

1 MR. SOLORIO: The first slide here,
2 everybody, is on Page 30. The following presentations
3 are going to present the results of the staff's review
4 of aging management activities for Sections 3.1
5 through 3.6.

6 I've included this slide to emphasize the
7 format of the majority of the remaining presentations
8 today. While I was tempted to use an equation, I knew
9 I'd get in trouble if I did, so I avoided that.

10 MEMBER ROSEN: We'd ask you about
11 uncertainty.

12 MR. SOLORIO: I conducting the review, the
13 staff focused on reviewing the materials, the
14 environments, aging effects, to verify that all the
15 applicable aging effects were identified in the aging
16 management programs credited for these aging effects
17 could adequately manage them.

18 Once this was determined, the staff could
19 reach a reasonable assurance finding that the intended
20 functions would be maintained consistent with a CLB
21 for the renewal period. In some cases, because there
22 are open items, the staff has qualified the findings.

23 And we'll be talking about the open items,
24 so I will turn it over now to Mr. Barry Elliot, who
25 will present the results of Section 3.1 and some

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1 additional information on BWRVIPs you've asked for.

2 MR. ELLIOT: Okay, my name is Barry
3 Elliot, I'm with the Materials and Chemical
4 Engineering Branch. The reactor coolant system for
5 this application consists of the reactor pressure
6 vessel, the reactor vessel internals, the RPV
7 instrumentation system and the reactor recirculating
8 system.

9 The environment is the BWR reactor water
10 environment. It's materials are low alloy steel,
11 stainless steel and nickel-based alloys. The pressure
12 is about 1,055 PSI, and operates in temperatures
13 between 70 and 533.

14 The Applicant identified the following
15 aging effects, cracking to stress corrosion and
16 cracking and cyclic loading. Cumulative fatigue, loss
17 of fracture toughness from neutron embrittlement and
18 thermal embrittlement.

19 The Applicant has identified all the aging
20 except for the bolting and the piping, which I'll get
21 into shortly. The applicable aging programs for these
22 aging effects. The first program is the reactor
23 coolant system chemistry program.

24 In this program the water chemistry is
25 optimized so that the aging effects of loss of

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1 material and cracking are minimized. It's controlled
2 while the reactor water chemistry is through the BWR
3 water chemistry guidelines.

4 And the program relies on monitoring and
5 control of various contaminants below specific
6 pre-established limits. Next slide.

7 The next program is the in-service
8 inspection program. And this is basically --

9 MEMBER WALLIS: Are you going to talk
10 about the noble chem part of this?

11 MR. ELLIOT: Well, I'm not going to talk
12 about noble, but I will talk about hydrogen water
13 chemistry. I won't talk about noble now, but if you
14 have a question on noble metal --

15 MEMBER WALLIS: Well, it's a relatively
16 new thing, I'm not sure we know how to manage its
17 aging because we don't know enough about it yet.

18 MR. ELLIOT: Well, I'll get to that.

19 MEMBER WALLIS: Okay.

20 MR. ELLIOT: I won't get to noble metal,
21 but I'll get to that. Okay. I think. In-service
22 inspection program is an ASME code in-service
23 inspection program. The pressure vessel, reactor
24 pressure vessels and internal ISI program is basically
25 a program which augments the in-service inspection

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1 program.

2 And chiefly it's supplemented by the
3 BWRVIP program. I'm going to talk about that shortly,
4 in a little more detail. The reactor vessel materials
5 surveillance program, the Applicant plans to implement
6 the integrated surveillance program. I'll give a
7 little more detail on that.

8 And then the fatigue management activities
9 will be discussed as part of the TLAA, Section 4.3.
10 At the time we put this slide together we had one open
11 item. And the open item had to deal with bolting and
12 instrumentation, piping.

13 We were in discussions with the Applicant
14 about how, what are the applicable aging effects and
15 what should be appropriate programs. As far as the
16 bolting is concerned, the staff believes that loss of
17 preload, loss of material corrosion, cracking, are
18 applicable aging effects for bolting.

19 And the Applicant has credited the ISI
20 program for managing these effects. And this is
21 consistent with what we've done in the past for
22 bolting for other plants. The other issue has to do
23 with the instrumentation. Carbon steel piping,
24 concerned about loss of material as a result of
25 galvanic corrosion between the austenitic and the

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1 carbon steel.

2 And the Applicant credits the reactor
3 water chemistry program for managing this aging
4 effect. We were concerned that, we were concerned
5 that there was no inspection here. So we requested
6 they do an inspection.

7 And they've committed to do a, part of the
8 one-time inspection to look for loss of materials for
9 this piping. And that is also consistent with what
10 we've done in the past.

11 MEMBER BARTON: What instrument of piping
12 are we talking about here?

13 MR. ELLIOT: It's carbon, I don't know
14 what particular pipe it is, but there's a carbon steel
15 piping in the reactor coolant instrumentation piping
16 line.

17 MEMBER BARTON: What's its function, do we
18 know?

19 MR. ELLIOT: I assume it's push boundary
20 function for instrumentation piping.

21 MEMBER ROSEN: So when you approve their,
22 are they going to come in with a program and say we're
23 going to do a sample of 21 locations, here, here, here
24 and here, and you know, some kind of statistically
25 significant number of places. Rather than just open

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1 up one place and say it looks fine here, close it up
2 and go on.

3 I mean we're talking about local effects
4 here.

5 MR. ELLIOT: I'm only concerned about
6 local effects.

7 MEMBER ROSEN: So you have to look at a
8 lot of places.

9 MR. ELLIOT: Well, not really. I don't
10 think so. Galvanic effect falls off the further you
11 get away from the interface between the carbon and
12 stainless steel. So if they concentrate their
13 inspections near the interface, they should be okay.
14 Near the interfaces, that should be satisfactory.

15 CHAIRMAN LEITCH:: But wasn't your
16 question, Steve, with many, with several interfaces.
17 I mean I think you interpreted the question as further
18 down the pipe, so to speak. But I think that Steve --

19 MR. ELLIOT: I'm talking the interface
20 between the austenitic and the carbon steel. The
21 further you get away from that interface --

22 MEMBER ROSEN: On any given line.

23 CHAIRMAN LEITCH:: On any given line. But
24 I think --

25 MR. ELLIOT: Exactly. Again, they have to

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1 take a representative number of lines where there are
2 interfaces. I thought you meant throughout the carbon
3 system.

4 MEMBER ROSEN: No, no, no. It's got lots
5 of pipes like this, instrument pipes, maybe both ends
6 hook up to austenitic stainless steel. So you need to
7 look, find out how many. If you have 20 lines like
8 that, you need to look at, that's 40 locations. Maybe
9 you need to look at a statistically significant number
10 of the 40 lines.

11 MR. ELLIOT: Okay, thank you. We're going
12 to look into that.

13 MEMBER ROSEN: Okay, the point is they
14 just don't open up one connection and say, see, it's
15 okay, close it back up and go on. You need to have a
16 scientific approach.

17 MR. ELLIOT: I assume they're planning to
18 do a volumetric examination. So they can look at
19 multiple locations.

20 MEMBER ROSEN: However they do it, they
21 have to prove to you, that's in a statistically
22 significant way, that it's okay.

23 MR. ELLIOT: Okay, thank you.

24 MR. POLASKI: This is Fred Polaski from
25 Exelon. Just to clarify, there's only one location

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1 that we've addressed, that needs to be addressed.

2 MR. ELLIOT: Oh.

3 MR. POLASKI: It's on the bottom head
4 drain line. So there's only one.

5 MR. ELLIOT: Is it the bottom head drain
6 pipe we're talking about?

7 MR. POLASKI: Yeah.

8 MR. ELLIOT: Oh, okay.

9 MEMBER ROSEN: Well, then they can look at
10 all, complete, they can take a statistically
11 significant look by looking at all of it.

12 (Laughter.)

13 MR. ELLIOT: Okay, that's all I have on
14 that part. I'm going to talk about the BWRVIP
15 programs and hopefully answer your question about
16 noble metal. The first one is the BWRVIP-75.

17 And this forms the technical basis for the
18 revision to Generic Letter 88-01, inspection schedule.
19 Let me give you a little background on 88-01. Generic
20 Letter 88-01, is the staff's position for inspection
21 for piping that are, have had intergranular stress
22 corrosion cracking.

23 One of the issues that are hot the last
24 couple of years was the summer issue. That was the
25 first instance of, in a PWR, an intergranular stress

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1 corrosion cracking occurred.

2 However, the BWRs, in the 670s and 680s,
3 this occurred all the time. This occurred quite
4 often. And this is the program, 88-01, was the
5 program the staff initiated to correct this situation.

6 The piping that is involved here is four
7 inches in large enamel pipe diameter and it's any, any
8 piping that is over 200 degrees Fahrenheit. And the
9 material is either austenitic stainless steel, alloy
10 182 weld metal and alloy 600 base metal.

11 The Generic Letter 88-01, defines,
12 original Generic Letter 88-01, defines a whole bunch
13 of categories. And it was dependent upon whether a
14 material was resistant and whether the piping had been
15 given mitigation treatment like stress improvement or
16 something.

17 Since that, since that Generic Letter was
18 issued, many plants have implemented hydrogen water
19 chemistry. As a result of that, we've had experience
20 with hydrogen water chemistry. That has been the main
21 thrust of the revision here, is to change the
22 frequency of the inspections.

23 And a lot of that has to do with the
24 hydrogen water chemistry. Robin Dyle is here, from
25 BWRVIP. Do you want to add anything to that, noble

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1 metal to this?

2 MR. DYLE: I guess, and this is Robin Dyle
3 from Southern Nuclear. What I would say about noble
4 metal is VIP-75 accounts for inspection schedules
5 based on normal water chemistry and improved water
6 chemistry.

7 Which would be hydrogen water chemistry or
8 noble metal. The staff is reviewing the basis for
9 what we use to determine the effectiveness based on
10 ECP and things of that nature. So there are schedules
11 in this document that would allow use of normal water
12 chemistry or the other.

13 And I think the position, I know the
14 position we had on Hatch was for license renewal. We
15 didn't commit to noble metal or HWC for the additional
16 20 years of service, because we didn't want to make a
17 commitment until we knew how this would play out.

18 We started implementing this process, it
19 was effective in mitigating cracking, but we didn't
20 fully understand what it would do to fuel and other
21 things. So it was a commitment for license renewal,
22 it's something we're actively using.

23 We've got multiple programs, fuel
24 inspections and other tests underway to assess the
25 long term effects of it. So that's the generic

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1 position from the fleet. And I believe Peach Bottom's
2 position is the same as Hatch's.

3 That, you know, they're going to use
4 whatever they can to manage to cracking, but they
5 don't want to make a commitment to the additional 20
6 years for noble metal.

7 MR. POLASKI: Yeah, that's correct. For
8 Exelon, we do operate with hydrogen water chemistry
9 and we have implemented noble metals on both Peach
10 Bottom 2 and 3. But we did not credited it or going
11 to commit to it in a license renewal application.

12 We're going to credit our water chemistry
13 and our ISI program.

14 CHAIRMAN LEITCH:: Was there not a --

15 MEMBER SHACK: So it would be a separate
16 licensing action to come in then for a reduced
17 inspection schedule, for example.

18 MR. ELLIOT: Excuse me, the inspection
19 schedule is built into the VIP-75.

20 MEMBER SHACK: Okay.

21 MR. ELLIOT: If you implement the hydrogen
22 water chemistry, you have a certain frequency. If you
23 don't implement the hydrogen water inspection, you
24 have a different, more frequent. That's the basic
25 concept between the Generic Letter 88-01, and the

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1 VIP-75.

2 MR. POLASKI: And what we did for license
3 renewal is we've credited the VIP programs and we've
4 committed to implement the VIP programs.

5 MR. ELLIOT: And it's up to the individual
6 licensee to implement whatever part of that program
7 that he wants. But we approve the generic program.

8 CHAIRMAN LEITCH:: So the VIP-75 is no,
9 doesn't indicate noble metals then. It's silent on
10 noble metals.

11 MR. ELLIOT: I believe so. Let Robin
12 answer that.

13 MR. DYLE: This is Robin Dyle again from
14 Southern Nuclear. What it allows for is normal water
15 chemistry and improved water chemistry and effective
16 hydrogen water chemistry. And you can achieve
17 effective hydrogen water chemistry one of two ways.

18 Inject sufficient hydrogen that you have
19 the protection that you need or through the use of
20 noble metals it would allow a much lower induction
21 rate of hydrogen which is beneficial for dose and
22 other things.

23 so, either way, as long^g as you get the
24 protection that is necessary by reducing the ECP and
25 lowering the conductivity and keeping everything where

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1 we want it, to turn off the crank and, or slow it down
2 significantly, that's what we call improved water
3 chemistry or effective water chemistry.

4 CHAIRMAN LEITCH:: Okay, thanks. Now it
5 seems to me that Peach Bottom has, in a number of
6 places, installed less susceptible materials. Does
7 the VIP-75 also give credit for that.

8 MR. ELLIOT: That's part of the original
9 Generic Letter 88-01. You get inspection program
10 based upon the materials and that type of thing.
11 Inspection frequency and sample size is dependent on
12 the materials susceptibility to IGSCC.

13 That's the material part. Mitigation
14 measures and inspection history and performance of
15 welds. The topical report has no open items. The
16 next issue, the next report was the BWR shroud support
17 and inspection flaw evaluation guidelines, it's
18 VIP-38.

19 The scope and the aging effects are
20 cracking of the shroud supports. And this is the
21 structure below the core shroud to the reactor
22 pressure vessel inside surface. The materials are
23 alloy 600 base metal, alloy 182 and 82 weld metal and
24 type 304 stainless steel for BWR/2s.

25 The guidelines provide a basis for

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1 inspection and reinspection and also for evaluating
2 structural integrity. Topical report has one open
3 item, and that is a schedule for implementing
4 inspection for the lower plenum. Currently there is
5 no, well currently there is no tooling available.

6 They are developing the tooling, and when
7 the tooling becomes available this item will be
8 closed. The next one is the BWRVIP-76, which is a
9 core shroud inspection and flow evaluation guideline.

10 This is a comprehensive report combining
11 guidelines on VIP-01, VIP-07, BWRVIP-63. VIP-01 is
12 for inspection of the circumferential welds. VIP-07
13 is for reinspection of the circumferential welds. And
14 VIP-63 is inspection of the vertical welds. 01 and 07
15 are complete.

16 The open item is with VIP-63. We expect
17 to finish this item before the supplement for Peach
18 Bottom. And if we do we'll include a discussion on it
19 in the supplement.

20 CHAIRMAN LEITCH:: So when that is
21 approved, do you expect it to be approved for a 60
22 year basis?

23 MR. ELLIOT: Yes, I would think we would
24 be talking about tooling and frequency that could be
25 carried forward for, you know, 60 years easily.

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1 MEMBER BONACA: I had a question on the
2 frequency thing about the shroud. You mentioned the
3 topical report open items scheduled for implementing
4 inspection for lower plenum. The tooling is being
5 developed to perform the inspection.

6 MR. ELLIOT: Excuse me?

7 MEMBER BONACA: The tooling is being
8 developed, you said?

9 MR. ELLIOT: Yes.

10 MEMBER BONACA: And what's being done in
11 the meantime, I mean if this comes in ten years from
12 now?

13 MR. ELLIOT: The BWRVIP could tell you
14 what they're doing in the meantime.

15 MEMBER BONACA: Okay.

16 MR. DYLE: This is Robin Dyle again. Let
17 me clarify. The open item discussed a concern about
18 being able to inspect in the lower plenum. And it was
19 related to cracking that had occurred at a foreign
20 plant. And that was cracking that had occurred on the
21 bottom side of the shroud support.

22 There is a separate VIP document which
23 addresses inspections in the lower plenum region
24 itself, as far as the stud tube, CRD housings and
25 things of that nature. So we want to keep those two

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1 subjects separated.

2 What the VIP has gone off and done, is
3 we've done the fracture mechanics analysis, we've done
4 some destructive analysis, based on a unit that was
5 never constructed. Some of that is being reviewed now
6 by the staff.

7 We've also developed a change to VIP-38,
8 which we believe will address this. The current
9 inspection criteria allowed a visual inspection of one
10 side of the welds. What we're changing the document
11 to require is that you either must do a visual from
12 both sides of the weld.

13 Which would mean going to the lower plenum
14 and look at the bottom part of the core support
15 structure. Or, do an ultrasonic examination, possibly
16 from the outside of the reactor vessel, where you
17 shoot through the vessel.

18 You can look at H-8 and H-9, which are the
19 two welds of concern, and see if there's any cracking
20 there. So we're going to leave that option up to the
21 owner, based on the configuration of the vessel, the
22 internals, the age of the plant, because some have
23 better access from the ID and some have better access
24 from the OD.

25 But that report is been submitted to the

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1 staff just recently and it's here for there review.
2 So we believe that will resolve that issue.

3 MEMBER BONACA: Okay, thank you.

4 MR. ELLIOT: The next slide deals with the
5 BWR integrated surveillance program. And this is a
6 program to look at the effect of a radiation for a BWR
7 reactor pressure vessels.

8 The BWRVIP-78 and 86, provide the
9 technical basis an implementation plan for 40 years.
10 The program is being re-evaluated and will be revised
11 by 60 years. We expect to complete this review of the
12 60 year program in 2003.

13 We don't expect to finish it in time for
14 the supplement. Therefore, this will probably be,
15 this will be a license condition included to implement
16 either the integrated surveillance program or plan
17 specific program prior to entering the license renewal
18 period.

19 This morning we talked about one other
20 issue which was the top guide. That was BWRVIP-26.
21 I'm not going to talk about it now. I'm going to talk
22 about it as part of the TLAA later on.

23 CHAIRMAN LEITCH:: I had a question on the
24 SER on Page 1-7. I don't see a listing there of
25 BWRVIP-78 or 86.

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1 MEMBER SHACK: That list there is
2 representative of what the Applicant, I think,
3 initially told us in the LRA. And in the staff's
4 review, I guess, through RAI process, we've come to
5 learn that they may rely on these reports. So we
6 actually discuss them.

7 MR. ELLIOT: We subtract, I think, I think
8 Page 83, in Section 3 has a listing of all of the VIP
9 reports that they take credit for. I think 86 and 78.
10 Or in that, and also the accession numbers on the
11 safety evaluation.

12 CHAIRMAN LEITCH:: Yeah, it is referred to
13 there, but on this particular listing it is not. So
14 I was just wondering if it was just inadvertently
15 omitted or there was some significance to that? This
16 is the SER.

17 MR. SOLORIO: No, no, I'm looking to see
18 if, I mean what we did there in Chapter 1 was copy
19 what we initially read in the SER, in the LRA. And as
20 a result of Barry's review, we have the additional
21 reports that you see listed in the table he just spoke
22 of.

23 CHAIRMAN LEITCH:: So this is something
24 that evolved as the work developed then. Page 1-7 is
25 what I'm looking at, Dave.

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1 MR. ELLIOT: He's talking about 78 to 86.

2 MR. POLASKI: This is Fred Polaski. I
3 believe 78 and 86 would show up on a TLAA, right?
4 Because that's where we credit those programs.

5 MR. SOLORIO: Yeah, I guess it's just an
6 administrative problem in terms of, well, it's either
7 one of two things. It's either that, perhaps, we left
8 it off and we copied out of the application wrong.
9 That's what we're putting on Page 1-6 and 1-7.

10 But I think what Barry said earlier is
11 through his review he's come to find out they're
12 relying on that.

13 CHAIRMAN LEITCH:: It is addressed later
14 on in the application, so it may just be an
15 administrative glitch.

16 MR. ELLIOT: Section 3 discusses that.

17 CHAIRMAN LEITCH:: Yeah, right,
18 absolutely, yeah.

19 MEMBER BARTON: What's the resolution?
20 Your point is it ought to appear as the list of VIPs
21 on Page 6 and 7, right? To make it a complete list.

22 CHAIRMAN LEITCH:: Yeah, I think it
23 should. I don't, you know --

24 MR. SOLORIO: I don't see why we couldn't
25 when we revise the SER or issue it as final, include

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1 those additional reports there. We'll talk with the
2 Applicant to make sure we got that straight, so it's
3 clear.

4 CHAIRMAN LEITCH:: If there are no more
5 questions for Barry, I'm going to have Jim Medoff come
6 up here now, thanks.

7 MR. MEDOFF: Good afternoon. I'm Jim
8 Medoff with the Materials and Chemical Engineering
9 Branch. I was one of the Reviewers for the emergency
10 safety features aging management review.

