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UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

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ADVISORY COMMITTEE ON REACTOR SAFEGUARDS (ACRS)

PLANT LICENSE RENEWAL SUBCOMMITTEE

+ + + + +

ARKANSAS NUCLEAR ONE, UNIT 1

LICENSE RENEWAL APPLICATION

+ + + + +

THURSDAY,

FEBRUARY 22, 2001

+ + + + +

ROCKVILLE, MARYLAND

+ + + + +

The Subcommittee met at the Nuclear Regulatory Commission, Two White Flint North, Room T2B3, 11545 Rockville Pike, at 8:30 a.m., Mario V. Bonaca, Subcommittee Chairman, presiding.

COMMITTEE MEMBERS:

MARIO V. BONACA, Chairman

GEORGE APOSTOLAKIS

THOMAS S. KRESS

WILLIAM J. SHACK

ROBERT E. UHRIG

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1 NRC STAFF: (CONT.)

2 J. RAJAN

3 OMID TABATABAI

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6

7 OTHERS PRESENT:

8 RAYMOND BAKER, Southern Nuclear

9 RICK BUCKLEY, Entergy

10 RICHARD HARRIS, Entergy

11 NATALIE MOSHER, Entergy

12 JEFF RICHARDSON, Entergy

13 MARK RINCKEL, Framatome

14 CHARLES WILLBANKS, Scientech

15 GARY YOUNG, Entergy

I-N-D-E-X

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

(8:30 a.m.)

DR. BONACA: The meeting will now come to order. This is a meeting of the ACRS Subcommittee on Plant License Renewal. I am Mario Bonaca, Chairman of the Subcommittee. ACRS members in attendance are George Apostolakis, Thomas Kress, William Shack, and Robert Uhrig.

The purpose of this meeting is to discuss the license renewal application for the Arkansas Nuclear One, Unit 1, and the associated NRC staff's draft Safety Evaluation Report. The Subcommittee will gather information, analyze relevant issues and facts, and formulate proposed positions and actions, as appropriate, for the liberation by the full Committee. Sam Duraiswamy is the Cognizant ACRS Staff Engineer for this meeting.

The rules for participation in today's meeting have been announced as part of the notice of this meeting, previously published in the Federal Register on January 29, 2001. A transcript of the meeting is being kept and will be made available as stated in the Federal Register Notice. It is requested that the speakers first identify themselves and speak with sufficient clarity and volume so that

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1 they can be readily heard.

2 We have received no written comments or
3 requests for time to make oral statements from members
4 of the public regarding today's meeting. We will now
5 proceed with the meeting and I call upon Mr. Chris
6 Grimes, of the NRR, to begin.

7 MR. GRIMES: Thank you, Dr. Bonaca. I am
8 Chris Grimes, Chief of the License Renewal and
9 Standardization Branch, and we're here today to
10 present the results of this staff's safety evaluation
11 with open items for the review of the license renewal
12 application for Arkansas Nuclear One, Unit 1.

13 As you may recall, this is a B&W unit, and
14 our review followed very closely the Oconee license
15 renewal application. And in order to make this most
16 useful for you, the staff's presentation has been
17 organized to highlight differences and uniqueness of
18 this review over other license renewal reviews that
19 we've presented to you, in order to focus on what was
20 special about Arkansas Nuclear One in terms of the
21 conduct of this staff's review.

22 I would like to introduce Robert Prato,
23 who is the license renewal project manager for the
24 ANO-1 license renewal review. And he'll go over the
25 license renewal application and the main part of the

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1 presentation. And then we have other staff members
2 who will cover other topics in our agenda today.

3 As the Subcommittee, or the full
4 Committee, I can't recall now which, as you requested,
5 we've also arranged to present a brief overview of the
6 environmental review, in order to familiarize you with
7 the parallel activity that the staff had ongoing
8 related to the review of the environmental report and
9 the preparation of the supplement to the generic
10 environmental impact statement. And that's arranged
11 later in the agenda.

12 Unless there are any questions that you
13 have for me, I'll turn it over to Bob Prato, and we'll
14 get started with the presentation.

15 DR. BONACA: We can start.

16 MR. PRATO: Thank you. Good morning.
17 Again, my name is Bob Prato. I'm the -- should I go
18 ahead? I'm the Project Manager for Arkansas Nuclear
19 One License Renewal Application. On slide two is a
20 listing of the topics, and the presenters of those
21 topics.

22 Now, I'll begin with the overview. On
23 slide -- we'll start on slide three if we could,
24 please. Unit description: ANO-1 is a two-unit site
25 consisting of a Babcock and Wilcox pressurized water

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1 reactor and a combustion engineering pressurized water
2 reactor located in Pope County in central Arkansas on
3 Lake Dardanelle.

4 Lake Dardanelle is a man-made lake. It
5 was constructed around 1960, in the very early '60s.
6 On February 1, 2000, the applicant, Entergy
7 Incorporated, submitted a license renewal application
8 for ANO-1, Arkansas Nuclear One, Unit 1, the 2,568
9 megawatt thermal Babcock and Wilcox pressurized water
10 reactor.

11 Unit 1 construction began in 1968 and went
12 commercial in 1974. The current facility operating
13 license expires in May of 2014. This facility is
14 similar to ONS in the interpress design aspects.
15 Comparing ANO-1 site with the Oconee nuclear facility,
16 Oconee nuclear site is a three-unit site.

17 It has a stand by shut down facility,
18 which is not only a difference between Oconee and ANO,
19 but it's unique to the industry. And Oconee uses a
20 keowee hydroelectric dam to provide emergency power,
21 which again, is unique to that site.

22 The difference between ANO-1 and Oconee is
23 ANO-1 has an emergency cooling pond as an alternate
24 ultimate heat sink. With respect to the applications,
25 you need to understand that Oconee submitted its

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1 application prior -- or developed this application
2 prior to issuance of the standard review plan.

3 As a result, their outline was
4 considerably different than was anticipated in the
5 standard review plan. The outline for the Oconee SER
6 application was -- Chapter 1 was the introduction.
7 Chapter 2 was scoping. Chapter 3 was aging effects.
8 Chapter 4 was age of management programs. And Chapter
9 5 was time limited aging analysis.

10 The ANO-1 application was more consistent
11 with the SRP, where we had Chapter 1 was the
12 introduction. Chapter 2 was scoping, and Chapter 3
13 was the aging management review, which is combined
14 Chapter 3 and 4 putting in the Oconee application.
15 Chapter 4 was also a TLA.

16 As far as the safety evaluation reports,
17 the SER was out in time for the staff to develop the
18 SER for Oconee consistent with the SRP. And
19 therefore, both applications are very similar. There
20 is a couple of extra chapters in the Oconee
21 application.

22 I believe it's Chapter 2 is -- I'm sorry
23 -- Chapter 2 is aging effects from mechanical systems,
24 and I believe Chapter 3 is containment. They
25 separated out containment from the rest of the

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1 structures. The ANO application, a safety evaluation,
2 starts with an introduction, goes to scoping, goes to
3 aging management review, and goes to time limit aging
4 analysis.

5 There is a unique feature about the ANO
6 application, the Chapter 3, is what they call the
7 mechanical tools. This chapter is what they use to
8 develop the aging effects for mechanical components.
9 This -- understanding that this is a separate focus of
10 the applicants will help us later on in presentation.

11 What we did to try and provide you a
12 comparison of the two applications was we took the
13 open items from Oconee and ANO, and we identified the
14 differences in the application for those items. So
15 we're going to begin with scoping.

16 ANO-1 safety-related criteria is based on
17 the more current definition consistent with 10 CFR
18 54.4(a)(1) and (a)(2). That is that the safety-
19 related criteria is based on the safety-related
20 criteria and a non-safety-related criteria for scoping
21 for license renewal.

22 Oconee's safety-related criteria was
23 considerably different. Their definition was based on
24 very deficient products, and that caused some contrast
25 between what the staff was used to and the rule

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1 itself. And we spent quite a bit of time trying to
2 rectify the differences in ensuring that the scope was
3 complete for Oconee.

4 We did not have that difficulty for ANO.
5 We'll begin the presentation on the scoping
6 methodology here a little bit later. ANO-1 spent fuel
7 pool cooling was not included within the scope of
8 license renewal. This was consistent with the Oconee
9 conclusion that the -- Oconee's recirculating cooling
10 water system was not required because the spent fuel
11 pools are similar designs. Neither one were required
12 for being within the scope of license renewal.

13 ANO-1 chilled water was not excluded from

14 --

15 DR. BONACA: Excuse me.

16 MR. PRATO: Yes, sir.

17 DR. BONACA: But Oconee had an emergency
18 make-up to the pool that is a part of the aging
19 management programs. And I believe, also, Arkansas
20 has an emergency make-up capability, right, to serve
21 this water.

22 MR. PRATO: Yes, sir. And both of them
23 are required to keep their fuel full, and rather than
24 requiring emergency cooling, it's just required to
25 keep the materials in the fuel -- spent fuel pool covered.

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1 DR. BONACA: Yes. And you tell us also
2 about the liner, because there is a one --

3 MR. PRATO: We will cover that a little
4 bit later as well when we get down into the specifics.

5 DR. BONACA: Yes. Was the Ocone
6 application -- did it include the liner as part of the
7 components under -- in the scoping?

8 MR. PRATO: Yes, sir.

9 DR. BONACA: Okay.

10 MR. PRATO: Yes, sir.

11 DR. BONACA: Do you also want to discuss
12 the boron flux issue?

13 MR. PRATO: Yes, we will. We will. We
14 will get to that as well.

15 ANO-1 passive long-lived skidman equipment
16 were not excluded from an aging management review and
17 the license renewal application. ANO-1 structural
18 sealant, water stops and expansion joints were not
19 excluded from an aging management review as well in
20 the license renewal application.

