have done and what we're  
10 doing here is we are requesting that the applicant  
11 manage or account for these environmental effects by  
12 having a -- by using the Fatigue Monitoring Program to  
13 check on the cycles.

14 The cycling that is used in the fatigue  
15 calculations is often very conservative and does not  
16 correspond to the actual cycles that are measured or  
17 that are recorded in the plan. And this is one place  
18 where the fatigue calculations are helped most by the  
19 reduction of the actual cycles that the plant sees.  
20 That reduces the cumulative usage factors. In all  
21 cases, the applicants are required to assure that the  
22 cumulative usage factor by whatever means they can  
23 does not exceed 1.

24 So in this case, even though the numbers  
25 are very -- the number is very large to 15, it

1 includes a number of conservatisms which are usually--  
2 which can usually be removed by more exact  
3 calculations and by measuring the -- or by counting  
4 the number of cycles, the operational cycles that the  
5 plant actually goes through.

6 DR. FORD: But surely the CUF is  
7 determined with respect to the ASME III Design Code,  
8 the current ASME III Design Code.

9 DR. HARTZMAN: As modified by fatigue  
10 environmental coefficients.

11 DR. FORD: The 2 and 20 Rule of the ASME  
12 III Code. In fact, the design life, that curve is not  
13 conservative on the basis of current -- so again --

14 DR. HARTZMAN: Why not?

15 DR. FORD: -- if it's 15, it's even  
16 higher.

17 DR. HARTZMAN: If one accounts for the  
18 environmental effects, that's true.

19 DR. FORD: Yes.

20 DR. HARTZMAN: However, the ASME curve is  
21 not the only factor here. There is also the amount of  
22 conservatism that is included in the act of  
23 calculating the CUF. It depends on the number of  
24 assumed transients and the correspondence cycles.

25 DR. FORD: Yes.

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1 DR. HARTZMAN: And the allowables for the  
2 particular stress range between load sets. So there  
3 is, indeed, in many places where the vessel can be  
4 sharpened.

5 DR. FORD: I was about to use exactly the  
6 same word. These will be sharpened. Mr. Leitch has  
7 got a very good point. We've come up with a rule, not  
8 a, you know, C Rule, but we've got a procedure in  
9 which you determine a CUF value and we say 1 CUF value  
10 of 1 is the limit. And now, we're getting calculated  
11 values considerably higher and you're saying well,  
12 okay, we'll sharpen our pencils in terms of what the  
13 real cycles are, etcetera.

14 DR. HARTZMAN: That is right.

15 DR. FORD: Well, at what point, where does  
16 reality come into this?

17 DR. HARTZMAN: Well, reality, in one place  
18 where reality comes in is in actually determining what  
19 is the actual number of operating cycles that the  
20 plant has gone through and is projected to go through.

21 DR. FORD: And the allowable number of  
22 cycles, real cycles, what's the allowable number of  
23 real cycles?

24 DR. HARTZMAN: The allowable number of  
25 real cycles is that which causes the CUF to be 1. In

1 other words, we don't work in terms of allowable  
2 cycles, of allowable operational cycles. We simply or  
3 I should say they simply verify that the CUFs, the CUF  
4 components has determined from all the transients,  
5 from the cycle's correspondent to the transients, when  
6 all these components are added, they add up to or less  
7 than 1 for a period of 60 years.

8 MR. LEITCH: That describes five possible  
9 remedies.

10 DR. HARTZMAN: That is correct.

11 MR. LEITCH: And, you know, that seems  
12 like a reasonable approach. But my concern is if this  
13 number is 15 at the end of 60 years, what is it today?

14 DR. HARTZMAN: This is --

15 MR. LEITCH: Is it more than 1 today,  
16 right now?

17 DR. HARTZMAN: This is nominally. This is  
18 a nominal number. This is a number that is based on  
19 design, on design transients and design cycles assumed  
20 for each transient. That is the current licensing  
21 basis list of transients.

22 MR. LEITCH: But shouldn't we be seeing  
23 what that number is today and define those, one of  
24 those five remedies right now? I mean, how can it be  
25 okay today?

1 DR. HARTZMAN: No, no. Well, what I'm  
2 saying is that they have determined, the licensee has  
3 determined that the number of cycles is, indeed, much  
4 smaller than the number of design cycles that was used  
5 in the initial design in the current licensing basis.  
6 And that is really the basis for not -- the applicant  
7 monitors the number of cycles and he has the -- and he  
8 determines that the CUF remains less than 1. He is  
9 committed to do that.

10 MR. LEITCH: Right now, today, the CUF is  
11 less than 1.

12 DR. HARTZMAN: Is less than 1, yes.

13 MR. LEITCH: Okay.

14 DR. HARTZMAN: That is correct.

15 DR. WALLIS: How big is it today?

16 DR. KUO: Can I provide --

17 DR. HARTZMAN: CUF was projected to be 15  
18 with the environmental effects.

19 CHAIRMAN BONACA: I understand that.

20 DR. HARTZMAN: Yes.

21 CHAIRMAN BONACA: At the end of 40 years  
22 of the current tech, that would put that -- I mean,  
23 the TLAA. What was the projected value at the end of  
24 the 40 years?

25 DR. HARTZMAN: Well, the licensing basis

1 for the analysis did not account for environmental  
2 effects and, therefore, they are all -- the CUF in all  
3 those calculations is less than 1 without  
4 environmental effects. So as far as the licensing  
5 basis of the plant is concerned, the CUF is less than  
6 1. Now, when GSI-190 was closed, it was determined  
7 that the environmental effects would not be -- would  
8 not significantly effect the piping, shall we say, in  
9 terms of fatigue.

10 But, however, as a precaution, shall we  
11 say, it was decided to explore the environmental  
12 effects on the piping to preclude any potential  
13 cracking that might occur. However, the word is  
14 potential, not necessarily so.

15 MR. LEITCH: Yes, I mean, I just see a  
16 paradox here. On one side we're saying we ought to  
17 worry about these, maybe we ought to worry about these  
18 environmental effects. But then we worry about them  
19 and it gives an answer we don't like, so we say well,  
20 they are really not that important anyway, I mean.

21 DR. HARTZMAN: No, what we're saying is  
22 that these numbers can be managed, can be reduced.

23 DR. KUO: Dr. Leitch, can I give you a  
24 summary of historical background on this issue? This  
25 issue has been the subject of two GSIs. One starting

1 with 168, GSI-168.

2 MR. LEITCH: Yes.

3 DR. KUO: And then later on turning into  
4 GSI-190. When we had the GSI-168, we had the lab  
5 perform analysis on six critical locations based on  
6 the ASME Code. The conclusion was that, and this was  
7 also a subject of a commission paper, for the current  
8 40 years, the current ASME Code curve is good enough,  
9 because they have a calculated cumulative usage  
10 factor. They are all within 1 more or less. So they  
11 are safe. To the conclusion that the closure of that  
12 GSI-168 is that for current operation, the design is  
13 okay. It's safe.

14 But then leave the question what about  
15 license renewal? So at the end, they created the 190.  
16 So our research office took this issue, again studied  
17 this for a couple of years. They looked at that in  
18 general, in general, this is true in general that the  
19 piping fatigue usage factor is very low. But a few  
20 critical locations that could be high. Okay. So the  
21 closure of the 190 stated that. For most of the  
22 locations of piping, the original design is still  
23 adequate. However, we want to make sure that the  
24 newly discovered environmental effect is not going to  
25 make it unsafe at the critical locations.

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1           So the recommendation at the end of at the  
2           closure of the 190 it states that "The applicant  
3           should be required to perform analysis at these  
4           critical locations for environmental effects." And  
5           that's where we are. We are asking the applicants to  
6           perform the environmental -- I mean, the fatigue  
7           analysis using the environmental effect for the  
8           critical locations. So I think we are taking care of  
9           the safety concerns here.

10           DR. FORD: But you're still left with,  
11           when you say GSI-190 predicted that CUF values even at  
12           60 years would be 1 or less, you have got values of  
13           15. So where did that come from?

14           DR. KUO: Well, like I said, at most of  
15           the locations, the fatigue usage factor usually is  
16           very low even factoring into the environmental  
17           factors, it's still within 1.

18           DR. FORD: Right.

19           DR. KUO: But at the critical locations,  
20           this is not the case Okay? So the GSI-190 inclusion  
21           recommended that for license renewal, the applicant  
22           should perform the analysis using the environmental  
23           effect at critical locations.

24           DR. WALLIS: And what are the criteria for  
25           acceptability after he has done that?

1 DR. HARTZMAN: A CUF less than or equal  
2 than 1.

3 DR. WALLIS: So what is this 15 that keeps  
4 being bandied about here?

5 DR. HARTZMAN: The 15 is a CUF that one  
6 gets if one does the license and basis analysis, but  
7 accounting for the environmental effects on the  
8 fatigue curves.

9 DR. WALLIS: And we should forget it?

10 CHAIRMAN BONACA: Including an assumed  
11 number of cycles, which by far exceeds --

12 DR. WALLIS: Suppose you do it right, what  
13 do you get?

14 DR. HARTZMAN: The number of cycles is the  
15 number of cycles that was used in the design of the  
16 plant.

17 DR. WALLIS: Yes, but then if you do it  
18 right, what number do you get?

19 DR. HARTZMAN: Excuse me?

20 DR. WALLIS: If you do it right, what  
21 number do you get? If you do it wrong, you get 15.  
22 If you do it right, what do you get?