11 April Smith and Andrew Szukiewicz also
12 contributed to the staff review of this system. For
13 the Peach Bottom application that are eight emergency
14 safety feature subsystems and they are listed here on
15 the slide.

16 Next slide, please. Basically the
17 materials of fabrication for the ESFs were carbon
18 steel, carbon steel with stainless cladding or
19 stainless steel. There were some copper, bronze,
20 brass and aluminum alloy components, and the standby
21 gas treatments system does have some neoprene and
22 rubber components.

23 The applicable environments for the ESFs
24 for steam wetted gas, sheltered air, ventilation air,
25 various treated water, environments such as torus

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1 water, condensate storage water, reactor coolant,
2 etcetera, raw water and lubricating oil environments.

3 The staff identified the applicable aging
4 effects for the ESFs to be loss of material in the
5 mechanisms that most, that led to this effect of
6 general corrosion and pitting FAC. Cracking was an
7 aging effect that was determined to be applicable for
8 certain components.

9 And for the various heat exchangers in the
10 ESFs, including the pump room cooler, the RHR heat
11 exchangers, lube oil coolers. Loss of heat transfer
12 capability and potential flow blockage were also
13 identified as applicable effects for the heat
14 exchangers.

15 For the rubber components in the standby
16 gas treatment, the Applicant appropriately identified
17 changes in material properties as an applicable
18 effect. Thermal aging can cause these rubber
19 materials to lose some of their elastic properties.

20 When we did our review, when we came to an
21 issue on an identification of an aging effect or the
22 ability of an AMP to manage the effect, we asked an
23 RAI. The RAIs that we asked on the ESFs were mainly
24 on the identification of aging effects for moist or
25 humid gaseous environments on applicable aging effects

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1 for the heat exchanges.

2 And as well as the identification of heat,
3 I'm sorry, the identification of aging effects for
4 copper, brass and bronze components. The Applicant,
5 in all cases, provided sufficient technical bases to
6 justify their identification of aging effects in the
7 application.

8 The Applicant credits a number of aging
9 management programs or activities to manage the aging
10 effects for the ESFs. Most of them were common aging
11 management programs that have been discussed earlier
12 today.

13 Such as the various water chemistry
14 programs. The torus piping inspection, ISI, IST, oil
15 quality, Generic Letter 89-13 activities which deal
16 with flow blockage of heat exchanger components.

17 We did have two system specific AMPs that
18 were credited for the program. One was the high
19 pressure service water radioactive monitoring
20 activities. And one was the HPCI, RCIC turbine
21 inspection activities that Stu discussed earlier
22 today.

23 The AMPs that were proposed for the, to
24 manage the aging effects for the ESFs were determined
25 in all cases to appropriately manage the effects. And

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1 therefore, we do not have any open items with regard
2 to the Applicant's aging management review for the ESF
3 components.

4 Therefore, we concluded that the Applicant
5 had provided reasonable assurance for the emergency
6 safety feature components.

7 MEMBER ROSEN: Let's talk about the
8 standby gas treatment system for a minute. It's got
9 a duct-like configuration and what did the Applicant
10 say and you agreed to with regard to inspection of the
11 casing of the standby gas treatment system ducting
12 configurative equipment?

13 MR. MEDOFF: My recollection of the
14 standby gas treatment system was that they did not
15 identify a lot of aging effects for the system,
16 basically, because they had provided a basis for
17 concluding that the operating temperature of the
18 system was hot enough to preclude the identification
19 of aging effects for the system.

20 For the buried portions of the system they
21 do propose using the outdoor and buried pipe
22 inspection program to look at those components.

23 MEMBER ROSEN: You said the system
24 operating temperature was high enough to preclude
25 aging effect. Do you mean that it was kept warm

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1 enough so that the moisture would not accumulate from
2 condensation or other reasons?

3 MR. MEDOFF: We basically asked that as a
4 global question for all the ESFs systems.

5 MEMBER ROSEN: The duct is typically
6 galvanized steel or something like that. So it could
7 become, moisture could collect in pockets and dry out
8 and rewet and dry out and ultimately damage the wall
9 over a long period of time of this.

10 And what you're saying is moisture won't
11 because of the high temperatures in the system, and
12 moisture won't pocket or collect. I have a hard time
13 believing that. Because the system is shut down most
14 of the time.

15 And it's not run, although the carbon is
16 kept warm, I think, in some of the systems. Maybe
17 somebody can talk to us about that assumption. The
18 fact that it's kept warm. Is there any more that can
19 be said about that?

20 MR. MEDOFF: I will have to look further
21 into it. I know, we kept, during the review we kept
22 coming up with the question of what the appropriate
23 aging effects would be for metallic components in
24 moist air systems.

25 So we asked a global RAI on that and the

1 response that was given back to us by the Applicant
2 was that the ambient temperature for the metal was,
3 I'm sorry, the temperature for the metal was hotter
4 than the ambient conditions.

5 And therefore, precipitation would not be
6 a concern for the components or the components were
7 insulated. So based on that, that response, that's
8 why we made that conclusion for the ESF components,
9 including standby gas treatment.

10 MEMBER ROSEN: I guess I need some,
11 somebody to help me understand or substantiate that.

12 MR. KUO: We'll get back to you on that
13 before the end of the day.

14 MEMBER ROSEN: Okay, I'll leave it as an
15 open item for me.

16 MR. SOLORIO: I there are no more
17 questions, I'm going to have Bart Fu present the
18 results to Section 3-3.

19 MR. FU: Thank you, Dave. My name is Bart
20 Fu, I'm with Materials and Chemical Engineering
21 Branch. I'm the VIP Reviewer for the aging management
22 review of auxiliary systems.

23 There are a total of 18 systems under this
24 section. They were reviewed by five different members
25 of the staff, April Smith, Andrea Keim, George

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1 Georgiev, Renee Lee and myself.

2 I coordinated the review activities. In
3 the slide we listed some of the major systems from
4 this section. Next slide. I listed materials and
5 aging effects. Briefly, the AMR aging management
6 review process.

7 The staff evaluated all components in
8 scope and the materials of construction in this
9 environment, and the aging effects identified. The
10 staff also reviewed the industry operating experience
11 just to make sure the Applicant provided adequate
12 information.

13 And also make sure all probable aging
14 effects were identified. Next slide. Aging
15 management programs. There are a total of 13 AMPs
16 that are applicable in this section. We listed some
17 of the examples and all of them are common AMPs except
18 the last one.

19 The emergency diesel inspection
20 activities. This program provides for condition
21 monitoring of the emergency diesel equipment. These
22 components are exposed to gaseous lube oil and fuel
23 oil environment.

24 And the aging effects identified were loss
25 of material, cracking, as discussed by the staff in

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1 the earlier presentation. This program will
2 effectively manage the aging effects. We would like
3 to provide for you examples who this program was used
4 during the AMR, aging management review.

5 As an example, for the air receivers, they
6 are made of carbon steel, exposed to a wetted gas
7 environment. And loss of materials was identified as
8 an aging effect. And as required by this program,
9 this aging effect would be mitigated by the daily
10 removal of the condensate on the surface of the
11 component.

12 Another example for the exhaust silencer,
13 also made of carbon steel. Loss of material was
14 identified as an aging effect. This aging effect is
15 managed by the periodic disassembly, cleaning and
16 inspections to ensure its functionality.

17 Another one, the lube oil and fuel oil
18 systems, also as required by this program, the aging
19 effect of loss of material and cracking would be
20 managed by the periodic inspections. And I recall in
21 the morning's presentation the committee raised a
22 question regarding this.

23 A concern that water may accumulate at the
24 bottom of the fuel tank. And I remember the Applicant
25 addressed that the performed, you know, the type of

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1 periodic inspection. We actually did look into some
2 of the details of how the testing is carried out.

3 The actual procedure requires that they
4 test every 31 days. So I guess that's a monthly test.
5 And they test a sample at the bottom of the diesel
6 fuel tank. If they detect any water content, you
7 know, they will, the procedure will require that they
8 pump out from the bottom portion of the, you know, the
9 diesel fuel and then retest at the end until they
10 don't have any more water content.

11 So that's to elaborate a little more.
12 Again, the AMPs form a very important part of the
13 safety, that is to provide reasonable assurance that,
14 you know, aging effect would be properly managed
15 through the extended life of the plant.

16 I understand the staff discussed all the
17 common aging management programs in the earlier
18 presentation and some of the specific ones. And
19 concluded that all AMPs are adequate in managing aging
20 effects pending the resolution of the open items.

21 During the review of aging management
22 review of auxiliary systems, the staff identified
23 numerous issues and they were all addressed through
24 the RAI process. The staff, SER summarized the review
25 process and also all the RAIs, the response from the

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1 Applicant, and also the reasons why, you know, they
2 are acceptable.

3 The SER also documented the conclusions of
4 this review and also documented the technical basis of
5 the conclusions. Again, all issues were resolved, we
6 don't have no open items for the aging management
7 review for the aux systems. Any questions.

8 CHAIRMAN LEITCH:: Yeah, I have a question
9 about the aging management programs. I'm not sure if
10 it should be in this area or the structural area, but
11 let me tell you my question and then maybe you'd want
12 to hand off to the structural people.

13 But let me see where it fits. I was
14 reading the NRC web page and I came across, last week,
15 this notice here that happened at one of the plants.
16 It says an open void was discovered approximately five
17 feet deep that exists in the area between the reactor
18 and turbine building walls affecting Appendix R fire
19 separation.

20 It goes on to say it appears that sand has
21 been moved or eroded away over time. Thus a void
22 beneath the A and B 408 weld switch gear room floors.
23 Do you know anything about that? I mean sand, it
24 sounds like something subsurface has eroded away a big
25 hole.

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1 No, it's John's former favorite station,
2 Oyster Creek.

3 MR. FU: This is not a part of the aux
4 review. There are different processes.

5 MR. SOLORIO: I was just going to add, I'm
6 not sure really we've actually addressed this in 3-5.
7 It sounds like an event that just came up. And we
8 will obviously look at it to see if it has an impact
9 for license renewal.

10 But I'm pretty sure I don't see any of the
11 structural guys shaking their heads no, we don't talk
12 about this apparently. But we'll look into it.

13 CHAIRMAN LEITCH:: It sounds like
14 something has opened up a big hole. I don't know if
15 the sand has just compressed.

16 MR. SOLORIO: Can I get that link from
17 you?

18 CHAIRMAN LEITCH:: Certainly.

19 MEMBER BARTON: Shifting sands at Oyster
20 Creek. Sixty-nine million dollars, what do you want?
21 What do you want for 69 million dollars? That's what
22 the plant cost.

23 MR. POLASKI: This is Fred Polaski from
24 Exelon. Just some information with respect to the
25 issue you just talked about. I was just told by our

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1 staff that that design feature at Oyster Creek is, you
2 know, applicable at Oyster Creek. That we do not
3 have that kind of design feature at Peach Bottom.

4 So if there's an issue with sand which
5 forms some separation, we think, between difference
6 electrical cables for separation. So it's probably an
7 Oyster Creek unique design. I'm not sure if anybody
8 else has it. But clearly not applicable to Peach
9 Bottom.

10 CHAIRMAN LEITCH:: Okay, thanks, Fred.

11 MR. SOLORIO: Are there any other
12 additional questions on 3-3? If not, I'll George
13 Georgiev present 3-4, steam and power conversion.
14 Thank you.

15 MR. GEORGIEV: Good afternoon. My name is
16 George Georgiev, and I'm with the Materials and
17 Chemical Engineering Branch. And I was an assigned
18 reviewer for the steam and power conversion system.

19 The application identified three systems
20 as being part of the steam and power conversion
21 system. Those are main steam, main condenser and the
22 feedwater. Carbon steel, stainless steel, brass,
23 copper and titanium were identified as a material that
24 are included with these systems.

25 Several operating environment were

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1 identified. The reactor coolant, steam, torus grade
2 water, raw water, sheltered environment, wetted gas
3 and dry gas. And aging effects were identified as a
4 loss of material for carbon steel and stainless steel
5 and cracking for stainless steel.

6 The review was done along the six column
7 table which basically binds the component type aging
8 effects and aging management programs and the
9 environment. And in doing the review we identified
10 some requests for additional information which
11 pertained to identification of aging effect.

12 And the reply from the Applicant was that
13 the terminology for the aging effect was the same as
14 the one stated in the GALL report. Then we also
15 needed some clarification about the review of
16 operating experience, and they clarified that the
17 operating experience is accounted within the program
18 itself and they have a separate place where they
19 record the review itself.

20 Several aging management programs were
21 identified as being proposed to manage the aging
22 effects. And are reactor flow and system chemistry
23 program. The ISI program. The flow-accelerated
24 corrosion program. Torus piping inspection program,
25 and torus water chemistry program.

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1 By the end of our review, we concluded
2 that the aging managing effect were correctly
3 identified in the applications, and that the aging
4 management programs were adequate to manage those
5 effects. So we didn't have open items or confirmatory
6 items.

7 MEMBER BARTON: In the LAR, under
8 structures, they talk about primary containment, the
9 in-service inspection program. I just have a
10 question. In your inspection program you're looking
11 at the inside of the drywell at the interface of the
12 floor to the metal light bulb, at that seal.

13 Is there anyway that you can determine at
14 Peach Bottom if there's any leakage from up in the
15 refuel floor, any place that got outside the drywell
16 and down underneath the light bulb?

17 Do you have any telltales of anything
18 which would give you indication that you've got any
19 leakage on the outside of the light bulb, which would
20 corrode the bottom of your drywell from the outside?

21 MR. POLASKI: Yes, this is Fred Polaski of
22 Exelon. The design is that that sand pocket is
23 drained. And whatever drains that come off of that,
24 which are checked periodically, once a cycle, I guess,
25 or, yes, once a cycle that there's checks done on that

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1 to make sure that there's no water accumulated in that
2 area.

3 MEMBER BARTON: Okay, thank you.

4 CHAIRMAN LEITCH:: On your previous slide,
5 you said you looked at the feedwater. I guess I'm
6 confused. How, where, where is the, how far back down
7 the heat cycle, what's the feedwater system defined
8 as?

9 MR. GEORGIEV: Well, the feedwater --

10 CHAIRMAN LEITCH:: I mean do you go back
11 to the feedwater heaters or condensate pumps? How far
12 back do you go?

13 MR. GEORGIEV: That is actually a scoping
14 question. As a courtesy, we do include in our slide
15 a brief description. And --

16 CHAIRMAN LEITCH:: Yeah, that's really a
17 scoping question.

18 MR. GEORGIEV: I'm trying to find it out
19 what they said. But as I said, that is a scoping
20 question. And as a material people we generally
21 don't, we assume that our scoping people are, have
22 included everything.

23 MR. SOLORIO: Well, we can look into that
24 and get back to you today.

25 MR. GEORGIEV: It says here from the out

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1 most primary containment isolation valve to the
2 reactor pressure vessel. The feedwater system is
3 safety related from the out most primary containment
4 isolation valve to reactor pressure vessel.

5 CHAIRMAN LEITCH:: Okay, so it's not --

6 DR. POWERS: Graham, we can, I think Gary
7 can provide some clarification.

8 EXELON REP: The feedwater system that's
9 in the scope is from the reactor vessel nozzle through
10 the containment up to the first water operated valve
11 on the discharge of the feedwater pump.

12 And it's in scoping because it provides,
13 the same piping provides the RCIC and HPCI input into
14 the reactor vessel. That's why it's in scoping.

15 CHAIRMAN LEITCH:: So it doesn't get back
16 the high pressure heaters --

17 EXELON REP: No, it doesn't go, the pump
18 itself is not in scope either.

19 CHAIRMAN LEITCH:: Yeah, right.

20 MEMBER SHACK: Can you explain to me why
21 torus coating doesn't serve a license renewal
22 function. I would have thought the coating was the
23 main reason that I didn't have degradation of the
24 torus.

25 And yet, you know, it says that the

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1 protection coating does not perform a license renewal
2 function as defined in 10 CFR 54.4(a), and therefore
3 --

4 MR. SOLORIO: Dr. Shack, the next
5 presenters will talk to that.

6 DR. LEE: This is Sam Lee. I'm from loss
7 renewal section. Okay, that, what they were talking
8 about was for scoping purposes. Okay, for scoping
9 there is a requirement in 54.4 that says this is
10 safety related or not safety, affect safety or safety
11 related to what the inspection like station blackout
12 for protection.

13 Coating, that's not their criteria.
14 Coating is part of the aging management program.

15 MEMBER SHACK: Except at Davis-Besse.

16 DR. LEE: Okay, it's part of the aging
17 management program. So you see it as part of aging
18 management program, but it's scoping. Okay. Some
19 tests are related to just scoping.

20 MEMBER SHACK: But it's in the discussion
21 of the aging management programs.

22 MEMBER ROSEN: I have an outstanding on
23 torus inspection scope and the findings.

24 MR. SOLORIO: And they are coming up next
25 to answer your question, sir.

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1 MEMBER ROSEN: All right, so we'll talk
2 about torus coating as part of that, I would assume.

3 MR. SOLORIO: If there are no more
4 questions, we'll get to the structures discussion and
5 we can move into those things.

6 MR. MUNSON: Okay, my name is Cliff
7 Munson. I'm a member of the Civil and Mechanical
8 Engineering Branch. To my right is Hans Ashar, he is
9 also a primary reviewer for Section 3.5, which is the
10 aging management of structures and component supports.

11 The structures covered by Section 3.5 are
12 the containment structure, which consists of the
13 primary containment and internal structural steel.
14 The containment is a Mark 1 design. It includes a
15 drywell and torus and ventilation systems.

16 The other Class 1 structures include the
17 reactor building, the rad waste building, the turbine
18 building, SBO structure, diesel generator building and
19 yard structures. Section 3.5 also covers component
20 supports, miscellaneous steel, barriers and
21 elastomers, raceways and insulation.

22 The major materials covered in Section 3.5
23 are concrete, carbon steel, stainless steel,
24 elastomers, bronze, oh, excuse me. Yeah, bronze,
25 graphite. The different environments are sheltered

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1 air, indoor, outdoor, buried, raw water, fuel pool
2 water, torus water.

3 The aging effects identified for these
4 materials are lost material, cracking, change in
5 material properties, fatigue, loss of mechanical
6 function. The staff reviewed the structural
7 components listed in Section 3.5 to determine if the
8 Applicant adequately identified the aging effects for
9 each component.

10 In the application, the Applicant did not
11 identify any aging effects for the concrete components
12 in the containment structure reactor building and in
13 any of the other Class 1 structures. So the staff had
14 an RAI concerning concrete aging.

15 In response to the staff's RAI, the
16 Applicant committed to manage cracking, change in
17 material properties and loss of material for above
18 grade concrete components. For below grade concrete
19 components, the Applicant provided ground water data
20 that showed that the soil ground water environment is
21 not aggressive. Therefore, the staff did not require
22 aging management of below grade concrete components.
23 Since.

24 MEMBER ROSEN: That's where I come in.

25 MR. MUNSON: Okay, that's where you come

1 in.

2 MEMBER ROSEN: That's where my question
3 comes in. They've provided the data for ground water
4 now. Is there any monitoring of the ground water over
5 the extended period?

6 MR. MUNSON: We have a slide that shows
7 that. The staff determined that based on the two
8 samples that they had taken, that the pH sulfates and
9 chlorides were well below or above the limits.

10 And we determined that the ground water
11 monitoring would not be necessary during the period of
12 extended operation.

13 MEMBER ROSEN: So how long is the period
14 of extended operation? How long does it take you to?
15 What year?

16 MEMBER BARTON: 2013 to 20 --

17 MEMBER ROSEN: 2033? So you're going to
18 go another 33 years. You went --

19 MR. MUNSON: Thirty-one years.

20 MEMBER ROSEN: You went 32 years between
21 the sample in 1968 and the year 2000, and there wasn't
22 much of a change, right? That's 32 years. Now you're
23 going to go another 30 some years without another
24 sample. No monitoring of any kind.

25 MR. MUNSON: Well, we have no reason to

1 believe that those, the ground water chemistry will
2 change over that period of time.

3 MEMBER ROSEN: You have no reason to
4 believe it won't. What can you --

5 MEMBER SIEBER: But there's a ton of
6 margin there.

7 MR. MUNSON: I mean if you look, the
8 values are so far below the limits that, I mean we
9 can, we don't manage for abnormal events. So I don't
10 know what would change the ground water significantly
11 to reach the limits.