21 DR. BONACA: The chilled water system.
22 You didn't -- I interrupted you at that point.

23 MR. PRATO: Yes, sir.

24 DR. BONACA: Did you have any comment on
25 that one? You have a bullet here.

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1 MR. PRATO: I thought I added that. It
2 was included within the scope of the license renewal
3 in the application. You'll find out as we go through
4 this presentation that ANO took considerable advantage
5 of the lessons learned from Ocone.

6 And a lot of what issues were raised
7 during Ocone, the great majority of them were
8 resolved right in the application. And that's really
9 the theme that we're trying to bring out here, is a
10 lot of what we identified early on for Ocone was
11 resolved.

12 DR. BONACA: Among the comparisons here,
13 I would like to talk about also the reactor vessel
14 level measurement system.

15 MR. PRATO: Okay. I'm not sure we were
16 prepared to go into detail on that, but if you'd like
17 --

18 DR. BONACA: Well, I would like to hear
19 about that. I understand it's been excluded from the
20 scope --

21 MR. PRATO: Yes.

22 DR. BONACA: -- of the application. And
23 I can't remember if we excluded it for Ocone too. It
24 probably was excluded.

25 MR. PRATO: It's just one of the measuring

1 devices. I don't believe that all of them were
2 excluded. They have --

3 DR. BONACA: When you go through the
4 scoping, it will be interesting to understand the
5 logic for excluding the reactor vessel level
6 measurement system.

7 MR. PRATO: Okay. And we'll try to
8 prepare for that. I'll go back. I believe that
9 presentation is probably scheduled for after lunch.

10 DR. BONACA: Okay.

11 MR. PRATO: The applicant is going to be
12 here as well, and you may be able to get the details
13 if you need, as well, from them.

14 DR. BONACA: Good.

15 MR. PRATO: Structural sealants, water
16 stops and expansion joints were included. Electric
17 cables were not excluded from this scope. They were
18 included and required an aging management review for
19 Arkansas Nuclear One.

20 Initially, in the application there were
21 some contradicting statements with respect to Lake
22 Dardanelle and the Turbine Building, and as to whether
23 or not they were included within the scope. Those
24 were straightened out in the RAI process, and it was
25 straightened out prior to issuing the SER.

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1 ANO-1 ventilation sealants were also
2 included within the scope, and an aging management
3 review was performed on those. ANO fire detector
4 cables were also included. ANO aging effects
5 discussed and accepted by the staff were consistent --
6 were consistently applied throughout the application.

7 This is where that Appendix C came into
8 play. Because they had tools and they applied those
9 tools consistently across all their systems, they
10 didn't have the problems that arose in the Oconee
11 application with applying aging effects consistently
12 across the different systems.

13 ANO-1 buried pipe were included within a
14 scope, and an aging management review was performed in
15 the license renewal application. And ANO-1 committed
16 to 10 CFR Part 50, Appendix B, for corrective actions,
17 confirmation, processes, and document control
18 activities were both safety-related and non-safety-
19 related.

20 Oconee had only committed it for safety-
21 related, and they applied different techniques to
22 resolve those for non-safety-related. ONS just
23 committed to Appendix B for all components within the
24 scope of license renewal.

25 MR. GRIMES: Excuse me, Bob, are you on

1 slide six?

2 MR. PRATO: Yes, I am.

3 MR. GRIMES: Is slide six up? Thank you.

4 MR. PRATO: The last two items on that
5 page are the two items that are open items for ANO-1
6 with respect to scoping. The staff identified in the
7 FSAR that one of the full control offices was required
8 to control the injection of sodium hydroxide for pH
9 control.

10 The applicant included that orifice within
11 the scope of license renewal, but solely for pressure
12 boundary. And the staff requested that they justify
13 excluding it for full control. The other item, which
14 is the item that right now is the center of our focus
15 for proceeding with the -- final safety evaluation --
16 is the fire protection system.

17 ANO-1 was built prior to 1968. They were
18 not subject to all of Appendix R, just the three
19 subsections they were back fitted to. They, at that
20 time, they were not submitting specific components for
21 fire protection. They were doing it in general terms.
22 The staff were reviewing them in general terms.

23 There was some confusion as to whether or
24 not they were ever within the applicant's CLB. In the
25 mid-'80s, they did a design basis reconstitution to

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1 convert their safety-related definition from Fischen
2 product barriers to event medication. And when they
3 went through that process, they identified all the
4 components on site.

5 And then they made a determination whether
6 it was safety related, whether it was required for
7 fire protection, ATWS, et cetera. When they were done
8 with that evaluation, they had what is known as the
9 ref list, which is the fire protection list.

10 And there were a number of components that
11 were not included on that list that the staff feels
12 should be included. And we're in the process of
13 evaluating whether or not those components need to be
14 added to their current licensing basis. If it is
15 decided that it needs to be added, they are going to
16 be required to submit an aging management review on
17 those components.

18 The components in question is the fire
19 protection jockey pump. The carbon dioxide system,
20 fire hydrants, the water supply to the low level rad
21 waste building fire protection system, and the piping
22 to the manual hose stations -- are they components
23 that are within question.

24 There will be a staff meeting on that.
25 Right now, we're trying to figure out a final date for

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1 that meeting. It's going to be a public meeting.
2 It's currently scheduled for the 7th. There are some
3 scheduling conflicts, and we're trying to work those
4 out as well.

5 MR. SHACK: Does this report sort of
6 follow the NEI suggested format? That is, is this
7 close to a template for what we expect future license
8 renewal applications to look like?

9 MR. PRATO: Their application did
10 basically follow the NEI template. They did something
11 unique. They incorporated a lot of tables. And the
12 staff had mixed feelings about that. Having the
13 tables were really helpful. It had a lot of compact
14 information that sat in front of you and it helped you
15 do your evaluation a lot quicker.

16 However, it being in table form, did raise
17 some questions on the details. And we had
18 approximately 250 REIs as a result of the application
19 review, which is less than our predecessors. However,
20 if you take a look at them, about 90, 95 percent were
21 questions on details that the information really was
22 contained in the tables, but it wasn't clear.

23 The staff is not discouraging the use of
24 the tables. We're trying to get a balance between the
25 tables and the detailed information that we need

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1 writing the application.

2 DR. BONACA: I didn't see any, you know,
3 extensive reference to the GALL2 report. Was it just
4 because of timing, the GALL2 came after the
5 application was essentially submitted, or was it just
6 because the GALL would be mostly referenced by the
7 SER?

8 MR. PRATO: The GALL hadn't been issued
9 during the development stage. They followed a lot of
10 it, and the staff requested a lot of information. And
11 the applicant made a lot of adjustments to be more
12 consistent with GALL.

13 DR. BONACA: Okay. So they played the
14 role, although maybe less a role just because of the
15 timing.

16 MR. PRATO: I believe it played a role for
17 the applicant as well as the staff.

18 DR. BONACA: Okay.

19 DR. SHACK: Well, the B&W topical reports
20 also had a tremendous impact, just to cover huge
21 chunks of stuff --

22 MR. PRATO: And that's another difference
23 between Oconee and ANO. A couple of the topical
24 reports were not issued when ANO were developing their
25 application. And that generated a lot of open items.

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1 And a lot of those open items were just not applicable
2 to Arkansas because they had incorporated the
3 requirements in those topical reports.

4 DR. SHACK: One other general comment,
5 just as you're coming up on the aging management
6 review, I didn't see really do a -- I didn't see
7 nearly as many one-time inspections. Is that correct,
8 or am I just -- that there's not a call out as one-
9 time inspections as there were for Calvert Cliffs or
10 Oconee?

11 MR. PRATO: There were a couple one-time
12 inspections, but I think you're right, because I've
13 worked both on Calvert and Oconee's.

14 DR. SHACK: Plus, there were like 30 of
15 them or something.

16 MR. PRATO: Yes, yes, sir. And a lot of
17 those were as a result of open items, and it was a
18 resolution to a lot of the open items. I'm not sure
19 why there aren't as many as at ANO, but I believe the
20 reason is is because they were aware of the fact that
21 they were open items.

22 And instead of trying to address the
23 resolution of the open items, I believe the applicant
24 tried to address the issue itself. And as a result,
25 some of those one-time inspections just materialized.

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1 DR. BONACA: But you performed a
2 comparison with the previous applications to make sure
3 that of one of the reasons a one-time inspection is
4 because there is a different commitment that fulfills
5 the need anyway.

6 MR. PRATO: We did not do a specific
7 evaluation to verify that itself. I think we did --
8 and I think a large part of that is because we had
9 different reviewers. Again, another unique about
10 Arkansas is that a lot of the review is done by
11 laboratories.

12 We had staff personnel overseeing it,
13 making sure it was complete, making sure that it was
14 consistent, that we weren't recreating the will, if
15 you will, for Arkansas. But I think as -- because we
16 got different reviews involved, there wasn't that
17 focus.

18 Another thing is I don't think the staff
19 wholesale accepts one-time inspections. We, in
20 general, request them to justify the use of that if
21 that's what they want to use. It has to make sense,
22 and it's the applicant's responsibility to provide a
23 justification for that.

24 DR. BONACA: But as you go forth, I mean
25 I imagine that although you have different reviewers,

1 you will want to capture lessons learned from
2 individual -- this, by the way, is one of the reasons
3 why we have a presentation that we discuss with Mr.
4 Grimes, which includes some comparison.