23 DR. HARTZMAN: If you do it right, it has  
24 to be less than or equal than 1.

25 DR. WALLIS: What is it when you do it

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1 right?

2 DR. HARTZMAN: Well, when you say you do  
3 it right, it's not a matter of doing it right. It's  
4 a matter of doing realistically, shall we say.

5 DR. WALLIS: Okay. Well, what is the  
6 answer when you do it realistically?

7 DR. HARTZMAN: I just said less than or  
8 equal to 1.

9 DR. WALLIS: No, what is the actual number  
10 you get? I know the average is less than 1.

11 DR. KUO: Dr. Wallis?

12 DR. WALLIS: Do you get .5 or .999  
13 recurring or what?

14 MR. SIEBER: You can only do it  
15 retrospectively.

16 DR. WALLIS: I should perhaps drop out of  
17 this, but I am very baffled by this sort of  
18 prevarication. A number is either less than 1 or it  
19 is not. What is that number and if it's bigger than  
20 1, then we do something.

21 DR. HARTZMAN: In NUREG-6260 there were a  
22 number of analyses made at these critical locations,  
23 and they showed that when all the conservatives were--  
24 where most conservatives were removed and other  
25 assumptions were made, these critical locations could

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1 be reduced to having a CUF less than or equal to 1.  
2 So the bottom line is that the CUF has to be less than  
3 or equal to 1. That is the criterion for  
4 acceptability.

5 DR. WALLIS: And the question I had is is  
6 it? That's the only question I have. There is a  
7 difference between what it has to be and what it is.

8 CHAIRMAN BONACA: Well, the possibility is  
9 that they are going to count the number of cycles,  
10 which is supposed to be much less than this number,  
11 and when they come close to 1, they have to do some  
12 remedial actions. Now, the question I have is how  
13 frequently do you have to monitor this?

14 DR. WALLIS: Well, is this tomorrow or is  
15 this going to be --

16 CHAIRMAN BONACA: Do they know when they  
17 have to do the evaluation?

18 DR. KUO: Dr. Kenneth Chang may have some  
19 comments, has some comments that may resolve some of  
20 your concerns. Let's try.

21 DR. CHANG: Ken Chang. Since this  
22 question was brought up as a general issue, so I'm not  
23 going to address particularly to ANO-2. I'm  
24 addressing this from a general point of view. I hope  
25 this can kill this issue once and for all.

1 CHAIRMAN BONACA: We had the same problem  
2 with Farley.

3 DR. CHANG: If you allow me, I will take  
4 off my jacket, so I can talk more comfortable.

5 CHAIRMAN BONACA: Please, do so.

6 PARTICIPANT: I don't know about that.

7 MR. ROSEN: When you take off your jacket,  
8 you can hit somebody.

9 DR. CHANG: Not that far. Okay. One  
10 thing I want to emphasize is fatigue usage factor to  
11 be less than 1, that's the absolute requirement, that  
12 we have to stick to it. The applicant has to stick to  
13 it. And as far as I know, most applicants are  
14 implementing a standard approach, four step approach,  
15 but in case you calculate only usage factor to be  
16 greater than 1, then you do either replacement,  
17 repair, refine calculation or using aging management  
18 technique to take care of that.

19 And one thing in particular about the ANO-  
20 2 is they have a fifth one that follows the ASME in  
21 case some day ASME may put in a new curve there. You  
22 follow the curve, you can do everything hunky-dory.  
23 But let's reemphasize that part. It's nice to have,  
24 but it's only a wishful thinking at this moment.

25 Now, we have talking about cycle counting

1 over and over again, but that's not the key. Every  
2 plant has a cycle counting. ANO-2 from day one have  
3 the cycle counting. Okay. That doesn't solve the  
4 problem. What solves the problem is almost every  
5 plant decided to adopt the Fatigue Monitoring Program.  
6 Fatigue Monitoring Program is cycle counting and  
7 transient monitoring.

8 MR. SIEBER: Yes.

9 DR. CHANG: Okay. That is the key from an  
10 analyst's point of view. When you implement the  
11 Fatigue Monitoring Program like FatiguePro, Rev. 3 as  
12 is being used by ANO, and also have been used for  
13 close to 10 years, am I right? Okay. You collect a  
14 lot of data. Now, you are staying away from design  
15 transients. Design transients not only conservative  
16 in the cycles, but also conservative in the delta T  
17 and ramp of delta T. Those things are critical to  
18 resolve your fatigue problem.

19 Now, let me answer Dr. Wallis' question in  
20 a different way. The FEA is a factor, is a penalty  
21 factor you apply to use this factor. It's lenient.  
22 This factor is a lenient relationship with the FEA.  
23 But knowing the fatigue curve, when you reduce the  
24 delta T, when you reduce the ramp, you reduce  
25 stresses. The allowable cycle is exponentially

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1 proportionate to the stress levels. So you reduce the  
2 severity of the transient, you increase allowable  
3 cycle by exponential order.

4 Okay. Another thing is we heard CUF 15.  
5 That's great, because CUF 15 is you took a number.  
6 The FEA maximize at 15.25. You cannot get more than  
7 15.25 based on current literature.

8 DR. WALLIS: So it's about as bad as it  
9 could possibly be?

10 PARTICIPANT: That's right.

11 DR. CHANG: Yes. All right. Now, I  
12 believe I mentioned a couple of times, but I am not a  
13 great speaker, 15.25 is the absolute maximum. You  
14 take one number, apply it to every transient, every  
15 location, every pressure, every temperature  
16 conditions. Now, you have a critical location, you  
17 have a critical transient. You take that transient.  
18 You develop a transient-specific FEA. That number  
19 will come down right away to 6, 7, 8, that order.

20 Now, within that transient, you take time  
21 slice. At the moment when the transient is most  
22 severe, you cut the time slice, consider all the time  
23 parameters. That FEA will come down to 2, 3, 4. All  
24 right? So there are two aspects.

25 The applicant is required to verify, to

1 demonstrate that their usage factor at any point  
2 during the extended period of operation to be less  
3 than 1. You are obligated to show that, and I am  
4 fully confident every applicant is doing the refined  
5 calculations before they jump in to replace, repair an  
6 aging management.

7 MR. SIEBER: Yes.

8 DR. CHANG: Just that calculation is  
9 progressive. When you are accumulating more data, you  
10 are doing more refined calculation. And that less  
11 than 1, you can bet they always have one value when  
12 you move into the extended period of operation. Did  
13 I explain my point?

14 CHAIRMAN BONACA: Yes, you did.

15 MR. SIEBER: Yes.

16 CHAIRMAN BONACA: The question I have is--

17 PARTICIPANT: I'm afraid you'll take your  
18 shirt off.

19 CHAIRMAN BONACA: -- when they come close  
20 to 1, how frequently they have to re-perform these  
21 calculations to make sure they don't exceed 1?

22 DR. CHANG: Yes.

23 CHAIRMAN BONACA: Since it is not an  
24 obvious number, I mean.

25 DR. CHANG: Right. That's a very good

1 question. Before the end of current licensing period,  
2 the applicant got to do a fatigue update calculation  
3 of fatigue usage factor to demonstrate at the end of  
4 the current life, based on the best fit of the  
5 monitoring data, to cover the period, 20 year period  
6 already gone by and plus the next 20 years. At that  
7 end of 40 years, you are less than 1. Then you can do  
8 all your refined calculations. They are obligated to  
9 show at the end of the 40 year life, it's less than 1.

10 CHAIRMAN BONACA: Okay. And now, you get  
11 into the period of extended operation.

12 DR. CHANG: Yes.

13 CHAIRMAN BONACA: And when do you perform  
14 the calculations to verify they are still below 1?

15 DR. CHANG: Normally when somebody  
16 implement a fatigue probe, they have a program to say  
17 every so often they do an updated usage factor  
18 calculation. I do not know whether ANO-2 has that  
19 program and has that frequency or period established.  
20 Garry, you may be able to talk a little bit about  
21 that.

22 MR. YOUNG: Yes. This is Garry Young. I  
23 can't tell you exactly what the frequency is, but I  
24 know that it's normally done on a refueling cycle  
25 basis or more frequent, but whenever we do the

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1 calculations, we have to look at the interval to the  
2 next update to make sure that we don't exceed 1. So  
3 whatever interval we pick, we have to show that we  
4 won't exceed 1 at the next interval.

5 DR. CHANG: In the next cycle.

6 MR. YOUNG: Or take corrective action at  
7 that time.

8 CHAIRMAN BONACA: Okay. So you do have a  
9 projection?

10 MR. YOUNG: Yes, we always have a  
11 projection?

12 CHAIRMAN BONACA: That capability that you  
13 can count on.

14 MR. YOUNG: Yes.

15 CHAIRMAN BONACA: That would allow you not  
16 to exceed the 1?

17 MR. YOUNG: Yes.

18 DR. CHANG: And this is very much in line  
19 with another plan I have done audit. They also do  
20 that every time. Every outage, they collect the data,  
21 refine the calculations, project it for the next fuel  
22 cycle and progressively. And if getting so close to  
23 1, then they may have to do a refined calculation for  
24 all the back history. The point is to assure in the  
25 next period, next fuel cycle, it's not going to exceed

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1 1.

2 MR. SIEBER: So you count on having just  
3 one more transient and if you have that transient, you  
4 shut down and take remedial action?