12 MR. ASHAR: Let me add one item that we
13 did consider and certainly they have to manage the
14 ground water. They showed in the application that the
15 ground water chemistry was within the threshold
16 established before.

17 For example, in Calvert Cliffs case, they
18 came with a number of samples near the containment and
19 auxiliary building area. Where they showed that they
20 were below these limits, except this limit that we had
21 established.

22 Very close to the intake structure area,
23 because of the vicinity to the sea water and
24 everything else, the fluoride levels were high. So we
25 asked them to monitor those areas. So we did specify

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1 in certain applications that they should monitor, they
2 should monitor the ground water and soil
3 characteristics on those areas where there are doubts.

4 They could go beyond, where the safety
5 factors are so much between what is acceptable and
6 what we are hearing right now. That we didn't see any
7 need to have them monitor.

8 MEMBER ROSEN: Monitoring implies you're
9 doing it every month or every year. I'm simply
10 suggesting --

11 MR. ASHAR: Five years or something.

12 MEMBER ROSEN: -- if you go another 30
13 years without taking the samples, it seems a little
14 bit extreme. I mean, is this a religious matter
15 between the staff and the Applicant. If so, I'll back
16 away. But it seems to me so easy to do.

17 And the consequences of going negative or
18 pH down near 5.5 or any change of sulfates and
19 chlorides in terms of the attack on concrete
20 structures below grade that you can't know about are
21 so severe that a simple test, once every period of
22 time, extended period of time, . maybe five, ten years,
23 is hardly a burdensome activity.

24 And I made the suggestion before. I'm not
25 sure any of the other members of the subcommittee or

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1 the full committee would agree with me, but it seems
2 just like an ordinary prudent thing to do.

3 MR. ASHAR: In a number of areas that we
4 have shown certain concerns and when you try to get a
5 commitment from various Applicants, I think we try to
6 be, trying to reconcile with what is more of concern.

7 Rather than something of no concern at all
8 at this time. And we're extending something that the
9 water quality can change after ten years, 15 years.
10 I mean it is a feasibility, but on this particular
11 plan that we looked at it, it looked like that it's
12 not going to change because it is an inland plant.

13 It would cost you to be suddenly not
14 allowing them to do this that way. But in most of the
15 inside areas where they are showing this type of the
16 chemistry, it doesn't seem to us that we should have
17 a commitment from an Applicant to do this kind of
18 thing. By themselves it is a prudent measure that
19 they do it.

20 MEMBER ROSEN: I'll just change the
21 subject, because I've heard all that before. Why is
22 the word settlement never a question here? Is there
23 no monitoring for a settlement of any of these safety
24 related structures over the period of the extended
25 operation?

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1 MR. ASHAR: Well, during the licensing of
2 the plants there were areas where the soil were bad
3 enough that the staff and licensees agreed on
4 monitoring the settlement on those particular, I
5 remember are the River Bend, Waterford and some other
6 plants where soils were bad enough that they would be
7 monitored.

8 Now the requirement in the tech spec was
9 that if there's no settlement or no problem occur for
10 first ten years, then they can stop monitoring the
11 settlement for those particular plants.

12 In the areas where people have their
13 foundations on either solid rock or very, very
14 compacted soil, then there were no requirements for
15 settlement. However, something that we always ask the
16 people to do, and it is in one of the code which is
17 being referenced in structural code.

18 That any signs of settlement is a part of
19 the cracking of the concrete that they are to
20 investigate. There's a part of ACF-349, which most
21 of the Applicants have committed to when they inspect
22 the structures.

23 MR. MUNSON: Right. And we have that
24 commitment from the Applicant to inspect for cracking
25 of concrete. That was one of the RAI we asked. So

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1 any settlement would show up as a cracking aging
2 effect.

3 MEMBER ROSEN: But you can monitor
4 settlement without looking for concrete cracking. I
5 mean you can just monitor the positioning of the
6 buildings. Make sure, you know, put a few mark lines
7 on them and with laser sighting nowadays you can
8 detect settlement to very low levels.

9 MR. POLASKI: Yes, this is Fred Polaski
10 with Exelon, just to clarify. Peach Bottom is built
11 on bedrock. So that settlement, and I think it was
12 checked early in construction days, but it wasn't an
13 issue and we haven't looked at since then because all
14 the buildings are founded directly on bedrock.

15 MEMBER ROSEN: Okay, well that's a good
16 answer.

17 MR. MUNSON: Okay. In addition, the staff
18 asked to RAI on some of the carbon steel components
19 that didn't have any aging effects identified. And in
20 response the Applicant committed to manage loss of
21 material for these carbon steel components.

22 The AMPs, aging management programs that
23 are used to manage the aging effects identified for
24 the structural components are listed. These aging
25 management programs are common aging management

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1 programs.

2 None of them are specific to Section 3.5.
3 The staff did have an open item concerning the
4 structural monitoring program. The open item dealt
5 with the concrete items, components that were added.

6 The Applicant needed to supplement its
7 acceptance criteria and parameters monitored and
8 inspected to cover the concrete aging effects that
9 they committed to inspect as part of Section 3.5 RAI
10 that we asked.

11 So the Applicant has shown us what text
12 they're adding to the structural monitoring program
13 or aging management program. So the staff is
14 satisfied with that. Any further questions for
15 Section 3.5?

16 Oh, excuse me, we were going to address
17 the torus, interior of the torus. Hans is going to
18 address that.

19 MR. ASHAR: I don't know what exactly the
20 question is.

21 MEMBER ROSEN: Well, I'll tell you, do you
22 want me to tell you exactly what the question is?

23 MR. ASHAR: Please, please.

24 MEMBER ROSEN: What was the scope of the
25 torus inspection, inside, outside, both? At the water

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1 line? Above the water line? Below the water line?
2 How many degrees around? All the way around? Or just
3 in one section? Near the SRV discharge lines? Away
4 from them?

5 What's the scope of the inspection? Where
6 did they look? That's the first question. And
7 second, what did they find? What has been find? Is
8 the liner intact or the coating intact? Not intact?
9 Degraded? Thin?

10 I mean what is the, this is an important
11 safety related structure, I should think there would
12 be a comprehensive report about this thing. I just
13 want to know what it said.

14 MR. ASHAR: Yeah, okay. May I give a
15 short background on torus corrosion in general. And
16 then I'll come to Peach Bottom specifically. First
17 the torus corrosion problems were identified during
18 almost late 1980's.

19 During that time Oyster Creek had
20 corrosion on their drywell also identified. Nine Mile
21 Point had torus corrosion and it was uncoated torus
22 and it corroded heavily in many years.

23 Based on that we issued three informational releases
24 in late 1980's, 1989, '88, time frame.

25 Then afterwards is why specialist concern

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1 BWR Owners Group first the staff came out with their
2 inspection program. Which was discussed with the BWR
3 Owners Group for Mark 1 containments.

4 Because they would generate problem. And
5 after number of discussions with the Owners Group,
6 what happened was ASME Subsection A and E was also in
7 the process of incorporating the torus corrosion as
8 well and the drywell corrosion as part of this special
9 requirement in the ASME, Section 11.

10 In 1992, a revision of the code, and the
11 code incorporated a requirement for augmented
12 inspection. The augmented inspection meant that when
13 there was various suspicion of having a corrosion in
14 a particular area, either to the operating experience
15 or creating even a possibility for having some kind of
16 corrosion in a particular area.

17 They were to have a program for augmented
18 inspection. Now this particular edition of the code
19 became a part of the regulation now. It is in 10 CFR
20 50.55(a). So all the licensees are, of Mark 1
21 containments, are required to have inspection programs
22 that would monitor the corrosion of torus in general,
23 outside, inside, everything.

24 Anyway it can occur, it's a part of the
25 program. And when we ask questions to the Peach

1 Bottom, to this Applicant, regarding the operating
2 experience, because we knew that torus corrosion is
3 very common in almost all Mark 1 containments.

4 So they replied and that has been
5 discussed in our SER at length. The acceptance
6 criteria and everything is described very well in the,
7 and what they told us about the operating experience.
8 And based on that we concluded that the program is
9 active, it is going to continue, and what, the kind of
10 acceptance criteria they have utilized, I accepted
11 from all point of view.

12 MEMBER ROSEN: Okay, you basically told me
13 to go back and read the SER. But I'd like to ask some
14 direct questions, perhaps of the Applicant. Is the
15 torus water inhibited in any way with chemicals, or is
16 it pure?

17 MR. POLASKI: Torus water is pure.

18 MEMBER ROSEN: Okay.

19 MR. POLASKI: Demineralized water.

20 MEMBER ROSEN: Is there a coating on the
21 inside of the torus?

22 MR. POLASKI: Yes, there is.

23 MEMBER ROSEN: What is, what is the
24 coating material?

25 MR. POLASKI: We believe it's carbyl zinc,

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1 but we're not --

2 MEMBER ROSEN: Carbyl zinc paint?

3 MR. POLASKI: Yeah, it's a paint type,
4 it's an applied type coating.

5 MR. ONNOU: If I may just give you some
6 information. Because we, we've done a lot of work on
7 the torus and I think --

8 MR. SOLORIO: Can you identify yourself?

9 MR. ONNOU: Again, Ahmed Onnou with
10 Exelon. In response to the RAI that staff issued us,
11 which you would find in the SER, I'm going back in it
12 some research. And we found that we did have
13 initially some degradation with the torus in 1991.

14 And as a result of that, the entire torus
15 was inspected under water. And the, it was heading
16 that range from 15 mils to a maximum of, I believe, of
17 40 mils, if my --

18 MEMBER ROSEN: Forty mils?

19 MR. ONNOU: Forty, right.

20 MEMBER ROSEN: What's the thickness of the
21 torus shell?

22 DR. POWERS: 41.1 mils is what your RAI
23 response says.

24 MEMBER ROSEN: What is the thickness of
25 the torus shell? The nominal thickness?

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1 MR. ONNOU: The torus shell is 675 or
2 five-eighths of an inch thickness. And again, as a
3 result of the questions staff asked us, what's the
4 projected thickness, assuming you consider the
5 degradation that has occurred in the past.

6 By the way, we also had another inspection
7 in 1998, for one unit and another one in 1997. And
8 what we found that is that the degradation rate was
9 significantly less than we had experienced in the
10 past.

11 And we attributed that to improved water
12 chemistry. Again, staff asked us if you assumed the
13 rate as you had, the degradation as you have, what
14 would the expected thickness be at the end of the 60
15 years.

16 And we provided some information on that.
17 I think when we calculated, we found that the design
18 thickness is 675. Assuming the degradation will
19 continue as the one from 1991 to 1997 or 1998, the
20 final thickness at the end of 60 years would be
21 something like 610, which is still below, which is
22 still more than what the design requires for the
23 shell.

24 MEMBER ROSEN: And tell me again what the
25 inspection regimen for the torus shell will be?

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1 MR. ONNOU: Well, the inspection for the
2 shell is, again, we have not made an inspection and
3 there is a visual inspection on the outside. There is
4 a visual inspection of surfaces under water. And on
5 a periodic basis the areas that we had experienced
6 degradation we go back and do the UT and make sure we
7 do have a thickness that's, UT inspection to make sure
8 that the thickness is adequate.

9 MEMBER ROSEN: Let's focus on the under
10 water inspection for a minute. How often do you do
11 that?

12 MR. ONNOU: Every six years.

13 MEMBER ROSEN: Every six years.

14 MR. ONNOU: Yes.

15 MEMBER ROSEN: And is this torus inerted?

16 MR. POLASKI: Yes.

17 MEMBER ROSEN: I mean the gas space?

18 MR. POLASKI: Yeah, the gas space is
19 inert, yes. Containment is inerted, yes.

20 MEMBER BARTON: It's inerted during
21 operation, because you've got the drywell atmosphere.

22 MEMBER ROSEN: During operation obviously,
23 it's not inerted during shut down?

24 MR. POLASKI: No, it's not inerted during
25 shut down, which is a very small time period in the

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1 overall.

2 MEMBER ROSEN: And what temperature does
3 the water typically run in the torus?

4 MR. ONNOU: I believe it's 98?

5 MEMBER ROSEN: Eighty degrees Fahrenheit?

6 MR. ONNOU: Yeah.

7 MEMBER ROSEN: Okay. Okay, thank you.

8 MR. SOLORIO: Okay, I'm going to be
9 presenting the results of 3.6, Section 3.6. Duc
10 Nguyen was the lead reviewer for this section, and
11 he's on my right. The additional reviewers, Mark
12 Paull and Paul Gill, who are in the audience with us
13 today.

14 The scope of the equipment covered in this
15 section includes cables, connections, and connections
16 being connectors, splices and terminal blocks.
17 Regarding the station blackout scope of equipment, I
18 think most of you are aware there's an interim staff
19 guidance that's been finalized on that.

20 The Applicant has committed to include the
21 additional equipment relied on per SBO recovery path,
22 which is consistent with this ISG. The SBO off-site
23 recovery path for this plant that required an AMR are
24 the switchyard bus, high voltage insulators, insulated
25 cables and connections, that again, being connectors,

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1 splice and terminal blocks, non-segregated phase bus,
2 transmission conductors.

3 No aging effects were identified for the
4 switchyard bus, high voltage insulators,
5 non-segregated phase bus and transmission conductors.
6 The materials and environments I've listed up here on
7 the slide.

8 I'll say that, there's some open items I'm
9 going to talk about in a minute. So I'm going to
10 qualify the statement of applicable aging effects
11 identified. We initially during the inspection, I
12 mentioned earlier today, that during the aging
13 management review inspection it was identified that
14 certain cables with a potential for being wetted and
15 experienced water treeing needed to be managed.

16 The Applicant initially had told us or has
17 already replaced these cables and told us initially
18 that because they were new they wouldn't be
19 susceptible to this effect for the remaining term.
20 The staff didn't agree with that.

21 The staff has gone back and forth with
22 some RAIs and on the site to actually talk in detail
23 with the Applicant. Initially the SER calls out an
24 open item on this. As of now, we've got a draft
25 response back from the Applicant that they propose an

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1 aging management program consistent with the GALL E3
2 program.

3 So provided that comes in under oath and
4 affirmation, we will be able to resolve that item.

5 CHAIRMAN LEITCH:: I'm just a little
6 confused. You expect the response to this open item
7 to be a commitment to look at the cables?

8 MR. SOLORIO: Using an aging management
9 program consistent with the GALL E3 program.

10 MR. NGUYEN: They would test the cable at
11 the end for the year. They would test the cable,
12 conduct a test. So at that time, you know, they will
13 know that the cable have any degradation or not. But
14 the test of program will be conducted every ten years.
15 Every ten years, beginning at year 40.

16 CHAIRMAN LEITCH:: What voltage, I'm
17 unclear what cables we're talking about?

18 MR. NGUYEN: These are medium voltage,
19 inaccessible medium voltage. Typically to kilovolt to
20 15 kilovolt. In accessible, yes. In the conductor or
21 buried.

22 CHAIRMAN LEITCH:: What about 13KV cables?

23 MR. NGUYEN: Thirteen kilovolt is
24 considered medium voltage. But let me bring another
25 point that we have a common goal with the Applicant

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1 because in the high voltage, you talk about 34.5
2 kilovolt, they have some cable underground.

3 That they call the ten seasonal cable that
4 connect from the manhole of Conowingo manhole and then
5 another portion also connect from the manhole from the
6 Peach Bottom. And during the staff visit, the plan
7 during the initial review, we questioned the Applicant
8 whether this cable simply included in the aging
9 management review.

10 And the answer we got from Applicant that
11 this is not a medium voltage. So it's not subject to
12 the water treeing phenomenon. And we have problem
13 with that. Because we think that the high voltage
14 cable also have problem with water treeing.

15 So we go back to the Applicant and ask
16 them to include this cable in their aging management
17 program. And yesterday they faxed me the initial
18 response and they include it in the aging program.

19 So in general any cable, the medium cable
20 or high voltage, if it's underground or buried
21 underground do or the duct band will be managed to
22 this aging management program. But in the SER we put
23 that as an open item and we expect to close that in
24 the final SER.

25 And we're here to respond from the

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1 licensee, it's just a formality to make sure that they
2 put in the document and then we can close that.

3 CHAIRMAN LEITCH:: It seems to me that
4 Peach Bottom has had a history of water treeing and
5 these cables.

6 MR. NGUYEN: Yeah.

7 CHAIRMAN LEITCH:: I guess for 4KV and the
8 cables surrounding the diesels and up the hill to the
9 substation and --

10 MR. NGUYEN: I think you're correct that
11 --

12 CHAIRMAN LEITCH:: -- there's a major
13 cable replacement effort that went on.

14 MR. POLASKI: Yeah, this is Fred Polaski
15 at Exelon. We did have a major program to replace
16 cables. There was at least one failure due to the
17 water treeing. We had a extensive engineering program
18 that evaluated the cables and the conditions in which
19 they operate and identified those that were subject to
20 water treeing and those were replaced.

21 Safety related and non-safety related. So
22 our position had been, on the application, that we had
23 replaced with the best cable that was available. The
24 original cable, you know, didn't last the life of the
25 plant, but the industry information is that these new

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1 cables, which are EPR cables, were manufactured
2 knowledgeable of the problems they'd had in the past
3 and should last well beyond 30 years.

4 One of the problems is there's no test or
5 documented testing to prove that they'll last that
6 long because there's no way to do that. And you can't
7 do accelerated age testing on cables for this like you
8 can for EQ.

9 So we've, I think after a discussion with
10 the staff, we agreed to do testing on them. The one
11 open issue with that right now is that there is no new
12 industry to do that. That still needs to be
13 developed.

14 CHAIRMAN LEITCH:: That's what I was going
15 to say. What does that testing look like?

16 MR. POLASKI: There isn't any that we
17 know. We've addressed, we've brought this up with
18 EPRI that we're going to need to develop a test
19 program. But to be honest, initial information is
20 that, you know, there's been work done on that in the
21 past over in the T&D world, underground, and they
22 haven't been able to find any program either.

23 So, it's an area that's still open to
24 determine what that test program is going to be.

25 CHAIRMAN LEITCH:: So your response is

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1 going to somehow be couched in terms that you'll keep
2 up with the industry in this regard and do what seems
3 to be state-of-the-art?

4 MR. POLASKI: We've agreed to do the
5 testing that's developed. And all the previous
6 Applicants that have had this question raised have
7 committed to the same program. Now it's up to us to
8 develop the program.

9 MR. NGUYEN: It has to be a proven test in
10 the industry. And so I think that, you know, because
11 this is new program, the new test, so at the time go
12 on hopefully in the next 20 years we will have a
13 better test than right now.

14 But it has to be a proven test. That's
15 the one operating requirement that we have.

16 CHAIRMAN LEITCH:: Is there a generic
17 safety issue on this? Is this GSI 1, I can't remember
18 all the numbers. But isn't there a generic safety
19 issue related to --

20 MR. NGUYEN: This didn't come out at the
21 Davis-Besse event or the medium voltage, so that's why
22 when we developed the GALL we had no problem with
23 Davis-Besse service water, if you recall.

24 They have a lot of problem and the staff,
25 when we developed the GALL, we put the program in the

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1 GALL, the Davis-Besse event.

2 MR. KUO: Dr. Leitch, this is not part of
3 a generic issue, GSI 168.

4 CHAIRMAN LEITCH:: That's the one I'm
5 thinking of, yeah. It's not part of that?

6 MR. KUO: No.

7 CHAIRMAN LEITCH:: Okay.

8 MR. SOLORIO: The aging management program
9 specific to this aging management review -- I
10 apologize, you can't see the first one, it's non-EQ
11 accessible cables. and the remaining programs are on
12 the next slide.

13 The two, earlier today you heard Stu
14 Bailey say there were four new programs. The new
15 programs are the non-EQ cable program and the fire
16 safe shut down cable inspection program.

17 The, I guess just because it's probably a
18 new term to you, or maybe different from what you've
19 seen in the past. The fire safe shut down cable
20 inspection program involves about 30 cables that are
21 located in the drywell and are all main steam relief
22 valve discharge relying thermal couple wires.

23 PVC insulated cables will be inspected
24 once every ten years. The first inspection will be
25 performed before the initial 40 year license renewal

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1 term. The staff found the program acceptable because
2 the aging management program will detect the cable
3 aging degradation before other loss of intended
4 function.