5 Because we are trying ourselves, as a
6 committee, to gain from previous experience.

7 MR. PRATO: Don't misunderstand me.
8 There's a big effort and a lot of focus on lessons
9 learned between plants. And not only with the staff
10 itself, but with the industry.

11 The industry meets quite often internally
12 to themselves, and talk about what they've learned and
13 where the problems are, and why is it a problem here
14 and it wasn't in another place, and what is a good
15 solution for it? And a lot of that work is going into
16 GALL, I believe.

17 MR. GRIMES: As a matter of fact, I wanted
18 to point out that I think that you say fewer one-time
19 inspections here, primarily, because some of the
20 uncertainty associated with the treatment of potential
21 aging effects in Calvert Cliffs and Oconee has been
22 resolved in the work on GALL, that has either
23 determined where there is no need to verify the
24 existence of an aging effect, or the effectiveness of
25 a program.

1 And I think also my sense was, as we were
2 going through the review of the Arkansas safety
3 evaluation, I got the sense that Entergy put more
4 reliance on existing programs and periodic inspections
5 to determine the existence of aging effects, where
6 Calvert Cliffs and Oconee look more to the one-time
7 inspection to check for the existence of aging
8 effects.

9 DR. SHACK: I notice they even opted for
10 a periodic pressurizer cladding inspection, whereas
11 you accepted a one-time inspection and a topical
12 report, which struck me as a considerable improvement.

13 MR. PRATO: Yes, well -- and we thought
14 so, too.

15 DR. BONACA: Yes, at some point, Appendix
16 B on the application has at least seven -- I believe
17 seven new problems. Among those are a couple of one-
18 time inspections. And at some point, we will get an
19 overview of those programs?

20 MR. PRATO: Not as a separate
21 presentation. But if you'd like, I'll be glad to
22 propose one.

23 DR. BONACA: No, you don't have to, but as
24 long as we get it sometime today from the licensee or
25 from you.

1 MR. PRATO: Okay. We'll do what we can.

2 DR. BONACA: Well, I mean, some of them
3 I'm sure you're going to go through, because --

4 MR. PRATO: Absolutely.

5 DR. BONACA: So there might be a couple
6 extra, but I would like to review them a little bit to
7 understand.

8 MR. PRATO: There are a number of them
9 that are common aging management programs, which we're
10 going to cover that as a separate entity as well. So
11 you'll get most of them. We weren't prepared to do
12 those by themselves, and I'm not sure if the applicant
13 is prepared to do that.

14 But if there are any --

15 DR. BONACA: Well, we just have a few
16 questions. I'm sure you are cognizant enough to
17 provide some answers.

18 MR. PRATO: Yes, sir. As for aging
19 management, the plant differences ANO-1 did not
20 exclude the heat transfer as an applicable intended
21 function for heat exchangers. And they use
22 performance monitoring consistent with generic letter
23 8913 to manage the following itself -- 8913 is the
24 service water generic letter.

25 ANO-1 performed an aging management review

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1 of all the piping in the service -- all the piping
2 within the scope of this service water system
3 regardless of the materials. Oconee limited their
4 initial evaluation just to carbon steel piping.

5 ANO-1 did not perform an aging management
6 review of the tendon galleries in the license renewal
7 application, which is consistent with the previous two
8 applicants. They weren't required to do that.

9 Continuing with the aging management
10 review, this is specific to the reactant coolant
11 system aging effects. ANO-1 pressurizer spray head
12 was not included within the scope of license renewal,
13 because it's not required by the current licensing
14 basis. They don't use it for design basis events
15 accident analysis.

16 ANO-1 addressed void swelling in its
17 license renewal application as an applicable aging
18 effect for the reactor vessel. And manage the related
19 aging using the reactor vessel internal aging
20 management program consistent with the topical report
21 BAW-2248 and the Oconee lessons learned.

22 Next slide is on reactive coolant systems
23 aging management programs. ANO-1 heater bundle
24 penetration welds are designed differently than
25 Oconee's heater bundle penetration welds. ANO-1

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1 heater bundles are all stainless steel and consist of
2 a stainless steel heater sheet weld directly to a
3 stainless steel diaphragm plate.

4 Oconee Unit One contained alloy 600 heater
5 sheets. And the design was a heater sheet to sleeve,
6 plate weld to a heater sleeve, to a bundle diaphragm
7 plate weld. ANO-1, in this license renewal
8 application, committed to examine heater bundles upon
9 removal consistent with the lessons learned from
10 Oconee.

11 DR. BONACA: Now, in the application,
12 however, it states that if Oconee performs the
13 inspection and doesn't find anything, then they would
14 not perform an inspection in Arkansas. But in the
15 SER, I didn't see the exclusions. So is there some
16 agreement that you reached through some
17 communications?

18 MR. PRATO: Yes, I don't believe there's
19 an open item on that issue at all. The agreement was
20 that when they replace it, they're going to inspect
21 it. There's not going to be any specific inspection,
22 unless when Oconee does its inspection, they find a
23 problem.

24 Is that correct?

25 MR. YOUNG: Gary Young with Entergy.

1 We're going to follow the Oconee work and they're
2 going to follow our work. So what we're going to do
3 is compare notes. If we do our heater bundle first,
4 then the results from that will be factored into the
5 Oconee program.

6 And if they do their heater bundle first,
7 then we'll factor that result into our program.
8 Though, it's really more of a B&W program to look at,
9 you know, both units together. That's why it's stated
10 the way it is. And the staff, if they have any
11 problems with that --

12 DR. BONACA: Okay. Yes, because the
13 application is clear on that issue, but the SER did
14 not -- assuming the SER says that Arkansas would
15 perform in any event, an inspection of the heater
16 bundle, which in turn, it means that it may not, in
17 case Oconee does it first.

18 MR. PRATO: Right.

19 DR. BONACA: And I think it's fine.

20 MR. PRATO: If the Oconee comes out, you
21 know, with no problems whatsoever, and there's no
22 benefit from doing a subsequent inspection in
23 Arkansas, that's what that section was all about.

24 DR. BONACA: And that was part of the B&W
25 topical.

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1 MR. PRATO: Yes.

2 DR. BONACA: That kind of --

3 MR. PRATO: Dr. Bonaca, I have a note
4 here, and we will go through the SER again and in our
5 revision and in our final version, we'll make sure
6 that's made clear.

7 DR. BONACA: Okay.

8 MR. PRATO: ANO-1, in its license renewal
9 application, included cracking as an applicable aging
10 effect for reactor vessel internal non-bolted items.
11 And the identification of limiting components when
12 considering irradiation embrittlement in its reactor
13 vessel internal's aging management program. This is
14 consistent with topical report BAW-2248 and the Oconee
15 lessons learned.

16 DR. BONACA: Now, Arkansas-1 experienced
17 thermal shields and cobalt bolt cracking, right, as
18 experienced in the past.

19 MR. YOUNG: Yes, that's right.

20 MR. RINCKEL: This is Mark Rinckel from
21 Framatome, and that's correct.

22 DR. BONACA: And so as part of the
23 internal inspections, it would be also -- probably you
24 have a periodic inspection of those components.

25 MR. RINCKEL: They are in the reactor

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1 vessel internal as aging management program. Yes,
2 that's correct.

3 DR. BONACA: And that program involves a
4 one-time inspection, right?

5 MR. RINCKEL: It could be one or it could
6 be more.

7 DR. BONACA: But now, if I remember, that
8 inspection is also tied to an Oconee inspection.

9 MR. RINCKEL: That is correct, yes, and
10 the application.

11 DR. BONACA: Okay. Which means if Oconee
12 performs the inspection first, then you may not
13 perform the inspection for Arkansas?

14 MR. RINCKEL: It's possible. I think it's
15 in the application we are committing to doing some
16 type of inspection, but I -- you know, I think there
17 will be lessons learned from the Oconee inspections
18 because they'll be first.

19 DR. BONACA: Yes, the reason why I'm
20 asking that question is, since you've experienced
21 already the cracking of the bolts, in both the thermal
22 shields and the wiring, why would you consider the
23 experience from Oconee applicable to our -- or, let me
24 just put it the other way, which is why would you
25 consider Arkansas to be -- you know, I mean, you have

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1 experienced the problem.

2 Wouldn't you want to see -- don't you have
3 already the inspections to look at those --

4 MR. RINCKEL: We do, not necessarily
5 biometric inspections. But if you remember back in
6 the original issue, they thought it was stress erosion
7 cracking, and a lot of it with the fabrication, you
8 know, overtorquing and so forth.

9 And so they've replaced those. And now
10 what the issue is, is possibly a radiation assisted
11 stress erosion cracking, which is more of an aging
12 phenomena as opposed to a fabrication type issue, so
13 it's kind of something different now with regard to
14 aging, even though it's the same component.

15 DR. BONACA: Okay. But you are tracking
16 the issue?

17 MR. RINCKEL: Yes.

18 MR. PRATO: Next page, we're going to
19 continue with reactant coolant system. ANO-1 included
20 IASCC as an applicable aging effect for baffle bolts
21 in its license renewal application consistent with
22 topical report BAW-2248 and Oconee lessons learned.

23 ANO-1 evaluated reactor vessel internal
24 cast components. In this license renewal application,
25 for reduction of fracture toughness by thermal

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1 embrittlement and a radiation embrittlement consistent
2 with the EPRI technical report 106092.

3 This is also consistent with the topical
4 report 2248 and the Oconee's lessons learned. ANO-1
5 included vent valve bodies and retainer rings in its
6 reactor vessel internal's age and management program
7 and its application.

8 DR. SHACK: Just let me get back to the --
9 the cast stainless was a sort of a extended topic of
10 discussion for Calvert Cliffs and Oconee. And this
11 one -- it just -- I mean, it did go smoothly, right?
12 I mean, they incorporated acceptable plans from the
13 lessons learned, basically, from line one, or was this
14 another exchange before we iterated to a successful
15 solution?