5 DR. CHANG: Theoretically speaking, that  
6 is the case, but practically, normally it doesn't  
7 happen that way.

8 MR. SIEBER: Right. It hasn't so far.

9 DR. CHANG: Right.

10 DR. FORD: Just to come back to Professor  
11 Wallis' initial question. What is the current value  
12 of CUF for this critical component, and it has to be  
13 something like near .8. Is that right?

14 MR. RINCKEL: This is Mark Rinckel. The  
15 CUF for the surge line right now is .98. So you  
16 multiply that times the environmental factor, you're  
17 up to 15.

18 PARTICIPANT: After 20.

19 MR. RINCKEL: And what ANO is doing now is  
20 they are monitoring their design transients with  
21 FatiguePro. Okay. So they are counting all their  
22 transients and that's what's required for the design.  
23 All right?

24 One of the things that they did in the  
25 Environmental Study is they said that we don't have to

1 take 500 heat-ups and cool-downs over 40 years. Like  
2 ANO right now is at 85. And so what they did is used  
3 fewer values, calculated what they thought the usage  
4 factor would be at 40 years and, you know, in all  
5 cases with environmental factors it was less than 1.  
6 And that is why they applied it. They said when you  
7 go to 60 years, you have got to look at this.

8 PARTICIPANT: It was 25 years at 80  
9 percent or 35 years at 90 percent.

10 DR. KUO: Any other questions?

11 PARTICIPANT: It's so close to continue to  
12 do anything different, go to 90.

13 MR. SUBER: Should I continue?

14 MR. SIEBER: Yes.

15 MR. SUBER: Okay. With respect to  
16 pressurized thermal shock, the staff performed --

17 DR. KUO: Any other questions on fatigue?

18 CHAIRMAN BONACA: No, that's fine, I  
19 think, that information.

20 DR. KUO: Can Greg go on?

21 CHAIRMAN BONACA: Yes.

22 MR. SUBER: With respect to pressurized  
23 thermal shock, the staff performed an independent  
24 calculation for the referenced temperature pressurized  
25 thermal shock values of the reactor vessel beltline

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1 materials through 48 EFPY. Okay. Both the applicant  
2 and the staff's calculations demonstrated that the  
3 applicable screening criteria for the limiting  
4 beltline reactor vessel material will be met through  
5 48 EFPY. The staff concluded that the TLAA is  
6 acceptable in accordance with 10 CFR 54.21(c)(1)(ii).

7 PARTICIPANT: It's Upper Shelf Energy.

8 PARTICIPANT: Can you remember what the  
9 guide said?

10 DR. KUO: Greg?

11 MR. SUBER: Yes, sir?

12 DR. KUO: Jim Medoff had some comments  
13 about the previous questions.

14 MR. MEDOFF: No. As I told them before,  
15 I'm going to add a 25 percent margin on the fluence to  
16 account for 50. I will punch out every material for  
17 RT<sub>PTS</sub> and for Upper Shelf.

18 DR. WALLIS: So when the staff calculated  
19 this RT, they presumably used the same formula that  
20 Entergy used.

21 PARTICIPANT: Correct.

22 DR. WALLIS: The same answer.

23 PARTICIPANT: Yes, sir.

24 DR. WALLIS: How well did you know the  
25 fluence when you did that?

1 MR. MEDOFF: How well did we know the  
2 fluence?

3 DR. WALLIS: How accurately did you know  
4 the fluence that you used to calculate this value?

5 MR. LOIS: This is Lambros Lois, Reactor  
6 Systems. The acceptability of fluence calculations,  
7 it complies with Reg Guide 1.190, which was published  
8 back in 2001 and this plant does meet those  
9 requirements.

10 DR. WALLIS: So how accurately did you  
11 know the fluence?

12 MR. LOIS: The accuracy required is plus  
13 minus 20 percent, one sigma.

14 DR. WALLIS: 10 percent accuracy, at that  
15 point?

16 MR. LOIS: 20 percent, one sigma.

17 DR. WALLIS: Is that achievable, 10  
18 percent accuracy?

19 MR. LOIS: 20 percent.

20 DR. WALLIS: 20, 20. Okay.

21 MR. SIEBER: Yes.

22 MR. SUBER: Section 4.3 contains the  
23 staff's evaluation of metal fatigue. Two analyses  
24 were affected by metal fatigue. The first analysis  
25 was for ASME Class 1 components. The staff's review

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1 found that the applicant supported its claim that the  
2 number of projected cycles will be well below the  
3 number of assumed design transient cycles. The staff  
4 concluded that the analysis remains valid under 10 CFR  
5 54.21(c)(1)(i).

6 The second analysis affected by metal  
7 fatigue was related to ASME Non-Class 1 piping. The  
8 staff concluded that the existing analysis remains  
9 valid under 10 CFR 54.21(c)(1)(i). For ASME Non-Class  
10 1 components, no fatigue evaluations were required.

11 Section 4.4 contains the staff's  
12 evaluation of the TLAA for environmental qualification  
13 of electrical components. The applicant's EQ Program  
14 is an existing program established to meet the ANO-2  
15 commitments for 10 CFR 50.49. The applicant's program  
16 is consistent with GALL X.E1 Program for environmental  
17 qualification of electrical components. The staff  
18 concludes that the applicant's EQ Program will  
19 adequately manage the electrical equipment in  
20 accordance with 10 CFR 54.21(c)(1)(iii).

21 DR. KUO: Greg?

22 MR. SUBER: Yes, sir?

23 DR. KUO: There was a question earlier  
24 about the non-EQ tables. Am I correct?

25 MR. SUBER: I believe so.

1 DR. KUO: Yes. And Duc is here to answer  
2 the question.

3 MR. SUBER: Okay.

4 MR. NGUYEN: Yes. There were questions  
5 about the inaccessible cable and connector. Yes.  
6 This program is written for --

7 MR. LEITCH: Particularly with the  
8 aggressive environment.

9 MR. NGUYEN: Yes, yes, yes. This program  
10 have provision that if you found a problem with the  
11 accessible cable, first you have to expand the  
12 sampling, expand the sampling --

13 MR. LEITCH: Size.

14 MR. NGUYEN: -- size. Okay. For example,  
15 if you take 25 percent for sampling into five  
16 problems, then you have to expand it more than 25  
17 percent, maybe 50 percent. And also, you have to look  
18 at the inaccessible cable would have the same  
19 environment that you found a problem with. So this,  
20 I believe, the corrective action element in this  
21 program, if you got requirement, so I think that this  
22 program is adequate to take care of the aging effect  
23 of inaccessible location.

24 MR. LEITCH: So if you find an aggressive  
25 environment --

1 MR. NGUYEN: Yes.

2 MR. LEITCH: -- in the accessible  
3 locations.

4 MR. NGUYEN: Yes.

5 MR. LEITCH: Then you --

6 MR. NGUYEN: Expand it.

7 MR. LEITCH: Expand your sample.

8 MR. NGUYEN: Yes, and look at the  
9 inaccessible.

10 MR. LEITCH: Yes.

11 MR. NGUYEN: Would have the same  
12 environment, localized environment. Okay?

13 MR. LEITCH: So the inaccessible somehow  
14 has to become accessible?

15 MR. NGUYEN: Yes, yes, yes.

16 MR. LEITCH: Okay.

17 MR. NGUYEN: But if the inspection see no  
18 problem, you don't need to expand it.

19 MR. LEITCH: Yes. Okay.

20 MR. NGUYEN: Okay.

21 MR. LEITCH: I understand.

22 MR. NGUYEN: So this program, I think,  
23 have provision for that, to take care of that.

24 MR. LEITCH: Okay. Thank you.

25 MR. SUBER: In Section 4.5, the staff

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1 evaluated the TLAA for concrete containment tendon  
2 prestress. The applicant committed to using the  
3 containment ISI Program to manage the loss of tendon  
4 prestress in the containment building post during the  
5 period of extended operation. Based on the  
6 applicant's commitment, the staff concludes that the  
7 aging effects on the intended functions will be  
8 adequately managed for the period of extended  
9 operation in accordance with 10 CFR 54.21(c)(1)(iii).

10 DR. WALLIS: Now, this is going to be  
11 managed, but did you look at the actual data on tendon  
12 stress and how it has been evolving?

13 PARTICIPANT: Yes, we did.

14 MR. MA: This is John Ma from Division of  
15 Engineering. This issue was reviewed by another  
16 staff, Hans Ashar, and yesterday he was sick and he  
17 told me to take care of this issue. As far as I know,  
18 this issue is, as of today, the applicant only has one  
19 point, data point, in 1999. But the applicant has  
20 made commitment. They are going to take additional  
21 points and there will be enough points of --

22 DR. WALLIS: When was this built?

23 MR. MA: What?

24 DR. WALLIS: When was it built, this  
25 plant?

1 MR. SIEBER: '70 something.

2 DR. WALLIS: So there was, presumably, a  
3 data point when it was built?

4 MR. MA: Oh, no.

5 DR. WALLIS: So one knows what the tension  
6 should have been when it was built?

7 MR. MA: No. The reason is our reg guide  
8 allowed them to -- if there's two plants on one site,  
9 they can monitor one plant without monitoring the  
10 other plant.

11 DR. WALLIS: I'm just trying to get an  
12 idea of how much the tendon stress has changed over 25  
13 years and how much it's likely to change over the  
14 years we're interested in. That's what I'm interested  
15 in, not what they are doing, but what the results have  
16 been of what they have done.