5 As I mentioned a moment ago, there were
6 some open items. I talked about one of them. The
7 second open item was regarding visual inspections
8 which may not be effective in detecting aging
9 degradation of neutron monitoring and high range
10 radiation monitoring cables.

11 The staff, over the last few weeks, and
12 the Applicant has been talking about this. And as a
13 result, the Applicant has now committed to a
14 calibration program consistent with the GALL E2
15 program.

16 So the staff is going to consider this
17 resolved, pending formal receipt of that information.
18 And the last thing I'll mention that I have up there
19 is fuse holders. And I have confirmatory item in
20 parentheses after that because it's a confirmatory
21 item in the SER.

22 And the reason we made it initially a
23 confirmatory item is we understood that, we thought we
24 understood that not only was the Applicant going to
25 submit fuse holders to an aging management review, but

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1 they'd also manage aging effects for the fuse holder
2 elastomeric or, and the metal components.

3 What we subsequently found out is that
4 they have committed to an aging management program for
5 the elastomeric component, but not the metal
6 component. And staff believes that there needs to be
7 one.

8 I think you're also, or if you're not,
9 this is also the subject of a draft interim staff
10 guidance issue being developed. So we're really in
11 still, you know, trying to work with the Applicant to
12 resolve this, and NEI, so that we can move forward.

13 So, more to come on this, but I wanted to
14 let you know that this confirmatory item was going to
15 be the subject of more debate.

16 MR. NGUYEN: Let me ask you some
17 background about the fuse holders. If you recall, we
18 had the issue with the fuse when we reviewed the
19 Oconee. The issue come up of whether the fuse would
20 be active or passive.

21 And later on it was determined that the
22 fuse be active, and not within the scope of the aging
23 management review. However, at that time we
24 communicate to the industry that we would look this
25 under general issue, because we believe that, we may

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1 think, we may think that the fuse problem have any
2 problem.

3 So we conduct a study by the Sandia Lab,
4 I think last year. And I was the Project Manager for
5 that. They looked at the fuse failure, looked at the
6 LER, and they found that the fuse, very few event that
7 it resulted in fuse failure, very few.

8 It was very surprised to us. But we also
9 found that a number of events involved a fuse holder.
10 As you recall, when they did a surveillance for the
11 control circuit, they took off the fuse to the circuit
12 to do some kind of testing. And they took it off and
13 on and off and on.

14 The fuse holder clipping may be loose, not
15 the one that the aging, degradation that this study
16 concluded. The other thing is they found some
17 corrosion in the fuse holder. Because of that, and
18 then in the assembly at Peach Bottom one of the
19 Inspectors found a question whether the fuse holder
20 should be included in aging management review.

21 Then the staff looked into it and the
22 issue, the interim staff guidance. The reason that
23 this issue did not come up because I think because we
24 find that the fuse holder usually inside the lock
25 assembly, that the fuse holder stand by itself.

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1 So the number is not, not a lot of number
2 or very few. So that's why we issue the interim staff
3 guidance and we were in, our understanding was if
4 you're going to manage the fuse holder, you have to
5 manage the whole thing.

6 That mean the metallic part and
7 non-metallic part. And NEI industry disagree with the
8 staff. They think that the fuse holder is special
9 after terminal block. And they say have no additional
10 aging effect.

11 Whatever aging effect of terminal block
12 will be applied to the fuse holder. But we think that
13 the characteristic of the terminal block is different
14 from the fuse holder. I explain to you that the fuse
15 clip, that potentially it can be loosened, you know.

16 So that's why right now we still have, are
17 looking at what the industry and try to resolve this.
18 And whatever come out will be, go back to the licensee
19 that will approve the license. And then go back and
20 treat it generically.

21 CHAIRMAN LEITCH:: Can we go back to the
22 Conowingo for just a moment. I guess I'm confused how
23 extensive the aging management program is at
24 Conowingo. I guess first of all, does Exelon still
25 own Conowingo? Is that somebody else?

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1 MR. POLASKI: Yes, Exelon still owns
2 Conowingo.

3 CHAIRMAN LEITCH:: Okay. Secondly, I
4 guess my question is what's so unusual about
5 Conowingo? I mean a lot of plants have off site power
6 supplies. And, you don't necessarily go back and
7 conduct aging management at every little fossil plant
8 or something that might be supplying power to the, off
9 site power to the nuclear plant.

10 What's so different about Conowingo? Why
11 are you in that area?

12 MR. NGUYEN: Let me try to answer that.
13 The reason that Conowingo is subject to aging
14 management is because they are due for the test and
15 blackout alternate AC source. Most other plants they
16 do this, but this plant they do the hydroelectric.

17 So to be consistent with the rule, you
18 have to include the power supply for the SBO alternate
19 AC. So that's why it's in the picture.

20 CHAIRMAN LEITCH:: So there's no SBO
21 diesel at Peach Bottom?

22 MR. NGUYEN: I'm not sure, but I think
23 that's a part of why --

24 MR. CALVO: Jose Calvo, the Chief of the
25 Electro-engineering Branch. The official history of

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1 how the Conowingo is, the station blackout was not the
2 thought. But we were negotiating with the Peach
3 Bottom on those days. They want to do maintenance of
4 the diesel on line and we say what are we going to get
5 in return?

6 So we say we've got a big hydroelectric
7 unit there, can we use that one. Okay? And we went
8 back and forth, so we allowed them to do on line
9 maintenance of the diesel and extend it for three days
10 to 14 days to see if we can get something else in
11 return.

12 And that something else in return went to
13 Conowingo line. Okay? Then the question come up of
14 the station blackout. And we feel, I have a question
15 if this was an eight hour coping plan. And we say
16 well you've already got a Conowingo line, you can use
17 it as an alternate AC source of power, pursuant to the
18 station blackout rules.

19 And then we said we wanted be sure that,
20 that if you lose your site power for whatever reason,
21 you don't lose also the Conowingo feed to the station.
22 So that's when a particular pole in there became so
23 important.

24 We wanted to be sure that that pole was
25 strong enough to hold it. Because if that pole would

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1 go, the whole Conowingo feed would get lost in there.
2 So the Conowingo has that kind of a history.

3 We've got 60 megawatts allowing them to do
4 on line maintenance, which I thought it was a good
5 swap. Okay, so they did that. We got to dig
6 ourselves in for the risk-informed aspects of it, they
7 can do on line maintenance.

8 We've got 60 megawatts reserved and we
9 only worry about the person at the commission. So we
10 got that one, it served a purpose to them and also was
11 used for the station blackout was an alternate AC
12 source for us.

13 Duc is saying because it's alternate AC
14 source, it is part of the aging management program
15 because all the AC sources are. Now keep in mind
16 that's a non-safety related system in the operating
17 world. It's not controlled by the tech specs.

18 Because we leave it up to the licensee to
19 establish requirements because they do that at the
20 other places.

21 CHAIRMAN LEITCH:: That's an interesting
22 piece of history.

23 MEMBER BARTON: You have an aging
24 management program for an old hydroelectric plant.

25 CHAIRMAN LEITCH:: Yeah, this is a 70 year

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1 old plant.

2 MR. POLASKI: That's correct, and it's the
3 FERC inspection, so we credit. But that hydro unit is
4 in good shape. It makes a lot of megawatts for us,
5 though.

6 CHAIRMAN LEITCH:: But I thought the FERC
7 inspection would be basically a hydraulic inspection.
8 This sounds like what we're talking here is an
9 electrical aging management program.

10 MR. BAILEY: I don't know.

11 MR. SOLORIO: That was what the aging
12 management program is all about.

13 MR. BAILEY: The FERC inspection covers
14 the power block as well as the structures

15 (Whereupon, at 2:59 p.m., the meeting was
16 recessed and resumed at 3:16 p.m.)

17 CHAIRMAN LEITCH: Maybe we are lacking
18 just a few folks here.

19 MR. SOLORIO: Do you want me to wait or do
20 you want me to start?

21 CHAIRMAN LEITCH: Yes, why don't you wait.
22 I think maybe I am a little bit ahead of schedule. I
23 was looking at this clock, and some people may be
24 looking at that one. We have to get these
25 synchronized. Okay. David, I think you can proceed

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1 now, please.

2 MR. SOLORIO: Okay. In Section 4.1 of the
3 SER, we summarize the applicable time-limited aging
4 analyses for the Peach Bottom units. We agreed that
5 the TLLAs that they identified were appropriate as you
6 would expect.

7 We also identify two additional TLLAs. I
8 will just mention that to my bright that Barry Elliott
9 who you have heard from before, and John Fair, will be
10 talking about the reactor vessel neutron embrittlement
11 and the metal fatigue TLAAs.

12 They are not the only two TLAAs, but they
13 are the two that we have people to make presentations
14 on here today. The other TLAAs didn't have any open
15 items, except for 4.5, which Barry will also be
16 talking about.

17 As far as the additional time-limited
18 aging analyses, for Peach Bottom, the crane load cycle
19 limit is 20,000 load cycles. They project that the
20 crane will undergo less than 5,000 load cycles in 60
21 years, and those loads are lower than the rated low
22 capacity.

23 This was not identified as a TLAA, and an
24 RAI from the staff flushed this out. It has pretty
25 much been an TLAA for prior reviews, and so it is

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1 something that you would expect to see.

2 So they have satisfied the requirements
3 for the time limited aging analyses by meeting the
4 requirements of 54.21(C)(1)(i). The other --

5 CHAIRMAN LEITCH: That response seemed to
6 me to be based on the fact that many of the lifts were
7 of components that weighed significantly less than the
8 rating of the crane.

9 But my question was basically whether
10 there were TLAA's associated with just the cycling of
11 the crane, and with the number of cycles, regardless
12 of the load.

13 MR. SOLORIO: Well, that is the definition
14 of why this is a TLAA. It is based on the number of
15 cycles over -- but I have Renee Li, the reviewer who
16 reviewed this, and has the RAI, and she is going to
17 make some additional comments.

18 MS. LI: I am Renee Li with the Mechanical
19 Engineering Branch. When I asked for the RAI, I think
20 it is with respect to not only the cycle limits, but
21 also the rate capacity, because in general the design
22 code specifies a specific number of limits, and that
23 would be the limiting cycle.

24 But it also states what is the rated
25 capacity, and as David mentioned earlier in the

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1 original RAI application, the applicant did not
2 identify this as a TLAA, and so we asked for the RAI,
3 and in the response, the applicant stated that the
4 Peach Bottom crane design was in accordance with the
5 criteria of Crane Manufacturer Association of America,
6 the specification number 70.

7 And that specification specify a 20,000
8 cycle load limit cycle, and also we didn't get into
9 the detailed number, the quantified number of what is
10 the greatest capacity.

11 But in the response, in the RAI response,
12 the manufacturer says that they have some type of
13 plant in the scope of license renewal, and among those
14 plants, is the bonding condition. So they further
15 elaborate for that bonding condition what is the
16 project load cycle limit and it turns out to be less
17 than 5,000 cycles.

18 And they also state that most of the
19 lifting is much less than the rate capacity, and based
20 on these two conditions the Africans determined that
21 the analysis that is associated with the crane design
22 included the load cycle limits specified by the
23 requirements of 10 CFR 54.21 9c) (1) (i).

24 CHAIRMAN LEITCH: I guess maybe I am not
25 clear on what the definition of a load cycle is. In

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1 other words -

2 MS. LI: In other words, it is the
3 lifting.

4 CHAIRMAN LEITCH: Is that just up and down
5 or does that mean up and down with the rated load on
6 the crane?

7 MS. LI: Okay. It's up and down with the
8 load, but the load should be less than the rate
9 capacity. It should be within that limit.

10 MR. KUO: If I may just to add to what
11 Renee just said, you know, the conditions that Renee
12 just described is consistent with what is required in
13 the AISC specification.

14 The AISC specification basically specified
15 that allowable stress for the crane, and that
16 allowable stress is based on implicit 20,000 cycles.
17 So basically whether you have a rated load or not, it
18 converts to allowable stress.

19 CHAIRMAN LEITCH: Okay.

20 MS. LI: And that this particular crane
21 design specification, especially going to the
22 allowable stress, is built in, and it gives a number,
23 like the number of liftings, and the rated capacity,
24 but they, too, are really related.

25 CHAIRMAN LEITCH: So we are saying that it

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1 wouldn't see the rated number or the design number of
2 load cycles, and in 60 years it would not get up to
3 that number of cycles?

4 MS. LI: Right, because they project a
5 maximum of 5,000 cycles.

6 CHAIRMAN LEITCH: And this is up to
7 20,000?

8 MS. LI: Right.

9 CHAIRMAN LEITCH: Okay. Thank you.

10 MS. LI: You're welcome.

11 MR. SOLORIO: The other time-limited aging
12 analysis was related to pipe break location based on
13 cumulative usage factor, and the applicant indicated
14 that the cumulative usage factor of calculations,
15 which was the basis for the pipe leak postulations,
16 remain valid for the period of extended operation.

17 We have a confirmatory item for the
18 applicant to include a summary description of this
19 TLAA, and the previous one, in the UFSA supplement.

20 MEMBER WALLIS: What does this mean, pipe
21 break location? Does it mean that the pipe break
22 location doesn't change over time?

23 MR. FAIR: This is John Fair. In the
24 initial design of some plants, CUF was used as a basis
25 for postulation pipe ruptures. For Peach Bottom,

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1 apparently they did use CUF to postulate pipe ruptures
2 on some of the piping.

3 For that particular piping, they had
4 recently done a reevaluation for a 60 year operating
5 life, and found that none of those original -- there
6 were no additional identified locations where the CUF
7 was greater than .1, and so they didn't have any
8 additional postulated locations.

9 MEMBER SHACK: John, didn't at least one
10 of the plants go back and look at the postulated
11 locations, in terms of their real potential mechanisms
12 for pipe failure?

13 MR. FAIR: I am not quite sure what you
14 are referring to.

15 MEMBER SHACK: Well, fatigue probably
16 isn't the greatest risk for pipe failure, but the
17 actual pipe break location might be well at the place
18 where you get FAC, or you are more likely to get
19 stress corrosion cracking than fatigue.

20 Didn't somebody redo the analysis that
21 way, or --

22 MR. FAIR: You may be thinking of
23 something different --

24 MEMBER SHACK: And a risk informed
25 inspection kind of argument.

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1 MR. FAIR: Well, we are talking -- and
2 this is the design basis for postulating pipe
3 ruptures, and it was based on the best that they had
4 at the time, which was cumulative usage would be the
5 -- you know, the higher the fatigue usage, the higher
6 your probability of a rupture.

7 MEMBER WALLIS: But the design basis is
8 not realistic is it? I think that's what we are
9 getting at here.

10 MEMBER BONACA: So the point that you
11 would be making, Bill, that you would have applied the
12 cycles in a location other than --

13 MEMBER SHACK: Whatever -- I would look at
14 the mechanism of degradation, and postulate my pipe
15 breaks where I thought it was really most susceptible
16 to failure.

17 MEMBER BONACA: And you would look at the
18 number of cycles there probably.

19 MEMBER SHACK: Yes, whatever degradation
20 I was going to pose there, yes.

21 MR. FAIR: Well, I can't argue with that
22 rational, except to say that is not the design basis,
23 and we are looking here at the TLAAAs on the design
24 basis.

25 MR. SOLORIO: If there are no more further

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1 questions, Barry Elliott will present the results of
2 42 and 45 time-limited aging analyses.

3 MR. ELLIOTT: My name is Barry Elliott,
4 and I am with the Materials and Chemical Engineering
5 Branch. The first five bullets up here, the first
6 four have to do with neutron and radiation
7 embrittlement, and the fifth bullet has got to do with
8 the radiation corrosion and stress fractures.

9 First, we are going to talk about neutron
10 radiation embrittlement. With neutron radiation
11 embrittlement, there are two factors; the material
12 part and the methodology part, and the calculation of
13 neutron fluids.

14 There is two guidance documents, Reg Guide
15 1.190, is the NRC's guidance document calculating
16 neutron fluence, and as far as material and how to
17 calculate radiation embrittlement, the guidance
18 document is Regulatory Guide 1.99, Rev. 2.

19 MEMBER SHACK: Barry, is the lower
20 temperature in a BWR, is that sort of ignored in 1.99
21 Rev. 2, in the sense that I would expect to get more
22 radiation damage per neutron?

23 MR. ELLIOTT: It is not ignored. I will
24 go into that if you want to go into that. It is not
25 ignored. The guidance in the document is that the

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1 radiation embrittlement, that the methodology is
2 applicable between 525 and 575, and as long as you
3 operate your plant in that range, the guidance
4 applies.

5 If you go below that guidance in the
6 document, and if you go below 525, there is more
7 neutron embrittlement, and the guidance in the
8 document needs to be supplemented. They haven't gone
9 below 525, and so the guidance in the document
10 applies.

11 The first four items require a valuation
12 of neutron fluence, and the applicant has performed
13 that evaluation using a G.E. methodology, and this
14 methodology conforms with the guidance in Reg. Guide
15 1.190.

16 The upper shelf energy evaluation is the
17 first item, and both the first item and the second
18 item are in the regulation, and they are in 10 CFR,
19 Part 50, Appendix G. There is a upper-shelf energy
20 requirement, and a pressure temperature limit
21 requirements in that regulation.

22 The upper shelf energy requirement is that
23 if you go below a certain foot per pounds, you need to
24 do additional analysis. Peach Bottom did that
25 analysis for the first 40 years, and they reference a

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1 G.E. topical report on this.

2 For 60 years the BWRVIP-74 revised that
3 analysis, and provided maximum allowable or upper
4 shelf energy drops, which the analysis would apply to.
5 We asked Peach Bottom to go back and calculate their
6 drop in upper shelf energy, and they fall within the
7 bounds of the BWRVIPs criteria.

8 So the upper shelf energy is satisfied.
9 As far as pressure temperature limits are concerned,
10 this is a licensing amendment question that the
11 applicant has, and we will follow in order to
12 calculate pressure temperature limits, and you follow
13 the guidance in Reg. Guide 1.99, Rev. 2.

14 And they will follow that, and they will
15 update the pressure temperature limits according to
16 their tech specs. The third bullet is reactor vessel
17 circumferential welds, and this issue has to do with
18 elimination of the inspection for the circumferential
19 welds, and the BWRVIP-05 demonstrated that the failure
20 probabilities of the BWR fleet was low enough so that
21 we could eliminate inspection.

22 The failure probability is dependent upon
23 the shift in the adjusted reference temperature, and
24 what the applicant did here in their license renewal
25 application for 60 years is that they showed that the

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1 adjusted temperature for 60 years would not exceed the
2 values in the guidance document BRWVIP-05.

3 And therefore they have satisfied that
4 criteria. The fourth bullet deals with --

5 CHAIRMAN LEITCH: Barry, just before you
6 move on, the first and third bullets, the upper shelf
7 energy and the circumferential welds, in the license
8 renewal application, in both places, it says that
9 Exelon will do calculations after the G.E. fluence
10 methodology has been approved by the NRC.

11 Did I understand you to say that that
12 methodology has now been approved by the NRC?

13 MR. ELLIOTT: Yes. What happened was that
14 is what the original application said, and we wrote
15 back to them and we told them that the methodology was
16 approved in September of 2001, and they went back and
17 recalculated all of the fluences and was able to
18 answer all of our questions specifically about these
19 issues.

20 CHAIRMAN LEITCH: Now, did they just say
21 that it falls within the bounds, or do you have
22 specific data in that regard?

23 MR. ELLIOTT: Well, they gave us the
24 neutron fluence, and we know that the materials that
25 we calculate, we confirmed the calculation that they

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1 fell within the bounds.

2 CHAIRMAN LEITCH: Okay.

3 MR. ELLIOTT: And then the fourth bullet
4 has to do with -- it says reactor vessel and failure
5 probability, and this has to do with the axial welds,
6 and again it is similar to the VIP-05, in that in the
7 case where axial welds, and we were looking at VIP-05,
8 the failure probability for axial welds was much too
9 high we thought.

10 So we asked them to redo the analyses in
11 a more realistic assumption, and they came up with a
12 failure probability for axial welds. Again, that was
13 dependent upon an adjusted reference temperature, and
14 the licensee went back and confirmed that they would
15 be within the bounds of that, and so it met the
16 criteria there.

17 And we have also confirmed that. The next
18 issue is the core shroud and top guide, and this is a
19 new issue for the staff. BWRVIP-26 establishes
20 screening criteria for radiation assisted stress
21 corrosion cracking.