16 MR. PRATO: I believe it went so smoothly
17 at ANO because they followed the topical report. Is
18 that correct --

19 MR. YOUNG: Yes, Bob. They -- and we also
20 followed the lessons learned from Oconee. We just
21 basically incorporated what the staff determined to be
22 acceptable. And you have to remember the CASS
23 includes the retical and pump casing, valve bodies,
24 and those we follow the same solution that Oconee did.

25 And then the rad vessel internal's CASS,

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1 you had not only thermal embrittlement, but
2 irradiation embrittlement. And we address those by
3 putting them in our rad vessel internalization
4 management program, which is consistent with Oconee.

5 MR. PRATO: And the last item, ANO-1
6 identified cracking and loss of material of letdown
7 cooler tubing, and loss of material for external
8 ferritic surfaces due to boric acid wastage as
9 applicable aging effects in the license renewal
10 application, which is consistent with the lessons
11 learned for Oconee.

12 That completes the RCS aging management
13 review. We'll go on with the rest of the system's
14 aging management review. ANO-1 did not consider
15 vibration loading as an applicable aging effect for
16 the HVAC system in its license renewal application
17 consistent with the staff's determination that caused
18 similar concerns on Oconee.

19 ANO-1 included an acceptable scope for the
20 aging management review of the reactant cooling pump
21 motor oil collection system inspection program. There
22 was some questions as to whether or not Oconee
23 included the entire -- enough of the system based on
24 lessons learned from Oconee. ANO included the
25 appropriate evaluation boundaries for the system.

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1 DR. BONACA: If I remember, for Oconee,
2 the only inspection was for corrosion due to water
3 intrusion in the --

4 MR. PRATO: Wet system.

5 DR. BONACA: -- in the drain, for the
6 drain in the tanks, collection tanks. And now, so the
7 Arkansas has included in the piping of the system and
8 any other component?

9 MR. YOUNG: Yes, we included the oil
10 collection pans and the piping that went down to the
11 drain tank, the whole system.

12 MR. PRATO: ANO-1 spent fuel concrete
13 thermal exposure is limited to less than 150 degrees
14 Fahrenheit, which is contrary to the Oconee. They
15 experienced temperature of up to 183 degrees, and
16 being less than 150 degrees is less than the threshold
17 for potential cracking and changes in properties of
18 the concrete.

19 And the applicant addressed this directly
20 in the application. ANO-1 considered results of
21 inspections and instances of reporting unusual event
22 in this demonstration of aging management programs in
23 the license renewal application. In general, part of
24 the demonstration was operating history.

25 The staff had a number of questions as to

1 whether or not they considered operating history, and
2 in a couple of cases, the applicant had to go back and
3 take a look at it. But in general, they did include
4 operating history, both industry and on-site history
5 for demonstration.

6 ANO-1 primary and secondary shield wall is
7 reinforced concrete without any tendons, and
8 therefore, monitoring of applicable forces is not
9 needed. And there was a question with Oconee's
10 monitoring of tendon forces in the secondary shield
11 wall.

12 ANO-1 consistently considered applicable
13 aging effects with cable trays and conduits located
14 inside and outside of containment.

15 DR. SHACK: Want to flip your slide?

16 MR. PRATO: Oh, I'm sorry. The last two
17 items there on this page common to both ANO and
18 Oconee, ANO meets -- and these are two of the -- two
19 of the six open items. ANO-1 needs to provide
20 additional summary description for a number of their
21 selected program descriptions in the FSAR supplement.

22 And a second item is ANO-1 needs to
23 identify an aging management program for buried
24 medium-voltage cables exposed to ground water that are
25 within the scope of license renewal and subject to an

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1 aging management review. This was an issue both for
2 Oconee and ANO, and the applicant is developing a
3 program similar to what ANO resolution -- I'm sorry,
4 similar to the resolution for Oconee.

5 DR. UHRIG: Are these primarily load
6 carrying cables, or are these there for emergencies?

7 MR. PRATO: It's load carrying.

8 DR. UHRIG: Load carrying.

9 MR. PRATO: Yes, sir.

10 DR. UHRIG: So they would have heating?

11 MR. PRATO: Right. That's part of the
12 problem, that along with moisture causes a number of
13 aging effects to occur. Slide 13. Time limit aging
14 analysis. ANO-1 did provide a discussion on the
15 cumulative effects of fatigue for the containment
16 liner plate and penetration in the application.

17 ANO-1 provided an adequate TLAA for the
18 reactive coolant system to address environmentally
19 assisted fatigue concerns for operation beyond 40
20 years in the application. ANO-1 committed to 10 CFR
21 Part 50, Appendix B, for all -- for corrective actions
22 for all components within the scope of license
23 renewal, including Section 11.4 evaluations.

24 ANO-1 addressed the reduction of fracture
25 toughness related to susceptibility of the reactor

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1 vessel internal -- internals under loss of coolant and
2 seismic loadings. And its reactive vessel internals
3 aging management program consistent with the topical
4 report BAW-2248 and Oconee lessons learned.

5 ANO-1 addressed the applicability of flow
6 of growth in accordance with the ASME boiler pressure
7 code Section 11 ISI requirements in the application
8 consistent with topical report BAW-2248 and Oconee
9 lessons learned.

10 The last two items are ANO open items.
11 These are the last two of the six open items that
12 exist right now in the safety evaluation. The first
13 one has come to both Oconee and ANO. ANO did not
14 demonstrate the adequacy of the existing pre-stress
15 forces in the containment tendons by providing the
16 trend lines for the containment post-tensioning system
17 for the period of extended operation.

18 There were some questions as to how they
19 described their program in the application. They used
20 the same aging management program that they used in
21 Chapter 3 for managing the aging of those tendons.
22 The staff wanted something more for the time limit
23 aging analysis, more trending, more than was required
24 by the code itself and the applicants in the process
25 of developing that.

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1 And the last item is the boraflex
2 monitoring program. The ANO monitoring program is
3 similar to Oconee's monitoring program. However,
4 sometime between the time they submitted their
5 application and during the staff review, they
6 collected additional data. They plotted that data,
7 and they found out that the boraflex is not going to
8 last much more than five years.

9 Therefore, they had to do something under
10 Part 50. Because they felt that it became a Part 50
11 issue, they turned around and told the staff instead
12 of sending additional description, as the staff
13 requested in the REI, they turned around and said,
14 "Look, we have this problem. We have to fix it prior
15 to entering into the period of extended operation.
16 Therefore, we don't consider it a TLAA anymore."

17 Initially, the staff accepted that. But
18 as we thought about it more and more, it was a
19 difficult concept for us to accept that we were going
20 to give them a license for 60 years without knowing
21 whether or not they have sufficient boraflex to
22 maintain the shut down margin.

23 We spoke with OGC. OGC said it's not --
24 if you look at the definition for TLAA, there's one
25 item that says as defined by the current licensing

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1 term. They said that does not necessarily need to be
2 interpreted as 40 years. In other words, if it was a
3 TLAA in the initial application for initial licensing,
4 we can still consider it a TLAA in the license renewal
5 process.

6 So the applicant is working out a
7 resolution. The resolution is targeted for late 2002.
8 What we're going to do is we're going to insist that
9 they maintain their boraflex monitoring program until
10 the resolution is not only developed, reviewed, and
11 approved by the staff, but implemented as well.

12 That completes the overview. Next item of
13 topic is scoping of systems.

14 DR. SHACK: I think it's -- when you say
15 they handled the environmentally assisted fatigue in
16 the application, that means basically, it came in in
17 an acceptable form, and you weren't negotiating back
18 and forth the way you were with Oconee and Calvert
19 Cliffs?

20 MR. PRATO: That is correct. After
21 resolving Oconee and Calvert Cliffs satisfactorily,
22 the information was out there. And they took
23 advantage of that, and they took the lessons learned,
24 and they submitted. That's not to say the staff
25 didn't have any RAIs on this subject.

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1 If I remember correctly, we had a number
2 of RAIs, but they responded satisfactorily.

3 MR. YOUNG: Bob, in that regard -- this is
4 Gary Young again with Entergy. We did have a number
5 of conversations with John Fair, and we had originally
6 proposed what we felt was a complete solution to the
7 environmentally assisted fatigue involving in-service
8 inspection

9 But we couldn't come to terms on the
10 interval for the inspection, the ten year interval.
11 So we wound up, through their RAI process, revising
12 our commitment to deal with whatever comes out of the
13 changes that may occur with the definition of flaw
14 growth tolerances for environmentally assisted
15 fatigue.

16 And also open the possibility that we
17 might go back and do analysis once the methodology is
18 established for doing analysis for environmentally
19 assisted fatigue. So there was an adjustment made,
20 but it was through the RAI process.

21 MR. PRATO: Are there any more questions
22 for me?

23 MR. GRIMES: Actually, before you go on to
24 the next topic, Dr. Bonaca, I would like to emphasize
25 that in describing these differences between Ocone

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1 and Arkansas, I don't want to leave the impression
2 that we were Oconee bashing in some fashion.

3 Bob referred frequently to deficiencies in
4 the Oconee application, and given that they were
5 flying blind as one of the first two license renewal
6 applicants. I still think it was remarkable that we
7 only had, I believe, it was 48 or 49 open items on
8 Oconee.

9 And the purpose of Bob's presentation was
10 to explain how Arkansas was issued with six open
11 items. So we got from 48 open items to six open
12 items. And I think that if you went through and
13 counted the number of times Bob referred to,
14 consistent with lessons learned from Oconee, the
15 Arkansas application did reflect a lot of the
16 experience from Oconee and also incorporated the
17 resolution of a number of the Oconee open items.