17 MR. MA: I think the applicant should  
18 respond to that question.

19 MR. AHRABLI: Reza Ahrabli with Entergy.  
20 I guess your question is, as we're trying to explain,  
21 that it was Mr. Hans had looked through the  
22 calculation we provided. In a nutshell, basically,  
23 what it is, that Unit 2, well, Unit 1, by the  
24 comparison, as you are aware, that IWL, ASME Section  
25 XI, IWL, has basically got three elements, which is

1 the tendon inspections, tendon surveillance and  
2 concrete inspections.

3 By reg guide, by similarity of both Unit  
4 1 to Unit 2, we had performed IWL, all three elements,  
5 for the Unit 1. However, we didn't have to do that  
6 for the Unit 2, but the comparisons since were  
7 allowed. We did perform the tendon inspections and  
8 also the concrete inspections, visual inspections.  
9 However, we did not perform concrete tendon  
10 surveillance, because we used the data from the Unit  
11 1.

12 When we looked through the Unit 1 data,  
13 Mr. Hans, basically, his point was that it is  
14 advisable to use the regression analysis as is  
15 identified in IN 99-10 versus what we have used in the  
16 past to demonstrate our tendon prestress forces are  
17 okay for the Unit 1.

18 So in summary, we have committed to use  
19 the regression analysis for the Unit 2 and also  
20 develop the curves as we go, as we gain the data,  
21 which from one point what we're talking about is the  
22 point that has been -- we have one point data, but not  
23 enough for the Unit 2.

24 DR. WALLIS: It's hard to extrapolate one  
25 data point.

1 MR. AHRABLI: Correct.

2 DR. WALLIS: Do you have some idea what it  
3 was when it was built 25 years before you got this  
4 data point?

5 MR. COX: This is Alan Cox. I think the  
6 answer to this, Reza can correct me if I'm wrong, but  
7 what we are saying is that, because of the similarity,  
8 we were using the Unit 1 data to satisfy the  
9 requirement for Unit 2.

10 DR. WALLIS: So maybe you have got two  
11 horses in the stable and one is healthy, the other one  
12 is okay?

13 MR. COX: Well, they are the same design.  
14 You know, if you are looking at the tendon relaxation  
15 on one unit, you expect to see the same relaxation on  
16 the other unit.

17 DR. WALLIS: Because it's the same design,  
18 the same history?

19 MR. COX: Right.

20 MR. AHRABLI: Again, it was allowed by the  
21 reg guide also.

22 DR. WALLIS: And when you do that --

23 MR. COX: The Unit 1 data --

24 DR. WALLIS: -- and you extrapolate, are  
25 you going to meet the criteria for the next 50 years,

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1 five years or what?

2 MR. AHRABLI: Correct.

3 MR. COX: Right. The projections or the  
4 actual measurements on Unit 1 tracked, if I remember  
5 right, they tracked very closely to what was  
6 projected.

7 DR. WALLIS: So when do you run out of  
8 tendon stress?

9 MR. COX: I believe we predicted 60 years.

10 MR. AHRABLI: 60 years.

11 DR. WALLIS: 60 years?

12 MR. AHRABLI: Correct.

13 MR. COX: And we were still okay.

14 DR. WALLIS: So that's what I'm trying to  
15 look for. You have got some kind of an extrapolation  
16 with time.

17 MR. AHRABLI: Right.

18 DR. WALLIS: And you are predicting that  
19 if you go through the data some honest way --

20 MR. AHRABLI: And it was about the MRV.

21 DR. WALLIS: -- that everything will be  
22 okay for the next 60 years?

23 MR. AHRABLI: Yes.

24 DR. WALLIS: That's all I'm trying to  
25 determine.

1 MR. AHRABLI: It was above the minimum  
2 required value.

3 DR. WALLIS: Was it the final 60 years of  
4 life or no, it's over -- 60 years from day 1 in 1974?

5 MR. SIEBER: Yes, it worked out pretty  
6 good.

7 PARTICIPANT: The next 35 years.

8 MR. AHRABLI: Yes.

9 CHAIRMAN BONACA: 30 years.

10 MR. COX: One other thing to keep in mind  
11 is we do have the capability if their projections  
12 don't show they are acceptable, you can re-tension the  
13 tendons to correct that.

14 DR. WALLIS: Do the tendons lose their  
15 tension?

16 MR. AHRABLI: That's what --

17 DR. WALLIS: Why do they lose their  
18 tension? Is it because the steel creeps or because  
19 the concrete creeps?

20 MR. AHRABLI: Concrete creeps.

21 DR. WALLIS: The concrete deteriorates and  
22 creeps?

23 MR. AHRABLI: Correct.

24 DR. WALLIS: Does it --

25 MR. AHRABLI: Tendons actually would

1 relax.

2 DR. WALLIS: Yes.

3 MR. AHRABLI: The tension on the tendons  
4 will --

5 DR. WALLIS: So it's basically the  
6 concrete that creeps, isn't that?

7 MR. AHRABLI: Which is very minute, but it  
8 will. The true statement is the answer is yes. The  
9 amount of it will be very minimal.

10 DR. WALLIS: Concrete.

11 MR. AHRABLI: But mainly, it basically  
12 will be your tendons that will be relaxing.

13 MR. ROSEN: I think you said the concrete  
14 creeps. Did you say that?

15 DR. WALLIS: You meant the steel.

16 MR. AHRABLI: Steel, correct.

17 DR. WALLIS: Maybe I misunderstood you or  
18 you misunderstood my question. The concrete is rigid  
19 and it's the steel that creeps.

20 MR. AHRABLI: As Alan was alluding to --

21 DR. WALLIS: So you just assume a  
22 logarithmic creep curve, a relaxation curve and you  
23 got one point on that curve and it looks reasonable.

24 MR. AHRABLI: Okay. Let's go back to the  
25 question again. I think we're kind of mixing apples

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1 and oranges. The question was about the concrete  
2 creeps or the steel creeps?

3 DR. WALLIS: Well, I would say what  
4 affects this tension?

5 MR. AHRABLI: Okay.

6 DR. WALLIS: It's the tension you want  
7 and, presumably, if the concrete crept, you would lose  
8 tension and if the steel crept, you would lose  
9 tension. I think we have now established it's the  
10 steel that creeps and not the concrete.

11 MR. AHRABLI: Well, the terminology  
12 normally used is the concrete creeps and the steel  
13 relaxes, but if you wish to use it in the other way,  
14 you can say --

15 DR. WALLIS: Well, they both change the  
16 dimension. They both change the dimension.

17 MR. AHRABLI: But relaxation based on the  
18 tendon is what is the concern. And as Alan was  
19 mentioning, if the value shows that is, you know, not  
20 acceptable for the next period, the options are to,  
21 you know, as you mentioned, either re-tension it or  
22 replace it or repair it or redo the analysis.

23 DR. KUO: If I may, my knowledge, of  
24 course, is 10, 15 years ago, so anyway, I try. We  
25 have Reg Guide 1.35. That specifies the requirement,

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1 the tendon surveillance requirement, and the current  
2 ASME Code Section XI IWL also has the same  
3 requirement. Okay.

4 Ideologically, when we designed the plant,  
5 the prestress component, there are a set of project  
6 the curve. That gives a band. Every time you do the  
7 surveillance, you try to measure the tension in the  
8 tendons. Okay. So in any surveillance interval, if  
9 you discover that the tension is less than or outside  
10 the band, it will be retained.

11 DR. WALLIS: These are sort of general  
12 protestations. All I'm really looking for is the  
13 data. If you could put up a figure, which said these  
14 are the tensions we measured, this is how we  
15 extrapolated them, here is the criteria, everything  
16 would be clear in about 10 seconds. When you say I  
17 used this guide and that guide and they went through  
18 some ritual, that doesn't tell me anything about  
19 whether it worked or not, whether the answer was right  
20 or not. I just want to know.

21 DR. KUO: That's why I'm going into the  
22 details.

23 DR. WALLIS: But I don't want all the  
24 details. I just want one summary statement.

25 MR. SIEBER: You want the number.

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1 DR. WALLIS: I want the number.

2 DR. KUO: The projected curve, it projects  
3 the number at the year 40. At the year 30, the  
4 minimum required tension for that design. It builds  
5 up at the beginning based on the relaxation, the  
6 prestress loss, okay, a factor, and then come down to  
7 say, current term is 40 years that the curve should be  
8 at --

9 DR. WALLIS: But this is really a comment  
10 of what it should do. All I want to know is does  
11 there --

12 MR. SIEBER: Does it --

13 DR. WALLIS: Does their design and their  
14 history meet the requirement?

15 MR. YOUNG: This is Garry Young. An  
16 additional comment. Hans Ashar did ask for the curves  
17 and we did provide them and they do show a projection  
18 for 60 years that would be below the minimum value.  
19 We're continuing to monitor in accordance with the  
20 Inspection Programs to ensure that those curves remain  
21 valid.

22 DR. WALLIS: Do you predict through that  
23 1999 point or do you predict just from ANO-1?

24 MR. YOUNG: Both. We gave all of the data  
25 for both the previous methodology, which was based on

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1 the Unit 1 data, and the new methodology, which  
2 included the data from Unit 2.