22 The only -- the core shroud is below that
23 limit, and in the top guide, the only component that
24 are above the limit projected by the applicant are the
25 top guide beams.

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1 They will exceed the threshold limit. The
2 staff is concerned that if you exceed this threshold
3 limit that there could be multiple failures of the
4 beams, and the staff is concerned that if there are
5 multiple failures of the beams that there could be a
6 loss of function of the top guide.

7 We asked questions of the applicant on
8 this, and the applicant has responded. Right now the
9 staff has the final position on this, and we are
10 evaluating it. And right now this is an open issue.

11 MEMBER WALLIS: Why would this be multiple
12 failures? Isn't this the kind of thing where the
13 problem is sort of low and adding up to the limits and
14 something happens, and so they don't all go.

15 MR. ELLIOTT: Well, the problem -- we have
16 had this problem in Oyster Creek and we had a couple
17 of failures, and then a similar thing as an example,
18 would be about the baffle bolts. When you exceed the
19 limit, you don't automatically fail everything.

20 But you could fail enough that you could
21 lose the function, and the question is what inspection
22 is required to make sure that you don't lose function,
23 if it is possible to fail multiple of these. And that
24 is the issue that the staff is concerned about.

25 MEMBER BARTON: Well, what inspections are

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1 being done, for example, at Oyster Creek that does
2 have cracks on the top --

3 MR. ELLIOTT: They are -- they only
4 inspect it during the -- as part of the -- whatever
5 they look at the internals, they look at it from
6 there.

7 MEMBER BARTON: And what is so hard at
8 doing that at Peach Bottom?

9 MR. ELLIOTT: I don't want to prejudge
10 anything.

11 MEMBER BARTON: I am just asking you.

12 MR. ELLIOTT: I don't think that is
13 difficult, but that may not be -- and it also depends
14 on -- to me, what does the word multiple mean. If
15 multiple means 2 or 3, then you have a certain
16 inspection program.

17 If multiple means 25 or 30, or 40 percent
18 of them have to fail, then you have a different
19 inspection program.

20 MEMBER BARTON: I understand that.

21 MR. ELLIOTT: And so we have got to get a
22 handle on what that multiple means before we can
23 really say this is acceptable or that is acceptable.

24 MEMBER WALLIS: Well, don't you notice
25 something before 30 fails?

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1 MEMBER BARTON: You should.

2 MEMBER WALLIS: You should?

3 MR. ELLIOTT: Yes, you should, and that
4 may be the answer, and that is all you need to look to
5 see; 30 fails and that is the end of it. But it is
6 something that we have to decide and look into.

7 MEMBER BONACA: And this is likely to
8 affect other plants, too.

9 MR. ELLIOTT: I think it will. It is a
10 new issue for the nuclear field for us.

11 MEMBER SHACK: But even at the end of 60
12 years, your core shroud doesn't hit the radiation
13 assisted stress corrosion cracking?

14 MR. ELLIOTT: That is the answer in the
15 RAI said.

16 MEMBER BONACA: Very interesting.

17 MR. DYLE: This is Robin Dyle from
18 Southern Nuclear and representing the VIP. Bill, to
19 your question, there might be some plants that the H-3
20 welds, the mid-core weld, might exceed their fluence
21 limit, but that's going to be on a plant specific
22 basis. It depends on the core loading and things of
23 that nature.

24 So each plant will have to evaluate that.
25 Should they exceed that limit, there is already

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1 inspections in place for that location, and then if
2 you have got flaws, we require the adjustment in the
3 crack growth rate, and dealing with the loss of
4 fracture toughness associated with that irradiation
5 embrittlement, so that you would shorten the time
6 between inspections to account for that change.

7 In regard to the top guide as Barry
8 discussed, there is one plant that has had cracking.
9 If you consider cracking a failure, then there has
10 been failures, but only one plant has had cracking,
11 and it is the top guide grid structure.

12 And to date there has been no failures,
13 and what the VIP has put in the document is that we
14 have done an evaluation of those flaws, and it is
15 IGSCC, and it was going very slowly.

16 We have not seen a need to change the
17 document to require inspection of those areas because
18 you would truly have to have a failure. And in our
19 mind that is a failure where the beam cracks
20 sufficiently all the way through that multiple beams
21 would have to fall down to the core plate, and then
22 the entire core shifts and so you could not insert the
23 control rod drives.

24 We don't see that happening. One of the
25 things that occurs every outage, at every plant where

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1 you remove the head and you are doing in-vessel work,
2 is the top guide is available for visual examination.
3 It is routinely seen by what would be considered a
4 VIP-3.

5 That in and of itself assures you that you
6 don't have a beam that is broken at one end or several
7 sections of the beam that might have cracked all the
8 way through.

9 So until that occurs, there is not a
10 safety significant issue. So the VIP hasn't seen the
11 need to describe an inspection requirement for that
12 component as of yet. We will continue to monitor what
13 is going on as we get experience, and if that changes,
14 we would do so.

15 But that doesn't really address what Peach
16 Bottom is going, but that is what the VIP is doing
17 with that issue.

18 MEMBER WALLIS: That sounds reasonable.

19 MR. DYLE: And from an Exelon perspective,
20 we will continue to follow the VIP guidelines, and we
21 had done inspections of the top guide at Peach Bottom,
22 and I am going to ask Rich Ciemiewicz to talk about
23 what those have been.

24 MR. CIEMIEWICZ: Rich Ciemiewicz from
25 Exelon. As we had talked about, we do follow the

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1 BWRVIP guidelines right now with Peach Bottom, and
2 currently those guidelines do not require examination
3 of the beams. We have, however, based on earlier
4 guidelines, G.E. Sills, et cetera, performed some
5 examinations.

6 And in fact we have performed both UT
7 examinations and visual exams of these grid beams.
8 Back in 1987 and '88, we had performed UT, and found
9 no indications whatsoever.

10 And then in '94 and '96, we did perform
11 visual exams of some sample cells and found no
12 indications of any cracking. So we continue to follow
13 the VIP guidelines, and if they were to be revised to
14 require examinations, then we would intend to follow
15 those guidelines.

16 MEMBER BARTON: It sounds reasonable to
17 me.

18 MR. SOLORIO: If there are no more
19 questions on the 4.2 and the 4.5, John Fair will
20 present the results of 4.3.

21 MR. FAIR: Section 4.3 covers metal
22 fatigue, and to address metal fatigue, the applicant
23 chose to monitor a sample of high fatigue usage, and
24 locations include the pressure vessel, vessel
25 internals, of course, and the coolant loop piping.

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1 This is similar to the approach that was
2 used by Hatch, with one difference in this particular
3 program, and that is that they are using some
4 automated industry software to monitor detailed
5 cumulative usage factors stresses at a couple of
6 critical locations.

7 One of them being the feed water nozzle,
8 and another being the vessel support skirt. They also
9 have a couple of cases where the projected CUFs for 60
10 years may be high, and therefore, I think that is the
11 reason that they are going to an automated monitoring
12 type of system.

13 One of the areas is the stud bolts, which
14 they project may exceed the CUF during the current
15 operating time based on a conservative projection.
16 But it appears from the responses that they think that
17 the projection is fairly conservative, and that the
18 monitoring is going to show that they are not going to
19 exceed it during the current period.

20 But they still have a contingency if they
21 do exceed the CUF to either do some more detailed
22 calculations, repair or replace, or as an alternative
23 proposal, to have some kind of an inspection program
24 to monitor for cracks.

25 And I will get into that further in the

1 last bullet on this slide. In addition, they
2 evaluated the environment impact effects on fatigue
3 usage.

4 They originally had an argument that there
5 was enough conservatism in the original design
6 analysis to account for it. We asked for an RAI in
7 this area, and asked them to do a specific evaluation
8 of the six locations that we normally choose for every
9 other plant.

10 And they responded that instead of doing
11 the analysis right now, they committed to perform the
12 evaluation prior to the period of extended operation
13 for those six locations which are in the staff's NUREG
14 6260 applicable to BWRs.

15 We didn't have an open items in the
16 review, but we did have a confirmatory item, which was
17 to get two commitments into the FSAR supplement. One
18 of them is the commitment for the potential corrective
19 actions for the stud bolts where the CUF may exceed
20 one in the period of extended operation.

21 And the other is the commitment to do the
22 environmental evaluation, and again the corrective
23 actions for the environmental evaluation if they
24 project the usage factor to exceed one in the period
25 of extended operation.

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1 The bullet on license amendment really
2 relates to the third option. If they choose to take
3 some kind of a program instead of showing that they
4 meet the usage factor criteria, and they decide that
5 they want to monitor by some inspection program, we
6 have requested that they submit the details of that
7 program to the staff for staff review and approval
8 prior to them implementing them.

9 The license amendment is the vehicle in
10 which we are requesting them to do that.

11 MEMBER SHACK: John, in the cycle counting
12 program, they are computing the CUF from those cycles,
13 with essentially no consideration for environmental
14 fatigue?

15 MR. FAIR: That's correct, currently.

16 MEMBER SHACK: Currently.

17 MR. FAIR: Yes.

18 MEMBER SHACK: And on the B31.1 typing,
19 where here is no sort of explicit fatigue analysis, is
20 it the staff's judgment that there is enough
21 conservatism in there that you don't have to worry
22 about environmental fatigue in those cases?

23 MR. FAIR: Yes, I believe that is the
24 position on that, because usually what happens for the
25 B31.1 -- well, let me back up on that, because for

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1 B31.1 plants on the reactor coolant loop piping, we
2 have requested those plants that are designed for
3 B31.1 on the coolant loop to address the six
4 locations, regardless of whether they have a fatigue
5 analysis or not.

6 And those locations are locations where we
7 expect to get significant fatigue transients. For the
8 rest of the piping systems which are usually
9 considered Class 2 and 3 piping systems, they are
10 designed based on a criteria that is just looking at
11 the range of bending stresses.

12 And for most cases, they don't see a lot
13 of significant design transients. There have been
14 cases that utilities have looked at particular items
15 that were designed to B31.1 type of criteria, one
16 example being originally on Calvert Cliffs on the feed
17 water nozzle, where you do get some cycling occurring
18 on that particular nozzle.

19 And they did see fit to actually do some
20 detailed monitoring at that particular location.

21 CHAIRMAN LEITCH: A question regarding the
22 SER on page 4-3, and under the paragraph of feedwater
23 and control rod drive nozzles. The title is control
24 rod drive nozzles, but the verbiage there refers to
25 control rod drive return line nozzles.

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1 And I am not sure which is correct, but I
2 believe at Peach Bottom that control rod drive return
3 lines used to be just off one nozzle, and that was
4 capped.

5 I guess I'm just not sure what we are
6 talking about here. Is this the control rod drive
7 nozzles, or the control rod drive return line nozzle?
8 Do you see where I am, on page 4-3?

9 MR. DYLE: If I could, this is Robin Dyle
10 from Southern Nuclear. That goes back to an old
11 owners' group analysis that was done, and it was done
12 in response to NUREG 0619, which addressed fatigue
13 cracking in BWR feed water nozzle inter-radiuses, and
14 the control rod drive return line nozzle. So that is
15 what it is.

16 And all but two of the plants in the
17 country have cut and kept those lines and so that has
18 become not an issue going forward.

19 CHAIRMAN LEITCH: Peach Bottom is cut and
20 capped, right?

21 DR. POWERS: That's right. Peach Bottom
22 is cut and capped a long time ago.

23 MR. DYLE: But there was a generic
24 analysis that the owners group did in concert with
25 G.E. that dealt with that that prescribed the

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1 inspection programs for this.

2 CHAIRMAN LEITCH: So this verbiage I think
3 on page 4-3 of the SER needs to be clarified.

4 MR. SOLORIO: We will look into that. We
5 apologize that the reviewer is not with us here right
6 now.

7 MEMBER ROSEN: I probably should have
8 asked this question a long time ago, but in some other
9 discussions of this subcommittee, and the full
10 committee even, we talked about would we recommend the
11 extension of the license for just any plant,
12 regardless of its ROP status.

13 And I think we concluded, well, no, and so
14 I think it is based on that that it is incumbent upon
15 us that we ask that question, even though I think I
16 know the answer.

17 What is the ROP status of this plant?
18 That is not a question for you, John. Where does this
19 plant stand in the ROP? If I went to the web page
20 what would it show?

21 MR. SOLORIO: I looked at it and it would
22 show all green at the highest level right now. I am
23 not prepared to go over that with you. I can actually
24 prepare to come back at a later time and meet with you
25 or have a conference call and go over that with you.

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1 MEMBER ROSEN: No, I think that for the
2 full committee that you might make the point about
3 what the ROP status is.

4 CHAIRMAN LEITCH: And we will go around
5 the room here when we are done and talk about perhaps
6 some of the issues that should be raised. Let me ask
7 one more question here though.

8 The cumulative usage factors at the end of
9 60 years for Peach Bottom Number 3 is 1.02, and I
10 guess I am not clear what we are talking about there.
11 It says in the verbiage on page 428 of the -- and now
12 I am in the license renewal application.

13 It talks about the support skirts, but the
14 table seems to imply that it is the reactor vessel
15 lower head to shell transition.

16 MR. FAIR: I think there is a footnote,
17 and I will make sure the applicant confirms that says
18 that as an alternate location the location in the
19 table was one of our 6260 locations.

20 But as an alternate location where they
21 had the more critical fatigue usage that they were
22 going to monitor there, and I believe that is what
23 that usage factor is involved with.

24 MR. PECAL: Yes, this is Eric Pecal, and
25 we did find one from a calculation perspective on

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1 1.02, and what we planned to do with those areas and
2 program and monitor it, because we believe that there
3 is lot of facilities relating to that number, and
4 trying to redo the analysis is (inaudible) program
5 which over a period of time will reflect where we are
6 going with that thing, and be able to manage on that
7 basis.

8 That is what the second line item on there
9 reflects, and so we actively support that location.

10 CHAIRMAN LEITCH: But I guess Eric what I
11 don't understand is are we talking about the lower
12 heads to the first ring of the reactor vessel, or are
13 we talking about the lower heads of the support skirt?

14 In one place, and that is in the verbiage
15 on page 4-28, it seems to imply a kind of a -- on the
16 second full paragraph on that page, it seems to imply
17 that we are talking about the support skirt.

18 Whereas, on the table it seems to imply
19 that we are talking about the shell transition. Now,
20 is this a pressure boundary that we are talking about
21 here, or is this a structural boundary?

22 MR. POLASKI: Our memory on that is that
23 is a location that is on the outside of the reactor
24 vessel. That is the skirt to the vessel location. I
25 remember that because that location is not subject to

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1 environmental assisted fatigue, because it is not
2 subject to the reactor water environment.

3 CHAIRMAN LEITCH: Right.

4 MR. FAIR: So it is where the support
5 skirt is attached to the lower head.

6 CHAIRMAN LEITCH: The lower head, yeah.
7 So the words in the table then are incorrect?

8 MR. FAIR: Yes, they appear to be. They
9 are not the best words to use, yes.

10 CHAIRMAN LEITCH: Okay. That answers that
11 question. I guess I had another question here. The
12 license renewal application, page 439, I guess I have
13 the impression reading this that the torus
14 penetrations that there is a CUF of .992 for 40 years,
15 and would that mean then that we would be up to like
16 1-1/2 or 60 years?

17 MR. SOLORIO: Graham, unfortunately the
18 reviewer who did that review isn't with us at the
19 moment. We had tried to get him over here, and so we
20 could anticipate a question that you would ask on this
21 section. So we are going to have to get back to you
22 with an answer on that question, sir.

23 CHAIRMAN LEITCH: Okay. Do you understand
24 the question?

25 MR. SOLORIO: Could you repeat it?

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1 CHAIRMAN LEITCH: I am looking at page 439
2 on the license renewal application, and at the top
3 there it refers to number two, torus penetration,
4 having a CUF of .992.

5 MR. SOLORIO: Yes.

6 CHAIRMAN LEITCH: And the question really
7 is that from the reading of that there that is based
8 on 40 years, but how about 60 years? It would seem to
9 be up near 1.5. Is that acceptable, I guess, is my
10 question.

11 MR. SOLORIO: Okay.

12 MR. POLASKI: I guess I could answer that
13 from an excellent perspective. The .992 number came
14 out of the Mark-1 containment study when it was worked
15 on a number of years ago with concerns about the Mark-
16 1 design, and we did a lot of work to beef it up and
17 tie it down, and that analysis was done at that time,
18 and then documented, and you are right.

19 If you multiple that by 1-1/2, you go
20 above one, and you go above that for a couple of
21 occasions. So the way that we are approaching that is
22 that that fatigue is the result of it opening and
23 closing.

24 So we are going to be monitoring those
25 locations with our fatigue management program to

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1 actually manage what has actually happened, because
2 typically these kinds of calculations are done
3 conservatively, and on straight-on projections, and
4 the operating experience.

5 And so we are going to actually monitor
6 that location through the fatigue program, and
7 actually determine what the actual cumulative fatigue
8 is at those locations.

9 CHAIRMAN LEITCH: So I guess my question
10 really is what about in a -- what about in 59, where
11 we have a LOCA. Are we going to be okay in this?

12 MR. POLASKI: As I understand it. I am
13 not an expert on fatigue, but I have been involved
14 with it for the last couple of years, and in talking
15 to the people that are experts, that if you are at a
16 fatigue -- a calculated fatigue of close to one, and
17 you have a transient, you are not going to have
18 immediate failure of that location.

19 The fatigue calculations are very
20 conservative, and I talked to the people who do this
21 a lot, and Barry, you can tell me whether you agree or
22 disagree, or John. In one, you don't get cracks. You
23 have got to go above CUFs of one.

24 And I am not talking about environmental
25 assisted fatigue. But there is a lot of conservatism

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1 in the calculations that we use to calculate those
2 numbers.

3 MR. FAIR: Well, I think what we assume is
4 there is a certain probability of getting a crack
5 initiation in a CUF of one, but that is a crack
6 initiation, and it depends on the type of loading.
7 Once you get a crack initiation, you have some time
8 left to grow the crack and go to failure.

9 MR. POLASKI: And if you do get the CUFs
10 calculated at one, then there is things that you need
11 to do per the code and other things like that. It can
12 be reanalysis to do the inspections.

13 So when you get to CUF-1, it doesn't mean
14 that you have got component failure.

15 MEMBER WALLIS: Well, what does it mean?
16 I mean, it must mean something that is significant, or
17 otherwise we wouldn't do it.

18 MR. FAIR: Well, the way that the criteria
19 was established was originally there was some testing
20 of some specimen components for fatigue crack
21 initiation, and the test data was then adjusted to
22 account for differences between the specimen tests,
23 and actual components.

24 And there was some adjustment for data
25 scatter in that, and so if you account for data

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1 scatter, even with the test specimens, there is a
2 certain probability of initiation at a CUF of one, but
3 most of the specimens would not crack at CUF equal to
4 one.

5 MEMBER WALLIS: So what sort of
6 probability is there?

7 MR. FAIR: Well, Bill is here, but I think
8 some of the studies that were done with the design
9 fatigue curves indicated that the probability was
10 something between 1 and 5 percent probability of
11 initiation of a CUF equal to one.

12 MEMBER WALLIS: And what happens when it
13 goes to 1-1/2?

14 MR. FAIR: The probability increases.

15 MEMBER WALLIS: What is the number? Does
16 it go from one percent to a hundred percent, or one
17 percent to two percent?

18 MR. FAIR: If you go -- now again we are
19 talking just the adjustment of laboratory data for
20 fatigue and air. If you take the fact that a factor
21 of two was applied to the covered data scatter, you
22 would say that from 1 to 2, if you went up to a CUF of
23 2, you would probably have a 50 percent chance of
24 fatigue crack initiation, and you would draw some kind
25 of crack curve in between the two.

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1 And actually some of the studies done by
2 Oregon have formulas for calculating that probability
3 of fatigue crack initiation at a given CUF, some of
4 the NUREG reports.

5 MEMBER WALLIS: So suppose you have a
6 criterion, and if you get above a certain CUF, then
7 you have to act in some way?

8 MR. FAIR: Well, that is the CUF of one.
9 That is the design criteria.

10 MEMBER WALLIS: Does that mean that you
11 have to sharpen your pencil when you get to one; is
12 that what you do here?

13 MR. FAIR: That is what happens a lot of
14 the times. Usually the calculation is done on a
15 conservative basis for simplicity sake.