18 And that was the vast majority of the
19 reasons for the difference between the number of open
20 items. You also heard reference to a number of B&W
21 programs that were resolved and a staff evaluation was
22 issued at about the same time that the Oconee safety
23 evaluation was issued. And so we took advantage of
24 that.

25 And then there were a handful of

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1 circumstances where Bob explained that there were
2 plant unique features, plant unique environment.
3 There were only a few cases where unit differences
4 between the Oconee site and Arkansas site accounted
5 for the basis for the differences.

6 So those are the categories of differences
7 that we described. You also will observe that there
8 were -- there are a handful of these open items that
9 will probably always be open items. The content of
10 the FSAR supplement is always going to have to have a
11 finishing touch to it. And there are going to be open
12 items in the scoping area where there -- we're trying
13 to pin down the precise nature of the current
14 licensing basis.

15 So you can expect that future license
16 renewal safety evaluations are going to have open
17 items that look like that, but they're going to vary
18 from plant to plant based on the differences in the
19 current licensing basis.

20 DR. BONACA: Thank you. I must say at
21 least I didn't get the impression that there was any
22 bashing of Oconee. I mean, I recognize the fact that
23 Oconee was the second -- one of the first. Anyway,
24 the first two coming through the gate. And they had
25 to really start from scratch.

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1 I mean, so clearly, there were many more
2 open issues. I think what we're seeing here for
3 Arkansas is encouraging. However, the lessons learned
4 are being clearly implemented and used. And the
5 issues are closed before they are opened. That's
6 good. Okay, thank you.

7 MR. PRATO: Okay. Next presentation will
8 be on scoping. Greg Galletti will make that
9 presentation. The next presentation is supposed to be
10 Entergy. I apologize.

11 DR. BONACA: Yes, okay.

12 MR. PRATO: We're just getting a little
13 ahead of ourselves.

14 MR. YOUNG: My name is Gary Young, and I'm
15 with Entergy. I'm the Project Lead for the license
16 renewal project. And one thing I'd like to make you
17 aware of is about 22 years ago, I was part of the ACRS
18 staff. I worked as an ACRS fellow for one year, and
19 then as an ACRS Staff Engineer for one year.

20 And that was in 1979, 1980, and 1981 time
21 frame. So I'm glad to be back, and especially in the
22 context of presenting license renewal as the subject.
23 So that's a very nice subject to be talking about with
24 the ACRS.

25 To my right is Natalie Mosher, who is our

1 Lead Licensing Engineer for the license renewal
2 project. She's been doing all of the interfacing and
3 coordinating with the NRC staff as we've gone through
4 this process. I've also got several members of our
5 staff here.

6 Reza Arabli is from our structural group.
7 Jeff Richardson worked on our electrical portion of
8 our application. Mark Rinckel, who spoke earlier with
9 FDI, helped us a lot with the Class 1 and the
10 mechanical portion of the work.

11 Rick Buckley was our Environmental Lead
12 and did a lot of work in that area. And Richard
13 Harris, who worked on our SAMA portion of our
14 environmental application. So we brought all these
15 people here to help address any questions you might
16 have and help facilitate your review process.

17 DR. BONACA: I'll have a number of
18 questions about specific components in scope. I don't
19 want to interrupt your presentation. So you tell me
20 when is the best time for me to ask questions.

21 MR. YOUNG: At any time. At any time.
22 Yes, I'd rather you ask at the point that the question
23 comes up, and then we'll try to address it right then.

24 We'd like to than the ACRS for the
25 opportunity to come here, and to go through this part

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1 of the process. We're anxious to answer your
2 questions and to help you facilitate your review.
3 We'd also like to thank the NRC staff, because we --
4 this process, although it's been somewhat grueling to
5 go through all the questions and the RAIs, and the
6 site visits, and the meetings, we think that the end
7 product justifies all the work that we've had to put
8 into it.

9 And we know the staff has put an awful lot
10 of work into it, too, because getting down to just six
11 open items was -- I mean, we'd like to take all of the
12 credit for that, but we don't deserve all the credit.
13 The NRC staff did a lot of work in order to get the
14 list down to just the six open items.

15 Okay. Next slide. Now, Bob covered a lot
16 of this, so I'll skip through a good portion of this
17 and try to move on. Again, we're located in
18 Russellville, Arkansas. We are similar to Oconee, a
19 B&W 177 fuel assembly plant, a 2,568 megawatts
20 thermal. Our current license expires May of 2014, and
21 with license renewal, we will have the option to
22 operate until 2034.

23 And again, one issue that we always like
24 to make clear, is that by getting this renewed license
25 doesn't mean we will operate for 60 years because

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1 economic factors will dictate how long we operate even
2 if we go beyond 40 years.

3 But by getting this license, it gives us
4 that option that if economic factors are good, then we
5 can continue to operate. Now, you know, two is not
6 included in this application or this review. It's a
7 combustion engineering unit, and so, we're going to
8 have to submit a separate application for ANO-2. And
9 we plan to do that by September of 2003.

10 The ANO-1 effort, too, is going to set the
11 platform for all the subsequent Entergy applications.
12 And we have a number of other plants that we plan to
13 pursue license renewal on. So we'll use this as our
14 template, and the lessons that we learn from this.
15 And we have learned a lot of lessons going through
16 this process. We plan to apply to the other units,
17 and then hope to come in with even cleaner
18 applications in the future.

19 Next slide. And again, as mentioned
20 earlier, we did follow Oconee, and we tried to apply
21 as many lessons learned as we could. The timing of
22 our application was very good relative to the
23 resolution of a lot of the issues on Oconee, and the
24 completion of some of the topical reports.

25 Those were completed at a point where we

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1 could take advantage of them in our application. And
2 as mentioned earlier, there's a lot of credit to be
3 given to that for reducing the number of open items.

4 We did participate with the B&W owners
5 group in developing generic aging management reports,
6 which were the topical reports we talked about
7 earlier. But in addition, we developed, or
8 participated in the development, of mechanical and
9 structural guideline documents to help actually do the
10 aging management review.

11 And those things are sometimes referred to
12 as mechanical tools and structural tools. We took
13 full advantage of those, and that's part of what is
14 described in Appendix C of our application. Also, we
15 looked at the RAIs that had come out on Oconee, and
16 tried to incorporate as much of that as we could.

17 I certainly cant' say that we incorporated
18 all of the RAI resolutions from Oconee, but we did try
19 to incorporate the ones that we felt were the more
20 significant ones. And then also, we got feedback from
21 the NRC prior to submitting our application on what
22 kind of format they would like to see.

23 And this was what became known as the
24 standard format for license renewal application. It
25 was published a few months before we were to turn in

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1 our application. So again, we took advantage of that,
2 and formatted our application to the standard format
3 that was draft at that time.

4 In addition, we had some conversations in
5 meetings with the staff to discuss some of the
6 details, and got some direction there. In fact, some
7 of the tables that you see in our application were
8 worked out with the NRC staff ahead of time. Now,
9 again, it was the first time that we tried to use
10 those kind of tables.

11 There were some problems with them as far
12 as, maybe, level of detail. But again, I think we've
13 learned some lessons from that and we can apply them
14 on the next applications. In addition, we worked with
15 NEI to obtain industry input. During the final stages
16 of our application, we actually had a peer review of
17 the draft application with several other utilities
18 through the NEI License Renewal Task Force. And we
19 get a lot of benefit from that by getting the
20 perspective of other utilities on our application.
21 Next slide.

22 This slide shows the hierarchy of the
23 documentation that exists to support the application
24 itself. The application is the top box on this slide,
25 and then all of the other documentation below that

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1 represents on-site engineering reports that were
2 create to support the license renewal project.

3 The first grouping of documents is what we
4 call the Class 1 mechanical. These are the ASME Class
5 1 or the RCS related components. In this grouping, we
6 had eight reports that were created, eight on-site
7 engineering reports. And these benefited from the
8 generic topical reports that were done by the B&W owners
9 group.

10 And four of those had received prior NRC
11 approval so that we could actually reference those in
12 our application. And that was on the reactor vessel,
13 reactor vessel internals, the pressurizer, and the RCS
14 piping.

15 The second grouping of documents is the
16 non-Class 1 mechanical. There were 25 system reports
17 generated, and these were on systems such as the high-
18 pressure ejection system, and the emergency feed water
19 and main steam. For this grouping of documents, we
20 used the mechanical tools to guide us through the
21 evaluation process.

22 And those mechanical tools, at the time,
23 were B&W report. They've now been transferred to EPRI
24 and they're being published as an EPRI document so
25 that the whole industry can use those and reference

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1 those.

2 In the structural area, we had seven
3 reports that were broken into major structures on-site
4 and commodities. For example, we had one report on
5 the reactor building, one on the OTS building, and one
6 on the intake structure. And for these reports, we
7 used the structural tools, which at that time were
8 also B&W document, which has also been transferred to
9 EPRI and is now an industry document.

10 And then the electrical area, we had ten
11 engineering reports on the cables, connectors,
12 terminal blocks, et cetera. And these were generated
13 using the Sandia Spaces approach, which is also a more
14 or less an industry document that we -- that the whole
15 industry can use to do their review on electrical
16 equipment the same way.

17 Then we had separate reports on the
18 environmental issue, TLAA's, our program's document,
19 and an EQ. We separated EQ out, simply because of the
20 volume of work that was required to go through a
21 reevaluation on our EQ components.