3 DR. WALLIS: But they don't make sense.  
4 They are not scattered all over the place?

5 MR. YOUNG: No, the trend matches the  
6 original design.

7 DR. WALLIS: Okay. So if you had shown  
8 the figure or something, it would have been clear.

9 MR. YOUNG: The figure is in the RAI  
10 responses.

11 DR. WALLIS: It is in the RAI responses?

12 MR. YOUNG: Yes.

13 DR. KUO: Yes, Hans Ashar has the curve.

14 MR. ROSEN: Okay. So now we have the  
15 curves and we have shown you are not going to be in  
16 compliance at 60 years. You're going to be below the  
17 minimum requirements.

18 PARTICIPANT: For the tension.

19 MR. YOUNG: I'm sorry, I misspoke. The  
20 curves show that we are within the minimum  
21 requirements for 60 years.

22 PARTICIPANT: Above the minimum  
23 requirements.

24 MR. YOUNG: Above the minimum requirement.  
25 I'm using the wrong term.

1 MR. ROSEN: Well, that's different than  
2 below.

3 MR. YOUNG: Yes, we meet the requirements  
4 for the 60 year term and we will continue to monitor.

5 MR. SIEBER: It takes time.

6 DR. KUO: The prestress has to stay above  
7 the minimum.

8 DR. WALLIS: I know that. I just want to  
9 know the answer. That's all.

10 MR. ROSEN: When he says it's below, then  
11 I'm suddenly concerned. Then he corrects himself and  
12 says above.

13 DR. WALLIS: I just don't know why we  
14 can't get an answer in five seconds.

15 CHAIRMAN BONACA: Let's move on.

16 MR. SUBER: In Section 4.6, the staff  
17 evaluated the TLAA for containment liner plate and  
18 penetrations fatigue analysis. The applicant stated  
19 that the allowable fatigue cycles far exceeded the  
20 projected number of anticipated cycles for all  
21 operating conditions. The staff concluded that the  
22 containment liner plate and penetrations fatigue  
23 analysis remains valid in accordance with 10 CFR  
24 54(c)(1)(i).

25 DR. WALLIS: Do you have to read all these

1 numbers?

2 MR. SIEBER: No.

3 MR. SUBER: In Section 4.7, the applicant  
4 listed six additional plant-specific analyses.

5 PARTICIPANT: They can fill this slot,  
6 Mario.

7 MR. SUBER: And we are going to highlight  
8 just a few of these examples. The TLAA for Alloy 600  
9 nozzle repairs is evaluated under Section 4.7.5. The  
10 half nozzle repair method leaves a short section of  
11 the original nozzle attached to the inside of the  
12 surface of the J-groove weld and exposes the ferritic  
13 material to borated water. The applicant stated that  
14 the service life of the repairs extend beyond the  
15 period of extended operation. The staff concluded  
16 that the projection of the analysis was valid.

17 DR. WALLIS: Now, do we have a good  
18 technical base for evaluating that, the service life  
19 of these repairs?

20 MR. MEDOFF: This is Jim Medoff with the  
21 Materials Branch. Yes, Arkansas Nuclear One - Unit 2  
22 is a CE design, so they fall within the band of a  
23 topical report that was submitted to us by combustion  
24 engineering. They originally submitted it for 40  
25 years and then we had some issues about the ferritic

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1 analysis that we wanted answered and their projected  
2 ferritic corrosion rates.

3 The other thing they had to address in the  
4 CE Report was fatigue crack growth of the existing  
5 flaw. So there were actually two criteria they had to  
6 evaluate in the report. Combustion engineering sent  
7 in a revised report not only to address our concerns  
8 with the ferritic corrosion rate analysis, but also  
9 there was a typographical error that they wanted to --  
10 there was an error in the design basis for the fatigue  
11 crack growth that they wanted to fix, so they  
12 addressed that in the revised report and they also  
13 addressed 60 years from plant life. And we just put  
14 a safety evaluation out on that topical report for  
15 approval, and I can get you that safety evaluation to  
16 ensure that the half nozzle repair is applicable for  
17 60 years.

18 MR. SIEBER: I presume that the projected  
19 corrosion of the boric acid on the ferritic material  
20 in the absence of oxygen is in the order of a few mLs.

21 MR. MEDOFF: That's a large part of it.

22 MR. SIEBER: Yes.

23 MR. MEDOFF: But I can get you this.

24 MR. SIEBER: So it's not of any major  
25 concern?

1 MR. MEDOFF: Right. And we can get you  
2 the safety evaluation on the revised report, and I  
3 will bring that to you with the revised guidance.

4 MR. SIEBER: I can picture it. I can  
5 picture it. You don't need to.

6 MR. SUBER: The TLAA for the Reactor  
7 Coolant Pump Code Case N-481 is evaluated in Section  
8 4.7.2. The applicant stated that the number of  
9 transient cycles for 40 years were still bounding for  
10 60 years, and the staff concluded that the TLAA  
11 remains valid.

12 DR. WALLIS: You said you believe what  
13 they said, in other words?

14 MR. SUBER: Yes, sir. The TLAA for RCS  
15 piping leak-before-break analysis is evaluated in  
16 Section 4.7.1. As indicated on the slide, the leak-  
17 before-break analysis requires that the growth of the  
18 postulated flaws should meet a safety factor of two  
19 for the critical crack size. The applicant has  
20 demonstrated that the cycles in the fatigue growth  
21 analysis are bounding for 60 years. Therefore, the  
22 staff concludes that the TLAA for leak-before-break  
23 remains valid.

24 To summarize the staff's evaluation of the  
25 TLAAAs, the applicant has demonstrated that the TLAAAs

1 will remain valid for the period of extended operation  
2 or have been projected to the end of the period of  
3 extended operation or the aging effects will be  
4 adequately managed for the period of extended  
5 operation.

6 DR. WALLIS: It's very difficult to  
7 demonstrate that something will happen, but I guess  
8 it's the best you can do. All these assurances that  
9 everything will be adequately managed is rather  
10 difficult to verify. We all hope that we will do good  
11 things in the future.

12 MR. SUBER: Experience will show us.

13 DR. WALLIS: So the only thing is really  
14 to base it on the way they have done things up to now.

15 MR. SUBER: Yes, sir.

16 DR. WALLIS: You have to evaluate what  
17 they have been doing and extrapolate it. Is that what  
18 you do?

19 MR. SIEBER: Well, they could become born  
20 again, you know.

21 DR. WALLIS: It's almost like what  
22 teenagers say. I'm going to be good or something.  
23 It's a basic question with all these TLAAs.

24 MR. SIEBER: Yes.

25 MR. SUBER: The basic question is that

1 we --

2 DR. WALLIS: So you satisfy yourselves by  
3 having some sort of inspection or monitoring person?

4 MR. SIEBER: Well, that's the Reactor  
5 Oversight Program.

6 CHAIRMAN BONACA: In some cases, I mean,  
7 it's purely a re-engineering analysis, so that you  
8 have more confidence. In others, you depend on  
9 managing. So you have to monitor, evaluate,  
10 calculate.

11 MR. SUBER: Using the Aging Management  
12 Program.

13 CHAIRMAN BONACA: And so on and so forth.

14 DR. WALLIS: Really, what we should be  
15 after is not whether or not you think it's going to be  
16 adequately managed, but how you assure yourselves in  
17 the future that it will be adequately managed. Isn't  
18 that a more important thing we should be concerned  
19 with, because it always could appear that everything  
20 is going to be fine, but how are you going to assure  
21 yourselves that it will really be fine?

22 MR. SIEBER: Inspection and enforcement.

23 MR. SUBER: Through the inspection  
24 process.

25 MR. SIEBER: Inspection and enforcement.

1 DR. WALLIS: Then what we should focus on  
2 in license renewal is not all these assurances, but  
3 how are you going to actually implement them?

4 CHAIRMAN BONACA: Well, right now these  
5 are the commitments really. I mean, we don't -- you  
6 know, can you get through licensing? None of these  
7 plants is in the license renewal stage.

8 DR. RANSOM: It seems like a lot. Excuse  
9 me. Go ahead.

10 CHAIRMAN BONACA: Sure, no.

11 DR. RANSOM: It seems to me like a lot of  
12 these issues, you know, of aging management are really  
13 more management problems. It's like the Enron  
14 situation. How good is the actual system that is  
15 going to do record keeping, preserve the records,  
16 monitor these things, but yet the system doesn't seem  
17 to really test that.

18 MR. ROSEN: I'm not sure Entergy is going  
19 to want to be compared to Enron even though the first  
20 two letters --

21 DR. RANSOM: Safety culture is another  
22 aspect, I guess, that has been used and talked about  
23 here.

24 MR. SIEBER: These things show up as  
25 cross-cutting issues in the ROP, you know, the failure

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1 of problem identification and resolution, which is  
2 what we're talking about here. It's an element in  
3 safety culture. It's an element that is measured in  
4 the ROP and reported and they have a finding there, I  
5 think.

6 DR. RANSOM: Well, does anyone ever look  
7 at how well all these records are preserved? I get  
8 the impression that if something burned down and the  
9 records were lost, the plant would be lost.

10 MR. ROSEN: No, that's not true. All the  
11 records are kept off site.

12 MR. SIEBER: There are double.

13 MR. ROSEN: And there are two sets of them  
14 and typically --

15 DR. RANSOM: There are requirements in  
16 place to do that?

17 MR. ROSEN: Yes.

18 MR. SIEBER: Yes.

19 MR. ROSEN: 75 years.

20 PARTICIPANT: In a cave someplace.

21 MR. SIEBER: We kept ours in a mine.

22 MR. ROSEN: Iron Mountain.

23 MR. SIEBER: Yes.

24 PARTICIPANT: An abandoned mine.

25 CHAIRMAN BONACA: But you have to look at

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1 the big picture of what's happening with license  
2 renewal. I mean, you are taking, you know, all the  
3 commitments applied surrounding and etcetera, and you  
4 are focusing all those commitments on aging for the  
5 next 20 years of operation. And so I think it's  
6 beneficial, that perspective.