16 MEMBER SHACK: I mean, the designer gets
17 it below one and quits. It is good enough.

18 MR. POLASKI: I think the other thing that
19 you have to consider on this is that the fatigue
20 damage calculations, the CUF calculations, are
21 assuming design transients, which when we are looking
22 at this, we are looking at thermal fatigue damage.

23 It assumes step changes in temperature,
24 and in reality the transients in the plan are not step
25 changes in temperature. They are less than that. So

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1 that when you start looking at the actual transients,
2 you can get reductions in calculated CUF of factors of
3 13 to 30, to a hundred.

4 And there is continuing work going on
5 about how much we can credit for that, but from what
6 I have seen, it is a significant reduction in the
7 calculated when you take actual transient data versus
8 the design data.

9 And the one thing that we are doing with
10 our fatigue pro monitoring program, with the
11 exceptions of two locations, the feed water nozzle,
12 and the support skirt, we are monitoring on a counting
13 basis.

14 So we are still assuming that it is
15 designed step change transients when we are getting it
16 in close to one, and we take into account more
17 realistic data when we do the analysis on these
18 particular locations.

19 CHAIRMAN LEITCH: It is not particularly
20 in this section, but while we have the metallurgical
21 folks assembled here, we briefly mentioned, and I
22 can't find the reference now, but we briefly mentioned
23 -- I think it was on Unit 3, a main steam nozzle with
24 a manufacturing flaw. What is the significance of
25 that? An anelbow I should say.

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1 MR. FAIR: Excuse me?

2 CHAIRMAN LEITCH: A main steam anelbow I
3 think on Unit 3?

4 MR. ELLIOTT: That was a TLAA and it was
5 evaluated to see what the impact of heat-ups and cool-
6 downs are in 60 years would have on the growth of that
7 flaw, and it was very insignificant.

8 CHAIRMAN LEITCH: This was a manufacturing
9 issue.

10 MR. ELLIOTT: Yes.

11 MR. SOLORIO: Yes, the reviewer gave me a
12 few notes. An embedded, as forged, laminar tear in
13 the Unit 3 main steam flow anelbow material was
14 discovered during pre-service UT inspection. It did
15 not extend to the weld. The applicant performed
16 (inaudible) Section 3 Class 1 fatigue analysis,
17 considering the flaws of local discontinuity, with a
18 high stress concentration factor.

19 The analysis determined the highest
20 primary, plus secondary, stress was within the code
21 allowable, and in the cumulative uses factor of 0.12
22 was conservative below 1.0.

23 Pursuant to 10 CFR 50.21, we made a
24 conclusion that they are managing the aging by the
25 current analysis, or they are meeting the requirements

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1 that the TLAA by the current analysis.

2 I wanted to also add to the question that
3 you asked about 4.6, we do go on record here in the
4 SAR and talk about the applicant will use a fatigue
5 monitoring program to manage aging of that component
6 that you are asking about.

7 We will get back to you though later with
8 more information on that specific value, but the
9 expectation that I have is that the way they are using
10 the fatigue monitoring program, it is going to be
11 caught before it becomes a problem, and we will get
12 back to you.

13 CHAIRMAN LEITCH: Okay. Any other
14 questions on this section at any rate? We are at the
15 end of the agenda now, right, or at the end of the
16 presentation part.

17 MR. SOLORIO: Can I ask one question? I
18 have one IOU in the back of my mind right now. Are
19 there any others?

20 MEMBER ROSEN: Excuse me, but you have one
21 what?

22 MR. SOLORIO: IOU. I am going to get an
23 answer on the specific fatigue usage number that
24 Graham just pointed out, and I was just wondering if
25 there were any other questions that we didn't answer

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1 during the day.

2 MR. KUO: Dave, we are going to find out
3 the ROP status?

4 MR. SOLORIO: Right, the ROP status.
5 Okay.

6 MR. KUO: And if there is no further
7 questions, Dr. Leitch, this concludes the staff
8 presentation.

9 CHAIRMAN LEITCH: Okay. Well, thanks. I
10 want to say now that I think that the next thing we
11 should do as a committee is kind of poll the
12 subcommittee here and see what we think the proper
13 disposition of this should be. '

14 Is there any reason for an interim letter
15 right now? We are thinking in terms of no interim
16 letter, but of a verbal presentation at next week's
17 full committee meeting, to be followed by a full
18 committee meeting with respect to Peach Bottom
19 probably in the March time frame, I believe.

20 MEMBER BARTON: From my perspective, I
21 don't think you need an interim letter. That is just
22 the way I look at this.

23 CHAIRMAN LEITCH: What I was going to
24 suggest, John, is that maybe we should take 10
25 minutes, and take a little break, and then come back

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1 at 4:15, and kind of poll around the room and see what
2 are the issues that are still -- you know, that are
3 still on people's minds, and we will go from there.

4 So I want to thank the staff for their
5 presentation, and the Exelon folks for their
6 presentation. I think the presentations today have
7 been very, very good, and very responsive to our
8 questions.

9 And we will poll the subcommittee here
10 when we resume at 4:15.

11 MEMBER BARTON: I've just got one
12 question. Why is the "O" in Exelon green?

13 CHAIRMAN LEITCH: I don't know.

14 MEMBER BARTON: I wonder if there is any
15 safety significance to that.

16 CHAIRMAN LEITCH: Let's recess until 4:15.

17 (Whereupon, at 4:07 p.m., the meeting was
18 recessed and resumed at 4:17 p.m.)

19 CHAIRMAN LEITCH: Let's come back into
20 session. Unfortunately, we truncated David's
21 presentation, and he has got one more slide to go. So
22 why don't you wrap it up there with that one
23 concluding slide.

24 MR. SOLORIO: All right. The next steps,
25 we are going to talk about whether you need our

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1 support next week, and to what degree. Right now we
2 are going to focus on the remaining open item, and we
3 are glad that you all were able to hear some of the
4 dilemmas that we are facing with that one.

5 The formal responses to these open items
6 are due on November 29th of this year. I have a date
7 here for the final SER being 3/25/03, but that is when
8 we issue it as a NUREG.

9 Actually, the date that we expect to be
10 finished with the SER, in terms of closing the open
11 items out, is February 2nd. But it takes a number of
12 weeks actually to get it put together as a NUREG.

13 So I just wanted to make sure that you all
14 didn't think that we were moving the schedule out,
15 okay? And that is all that I have. Thank you very
16 much, sir.

17 CHAIRMAN LEITCH: And I think, David, that
18 our wrap-up of this with the final committee is
19 scheduled for the March '03 meeting if I am not
20 mistaken. So that seems to dovetail with the schedule
21 that you have there.

22 To answer your first question, I don't
23 think we need all the presenters next week by any
24 means, but I do think that it would be good if we had
25 perhaps yourself if that is possible, David.

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1 MR. SOLORIO: Sure.

2 CHAIRMAN LEITCH: And PT, you may want to
3 be there, too.

4 MR. KUO: We will be here.

5 MEMBER ROSEN: I think we should go around
6 the table and see what the issues are, and you might
7 want to think about that after you hear the issues.

8 CHAIRMAN LEITCH: Okay. So, Dr. Wallis.

9 MEMBER WALLIS: That's easy. I don't have
10 any issues to raise at this time.

11 CHAIRMAN LEITCH: Okay. John.

12 MEMBER BARTON: My questions were
13 basically answered, even though I didn't like the
14 answers to some of them. But I think the important
15 thing here is for the full committee to see the
16 difference between this application and other ones
17 that they heard about, and this boundary concept that
18 they have in their format.

19 CHAIRMAN LEITCH: By boundary do you mean
20 the realignment?

21 MEMBER BARTON: Yes, the boundary
22 realignment thing. I think the committee ought to
23 hear that. And I think the main thing remaining is a
24 resolution of the open items to the staff, and the
25 ACRS to their satisfaction. I think that is really

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1 where the nuts and bolts are in this application at
2 this point.

3 I don't have any burning bushes, or major
4 issues from my review, that I think would prevent an
5 extended operation from what I see. So as far as on
6 the full committee, are you are going to have the
7 licensee make a presentation at all or just the staff?
8 Just the staff?

9 CHAIRMAN LEITCH: Next week, we were
10 thinking not, I believe.

11 MEMBER BARTON: Just the staff?

12 CHAIRMAN LEITCH: And I don't even know
13 that the staff is going to make a presentation. I
14 think what I am picturing is making maybe a 15 or 20
15 minute verbal discussion myself.

16 MEMBER BARTON: Okay. So you have a real
17 short agenda in the main meeting?

18 CHAIRMAN LEITCH: With just some support
19 from the staff here in case they are needed. Now,
20 certainly we are not talking about the March meeting
21 now.

22 MEMBER BARTON: No, I was talking about
23 the November full ACRS meeting.

24 CHAIRMAN LEITCH: That is assuming that we
25 see no need for an interim letter, and that the cycle

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1 is just going to be to make a brief summary
2 presentation to the ACRS in November, and then have
3 the full ACRS meeting in March.

4 MEMBER BARTON: Well, I think at that
5 point the full ACRS needs to get the subcommittee
6 sense for this application, versus other applications,
7 and what is different about it, and what is good about
8 it.

9 And what are the open items, and I think
10 that is all that you need to cover.

11 CHAIRMAN LEITCH: Stephen.

12 MEMBER ROSEN: I have a number of
13 comments, and they go to different places, and so that
14 I will organize, and let me just hit them. The first
15 one is kind of a reverberation of the point that you
16 have made several times, Graham, about the what you
17 have reviewed for the staff.

18 Many analyses of the PLAs and subsequent
19 interactions with the staff are deferred until the end
20 of the initial operating period, and that creates this
21 workload that they have a new procedure for.

22 And I don't think the full committee has
23 heard that, and furthermore, I think that if the full
24 committee was going to write a letter that it might
25 want to somehow communicate to the Commissioners that

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1 this is creating a bow wave of work for the staff out
2 in a narrow time window in the future.

3 And the staff understands the issue, but
4 I think the Commission should be aware of it. So I
5 think that is something that we ought to put in some
6 formal communication to the full Commission. The
7 system boundary realignment --

8 CHAIRMAN LEITCH: Just for clarification,
9 that is not specifically a Peach Bottom issue.

10 MEMBER BARTON: No.

11 CHAIRMAN LEITCH: It is more of a work
12 planning issue for the Commission.

13 MEMBER BARTON: That's exactly right.

14 MEMBER BONACA: And it is more of a time
15 when we could proceed with that in a letter that we
16 are due to write in the spring regarding the generic
17 issues, and particularly the adequacy of the guidance
18 document.

19 MEMBER ROSEN: Yes, it would be very good
20 in that. And the ACRS subcommittee on planning and
21 procedures might want to consider that next week and
22 figure out when we want to interact, and when and
23 where we want to get that message up to the full
24 committee and to the Commission.

25 CHAIRMAN LEITCH: We have an SRM.

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1 MEMBER BONACA: We do have an SRM.

2 MEMBER ROSEN: So we have the SRM, and so
3 you are already deciding it, and that's okay. I think
4 that it needs to be communicated.

5 MEMBER SIEBER: The real issue there is
6 the one time inspections. That's probably where you
7 will get bogged down, but there is a limit. You are
8 supposed to do that within the last 10 years of the 40
9 year period.

10 So that it really represents that point in
11 aging life. On the other hand, the aging analysis and
12 that kind of stuff, those kinds of open items, they
13 ought to be worked on and finished up as we go along,
14 and you can start those now.

15 CHAIRMAN LEITCH: Although I think the
16 one-time inspection is really a burden on the
17 licensee.

18 MEMBER SIEBER: That's true.

19 CHAIRMAN LEITCH: I think what we are
20 talking about here is making sure that the staff has
21 the manpower and the resources necessary to inspect to
22 the extent necessary that the licensee has done what
23 they have to do.

24 MEMBER SIEBER: Well, that's true. On the
25 other hand, if you inspect at the last minute then

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1 that burden goes to the staff.

2 MEMBER ROSEN: That's exactly what we are
3 talking about.

4 CHAIRMAN LEITCH: That's true.

5 MEMBER ROSEN: Having an unmanaged deluge
6 of work for the staff.

7 MEMBER SIEBER: The big issue is going to
8 be when you have about 10 of these plants in a row.

9 MEMBER ROSEN: Exactly.

10 MEMBER SIEBER: And then you are going to
11 be running around, and you either are not going to be
12 able to do as good a job as you should, or you are not
13 going to be timely.

14 MEMBER ROSEN: Right, and I would think
15 that it is serious because a lot of the issues that we
16 have talked about have referred to the demonstration
17 of some sort of something based on the timing of the
18 aging analysis at a point in the future, or some
19 substantive matter.

20 And the staff will have to interact with
21 the licensees, and maybe inspect, you know, and so I
22 think it is an issue, a planning issue for the staff.
23 So enough of that. I think the system boundary
24 realignment technique that John mentioned, is
25 cumbersome to the staff review, and may be somewhat

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1 opaque to the public, and maybe somewhat opaque to the
2 ACRS.

3 And the staff should interact with NEI to
4 make clear their preference for the scoping approach.
5 That is a message to the staff really. It is not open
6 season over here. I don't think that licensees can do
7 anything the way they want without some net loss of
8 efficiency and effectiveness on the staff, which means
9 that schedules will extend.

10 If the staff finds a way to do something
11 that is more effective and efficient, I think they
12 need to communicate that clearly with the licensees
13 or for the licensees.

14 And say, look, if you are going to do it
15 this other way, it is going to take us longer and we
16 prefer you not do it, and so there is a lot of
17 messages there. I don't know where we put that point,
18 but I think John and I -- John Barton and I feel the
19 same way about that one. That is a significant
20 matter.

21 I didn't get a good -- another subject.
22 I asked a lot of questions, most of which I got I
23 think satisfactory answers for. But I did not get a
24 good answer I don't think to the stand-by gas
25 treatment aging effects.

1 I guess I don't believe the argument that
2 the components that are kept warm are insulated so
3 that there is no likelihood to be any moisture
4 pocketing effects or effects on the shell of the
5 stand-by gas treatment systems, and the galvanized
6 portions of it.

7 So I would appreciate some specific
8 further information on that, either before the meeting
9 or at the meeting.

10 MEMBER BARTON: What is the environment
11 for that system? Is that system in a building or is
12 it outside near the stack, or where is it physically
13 located?

14 MR. POLASKI: Most of the system is
15 inside. The fans, the flippers, are all in the plant.

16 MEMBER ROSEN: In the building?

17 MR. POLASKI: The discharge goes
18 underground though, because at Peach Bottom, the
19 stand-by gas treatment system exhausts to the main
20 stack, which is up on top of the hill behind the
21 plant. So there is underground piping on the
22 discharge going up to the stack.

23 But the duct work that is in the building
24 is in an environment that -- it is not air-
25 conditioned, but it is a controlled in-door

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1 environment, and we have not had any experience at
2 Peach Bottom with water collecting in any of that duct
3 work or any degradation on that duct work.

4 MEMBER ROSEN: Please understand that I am
5 not so concerned so much about corrosion outside in.
6 I am more concerned with inside out corrosion from
7 moisture condensation inside the duct work and the
8 effect of that on the shell of the -- on the
9 pressurized shell.

10 MR. POLASKI: I understand.

11 MEMBER ROSEN: So anything that you can do
12 to help me realize that is not a problem would be
13 helpful.

14 MEMBER SIEBER: That has charcoal filters
15 in it?

16 MEMBER ROSEN: Yeah, charcoal filters, and
17 it has even got water piping typically to put out a
18 charcoal fire.

19 MEMBER SIEBER: Is that the thing that at
20 Perry that burned up and caught fire?

21 MEMBER ROSEN: I don't know.

22 MEMBER SIEBER: It was on fire for several
23 days.

24 MEMBER ROSEN: I don't know.

25 MR. POLASKI: That was the charcoal I

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1 think in that system.

2 MEMBER ROSEN: No, I think that might have
3 been in the off-gases.

4 MR. POLASKI: Yeah, the charcoal and the
5 stand-by gas would not burn for several days. There
6 is not enough load there.

7 MEMBER SIEBER: Okay. You're right.

8 MR. KOBETZ: Is then Exelon committing to
9 give us that information then at the next meeting?

10 MR. POLASKI: I think what we will do is
11 we will work with the staff to get you that
12 information early this week or early next week so you
13 will have it.

14 MEMBER ROSEN: The staff can just e-mail
15 me a response.

16 MR. KUO: The staff will be working with
17 the applicant and we will send you an e-mail for
18 before the meeting.

19 MEMBER ROSEN: Will you say again what you
20 just said?

21 MEMBER SIEBER: I think we want it in the
22 record, and not as an e-mail.

23 MR. KOBETZ: So that it will be presented
24 at the next meeting.

25 MEMBER SIEBER: Yes, we have a transcript

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1 of your question, but I think we ought to have a
2 written answer that makes it to the record.

3 MEMBER ROSEN: And the last point that I
4 had was that I think as a general thing we should have
5 an ROP status of all applicants who want license
6 renewal and license extension, and present it to the
7 full-committee and submit it to the full committee so
8 that we know what is the plant's current performance.

9 That doesn't guarantee the future clearly,
10 but --

11 MEMBER BARTON: But that gives us a
12 snapshot right now though.

13 MEMBER ROSEN: Well, in the past, at least
14 in the past. So I guess we have a commitment from the
15 staff to have that for the full-committee.

16 MR. KUO: Yes.

17 MEMBER BARTON: Let me ask you something.
18 What good do you see out of this when you take a plant
19 that we are all familiar with, and that was an info on
20 and was hunky-dory two years ago when the ACRS visited
21 that plant, and all of a sudden things went to hell,
22 and now it is the worst plant in the country?

23 So what good is this ROP tell you now or
24 in the last 18 months what their performance has been?

25 MEMBER ROSEN: Well, that is an indictment

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1 of the ROP that is so broad sweeping that I don't
2 think that I can respond to it. I think what we have
3 to say is what does the ROP -- the ROP is the agency's
4 current measurement of plant performance.

5 And when we are considering a licensing
6 action like this, we should have a reading from it.

7 MEMBER SIEBER: Well, my question is that
8 once you have the information, which each one of us
9 could get off the website if we wanted, what are we
10 going to do with it?

11 You aren't going to put it in the letter,
12 and you aren't going to withhold your recommendations,
13 because that is all we do. We don't approve anything.

14 MEMBER ROSEN: I'll tell you what I will
15 do with it.

16 MEMBER SIEBER: It is not all that clear
17 to me what it is that -- you know, the rule doesn't
18 require it.

19 MEMBER ROSEN: Can I answer

20 MEMBER SIEBER: Well, in a minute. And if
21 you have a plant that is mediocre, and is mediocre
22 today and not 15 years from now after some get well
23 program, it is not clear to me what it is that you get
24 out of that.

25 MEMBER ROSEN: Okay. If the answer to

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1 your question from me is if the plant is in red, or in
2 a seriously degraded state, it's operating experience
3 upon which this program relies is not very good
4 obviously, and I couldn't recommend for this license
5 to be extended.

6 MEMBER BONACA: I don't think it would
7 come to us.

8 MEMBER SIEBER: If it is in red and it is
9 not running --

10 MEMBER ROSEN: It is not running.

11 MEMBER BONACA: It's a good point.

12 MEMBER SIEBER: Because if it is in red,
13 it is not running. That's true.

14 MEMBER ROSEN: It doesn't mean that it
15 can't get its license renewed. I mean, that it can't
16 ask for license renewal.

17 MEMBER SIEBER: That's right, but it
18 doesn't mean that when you get it renewed that you are
19 allowed to run, okay?

20 MEMBER ROSEN: Right. It doesn't mean to
21 me that we should spend any time looking at a license
22 application from a plant like that because we don't
23 know what the circumstances are going to be like in
24 that plant when it is finally allowed to operate.

25 MEMBER BONACA: That's true.

1 MEMBER SIEBER: Well, I think that is a
2 policy decision that somebody needs to make, and I
3 think we are stepping outside of whatever
4 responsibility there is there.

5 MEMBER ROSEN: Are you suggesting, Jack,
6 that a question about what is this current plant's ROP
7 is out of bounds?

8 MEMBER SIEBER: I don't think there is
9 anything that you can do with it once you know the
10 answer.

11 MEMBER BARTON: I don't think it is out of
12 bounds. I just think it doesn't do much for you to
13 know whether it is green, white, or yellow. Because
14 you know that if it is red, then it is shut down. So
15 if it is green, red, or yellow what are you going to
16 do with it.