22 Region 4 has just recently been at
23 Arkansas on site, performing a review of these
24 engineering reports as part of this review process.
25 And they're having an exit meeting on the results of

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1 that on, I believe, it's March the 9th. So we think
2 that went fairly well.

3 We haven't got the full results from that
4 inspection yet, but it seemed to go quite well as they
5 went through and reviewed the details of these
6 reports.

7 DR. BONACA: In the phase of scoping, you
8 know, the documentation shows that you were pretty
9 much helped by the fact that you have -- you included
10 all the supports in the system, and those include a
11 lot of support systems that somebody else could not
12 call them until later, actually.

13 MR. YOUNG: Yes.

14 DR. BONACA: So you have a pretty
15 comprehensive scope. You all do list in the
16 application the -- your design basis events that you
17 considered as the basis, I guess, as the source of
18 this information. Since you have a pretty extensive
19 definition, you know, not the minimum requirement
20 definition of safety-related, I was kind of surprised
21 a little bit regarding the reactor vessel level
22 measurement system. And I can see how you don't have
23 any specific design basis event that would reference
24 that and become, therefore, excluded. On the other
25 hand, I mean, that's a true -- the only function of

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1 the system is to provide a safety function of some
2 type, which is under certain conditions to measure
3 level.

4 What was the logic for excluding it that
5 you presented that was then accepted by the NRC?

6 MR. YOUNG: Okay. The reactor vessel
7 level instrumentation was added as a post-TMI
8 modification. During the development of our emergency
9 operating procedures, which is where that component
10 comes into play -- first of all, in the safety
11 analysis, we take no credit for vessel level
12 monitoring.

13 It's not something that we include in any
14 of our safety analysis as credit. On top of that, in
15 our emergency operating procedures, they're based on
16 maintaining a sub-cooling margin in the core. And
17 that is the safety source of information. And as long
18 as we can maintain the sub-cooling margin, then we
19 don't get into any vessel level problems.

20 As the staff went through and reviewed the
21 Entergy staff in developing all of these emergency
22 procedures, they realized that the vessel level
23 monitoring system is a good piece of information for
24 the operators to have, but they don't take action on
25 that information. They take action solely on the sub-

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1 cooling margin in keeping the core cool.

2 DR. BONACA: But once you lose sub-cool
3 margin --

4 MR. YOUNG: Again, that piece of
5 information is available to the operators, but they
6 take action based on losing sub-cooling margin, not
7 based on vessel level.

8 DR. BONACA: Okay. Now, what's the
9 consequences of not including that system? Does it
10 mean that --

11 MR. YOUNG: Really, a lot of -- one of the
12 things I think is important to understand is by not
13 having it in the scope, license renewal doesn't change
14 how it's treated. It's still treated as a full
15 quality requirements PBX type inspections,
16 surveillances. It has specifications on if it's out
17 of service, how long you can continue to operate, or
18 what you do if it goes out of service.

19 There's a number of requirements that
20 still exist because of the post-TMI commitments, and
21 those have not changed. And they will continue
22 through the extended term.

23 DR. BONACA: Yes, that goes to the
24 commitments issues. What I mean is that, on the other
25 hand, you could change commitments regarding the

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1 system and not have a linkage to the commitments of
2 the license renewal. I mean --

3 MR. YOUNG: Yes, all of that, though,
4 would have to go through a 5059 review process. And
5 depending on the outcome of that, you know, possibly
6 having NRC staff approval before we can make any
7 changes to it.

8 DR. BONACA: Okay.

9 MR. YOUNG: Another factor that would
10 probably be important to point out here is that we did
11 include the pressure boundary portions of the vessel
12 level monitoring system, since that is in the scope of
13 license renewal.

14 DR. BONACA: Yes, I saw that.

15 MR. YOUNG: And most of the other
16 instrumentation would have been excluded anyway
17 because it would have been an active component. So I
18 doubt that even including it would have changed very
19 much on how we would have handled the aging management
20 review. Because most of it is just electrical thermal
21 couples and so forth, inside the reactor vessel.

22 DR. BONACA: Okay. But certainly, I mean,
23 right now you may have some guidelines that says that
24 if it fails, you have some commitment on how long you
25 can stay with the system failed.

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1 MR. YOUNG: Yes.

2 DR. BONACA: And, you know, you can change
3 that?

4 MR. YOUNG: Well, those, I believe, are
5 tech specs. So we would have to go through NRC review
6 and approval to change that. They're not -- they're
7 not just commitments. They're actually in our tech
8 specs.

9 DR. BONACA: All right. Thank you.

10 MR. YOUNG: Okay. On the -- again, on the
11 scoping, I think we've talked about most of this. The
12 first, we used NEI 95-10 as our guidance document for
13 doing the scoping review. And the guidance documents
14 that were available from the NRC in the form of the
15 rule and the draft and the review plan.

16 Safety-related definition we have -- was
17 mentioned earlier as component level Q-list, and also
18 a summary level Q-list that's in the SAR. And those
19 were the basis for determining what equipment was in
20 the scope of A-1, which is the safety-related
21 category.

22 A-2, which is the non-safety-related
23 components that can prevent a safety-related function
24 from being performed. At Arkansas, most everything
25 that would really fall in this category, we had

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1 already classified as Q, or safety related. The
2 history on that was simply that at the time that we
3 were building the plant and licensing it, was that if
4 you had a support system that was needed -- for
5 example, a cooling water system to a pump.

6 And that cooling water system was needed
7 to make that pump operable, we'd call that Q, safety
8 related. We didn't call it non-Q that could affect
9 safety related. So we had very little equipment that
10 fell into the A-2 category. We did have some, because
11 it is an older plant, and there were a few things like
12 seismic category two over one, that fell in this
13 category.

14 But the majority of equipment was actually
15 falling in the category of A-1 for us. Next slide.
16 The A-3 category, which is sometimes referred to as
17 the regulated events category, included the fire
18 protection, environmental qualification, pressurized
19 thermal shock, anticipated transits without scram and
20 station blackout.

21 We simply used the design documentation
22 for those events to come up with a listing of what was
23 in scope. And as was mentioned earlier, fire
24 protection is one that we still have an open item on.
25 We're working through that. You know, we have what we

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1 defined as the scope of our fire protection equipment.

2 And the -- I think it was four or five
3 sets of components are being evaluated right now with
4 the staff on whether or not they should have been
5 included. And we're going to have meetings on that in
6 another week or two.

7 Okay. On the next slide, going into the
8 screening process, after we had scoped -- we scoped at
9 the system level, the system and structure level. And
10 then we went in to do screening to identify the
11 passive long-lived components that were within those
12 structures and systems, that had a function that
13 required an aging management review.

14 And this was, I guess, the second major
15 step in the process before you got into aging. And
16 this again, was using the guidelines of NEI 95-10.
17 Next slide. The -- once we got into the scoping and
18 screening work, again, we split it up into mechanical,
19 electrical, and structural, and did those pretty much
20 in parallel with separate activities.

21 All of this work, of course, was done on
22 a plant specific basis. But for the Class 1
23 mechanical equipment, we did have the benefit of the
24 generic B&W topical reports to use, and that was a
25 tremendous benefit, because when we started into the

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1 site specific, we could basically take those topical
2 reports and simply deal with the site specific
3 differences.

4 So most of our actual on-site effort was
5 in the areas of the non-Class 1 and the electrical and
6 structural. We didn't have any generic or topical
7 type reports that we could rely upon. I think that's
8 all we have on that slide. Next slide.

9 Okay. The aging effects. Again, the
10 mechanical review was done on a system basis. We went
11 system by system, and did an evaluation for the Class
12 1. Again, we used the topical reports. For the non-
13 Class 1, we used the mechanical tools to help us go
14 through that review process.

15 On the electrical side, we used what's
16 called the spaces approach, which is based on the
17 Sandia aging management guidelines. And then on
18 structural, we used a commodity and a building
19 approach. We looked at major buildings, but then
20 within those buildings, we took commodities basically,
21 steel and concrete, and just did an aging review on
22 those commodities.

23 And based on that, we identified the aging
24 effects that required management. Okay. Next slide.
25 After we had identified the aging effects that

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1 required management, then we'd identify the aging
2 management programs. And as was mentioned earlier, we
3 had -- well, first of all, we had about 30 major
4 groupings of programs that we've identified.

5 Now, there's probably about over 100
6 actual specific programs, but we grouped them, such as
7 our preventive maintenance program, which has a lot of
8 individual preventive maintenance activities that we
9 credited. We just put it in the category -- one
10 category called preventive maintenance. Same thing
11 with our chemistry.

12 But in the aging management programs, we
13 have a group called the new programs, and then a group
14 called the existing and modified programs. And there
15 were seven major categories for new programs that
16 didn't exist before.

17 And I've listed a few of them here, our
18 buried piping inspection program, our electrical
19 component inspection, certain pressurizer
20 examinations, reactor vessel internals aging
21 management, which was a B&W topical issue, and our
22 Smithfield fuel monitoring programs.

23 DR. BONACA: I have a number of questions
24 on these programs. And is it a good time to ask?

25 MR. YOUNG: Yes.

1 DR. BONACA: On the buried pipe inspection
2 program, you know, when I go back to Appendix B, and
3 I'm looking at what it says, it says that the program
4 consists of, you know, whenever you have an
5 opportunity to expose one of these pipes because of
6 maintenance or a design change, you will look at the
7 pipe.

8 MR. YOUNG: Right, right.

9 DR. BONACA: And how different is this
10 program from what you do right now?

11 MR. YOUNG: The main difference is that
12 right now, when we expose the piping, it's really up
13 to the individual work group doing the activity to do
14 an inspection, so what we want to do is formalize that
15 and give them criteria so that when they uncover one
16 of these pipes, they know what to look for, what sort
17 of things we were concerned about.