7 I think, you know, that's the difference,  
8 for example, that we see with some of the review  
9 programs they have in foreign countries. They are not  
10 really focused on aging, per se, and, yet, it's  
11 happening. I think, at this stage, however, we are  
12 really at a commitment stage. Whoever walks into  
13 license renewal will see how this thing ends up being  
14 implemented.

15 MR. ROSEN: Are we in the subcommittee  
16 discussion section now, Mr. Chairman?

17 CHAIRMAN BONACA: I think so. We're  
18 pretty much done?

19 PARTICIPANT: Yes, sir.

20 CHAIRMAN BONACA: Do you want to go  
21 through your last slide?

22 MR. LEITCH: I have a question about  
23 scoping that I think is an interesting one to me.  
24 There in the draft SER, pages 2-3 and 2-4, there are  
25 three types of spatial failures discussed. We're in

1 the area of how do you scope items into license  
2 renewal that could possibly damage or prevent the  
3 proper operation of safety-related equipment. And all  
4 these things are spatial. That is they discuss,  
5 basically, impact, whip and spray.

6 But I wonder if we have considered in any  
7 of these things the disintegration of non-safety-  
8 related components such as valve internals and how  
9 they might affect the proper operation of safety-  
10 related components. I see this as parallel perhaps to  
11 the situation at the BWRs where the steam dryers were  
12 ultimately included in scope on the basis that they  
13 could fail in such a way that they create loose parts.  
14 Those loose parts would go down the main steam line,  
15 prevent the proper operation of the main steam valves,  
16 which are safety-related. And it seems to me that we  
17 have not considered here those kind of interactions as  
18 being candidates for putting equipment in scope.

19 DR. WALLIS: Are you thinking of something  
20 like a valve stem blowing out under pressure?

21 MR. LEITCH: Yes, or a disk dropping off  
22 a valve. In a non-safety-related system, a disk drops  
23 off a valve and prevents the proper operation, you  
24 know, moves downstream and prevents the proper  
25 operation of some other piece of equipment.

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1                   Now, I guess it seems to me that the whole  
2 discussion of the BWR steam dryer opened up this door,  
3 because I don't think previously we had considered  
4 that in the interactions. I say that the interaction  
5 was, basically, a spray or something falling from a  
6 non-safety-related system that directly physically  
7 damaged the safety-related system. But I see an  
8 inconsistency with what we have done in the BWR steam  
9 dryer situation and what we're doing elsewhere.

10                   I guess what I'm saying is is it  
11 appropriate or have we considered this kind of non-  
12 safety-related damage, non-safety-related  
13 disintegration damaging a safety-related piece not  
14 from falling, but from passing down the line where a  
15 spatial action, a spacial analysis, might not give you  
16 the right answer?

17                   DR. KUO: Yes, I guess I have a two part  
18 answer. You know, this kind of interaction I would  
19 say will not happen unless there is an aging problem,  
20 there is increase of, say, flow, temperature, pressure  
21 and all that, because the valve itself supposedly is  
22 designed for whatever it's supposed to serve.

23                   Now, one thing can happen is aging, and  
24 these are the active components that you are talking  
25 about. And we have a Maintenance Program to monitor

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1 that. If there is any problem, that will be either  
2 replaced or refurbished or whatever. So without any  
3 other factors, just due to operation, I believe that  
4 the Maintenance Program will take care of it.

5 Now, because of the power uprate, we have  
6 a change of characters. The flow may be -- the speed  
7 increased, the pressure increased, the temperature  
8 increased and all that. Okay? And that is what we  
9 find out here in the, say, BWR steam dryer. Okay?  
10 And now, in our letter to the ACRS, we made it very  
11 clear that if a plant comes in for power uprate after  
12 license renewal, after the receipt of a renewed  
13 license, the applicant for that plant, they will have  
14 to address aging of this type of a problem.

15 DR. WALLIS: Because it's a question of  
16 scope, isn't it? What if you have something -- scope,  
17 say, for safety, which could go affect something that  
18 does affect safety downstream, then maybe it should be  
19 within the scope of license renewal.

20 DR. KUO: Yes.

21 CHAIRMAN BONACA: But it seems to me  
22 that, you know --

23 MR. LEITCH: It's non-safety-related.

24 DR. KUO: But so far, we don't have this  
25 operating experience. We haven't seen anything that

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1 is disintegrated.

2 CHAIRMAN BONACA: That's right. I mean,  
3 it seems to me that, you know, the issue of long-lived  
4 component that's for the metal one, we never would  
5 have thought of steam dryers, because we never thought  
6 they would come apart.

7 DR. KUO: Right.

8 CHAIRMAN BONACA: We're realizing they can  
9 come apart. In fact, they did. Then we said okay,  
10 then the interaction is possible now. I would say  
11 that you probably would treat other internals the same  
12 way if you have a history or experience where some  
13 measured components internal could come apart or  
14 fragment itself in a way. But, you know, you would  
15 have to have some experience that says this happens  
16 and there is a possibility of that.

17 DR. KUO: And if that does happen, we take  
18 care of it immediately just like this steam dryer.

19 MR. LEITCH: Yes, okay. But you're  
20 thinking, consciously thinking about whether a piece  
21 of equipment falls off the wall and damages a safety-  
22 related piece of equipment below.

23 DR. KUO: Right.

24 MR. LEITCH: I'm just saying are we  
25 consciously thinking about some kind of an internal

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1 disintegration of a valve that could damage safety-  
2 related equipment. I mean, it looks as though that  
3 thought process is excluded from this screening  
4 criteria.

5 DR. KUO: I don't believe so.

6 MR. LEITCH: Scoping criteria.

7 DR. KUO: I don't believe so. I think  
8 that thought is there when we do the scoping, but in  
9 the case of a stream dryer maybe there's just one  
10 thing.

11 MR. LEITCH: Yes. Well, we got smart  
12 after the fact there. What I'm saying is shouldn't we  
13 be thinking about situations where we can get smart  
14 before the fact.

15 DR. KUO: Yes.

16 DR. FORD: I thought, P.T., you said that  
17 items such as a valve stem or something like this, a  
18 moveable part, will be covered by the Maintenance  
19 Program.

20 DR. KUO: Yes, yes.

21 DR. FORD: I think what the question is is  
22 that good enough?

23 DR. KUO: Well, that's why I have said we  
24 don't have any operating experience so far. Our  
25 experience has shown that with maintenance rule there,

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1 this type of a disintegration that we're talking about  
2 probably won't happen. I will not say never happen.

3 DR. WALLIS: It's sort of irrelevant  
4 whether it's a moving part or a stationary part if  
5 it's going to disintegrate.

6 MR. ROSEN: Except that the moving parts  
7 get examined routinely.

8 DR. WALLIS: Get examined. That's right.

9 MR. SIEBER: And the moving parts are  
10 covered by the rule.

11 CHAIRMAN BONACA: And the moving part  
12 begins to malfunction. You know the pump is not  
13 working. You have to, you know, take it down and you  
14 fix it.

15 PARTICIPANT: You take a check valve.

16 MR. SIEBER: I'm talking about a non-  
17 safety-related part, non-safety-related part of the  
18 steam dryer to break up that, the proper operation of  
19 a safety-related part.

20 CHAIRMAN BONACA: Yes, I have been trying  
21 to think about some example I can come up with, but --

22 MR. SIEBER: Well, the examples are all  
23 the check valves in the safety injection system. You  
24 know, of the valves, check valves are the ones that  
25 fail the most.

1 MR. LEITCH: They are in scope.

2 CHAIRMAN BONACA: They are in scope.

3 MR. SIEBER: That's right. Well, they  
4 aren't in scope, because they are moving. They are  
5 active.

6 MR. ROSEN: Their bodies are in scope, but  
7 not their flappers.

8 MR. SIEBER: Flappers are not. They are  
9 part of the --

10 MR. ROSEN: And that's what you're worried  
11 about, it's the flappers and the pins and that sort of  
12 thing.

13 DR. WALLIS: There are sometimes other  
14 parts of valves, which are stationary, but are not all  
15 that robust, which can break off.

16 MR. LEITCH: Well, I just wanted to have  
17 a discussion. I will see if I can think of a good  
18 example. At the moment, I'm hard pressed for an  
19 example, so maybe your answer is right that it hasn't  
20 happened, so we'll worry about if and when it happens.

21 MR. SIEBER: When it does.

22 DR. LEE: This is Sam Lee from License  
23 Renewal. Yes, that is good question. You know,  
24 sometimes the staff actually ask that kind of  
25 question. Like, you know, inside the steam generator,

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1 for example, okay, like the J-tube, the feed rings.

2 MR. LEITCH: Okay, yes.

3 DR. LEE: Okay. Sometimes they fail.  
4 They crack. You get a loose piece.

5 MR. SIEBER: Yes.

6 DR. LEE: So the staff ask that kind of  
7 question. Okay? So sometimes you see the feed ring  
8 is actually in scope because of that. Okay.