17 MEMBER ROSEN: Well, I leave it on the
18 table. This ACRS member would like to know the ROP
19 status, and it is true that I could go back on the
20 website and look at it, and maybe I have, but the
21 issue is not about what I know. It is about what is
22 on the record to me. That's all I have.

23 CHAIRMAN LEITCH: All right.

24 MEMBER BONACA: Well, I think in general
25 that it was a reasonable application. I think that we

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1 can renew all the questions, and they were answered.
2 I still have some concern with the documentation, and
3 I voiced this a number of times.

4 What is documented in the application and
5 what is documented in the review, and what is
6 documented for the future. And the example that I
7 would like to quote here is again in the application
8 the service water system is not in scope.

9 In the presentation the service water
10 system is in scope. Then we discover that some
11 portions of it are in scope. And this is true of
12 other systems which are listed both in the application
13 and now there is a logic behind that?

14 We understood that we got a good
15 explanation on the realignment and the system boundary
16 realignment. And we know that all applications have
17 to do some of that. The fact remains that I am still
18 questioning in my mind if there is going to be one
19 place where there is a clear statement of what is in
20 scope, and what is not in scope.

21 I understand that if we punch up all these
22 documents and we go back now to the RAIs, and we look
23 at the SER, that we can put it all together. But I
24 wonder about those guys will pick up again this
25 application 15 years from now, and try to implement

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1 the inspections and so on. It may be more confusing.

2 So that is just a point that I raised I
3 believe already some months ago, and it is a current
4 issue in my judgment that is not being totally
5 settled. It is not unique to this application at all,
6 and I don't think the in statement regarding this
7 application.

8 I felt that the SER was a good SER, and
9 that went through pretty well, and I think there was
10 enough information in the SER to come to certain
11 conclusions, and I think the conclusions in the SER
12 were reasonably sound and general.

13 I liked the presentation that we got from
14 Mr. Elliott and others. They were informative. I
15 feel that we don't have a need for a full discussion
16 at the full meeting.

17 I think if we prepare it to the chairman
18 that it will be adequate, and I don't think we need an
19 interim letter at this time. That is pretty much my
20 recommendation.

21 CHAIRMAN LEITCH: Thank you. Jack.

22 MEMBER SIEBER: I guess I agree that an
23 interim letter is not required. I also agree that the
24 best way to handle the November presentation is as you
25 suggested, with support from the staff. I think that

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1 is sufficient.

2 I don't think there are enough issues out
3 there where we need to have a long presentation and a
4 big contest over the content of the application or the
5 SER. I also agree with Mario that the application was
6 pretty good and the SER was good.

7 As far as the boundary realignment,
8 compared to the difficulty that I had with the Hatch
9 application, and trying to figure out what was going
10 on, I thought that this was close to heaven.

11 MEMBER BARTON: It is a lot better than
12 Hatch, and maybe there is a simple way, and it is much
13 better than Hatch.

14 MEMBER SIEBER: It took me a half-a-day to
15 figure out exactly what it was that they were doing
16 with the help of some drawings, and reading it a
17 couple of times, I thought that the way that their
18 systems are laid out, and the way they numbered
19 things, that was probably a reasonable and with
20 minimum confusion way of doing it.

21 But I do agree with Steve. There ought to
22 be some kind of a system which I think is part of that
23 SER where we hint to them what things could be firmed
24 up a little bit that would allow us to not read
25 rediscover the world, or rediscover different ways of

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1 doing stuff every time one of these comes down the
2 pipe.

3 I happen to like this, but since I had
4 only see two, plus the PWR, I don't know this one is
5 the best, and maybe somebody will have different
6 ideas.

7 But I think we know enough now how to do
8 these, both from the staff side and from the industry
9 side, that we ought to be able to settle on a format
10 that would expedite the staff review, and our review,
11 and the licensee preparation and so forth. But as far
12 as I was concerned this was a pretty good one.

13 MEMBER BONACA: By the way, I would like
14 to just chip in with the fact that I appreciated the
15 presentation that we had on this realignment, because
16 I think it showed us what they did, and we didn't have
17 the benefit of something similar in previous
18 presentations.

19 MEMBER SIEBER: And I thought that the
20 explanation in the application was good enough for me
21 to imagine what they were doing. But when I looked at
22 the drawings, it was pretty obvious what they were
23 doing, and how they did it, and what criteria they
24 used.

25 So to me it was a simple leap to convince

1 myself that they had done the right thing, and they
2 probably captured everything that they should. But I
3 do agree that when we respond to the SMR that we ought
4 to make that an issue to sort of drive the BWR owners
5 towards a consistent way of dealing with what is in
6 scope and what isn't in scope.

7 The other thing I note is that I don't
8 know how to examine scope issues without looking at
9 drawings. For some reason or other, I just can't do
10 it. I know some plants, but I don't know every plant
11 that is out there.

12 And in particular when there is little
13 quirks like putting a mechanical mark number on an
14 electrical switch instead of an electrical one, and we
15 didn't do that. Our way was that there were more
16 numbers to remember, and at least they were
17 consistent.

18 You know, everything that you do has to
19 fit the way the plant was built. Among the technical
20 issues, I continue to believe that Hiltis relax over
21 time because of the deterioration of concrete.

22 I thought that we got an answer, but the
23 answer didn't tell me anything about the future. It
24 told me what had been done in order to ensure that the
25 things had been set properly and had the margin that

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1 they were supposed to be set at, at the time that they
2 were tested.

3 And I went through all of that, and I
4 don't think it was 7902. It might have been, but I
5 don't think that was the right one.

6 MEMBER ROSEN: It doesn't sound like it.

7 MEMBER SIEBER: But in any event, I went
8 through all of that and I know how many failures there
9 were, and I have seen transients that pulled hangers
10 and plates out of the wall.

11 I know that concrete deteriorates, and
12 loses and compresses strength. And I would like to
13 feel more comfortable if there were -- I would feel
14 more comfortable if there was some kind of look at the
15 future as to the fact that these hiltis and other
16 types of fasteners like that maintain their strength
17 throughout the suspected life of a plant.

18 I would not like to see a seismic event
19 where you end up with a lot of supports that pull out
20 of the building. So to me that is an issue where we
21 got an answer, but I was left with an uncomfortable
22 feeling about the answer.

23 I think I now understand how the
24 Susquehanna River works thanks to Don, but the
25 explanation in the application was not real good. A

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1 picture is worth at least a hundred words, and a
2 drawing was real good, and even the picture on the
3 application cover would have been okay. That would
4 have helped.

5 So other than that, I thought that it was
6 a pretty good experience, and I learned some more
7 about the VIP program, but not enough obviously. So
8 that would be my comment.

9 CHAIRMAN LEITCH: Bill.

10 MEMBER SHACK: I thought it was a pretty
11 good report. Again, I guess I am more optimistic
12 about a number of these issues. I think this is the
13 first BWR done on a system basis, and the guidance for
14 the II over I is now in place and so the next time
15 that we get an application I guess it will be built
16 into the application rather than an add on.

17 Even the bow wave of work. To me, it
18 seems like you are resolving a lot of the plant
19 dependent issues in the current wave of license
20 renewal of things, and a lot of the open issues will
21 be handled generically.

22 That is, you will have a comfortable
23 report and your issue will be whether you fit in the
24 bounds of that comparable report. So I think it will
25 turn out to be a more manageable problem than it might

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1 occur, and I do think that the notion of the way that
2 the VIP is going, and of setting up comparable
3 reports, and handling as many items as you can on a
4 generic basis.

5 And what the plant has to do is to
6 establish that it fits into those bounds, and makes it
7 much better for the plant, and makes it much better
8 for the staff, and makes it much better for everybody.
9 I like the way that we are going.

10 On the system realignment, you know, I
11 think there is sort of general agreement that the
12 system approach is the way to go. It fits in the NEI
13 documentation, and so I think we will work out this
14 notion of how to describe the system realignment a
15 little bit better.

16 So I am a cock-eyed optimist type, and I
17 think that every day and in every way it is getting
18 better and better.

19 CHAIRMAN LEITCH: Tim.

20 MR. KOBETZ: One thing that you might want
21 to consider is asking the staff at the full committee
22 meeting is when they get all done, they are going to
23 close out all the open items, but there is going to be
24 a number of commitments, some of which are going to
25 get drawn into the license conditions, and some may

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1 not.

2 You may want to get an understanding of
3 which ones get drawn into conditions and why, and
4 which ones don't and why. And then how those ones
5 that don't are tracked.

6 And I think that is something that you
7 have talked about a lot at this meeting and at past
8 ones that you are talking about. And then also the
9 second part to that is with the inspection process.

10 They have had two inspections, and they
11 are going to have a close-out inspection. Then
12 somehow that information has to also feed back into
13 the SER.

14 And I think I had talked with the staff
15 before and there is a letter from the regional
16 administrator and something like that. But just
17 drawing or tying a bow around everything so that when
18 you get done you know what the commitments are, and
19 which ones are captured because they are more
20 important for safety.

21 And which ones are maybe just captured in
22 the FSAR and could be changed with a 5059 evaluation
23 or something.

24 CHAIRMAN LEITCH: That is a comment for
25 the March meeting and not for next week's meeting.

1 MR. KOBETZ: Correct. That would be for
2 the March meeting, but that is just a recommendation.

3 MEMBER BONACA: That's a good comment.

4 CHAIRMAN LEITCH: Yes. Ramin.

5 MR. ASSA: No comment.

6 CHAIRMAN LEITCH: Okay. I guess I really
7 had nothing else than that. I think we have -- that
8 almost all of us have referred to the realignment
9 issues, and I guess that really comes in two flavors.
10 There is the five classes.

11 DR. POWERS: Five cases.

12 CHAIRMAN LEITCH: The five cases, yes. I
13 think that the five little schematic drawings there
14 made that pretty understandable.

15 MEMBER SIEBER: The issue there is whether
16 you are going to do it on a system basis or a
17 functional basis. A system basis, to me is a more
18 logical way of thinking. But then you are forced into
19 the realignment, and then you need to set a rule. But
20 to me it is just easier to comprehend.

21 CHAIRMAN LEITCH: Yes, I think that's
22 right.

23 MEMBER SIEBER: That was difficult.

24 MEMBER BARTON: That was too hard.

25 MEMBER BONACA: Well, the application of

1 the component one by one is not difficult, and the
2 setting of the rule for your employees to do it, that
3 is more of a help for the staff. But I agree that on
4 a system basis that I support that.

5 MEMBER SIEBER: The functional thing is
6 superior from a philosophical standpoint, because
7 really what you are interested in is function, and you
8 don't care how the system does it.

9 MEMBER BONACA: That's right.

10 MEMBER SIEBER: On the other hand, if you
11 are an ex-operator you think in terms of the systems.
12 So I am sort of stuck that way.

13 MEMBER BONACA: Right.

14 CHAIRMAN LEITCH: The other case is that
15 maybe realignment is not the right word, but this
16 issue of II over I, and there were a fairly
17 significant list of systems that at least part of
18 which got added into the process.

19 MEMBER SIEBER: Well, it is more than II
20 over I isn't it? It is pipe whip, and all the high
21 energy line break effects are involved there, too.

22 MEMBER BARTON: I think we have come a
23 long way on it. I mean, you add more to the scope,
24 but at least I think you now understand what they have
25 done to address that issue throughout the plant. I

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1 kind of like what they did.

2 MEMBER SIEBER: Well, they have a bigger
3 scope than they really need to have for the rules.

4 MEMBER BARTON: Well, don't tell them
5 that.

6 MEMBER SIEBER: Well, if it becomes too
7 complicated to figure out you are allowed to throw
8 out, they are probably better off with where they are
9 at. On the other hand, they end up making a bigger
10 envelope to make sure that they fit everything in
11 there, which I thought was a prudent way to do it.

12 MEMBER BONACA: In that sense, then in
13 many cases they go on a central basis, and therefore
14 they go on an expanded scope, and it may be capturing
15 more work.

16 MEMBER SIEBER: You may be hitting outside
17 the box all the time.

18 MEMBER BONACA: Exactly, and the impact
19 that it has on the work.

20 CHAIRMAN LEITCH: So I guess that those
21 two issues have been up for next week so that the full
22 committee understands at least those two issues. I
23 guess I am not really sure what we are doing to
24 address your Hilti bolt question, Jack.

25 MEMBER SIEBER: Probably not too much

1 right now. But I am curious. I don't think it is a
2 show stopper. On the other hand, I think it is an
3 unanswered question. I also think it is generic.

4 MR. KUO: Yes.

5 MEMBER SIEBER: And not a Peach Bottom
6 issue.

7 MR. KUO: If I may add. This is really a
8 current issue, and if anything I would go back to our
9 staff, technical staff, to really present this problem
10 to them as a current issue. Not as a renewal issue.

11 MEMBER SIEBER: I think that is
12 appropriate.

13 MR. KUO: And later on if the staff is
14 ready, the staff can come back to the committee --

15 MEMBER SIEBER: Well, the aging question
16 I think comes from license renewal.

17 MR. KUO: Right.

18 MEMBER SIEBER: Because concrete for 30 or
19 40 years probably isn't too bad, but real old concrete
20 doesn't look too good and react too good.

21 MR. KUO: Well, generally speaking,
22 concrete aging and the shrinkage, or whatever, would
23 happen probably after one year or two years after it
24 is poured.

25 The question about Hilti bolt or maxi

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1 bolts losing their strength basically comes from a
2 crack. If there is any crack in the concrete, then
3 you really lose the safety margin there.

4 MEMBER SIEBER: But if the bolt is used to
5 hold the base plate down, you can't see the cracks.

6 MR. KUO: I understand that, but that's
7 why I say it is probably better treated as a current
8 issue than as a renewal issue.

9 MEMBER SIEBER: Well, to me it is -- I
10 don't picture it as a safety significant issue right
11 now. It is more of a curiosity, but it is something
12 that I wonder about.

13 And if I wonder about it and then say,
14 well, I can accept that, then it sort of goes way.
15 But I haven't gotten to that point yet that I can say
16 that this is not a problem. I would still wonder.

17 MEMBER ROSEN: If PT is right, it comes
18 from a crack, and the crack occurs randomly in the
19 hilti foundation, it is not a big problem, because you
20 are going to have a failure here and a failure there
21 randomly.

22 But if it is more generic, and it is just
23 old concrete, then all the hiltis are in old concrete
24 and so now you are going to have a common mode failure
25 of the hiltis in a seismic event, and that is a much

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1 more serious concern.

2 MEMBER SIEBER: Well, the way that they
3 are tested, too, they are tested basically in tensile.
4 But when you load them, in a seismic event, they are
5 loaded laterally, and so there is a bending moment,
6 and that opens the cracks and does different things.

7 MR. KUO: And that is why that you have a
8 factor of safety of 8 of 4 or 4 to 8. In Southern
9 California, they require the factor safety as eight,
10 and during the 846 evaluation, they require a safety
11 valuation of 6 to 4.

12 MEMBER SIEBER: How can they establish
13 that there is enough margin and I will go away.

14 MR. KUO: But what I am really trying to
15 say is that I think that this is really a generic
16 issue.

17 MEMBER SIEBER: I do, too.

18 MR. KUO: And it shouldn't be treated in
19 the renewal space.

20 MEMBER SIEBER: Is it renewal that causes
21 or contributes to the aging?

22 MR. KUO: Correct. Right.

23 MEMBER SIEBER: And at least in that sense
24 it is a renewal issue. I wouldn't have thought of it
25 had I not been thinking about license renewal.

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1 MR. KUO: If the cracks come from the
2 aging of the concrete, yes. That might be proper to
3 deal with it in a renewal space. In this case, what
4 I am trying to envision is that we have this aging
5 management program here for concrete, and as soon as
6 there are cracks, hopefully they catch it and they
7 repair it.

8 And that the loss of strength is often not
9 from the crack, and that eliminates one aspect of
10 uncertainty. There are so many uncertainties involved
11 in this issue really, and that the aging of the
12 concrete like you said would be the crack.

13 MEMBER SIEBER: Well, the crack is one
14 issue, and a change in chemical composition over time
15 with the concrete is another issue, which causes it to
16 lose strength, especially tensile strength.

17 MR. KUO: I will take that back and at the
18 proper time we will come back to the committee.

19 MEMBER SIEBER: I would appreciate that,
20 sir. Thank you.

21 MR. KUO: You're welcome.

22 CHAIRMAN LEITCH: Okay. Are there any
23 other comments?

24 MR. KUO: Yes. Dr. Wallis asked a
25 question earlier about torus administration. Has he

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1 left? At that time, we did not have the reviewer in
2 the audience, and he is here now. If the committee
3 wants to hear it, he can talk about it for just a
4 couple of minutes.

5 CHAIRMAN LEITCH: We didn't quite hear
6 you. Refresh us what the issue is here.

7 MR. KUO: Dr. Wallis earlier asked about
8 the torus penetration as a CUF equal to .992.

9 MEMBER SHACK: At the end of 40 years.

10 MR. KUO: For 40 years.

11 MEMBER WALLIS: That was following up on
12 Graham's question really, and he was asking the same
13 question, and he was extrapolating the 1.5.

14 MR. KUO: So if the committee would like
15 to hear it, then we have Dr. Mark Hartzman, who is
16 here.

17 MR. KUO: Okay. Thank you.

18 CHAIRMAN LEITCH: Please.

19 DR. HARTZMAN: I am Mark Hartzman with the
20 Mechanical Engineering Branch. The answer is that
21 this location, the location where the CUF is .992 will
22 be addressed under the fatigue management program.

23 Any location where the CUF exceeds .4 is
24 included in this program. And the way -- there are
25 various options in the program, and one of which is to

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1 reevaluate the fatigue analysis, such that -- to
2 ensure that the CUF remains less than one for the 60
3 year period.

4 The fatigue management program tracks
5 cycles, and so therefore this is a means of
6 eliminating many of the conservatisms that went into
7 the original fatigue analysis.

8 On that basis, it has been -- or I
9 accepted that. So my point is that the CUF of .992 is
10 based on various conservatisms and various assumed
11 cycling histories that will be tracked in practice,
12 and with this they expect to show -- and also with the
13 methodology that they have in the fatigue management
14 program, that a CUF will indeed remain less than one
15 for 60 years.

16 CHAIRMAN LEITCH: We were trying to
17 understand the significant of one. Is there --

18 DR. HARTZMAN: One? Okay.

19 CHAIRMAN LEITCH: In other words, a CUF of
20 one means what?

21 DR. HARTZMAN: A CUF of one normally means
22 this is where a crack will initiate and start
23 propagating. The low one, there will be no crack. It
24 is not an exact number. In other words, we cannot
25 match exactly that at one that a crack will start.

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1 But normally we accept that.

2 MEMBER BONACA: Assuming that you go
3 through reanalysis, and you sharpen your pencil and
4 you stay below that, and then at the end of exhausting
5 all these possibilities, you get to a hard number of
6 one. What would you expect at that point?

7 DR. HARTZMAN: I would expect them to
8 repair or replace.

9 MEMBER BONACA: Exactly. I'm glad that
10 you clarified that.

11 MEMBER SIEBER: You keep sharpening until
12 you actually get a crack?

13 DR. HARTZMAN: I suspect that the pencil
14 is going to be very short.

15 CHAIRMAN LEITCH: Okay. Thank you.
16 Anything else on that topic? PT, anything else at
17 all?

18 MR. KUO: Yes, if I can address Dr.
19 Bonaca's concern about the documentation, and as we
20 said earlier, and which Butch Burton also spent quite
21 a few minutes on that, is that we are working with the
22 industry to come up with this new format.

23 And we just had a workshop last week, and
24 we are going to have another meeting with the industry
25 next week. So I am optimistic that we can come up

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1 with a format that is acceptable to most of the
2 applicants, starting from Class '03, and that the
3 industry has indicated that they would be able to come
4 up with some proposal by December of this year.

5 So if that happens, and then I think that
6 would probably address Dr. Bonaca's concerns.

7 MEMBER BONACA: Yes, in part. In part, my
8 concern is also due to the fact that we received the
9 presentation like today before open items are closed
10 and before the implementation is completed, and before
11 all the final number of one time inspections are
12 agreed on.

13 And the earlier that we get this review
14 with respect to the final SER, and the more we get
15 more incomplete information, and that is also why it
16 was my comment the other time that it would be
17 desirable to have a subcommittee meeting when you
18 reach a number, let's say, of 10 open items left and
19 no more than that.