18 We went back in history and looked at the
19 times when we have exposed buried piping, and we found
20 that in most cases, they did do an inspection beyond
21 just the location they were either doing a repair on
22 or doing instruction. But there was no requirement
23 for them to do that.

24 So we felt like that because of the review
25 that came out of the license renewal, that we should

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1 formalize that into a set of activities or inspection
2 criteria, that then they would document those results,
3 and we could watch for trends. So that's the main
4 difference.

5 DR. BONACA: The other question is just on
6 the top of your head, what's the frequency of, you
7 know -- I mean, how many times in the past 30 years
8 you had an opportunity to --

9 MR. YOUNG: Yes, we've got about 26 years
10 of operation now, something like that. And we didn't
11 go all the way back to the beginning, but we found
12 that in the last ten years or so, we've had about, I
13 think, two or three situation where we've had to dig
14 up piping for various reasons.

15 So we're thinking that, in general, it's
16 about once every five years. Sometimes more,
17 sometimes less.

18 DR. BONACA: Okay, thanks. Second
19 question I had was on the heat exchanger monitoring
20 problem.
21 I thought you have core problems, which I'm looking at
22 performance. I think it's --

23 MR. YOUNG: We do. That's a little
24 confusing, the title of that program is a little
25 confusing, because what we have is our service order

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1 integrity program, which is an existing program. And
2 it looks at service water heat exchangers.

3 But what we found in doing our review,
4 there were some heat exchangers that were not covered
5 by the service water integrity program. And in fact,
6 the issue that we're dealing with on the heat
7 exchanger program is actually a cracking or loss of
8 integrity, primarily from a seismic viewpoint. So
9 that gets into things like doing some sort of non-
10 destructive testing, like maybe 80 current, or
11 something like that.

12 So those -- it's a very limited set of
13 heat exchangers that fall under what we call this heat
14 exchanger program, because the majority of the heat
15 exchangers on site are already covered by the service
16 water integrity program. So they work hand in hand.
17 We gave it that title, and we found out later that
18 even the staff questioned us on that, is why are there
19 so few heat exchangers in your heat exchanger
20 monitoring program?

21 The reason is we have what we call the
22 service water integrity program that covers most of
23 them.

24 DR. BONACA: Yes. The third question I
25 have, probably you already answered, I mean, you're

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1 not augmented, because you already have extensive
2 pressurizer examinations --

3 MR. YOUNG: Yes.

4 DR. BONACA: -- to perform as part of the
5 ISI, right?

6 MR. YOUNG: Right, right. These were some
7 new commitments on very special locations. And so we
8 went ahead and called it a new program, just to kind
9 of, you know, add to the visibility of it. We, in
10 fact, could have put it over into the category of an
11 existing ISI program that was just augmented.

12 But we felt like it was worth making this
13 one more visible in our report.

14 DR. BONACA: Okay.

15 MR. GRIMES: Dr. Bonaca, if I could add,
16 this is Chris Grimes. And I think that there is still
17 a certain degree of controversy over the clad
18 integrity inspections, and the need for them, and the
19 conduct of them. So, you know, Arkansas has called it
20 out. They have proposed to do more than we've been
21 able to negotiate on a generic basis.

22 But that will continue to be an area where
23 I think there's ongoing dialogue with the industry.

24 DR. BONACA: Thank you. On the -- let's
25 see -- on the reactor vessel internal aging management

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1 program, the application did not specify at all the
2 time when you would perform the one-time inspection.
3 But the SER states specifically, I can't remember now,
4 it refers to some kind of periodic time when it will
5 be done?

6 MR. YOUNG: Yes.

7 DR. BONACA: What's the commitment there?

8 MR. YOUNG: Okay. I might turn this over
9 to Mark Rinckel. He's the one that has helped us
10 develop that program. Mark?

11 MR. RINCKEL: Yes, this is Mark Rinckel.
12 I think the commitment came through the RAI reposes to
13 do one inspection towards the end of the fifth
14 interval. So that would be, you know, towards 45 to
15 50 years. But also, realizing that Oconee will have
16 already inspected probably Oconee Unit 1. And we're
17 going to certainly incorporate lessons learned.

18 Now, there is, you know, a question as to
19 whether or not we will have to inspect Unit 1 and O-1,
20 once Oconee has, but, you know, we are -- made a
21 commitment to do an inspection towards the end of the
22 fifth interval.

23 DR. BONACA: So that the fifth interval?

24 MR. RINCKEL: Yes, the fifth interval is
25 between years 40 and 50. So it's towards -- I believe

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1 it's towards the end of the fifth interval is when we
2 made the commitment. Now, I'm going by memory here,
3 so --

4 DR. BONACA: I couldn't understand, in
5 fact, what I was referring to. I only know that
6 clearly they were specified, although it was not
7 specified in the application.

8 MR. YOUNG: Yes, at the time we wrote the
9 application, I think they were still developing some
10 of these details in the reactor vessel internals
11 program, and we coordinated with Oconee in coming up
12 with this inspection. Because obviously, this really
13 is a generic B&W inspection effort.

14 So whatever we find, we feed to the other
15 plants. Whatever they find, they feed to us. So we
16 tried to coordinate our commitment on when we would do
17 an inspection so that we wouldn't wind up doing two
18 inspections at the same time. We would sequence them
19 with Oconee.

20 DR. BONACA: Once you have all these
21 agreements in place, will you amend the application
22 for your own purpose, I mean, to include these
23 descriptions?

24 MR. GRIMES: If I could answer that. It
25 is our expectation that by drawing a conclusion on the

1 proposals and the commitments that have been made, and
2 then are codified in changes in the FSAR, we would
3 expect that after issuance of a renewed license, that
4 commitments could be changed in accordance with 50.59
5 and 50.71 E.

6 And that -- and much like the vessel
7 surveillance program this internal program relies on
8 a sharing of information that we would expect would
9 feed the different B&W plants, and cause them to
10 reflect on whether or not they need to make changes in
11 these programs. And whether or not they trip the
12 threshold of 50.59 that would warrant a license
13 amendment.

14 MR. YOUNG: And we do plan to document
15 that inspection frequency in the SAR supplement that
16 will be, you know, issued with the new license. So it
17 will be documented.

18 DR. BONACA: I just wanted to point out,
19 at this stage, a reader like myself who come in cold
20 --

21 MR. YOUNG: Yes.

22 DR. BONACA: I went through the
23 application first, and I found a lot of open issues,
24 vague -- not vague, but simply they were specified
25 for, in this case, it will be one inspection.

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1 Then I go to the SER and I find there is
2 a timing of the inspection stated, and everything
3 else. So it seems as if something has been negotiated
4 in between that is not reflected in the application
5 yet.

6 MR. YOUNG: Yes, we don't plan to amend
7 the application, but in the commitment itself would be
8 contained in the SAR supplement.

9 DR. BONACA: In the supplement?

10 MR. YOUNG: Right.

11 MR. PRATO: A lot of this was discussed on
12 the RAI process. It's documented in the RAIs and
13 their responses.

14 MR. YOUNG: Yes, right.

15 MR. GRIMES: Yes, Dr. Bonaca, this is
16 Chris Grimes. Now, I would like to emphasize that
17 we're at that stage in the review where we expect to
18 have more dialogue with the applicant in order to
19 resolve the open items. And then, before we draw a
20 final conclusion on it, a renewed license, we'd
21 present the resolution of the open issues along with
22 any clarifications to the safety evaluation, and it
23 would feel warranted.

24 And then those would be reflected in
25 changes to the SAR supplement where appropriate. But

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1 the whole record will consist of the application along
2 with all the correspondence since the application was
3 submitted, in support of the final safety -- the
4 safety evaluation, the FSAR supplement, and those will
5 be the two case in terms of having a consistent
6 explanation of the treatment of these issues.

7 DR. BONACA: One last question I had on
8 the problems was -- well, on the spent fuel pool
9 monitoring, I think already we talked about that. But
10 I had a question regarding the mineralizers heat
11 exchangers in part of the scope?

12 MR. YOUNG: No.

13 DR. BONACA: They're not? Because they're
14 not included in the cooling pool?

15 MR. YOUNG: Right.

16 DR. BONACA: Just the emergency addition
17 from the service water.

18 MR. YOUNG: Yes, right.

19 DR. BONACA: And the last question I had
20 was, when I was reading about the program of wall
21 thinning inspections, specifically the major portion
22 of the description, you know, regarding application,
23 Arkansas claims that visual inspections have been
24 effective in maintaining the integrity of the walls.

25 When I look at the SER, the SER states

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1 that ultrasonic testing will be neutralized in wall
2 thickness.

3 MR. YOUNG: Yes.

4 DR. BONACA: Again, there is a disconnect,
5 and I don't understand.

6 MR. YOUNG: I believe that we got an RAI
7 on that, and that was actually an error in our
8 application. We meant to say that in service
9 inspections, instead of visual inspection, and it does
10 include volumetric inspection.

11 DR. BONACA: So you will go to --

12 MR. YOUNG: Yes.

13 DR. BONACA: Okay, thank you. I think
14 that's pretty much it. Thanks.

15 MR. YOUNG: Okay, this next slide is just
16 a summary listing of the 22 existing programs that we
17 had. And of course, these are some of the major
18 programs that all plants have, a Section 11 program,
19 chemistry program, preventive maintenance program, and
20 so on.

21 One of the things we did find that
22 literally, probably 95 percent of all of the
23 components and equipment, that need an aging
24 management program, already have one. And the new
25 programs are really covering a limited set of

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1 components. So most everything we need, we already
2 had in place.