9 DR. WALLIS: You find pieces of J-tube at  
10 the bottom of the steam generator?

11 MR. SIEBER: Or stuck in between the two.

12 DR. WALLIS: Stuck in between.

13 MR. SIEBER: Yes, but that's a pretty rare  
14 occurrence.

15 CHAIRMAN BONACA: I'm sure as plants age,  
16 there will be some new examples that will lead to, you  
17 know, expansion of the scope as we had for resident  
18 requests.

19 DR. LEE: Yes, this is based on our  
20 experience. Otherwise, you cannot stop. You can say,  
21 you know, if we fail that everything fails.

22 DR. KUO: There are thousands of  
23 components.

24 MR. SIEBER: Yes, that's right.

25 DR. KUO: We can't postulate that, you

1 know, disintegration on every one of them. Then this  
2 is going to be impractical.

3 PARTICIPANT: That's correct.

4 MR. LEITCH: I guess there seem to be some  
5 words in the draft SER that suggested to me that those  
6 kind of things were specifically excluded from  
7 consideration.

8 MR. SIEBER: Well, it's what the rule  
9 says.

10 DR. KUO: According to the rule.

11 PARTICIPANT: That's right.

12 MR. LEITCH: Because they hadn't happened.  
13 Therefore, we excluded them from consideration.

14 DR. LEE: Yes. Actually, without the rule  
15 the statement of consideration actually had certain  
16 criteria in there. One is the operating experience,  
17 because we use the rule for comment. That is one of  
18 the comments we get, because, you know, otherwise I  
19 say you can assume everything fails. Okay? So that  
20 is one of the, you know, considerations.

21 MR. LEITCH: Yes. Okay. I'll see if I  
22 can think of a good example for it.

23 CHAIRMAN BONACA: Okay.

24 DR. KUO: If you can give an example, that  
25 will be great.

1                   CHAIRMAN BONACA: Okay. If there are no  
2 further comments, at this point, I would like to go  
3 around the table and see if there is any observations  
4 that you want to make regarding this application.  
5 I'll start on this side. Rich?

6                   DR. DENNING: No.

7                   CHAIRMAN BONACA: Graham?

8                   DR. WALLIS: No, I don't see any issue  
9 which is going to hold things up, but as I have said  
10 already today, I'm a bit concerned about the process  
11 where a whole lot seems to depend upon assurance that  
12 everything is going to be done properly in the future  
13 and that's a very difficult thing to get any sort of  
14 real assurance of. I don't quite know how we handle  
15 that unless it's renewal, but that would seem to be  
16 the main question really. Things are fine now.  
17 Everything is going fine. Everyone is doing the right  
18 thing, but what is the assurance that it's really  
19 going to continue?

20                   DR. KUO: Well, Dr. Wallis, maybe you  
21 already know that, but let me repeat it. Now, to  
22 assure that whatever they have committed will be done  
23 properly, we have a list of commitments in the SER and  
24 that list of commitments transferred to our inspection  
25 procedure, post license renewal inspection procedure.

1 So the inspector, regional inspector, that are going  
2 out before year 40, they are going to assure that the  
3 implementation of the commitments are there.

4 DR. WALLIS: So the real question about  
5 license renewal should perhaps not be what is the  
6 applicant going to do, but what is the NRC going to  
7 do.

8 CHAIRMAN BONACA: Well, that's why we have  
9 raised this issue many times, the burden and the bow  
10 wave commitment that the NRC will have to work on.

11 DR. WALLIS: Right.

12 CHAIRMAN BONACA: Hopefully, however, I  
13 think that the licensees will proceed, hopefully, in  
14 a seamless way or, I mean, to transition from the last  
15 day of your 40 years to the next 20 in a smooth  
16 fashion and they will want to do that and so, you  
17 know, that should be --

18 DR. WALLIS: I think the thing is as  
19 plants get older and things happen, will the NRC be on  
20 top of them is the sort of question I have. I think  
21 the licensees are closer to it. Probably they have  
22 got more chance of catching things.

23 CHAIRMAN BONACA: That's right.

24 DR. WALLIS: I just wonder if the NRC will  
25 sort of anticipate perhaps some of the things they

1 will need to think about. That's the only sort of  
2 general question I have. It doesn't really apply to  
3 ANO.

4 CHAIRMAN BONACA: Peter?

5 DR. FORD: I see nothing, say, that the  
6 ANO application does not conform to the requirements.  
7 I have got some general comments. There's this  
8 question of the quality of Aging Management Programs  
9 as to how they are assessed, and we have discussed  
10 that in some detail, the quantitative quality aspect.

11 And again, I have said this before too,  
12 that I think there is an urgent need for an update to  
13 the GALL Report. It seems if everything conforms to  
14 GALL, then it's all right, but GALL is old and there  
15 are new aging phenomena coming to the fore, which the  
16 technical community are well aware of, which is not in  
17 GALL. For instance, the effect of surface core of  
18 stainless steel in PWR systems and the stress  
19 corrosion of that, the validity of  $K_{Ic}$  values for high  
20 nickel alloys in PWR primary systems.

21 These are the issues that the technical  
22 community knew about, but it is not perfected in GALL.  
23 I would hate to see this delayed too much further.  
24 GALL doesn't take those into account, but it has got  
25 nothing at all to do with the ANO applicant.

1 MR. SIEBER: It doesn't have much to do  
2 with LRA either, because it has to get into the code.

3 DR. FORD: Well, I know that.

4 MR. SIEBER: And the staff has to write a  
5 reg guide to endorse it.

6 DR. FORD: Jack, that will take time and  
7 as we know --

8 MR. SIEBER: But that's the path.

9 DR. FORD: Absolutely correct, and I guess  
10 I want to be more proactive than reactive.

11 CHAIRMAN BONACA: And I think, you know,  
12 the issue of GALL needs to be updated. They are doing  
13 it.

14 DR. FORD: Oh, absolutely.

15 CHAIRMAN BONACA: And I think that --

16 DR. FORD: I'm just saying.

17 CHAIRMAN BONACA: There is a need. I  
18 agree with you. For example, you know, many of the  
19 exceptions that I see in these programs being made by  
20 licensees then are accepted by the NRC naturally,  
21 because they have to do with over-prescriptive  
22 commitments, as I said, in GALL. I think to the  
23 degree to which we can relax them, it will allow for  
24 the licensees to use their own programs without having  
25 to have exceptions.

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1 I mean, you know, like this interval, the  
2 frequency of interval in the fire equipment. I mean,  
3 you know, what they are all showing is that the  
4 intervals they are proposing and using right now are  
5 longer than the ones in GALL. And if they are  
6 acceptable once, they should be acceptable in all  
7 cases without having to have reviews, etcetera.  
8 Otherwise, they should not be acceptable in all cases  
9 either. So I think that a GALL update will help.  
10 Steve?

11 MR. ROSEN: I have some direct messages  
12 for the licensee and some for P.T. Kuo and his team.  
13 First the licensee. I think they have used the wrong  
14 capacity factor for the pressure-temperature limits of  
15 the pressurized thermal shock in the Upper Shelf  
16 Energy screening. The use of 80 percent capacity  
17 factor for 60 years, clearly, that's not where they  
18 are headed.

19 It would be more correct, in my view, to  
20 use 80 percent for the first 25 years of operation and  
21 something like 90 percent for the remaining 35 years.  
22 But if you do that, you get to a point where -- I'll  
23 do a calculation for Mr. Medoff ahead of time, it's  
24 the margins are either not there for USE or are razor  
25 thin for the Upper Shelf Energy.

1 We heard this morning from our friends to  
2 talk about pressurized thermal shock, about the  
3 importance of Upper Shelf Energy in the late stages of  
4 a pressurized thermal shock event. You need to have  
5 retained ductility in those time frames, and so that's  
6 very important. And as I said, I think the wrong  
7 number has been used.

8 DR. DENNING: Excuse me. Can I ask you,  
9 Stephen, isn't it the utility that pays the price if  
10 that's the case though?

11 MR. ROSEN: No.

12 DR. DENNING: I mean, they are just going  
13 to have to come back at some time later and have to --  
14 it doesn't really affect us, does it, as far as saying  
15 okay, you can go forward recognizing that, at some  
16 time, they are going to exceed --

17 MR. ROSEN: That's one way to look at it,  
18 Rich. I think the other way to look at it is if the  
19 utility came in and said well, I'm going to use 70  
20 percent, because that gets me just above the Upper  
21 Shelf Energy criteria, even if he never had 70 percent  
22 before, what if it was 60 percent?

23 The question is when do you say that's  
24 nonsense? And I think Entergy prides itself,  
25 rightfully, on high capacity factor operation. And

1 here they use a capacity factor that is just not going  
2 to be representative. So anyway, enough said about  
3 that. I don't know where we go with that, but that's  
4 just my view and my simple calculation. So I may be  
5 wrong with the calculation, but I think their margins  
6 are either not there or are razor thin for the Upper  
7 Shelf Energy.

8 PARTICIPANT: And they don't run.

9 MR. ROSEN: The second point I want to  
10 make for the licensee was that the reactor vessel head  
11 ultrasonic inspections that were done instead of bare  
12 metal visual inspections are of some comfort. It's  
13 true they detect flaws that have not yet come through  
14 and that's a good thing. But I'm always more  
15 comforted by looking at the -- I am also comforted,  
16 let's put it that way, by looking at the bare metal  
17 visual of a head that shows no obvious staining from  
18 boric acid, and I hope that when they replace their  
19 head that they will make it easy to get in there and  
20 see. That's an important phenomenon.