20 And which is made as part of the
21 commentary as a criterion, because the further we are
22 out from closure, we are going to have more incomplete
23 documentation coming to us with respect to what would
24 be the end of it.

25 MR. KUO: I understand. I will work with

1 Tim and Ramim to see if there is any way that we could
2 facilitate better communication between the staff and
3 the --

4 CHAIRMAN LEITCH: Okay. Thank you. So I
5 am hearing then no sentiment for an interim letter.
6 I will make a brief verbal presentation at next week's
7 full committee meeting addressing these issues, and
8 perhaps one or two others.

9 And at that meeting, we will have the
10 support of a couple of staff people, but not
11 necessarily have any kind of a presentation other than
12 to support or amplify perhaps what I have to say on
13 any impromptu basis.

14 MR. KUO: We will be here.

15 CHAIRMAN LEITCH: So if there is nothing
16 else for the good of the cause, the subcommittee is
17 adjourned.

18 MR. KUO: Thank you very much.

19 (Whereupon, at 5:01 p.m., the subcommittee
20 meeting was concluded.)
21
22
23
24
25

CERTIFICATE

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

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

Docket Number: n/a/

Location: Rockville, MD

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

1s/ Rebecca Davis
Rebecca Davis
Official Reporter
Neal R. Gross & Co., Inc.

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SUBCOMMITTEE CHAIRMAN OPENING STATEMENT
LICENSE RENEWAL SUBCOMMITTEE MEETING
PEACH BOTTOM UNITS 2 & 3
OCTOBER 30, 2002

Good morning. This is the meeting of the ACRS Subcommittee on Plant License Renewal. I am Graham Leitch, Chairman of the Subcommittee.

The ACRS Members in attendance are Mario Bonaca, Dana Powers, Steve Rosen, William Shack, John Sieber, and Graham Wallis.

The purpose of this meeting is to review the staff's Safety Evaluation Report, with open items, related to the application for renewal of the operating licenses for Peach Bottom Atomic Power Station Units 1 and 2.

The Subcommittee will gather information, analyze relevant issues and facts, and formulate the proposed positions and actions, as appropriate, for deliberation by the full Committee.

Ramin Assa is the Cognizant ACRS staff engineer for this meeting. The rules for participation in today's meeting have been announced as part of the notice of this meeting previously noticed in the Federal Register on October 22rd, 2002. A transcript of this meeting is being kept and will be made available as stated in the Federal Register Notice.

It is requested that speakers first identify themselves, use one of the microphones, and speak with sufficient clarity and volume so that they can be readily heard.

I would like to point out that copies of this presentation are in the back of the room. In addition, copies of the Peach Bottom license renewal application are also available for reference in the back of the room.

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

We will now proceed with the meeting. I call upon Mr. P. T. Kuo, Program Director for the NRC Division of License Renewal and Environmental Impacts, for opening remarks.

Peach Bottom License Renewal SER With Open Items

NRR Staff Presentation to the ACRS
October 30, 2002
David L. Solorio
Office of Nuclear Reactor Regulation

1

Agenda

- Opening Remarks.....G. Leitch
- Staff Introduction.....P. Kuo
- Overview.....D. Solorio
- Applicant Presentation.....~~W. Bohike~~ *W. Bohike* *Sickness*
.....F. Polaski
- Scoping Screening.....R. Pettis
.....G. Hatchett
- Aging Management Programs.....S. Bailey
.....M. Khanna
- Reactor Coolant System.....B. Elliot
- Engineered Safety Features.....J. Medoff

2

Agenda (continued)

- Auxiliary Systems.....B. Fu
- Steam & Power Conversion Systems...G. Gerogiev
- Containment, Structures and Component
Supports.....C. Munson
- ElectricalD. Solorio
.....D. Nguyen
- TLAAs.....D. Solorio
B. Elliot
J. Fair

3

Background

- Exelon submitted LRA on 7/2/01
- Peach Bottom Unit 2 (BWR/4, Mark1, 3458MWt) license expires August 8, 2013
- Unit 3 (BWR/4, Mark 1, 3458MWt) license expires July 2, 2014
- RAIs (231) issued through 3/12/02
- RAI responses received 5/22/02
- SER with open/confirmatory items issued 9/13/02
- Response due - 11/29/02

4

License Renewal Rule

Principles of License Renewal

- **The current licensing basis is adequate**
the regulatory process is adequate to ensure that the licensing basis for all currently operating plants provides and maintains an acceptable level of safety with exception of the detrimental effects of aging ..
- **The current licensing basis carries forward**
the plant-specific licensing basis must be maintained during the renewal term in the same manner and to the same extent as during the original licensing term

5

Staff's Review

Process

- Methodology evaluation and audit
 - Provide reasonable assurance that the process identifies structures and components subject to aging management review (AMR) pursuant to 54.21(a)(1)
- Scoping
 - Evaluate systems, structures, and components within the scope of license renewal
- Screening
 - Evaluate which passive, long-lived structures are subject to aging management

6

Staff's Review

Process (continued)

■ Aging management

- ▶ Evaluate identification of aging effects and management of aging effect to ensure relevant equipment intended functions in accordance with the CLB are maintained during period of extended operation

■ TLAAs

- ▶ Evaluate applicant's methods to determine how analyses with time-limited assumptions will be extended/managed for the period of extend operation

■ Inspections

- ▶ Scoping and aging management (MC2516, IP71002)

7

Inspections

■ Scoping and Screening

- ▶ 4/23/02 (2 weeks)
- ▶ Objective. to confirm that the applicant included systems, structures and components required by the license renewal rule
- ▶ Notable findings - scoping of residual heat removal and containment spray subsystems, and scoping of fuse clips

8

Inspections (continued)

■ Aging Management

- ▶ 8/9/02 (2 weeks)
- ▶ Objective: to confirm that existing AMPs are effective and to examine the applicant's plans for enhancing certain existing programs and establishing new ones
- ▶ Notable findings - cables susceptible to cyclic wetting

■ Closeout (12/9/02)

- ▶ Close followup items, annual update, SER OI/CI support

9

~~and~~ bolts -
in vaults

Chapter 3: Aging Management Review

Aging Management Programs - Section 3.0 (continued)

- Enhanced programs (EMCB)
 - ▶ Lubricating and fuel oil quality testing activities
 - ▶ Boraflex management activities
 - ▶ Outdoor, buried, and submerged component inspection activities
 - ▶ GL 89-13 activities (Service Water System Problems Affecting Safety-Related Equipment)
 - ▶ Heat exchanger inspection activities
- New program (EMCB)
 - ▶ One-time piping inspection activities (modification to original LRA, one-time inspection)

25

Chapter 3: Aging Management Review

Aging Management Programs - Section 3.0 (continued)

- Open items
 - ▶ Verification of the effectiveness of the following chemistry programs through inspection activity:
 - Reactor coolant system chemistry activities
 - Condensate storage tank chemistry activities
 - Torus water chemistry activities
- Confirmatory items
 - ▶ Closed cooling water chemistry activities
 - Acceptance criterion parameters for the chlorides and fluorides (<10 ppm)

26

Chapter 3: Aging Management Review

Aging Management Programs - Section 3.0 (continued)

- Confirmatory items (continued)
 - ▶ Outdoor, buried, and submerged component inspection activities - frequency of inspections
 - Emergency cooling water pumps every 10 years
 - Refueling water storage tanks every 4 years
 - ▶ Heat exchanger inspection activities
 - Acceptance criteria
 - Percentage of heat exchangers to be visually inspected (100%)

27

Chapter 3: Aging Management Review

Technical Basis for Revisions to Generic Letter 88-01 Inspection Schedules (BWRVIP-75)

- Scope and aging effect: Cracking of BWR piping (4 inches or larger nominal diameter and temperature above 200 °F) resulting from intergranular stress corrosion cracking (IGSCC)
- Materials: Austenitic stainless steel, Alloy 182 weld metal, and Alloy 600 base metal
- Inspection frequency and sample size is dependent upon materials susceptibility to IGSCC, mitigation measures, inspection history, and performance of welds
- Topical report open items - none

34

Chapter 3: Aging Management Review

BWR Shroud Support and Inspection Flaw Evaluation Guidelines (BWRVIP-38)

- Scope and aging effect. Cracking of shroud supports (structure below core shroud to RPV inside surface) resulting from IGSCC
- Materials: Alloy 600 base metal, Alloy 182/82 weld metal, and type 304 stainless steel for BWR-2s
- Provides a basis for baseline inspections, re-inspections, and structural evaluation
- Topical report open items - schedule for implementing inspection program for lower plenum

35

Chapter 3: Aging Management Review

BWR Core Shroud Inspection and Flaw Evaluation Guidelines (BWRVIP-76)

- Comprehensive report, combining guidelines in BWRVIP-01 (inspection of circumferential welds), BWRVIP-07 (re-inspection of circumferential welds) and BWRVIP-63 (inspection of vertical welds)
- Review of BWRVIP-01 and BWRVIP-07 is complete
- Expect to complete review of BWRVIP-63 and BWRVIP-76 by December 31, 2002

36

Peach Bottom Atomic Power Station

Advisory Committee on Reactor
Safeguards Plant License Renewal
Subcommittee Meeting

October 30, 2002

1

Participants

- William Bohlke – Senior VP, Nuclear Services
- Fred Polaski – Manager, License Renewal
- Erach Patel – Technical Lead, Peach Bottom LRA

2

Purpose of Meeting

- Provide an overview of the license renewal application for Peach Bottom Atomic Power Station
- Report the status of the Draft Safety Evaluation Report Open Items and Confirmatory Actions

3

Background

- Application preparation began in March 1999
- Hatch Application submitted in February 2000
- Peach Bottom Application submitted July 2, 2001
- July 2001 final versions of guidance documents (NUREGs-1800 and 1801) received after Peach Bottom Application submitted

4

LRA Format

- Section 1: Administrative Information
 - *Section 2: Scoping and Screening Results
 - *Section 3: Aging Management Review Results
 - *Section 4: Time-Limited Aging Analyses
 - Appendix A: UFSAR Supplement
 - *Appendix B: Aging Management Activities
 - Appendix E: Environmental Information
- * Sections to be discussed today.

5

Scoping and Screening

- 10CFR54.4(a) Scoping Criteria
 - Criterion (1) Safety-Related (SR) SSC
 - Criterion (2) Non-Safety-Related (NSR) SSC whose Failure could Prevent Accomplishment of Safety Function
 - Criterion (3) Regulated Events
 - fire protection
 - environmental qualification
 - pressurized thermal shock
 - anticipated transients without scram
 - station blackout

6

Scoping and Screening Data Sources

- Systems and Structures Identified
 - Plant Information Management System (PIMS)
 - Maintenance Rule Database
 - UFSAR (Structures)
- Systems and Structures Boundaries Defined
 - Piping & Instrumentation Drawings
 - Component Record List (CRL)
 - Physical Drawings (Structures)
 - Boundary Realignments
 - Boundary Drawings Created
- System and Structure Functions Identified
 - UFSAR
 - Design Baseline Documents

7

Scoping and Screening: Mechanical

- Scoped on system basis
- Boundaries determined by traditional component numbering
- Confirmed interfaces between systems
- Some boundary realignments required
- Screening used CRL data and NEI 95-10 for active/passive

8

Scoping and Screening: Structural

- Scoped structures as buildings or structural commodities
- Structures support system safety-related intended functions
- Structural commodities
 - Similar design, materials, environments
 - Commodities include component supports, hazard barriers and elastomers, miscellaneous steel, electrical and I & C enclosures and raceways, and insulation

9

Scoping and Screening: Electrical

- Scoped on system basis
- Passive electrical/I&C components screened on a plant-level basis as commodities
 - Spaces Approach
 - Commodities
 - Cables
 - Connectors, Splices, and Terminal Blocks (Fuse Clips)
 - Switchyard bus, High-voltage insulators, Phase bus, and Transmission conductors

10

Two Mechanical Scoping Areas of Special Emphasis

- Boundary Realignment
- Scoping for 10CFR54.4(a)(2): Non-safety-related equipment that could impact safety-related equipment

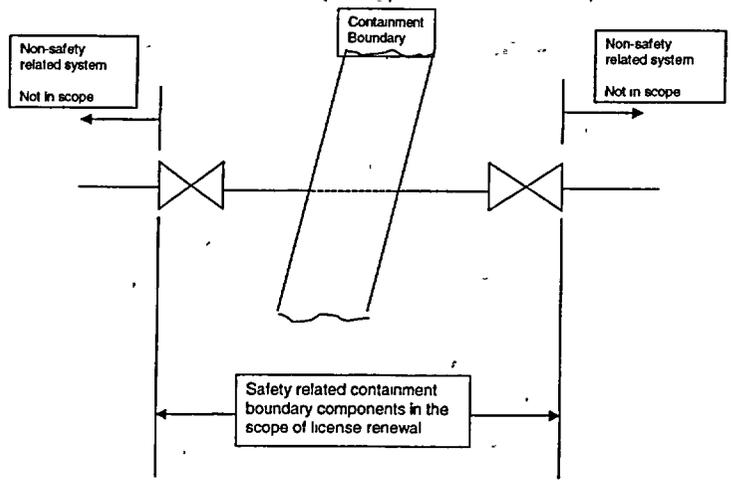
11

Boundary Realignment

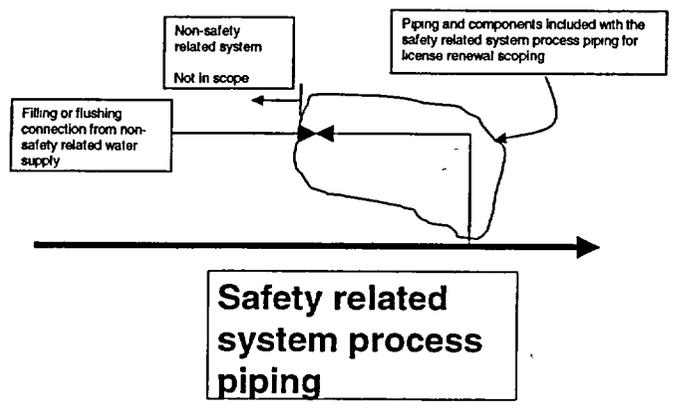
- Case 1 Components associated with Containment Penetration
- Case 2 Interfaces between In-scope and Out-of-scope mechanical systems
- Case 3 Interfaces between In-scope electrical and Out-of scope mechanical systems
- Case 4 Components shared between In-scope and Out-of-scope systems
- Case 5 Components required to support specific intended functions

12

Case 1 – Containment Penetration



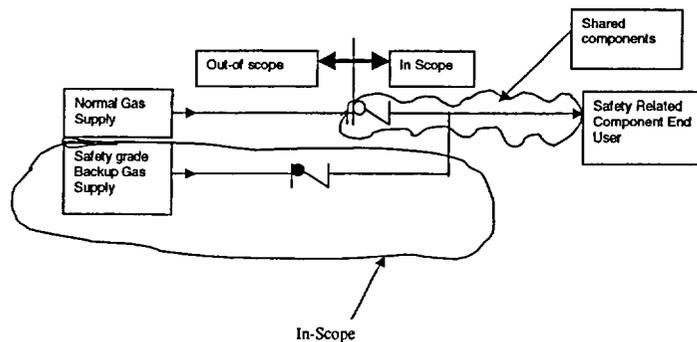
Case 2 – Interfaces Between In-Scope and Out-of-Scope Mechanical Systems



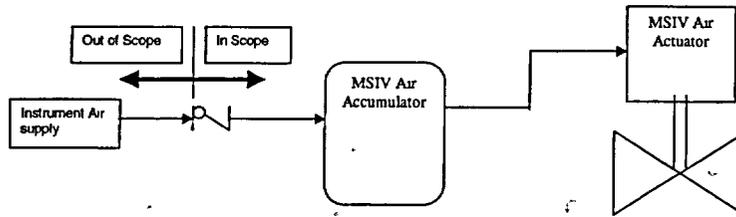
Case 3 – Interfaces Between In-scope Electrical and Out-of-scope Mechanical Systems

- The CRL often identifies electrical isolation devices such as fuses and circuit breakers as belonging to the mechanical system that they feed.
- This situation is problematic for license renewal when the mechanical system is out-of-scope and the electrical system is in-scope.
- The safety related function of these electrical isolation devices is to protect the power source.
- These electrical isolation devices were realigned to the in-scope electrical system.

Case 4 – Components Shared Between In-scope and Out-of-scope Systems



Case 5 – Components Required to Support Specific Intended Functions



10CFR54.4(a)(2)

- NRC Guidance on Scoping of Seismic II/I Piping Systems Issued on December 3, 2001
- NRC Issued RAI to PBAPS on Seismic II/I Piping Systems and Other NSR SSCs on January 23, 2002
- NRC Issued RAI to PBAPS on Seismic II/I Piping for Auxiliary Systems on February 6, 2002
- NRC Guidance on Identification and Treatment of Structures, Systems, and Components Which Meet 10CFR54.4(a)(2) Issued on March 15, 2002

Exelon RAI Response Regarding 10CFR54.4(a)(2) NSR to SR Interactions

- RAI response submitted on May 21, 2002
- Systems containing a fluid other than air or gas, irrespective of pressure and temperature, within spatial proximity of safety-related equipment was brought within scope.

19

NSR to SR Scoping Results

- Systems with expanded boundaries
 - Reactor Pressure Vessel Instrumentation
 - Reactor Recirculation System
 - Core Spray System
 - Residual Heat Removal System
 - Fuel Pool Cooling and Cleanup System
 - Control Rod Drive System
 - Emergency Service Water System
 - Radiation Monitoring System

20

NSR to SR Scoping Results

- **Systems added**
 - Service Water System
 - Reactor Building Closed Cooling Water System
 - Reactor Water Cleanup System
 - Chilled Water System
 - Water Treatment System
 - Plant Equipment and Floor Drain System
 - Process Sampling System
 - Auxiliary Steam System
 - Condensate Transfer
 - Refueling Water Storage and Transfer
 - Torus Water Cleanup System
 - Post Accident Sampling System

21

Section 3: Aging Management Review Results

- **Aging Effects Determination**
 - Component Materials
 - Component Environments
 - Operating Experience
 - Industry “tools” (documented by EPRI)

22

3.2.2 Core Spray System

Table 3 2-2 Aging Management Review Results for Component Groups in the Core Spray System

Component Group	Component Intended Function	Environment	Materials of Construction	Aging Effect	Aging Management Activity
Casting and Forging • Valve Bodies • Pump Casings	• Pressure Boundary	Sheltered	Stainless Steel, Carbon Steel	None	• Not Applicable
Piping • Pipe • Tubing	• Pressure Boundary	Sheltered	Stainless Steel, Carbon Steel	None	• Not Applicable
Piping • Pipe • Tubing	• Pressure Boundary	Torus Grade Water	Stainless Steel	Cracking	• Torus Water Chemistry (B 1 5)*
Piping Specialties • Restricting Orifice	• Pressure Boundary • Throttle	Reactor Coolant	Stainless Steel	Cracking	• RCS Chemistry (B 1 2) ** • ISI Program (B 1 8) ***

* SER Section 3 0 3 5
** SER Section 3 0 3 2
*** SER Section 3 0 3 6

Appendix B: Aging Management Activities

- Existing – 29 activities
- New – 5 activities
- TLAA – 2 activities
- One-Time Inspection Activities
 - Torus piping
 - SLCS
 - Aux Steam
 - Radiation Monitoring
 - Plant Equipment and Floor Drain
 - RPV Instrumentation
 - Reactor Recirculation
 - Service Water
 - Fuel Pool Cooling

Aging Management Activity Implementation

- Activities that were included in the LRA were incorporated through procedure/program changes that identify commitments.
- Additional activities identified in RAI and SER open item responses are planned to be incorporated through procedure/program changes in 2003.

25

TLAAs

- RPV Embrittlement
- Metal Fatigue
- Environmental Qualification
- Containment Fatigue
- Plant Specific
 - Reactor Vessel Corrosion Allowance
 - GL 81-11 BWR Feedwater Nozzle Cracking
 - ISI-Reportable Indications for Unit 3 Main Steam Elbow
 - High Energy Line Break
 - Crane Load Cycle Limit

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Future Actions

- Formally Respond to 15 Open Items by November 29, 2002
- Formally Respond to 18 Confirmatory Items, including updated UFSAR Supplement by November 29, 2002
- LRA update to reflect Current Licensing Basis changes that materially affect LRA content by December 2002
- Region I Final Inspection to close out open items week of December 9, 2002