21 I really would like clarification of when  
22 that's all going to happen. I didn't understand what  
23 all was said about the timing for all that, and I  
24 think it's a good idea to replace the head and it  
25 should be done promptly if you're going to do it.

1           The third thing for the licensee I thought  
2 about is that there are some demonstrated weaknesses  
3 in the PI&R Program. We all rely on it in a lot of  
4 ways and I know it's in the ROP, so I know you're  
5 working on it, but it comes back to our ability to  
6 have confidence in license renewal. If the plant is  
7 having trouble now running or operating a corrective  
8 action system at such a level that it is now in white  
9 finding, that's not a good port then for the future.

10           And then the fourth message I would have  
11 is, you know, when you come in and wave at us a  
12 commitment tracking system chart to which we are  
13 supposed to take some comfort, but that the staff  
14 finds that one of the very first, I take it,  
15 commitments in the license renewal area, the masonry  
16 wall baseline exam, was missed as a result of some  
17 failure in the commitment tracking system, it's not a  
18 good sign.

19           So I'm concerned about that as well.  
20 Maybe some of these points if you read the transcript  
21 or think about, I mean, you might say some things  
22 about us, to us in the future and give us some more  
23 comfort as we go further down the road on this.

24           Now, for the staff, a couple of points,  
25 P.T.

1 DR. KUO: Yes.

2 MR. ROSEN: First, this Flow-Accelerated  
3 Corrosion Program Review that Peter Ford wrote up I  
4 think is a very good idea.

5 DR. KUO: Right.

6 MR. ROSEN: We had that very sad and  
7 serious event in Japan.

8 DR. KUO: Yes.

9 MR. ROSEN: We know what's going on in the  
10 industry or at least I used to know. Maybe it's time  
11 to have a review of a Flow-Accelerated Corrosion  
12 Program outside of the context of license renewal. So  
13 I guess it's really not to you, P.T., but to the staff  
14 and your manager.

15 DR. KUO: Yes, I think it is.

16 MR. ROSEN: The second one is the action  
17 matrix chart that was shown. I mean, I guess it  
18 wasn't shown. What was shown was the performance  
19 indicator chart all green.

20 DR. KUO: Yes.

21 MR. ROSEN: And then when we were told  
22 there was a white finding in the action matrix on, I  
23 guess, it was corrective action.

24 MR. SIEBER: Right.

25 MR. ROSEN: And I said well, where is it

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1 and they said well, that's on the other chart. Well,  
2 maybe you could try showing us both charts.

3 DR. KUO: Okay.

4 MR. ROSEN: All right?

5 DR. KUO: Okay. We will get that.

6 MR. ROSEN: And the third and final thing  
7 is I don't know. Let's see. This opportunistic  
8 inspections business for buried piping. I rather  
9 think that we have got it backwards in the way we're  
10 looking at it in license renewal space.

11 DR. KUO: I got it.

12 MR. ROSEN: You understood that.

13 DR. KUO: I know your concern.

14 MR. ROSEN: Okay. Well, that's all I have  
15 to say.

16 CHAIRMAN BONACA: Good. Thank you. Jack?

17 MR. SIEBER: I'm going to just confine  
18 myself to license renewal, as opposed to current  
19 operating things and so forth. You know, I don't see  
20 any major impediments to moving forward nor problems  
21 with the safety evaluation for license renewal, so I  
22 guess I will just state that.

23 CHAIRMAN BONACA: Okay. Vic?

24 DR. RANSOM: I don't have much to offer,  
25 but except after sitting through a couple of these

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1 license renewal applications and their review, it's  
2 apparent to me that not only is their aging management  
3 as important, but how well management ages. And there  
4 is very little attention, I think, to the management  
5 system and I know that's a difficult thing to deal  
6 with, but you want to be able to be assured that  
7 things like Davis-Besse aren't going to happen.

8 CHAIRMAN BONACA: Graham?

9 MR. LEITCH: I don't have much to add that  
10 wouldn't be redundant to some of the comments that  
11 have already been made. I do think though that when  
12 the licensee comes back and makes a presentation to  
13 the full Committee meeting, they should be prepared to  
14 discuss in a little more detail the implementation  
15 schedule for some of these Aging Management Programs.  
16 I think that's of interest to the whole Committee.

17 And I know that it's perhaps difficult to  
18 finalize that schedule before it's completed, before  
19 you have got the new license in hand, but there have  
20 been other applicants that have come to us and given  
21 us some kind of a rough indication as to their  
22 schedule. Not a commitment, that's not what we're  
23 looking for, but some kind of an indication as to what  
24 the schedule would be for the implementation of those  
25 programs.

1                   CHAIRMAN BONACA:    Thank you.    I will  
2                   repeat some of the observations we have made.   Some of  
3                   yours, Steve, I appreciate and I share.   Looking at  
4                   the application, it seems to be clean.   I agree that  
5                   there are no open items on it and I am also impressed  
6                   by the review process, particularly again this audit  
7                   that has been done.   I think it's a quality document.  
8                   It brought a lot of information on the programs.

9                   You know, as I said before, I complained  
10                  about the fact that the programs described in Appendix  
11                  B, there wasn't much detail there, but the audit  
12                  brought a lot of the detail inside.   So that was  
13                  valuable and I think that, you know, this new process  
14                  should streamline the review.   In fact, you have less  
15                  RAIs.   I believe once you have also GALL updated and  
16                  less prescriptive, I think you're going to see even  
17                  less RAIs, because there will be less exceptions.

18                  I think that this application is just  
19                  similar to the previous we saw of Farley.   I thought  
20                  it was, you know, pretty complete and I think it  
21                  covers the basis.   Again, it has a lot of commitments  
22                  and, hopefully, the transition to license renewal will  
23                  be a seamless one.   I mean, will we see implementation  
24                  of some of the commitments ahead of time before we get  
25                  to the last meeting, and that is one thing that we are

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1 concerned about as a Committee, because we realize the  
2 impact it is going to have on the staff, one of being  
3 able to review the implementation of these programs  
4 when you get there.

5 So regarding the full Committee now, I  
6 don't know when it's scheduled to be. Is it --

7 PARTICIPANT: In June right now.

8 CHAIRMAN BONACA: In June right now.  
9 Okay. So you already got some feedback from us about  
10 what we would like to see. Clearly, one thing that is  
11 of interest to the Committee always is initiatives  
12 that you have to improve the plant, and you already  
13 have some. I mean, you have replaced the steam  
14 generators. Some information regarding that is  
15 important to us, for example, the fact that you're  
16 using 690. 690, that's an important element.

17 Also, I think it's of interest to the  
18 Committee. Well, I mean, this is an issue, but there  
19 are other issues like the reactor, replacement of the  
20 head. You know, maybe you will tell us that you  
21 commit to do that, but it's not a commitment. But if  
22 you have information, certainly, it's useful to us.  
23 And other initiatives you may have to improve the  
24 plant, we would like to see those.

25 The other thing that is of interest to us,

1 it's some of your operating history. I mean, you have  
2 had generally not many problems, but if you have had  
3 some problems, you know, we are interested to see how  
4 you dealt with it and how programs that you have put  
5 in place deal with monitoring performance of repairs  
6 and whatever going forward. So those are things that  
7 are of interest to us.

8 At a technical level, just because at this  
9 stage we are more interested in those issues than just  
10 specifically in procedures that we already have looked  
11 at. And I think that pretty much concludes my  
12 remarks.

13 MR. SIEBER: I take it that we aren't  
14 going to have an interim letter.

15 CHAIRMAN BONACA: An interim?

16 MR. SIEBER: Interim letter.

17 CHAIRMAN BONACA: No.

18 MR. SIEBER: Okay.

19 CHAIRMAN BONACA: We're not going to have  
20 one.

21 MR. SIEBER: No issues?

22 CHAIRMAN BONACA: There are no issues, no  
23 open items. So I would like to go around and ask if  
24 there are any further questions or comments from  
25 Members.

1 MR. ROSEN: Well, the only thing that's  
2 possible is if Medoff comes back and says they are  
3 below the shelf, USE criteria, then I would say that  
4 we have an issue, that they have to do the equivalent  
5 margins analysis.

6 CHAIRMAN BONACA: That's right.

7 MR. ROSEN: That hasn't been done.

8 CHAIRMAN BONACA: That's right.

9 DR. WALLIS: I support your statement  
10 about audits. I think these on-site audits are very  
11 helpful and they make a real contribution to sort of  
12 adding information that we need.

13 CHAIRMAN BONACA: And by the way, yes, I  
14 mean, the commitment evaluation was promised to us.  
15 We will get it.

16 MR. ROSEN: Before Friday.

17 DR. LEE: We will try to get it to you  
18 tomorrow according to Medoff.

19 CHAIRMAN BONACA: All right.

20 DR. LEE: Get it to Tanny when we get it.  
21 Okay.

22 CHAIRMAN BONACA: Okay. All right. So  
23 with that, any additional comments or questions from  
24 the public? Since I hear none, I will adjourn the  
25 meeting actually. Thank you very much.

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PARTICIPANT: Thank you.

(Whereupon, the meeting was concluded at

5:46 p.m.)

CERTIFICATE

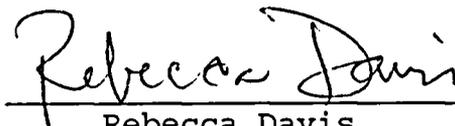
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