3 DR. SHACK: Your risk informed ISI, you
4 referred to as a -- translate that for me. Is that
5 every risk informed, or the Westinghouse?

6 MR. RINCKEL: That is, as Mark -- it's the
7 EPRI, EPRI method. And I think they'll get into that
8 later, but those application numbers from form ISI,
9 and essentially resolve the small buried piping issue,
10 which is a good precedent for future applications.

11 MR. YOUNG: Right. Okay. The next slide
12 here is on the time limited aging analysis, and here
13 I've just listed some examples of the TLAAs that we
14 had and evaluated. This was done separately from the
15 rest of the review process. Our list of TLAAs was
16 very similar to Oconee's, and of course, similar to
17 other utilities. I think we're all coming up with
18 very similar lists on our TLAAs.

19 And we've already talked a little bit
20 about the boraflex issue. That was something that we
21 thought was going to last for the full 60 years, but
22 as we got into the review, we got some test results
23 back showing that it would not. So we're working with
24 the staff now to deal with that as far as getting our
25 license renewed.

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1 Next slide. Yes, that's the end of the
2 discussion on the application on aging management.
3 Now I'm going to move into the environmental report.
4 In the environmental report, again, we --

5 DR. BONACA: How long do you think you'll
6 need for this portion here?

7 MR. YOUNG: About five minutes.

8 DR. BONACA: Well, let's go through it,
9 and then we'll take a break so we are on schedule.

10 MR. YOUNG: And the reason I say that, the
11 environmental review is going extremely well. We've
12 really had no problems in that area. Again, we used
13 NEI and NRC guidance documents. We incorporated
14 lessons learned, primarily from Oconee. We looked at
15 what they had done, and tried to adjust our
16 environmental report accordingly.

17 We did a new insignificant information
18 review to confirm the adequacy of the category one
19 conclusions that were in the generic environmental
20 impact statement that the NRC staff credits for
21 license renewal.

22 Next slide. The environmental impacts in
23 all areas were identified as small, which is I guess,
24 an EPA definition meaning that there are no
25 significant impacts. There were no unique plant

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1 characteristics that would effect the environment
2 based on license renewal. And we had no threatened
3 and endangered species present on site.

4 In the area of SAMA, Severe Accident
5 Mitigation Alternatives, we identified 169
6 alternatives to be considered. This was based on the
7 Calvert Cliffs and Oconee work that had been done
8 previously. Eighty of those were screened out as
9 either being not applicable or already having been
10 implemented at ANO.

11 And then 89 were subject to benefit cost
12 evaluation. Of those 89, we only found one that was
13 actually cost beneficial. It dealt with a training
14 program -- or -- yes, a training item that dealt with
15 the operator switchover when they're going from the
16 water storage tank to the sump during ECCS
17 recirculation mode.

18 That was the only one that turned out to be
19 cost beneficial. As we looked into it further, we
20 determined that the training program had been
21 appropriately modified, and there was no further
22 action required there.

23 No SAMAs were identified that were age
24 related, including the one that was cost beneficial.
25 Tom Kenyon, our NRC Project Manager on that, has done

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1 a very good job, I think, of going through and doing
2 the review. We had a couple of public meetings.
3 Those went quite well.

4 And we're now, I think, in the final
5 stages of getting the supplemental environmental
6 impact statement issued and published. And then the
7 last slide, just a quick conclusion, again we utilized
8 a number of the lessons learned from Oconee and the
9 industry to get to where we are.

10 We appreciate that support that we got
11 from the previous applications, and from the NRC's
12 previous reviews. We were able to reduce the number
13 of RAIs during the review process, as was mentioned
14 earlier. I think Oconee had over 350 and we had
15 pretty close to 250.

16 Of course, we'd like to get that number
17 down even further and later applications, but still
18 that was quite an accomplishment. And we also reduced
19 the number of open items down to six, with taking
20 benefit from those lessons learned. In our opinion,
21 the license renewal process is stable and predictable.
22 We, as well as the other utilities that we're working
23 with on the NEI group, are building our applications
24 off of each previous application.

25 So I think you'll see that the

1 applications, for example, Turkey Point, that has come
2 in fairly recently, used a lot of lessons learned from
3 our application as well as Oconee. And hopefully,
4 they'll come through with a lot of the issues we're
5 dealing with, and our RAIs will already have been
6 dealt with in their application. So that's all I had.

7 DR. BONACA: Thank you. Any additional
8 questions from the members? I thank you for your
9 presentation. I think we will hear about the
10 specifics in this scoping methodology, and design
11 basis events, and open items after the break. So
12 let's take a break now until 10:15.

13 (Whereupon, the foregoing matter went off
14 the record at 9:59 a.m. and went back on
15 the record at 10:16 a.m.)

16 DR. BONACA: Let's resume the meeting, and
17 we now can proceed to the next presentation on the
18 agenda.

19 MR. GALLETTI: Good morning. My name is
20 Greg Galletti. I'm an operations engineer with
21 Nuclear Reactor Regulation, Division of Inspection
22 Performance Management. I'm in the Equipment Quality
23 and Performance Branch, and our Branch had the
24 responsibility for the screening and the scoping
25 methodology review for the license renewal

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1 application.

2 What I wanted to go over today was quickly
3 give you an overview of the methodology review that we
4 performed, that was both done in-house and as an on-
5 site audit. And then get into some of the findings
6 from that review, our conclusions from that review and
7 then we'll switch over and discuss a little bit about
8 the plant differences between the Oconee and the ANO
9 review.

10 With respect to the scoping methodology,
11 the staff's mandate was to review the license review
12 application to ensure that the information provided in
13 the application was consistent with the 54.4
14 regulations. In order to do that, the staff
15 implemented a two-tiered approach, one being the in-
16 house review of certain design documentation.
17 Specifically, what we looked at was the license
18 renewal application information and some of the
19 supporting information that was provided by the
20 applicant.

21 Some of that supporting information we had
22 already in-house, for instance, the updated final
23 safety analysis report, which we used quite heavily;
24 the B&W ATOG, which is their emergency procedures
25 guideline documentation, which the licensees have used

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1 to generate their own site-specific EOPs. And we had
2 the benefit of using the applicant's summary report
3 from their IPE.

4 The basis for our doing the desktop review
5 was, as I mentioned, first, to ensure that their
6 application documentation was consistent with the
7 regulations, that it encompassed all of those aspects
8 of 10 CFR 54.4 that were required. And then,
9 secondarily, the supporting documentation provided the
10 staff some additional insights as to how the applicant
11 had implemented their procedures and processes to
12 ensure that their final product was consistent with
13 their LRA application.

14 In addition, some of the background
15 documentation, like the updated final safety analysis
16 report and the EPGs, provided the staff some better
17 understanding of the design basis, certain design
18 basis events that the licensee basically was
19 responsible for reviewing, and gave the staff some
20 additional understanding of some of the CLB issues.

21 In addition to the desktop review, we had
22 the opportunity to do an on-site audit, and that was
23 performed by three staff members over a period of
24 about three days, and that was done on-site at the
25 engineering facilities of the licensee, the applicant.

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1 The purpose of the on-site audit was initially to
2 verify that the documentation provided in the LRA, in
3 terms of the process used to generate the scoping
4 methodology, was consistent with the actual
5 application in the field; that is, that what they
6 described in the LRA was consistent with the actual
7 application of the engineering procedures and the
8 process that they -- the implementation process the
9 licensee used at their own facility.

10 Secondarily, what the on-site audit
11 provided us is an opportunity to look at some products
12 from their LRA implementation process to ensure that
13 there was consistency in those products; that is, the
14 different reviewers, different engineers that were
15 involved in the review basically had the same level of
16 detail, same analysis approach, same processes used to
17 generate their final reports.

18 And thirdly, the on-site audit provided us
19 an opportunity to look more specifically at the
20 implementation guidance of the licensee. Their
21 engineering reports, that Gary had mentioned earlier,
22 we got to look at some of the detail associated with
23 those reports, and we got to look at their actual
24 implementing procedures; that is, what specific
25 guidance, if you will, and operating procedure, if you

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1 will, for this purpose, specific guidance that the
2 engineers had at their disposal that governed what
3 sort of information they looked at, how they
4 approached the process of developing the LRA, the
5 scoping methodology and the results.

6 DR. BONACA: This on-site visit was three
7 days, you said?

8 MR. GALLETTI: Yes, sir.

9 DR. BONACA: Okay. Because in the
10 application and also in the NCR there is a lot of
11 statements regarding the fact that the applicant
12 stated that or has stated that. So that was the
13 extent of the verification process.

14 MR. GALLETTI: The initial verification
15 process, which was done in-house, which was to review
16 the LRA and make it very clear what the applicant
17 provided to us.

18 DR. BONACA: Okay.

19 MR. GALLETTI: In addition, the on-site
20 audit provided what I would characterize as a
21 verification and validation process for the staff.
22 That is, we were able to verify that the process used
23 by the applicant matched very well with the
24 description that was provided in the LRA.

25 And in terms of verification -- or in

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1 terms of validation, again, we got to see the end
2 results. We got to look at the specific design
3 documentation that the applicant used. We got to
4 understand the scope of that design documentation, and
5 that was quite important, because what we wanted to
6 set out to do was establish that the licensee had done
7 a credible job of reviewing their CLB and ensuring
8 that they went, certainly, just beyond like accident
9 analysis or just design basis events.

10 DR. BONACA: One statement regarding the
11 involvement of the staff was that you took some
12 systems or some components that were not included in
13 the scope by the application, and they were
14 borderline. And for those, you verified that in fact
15 the contention of the applicant was correct.

16 MR. PRATO: This is Bob Prato. That's
17 part of the scoping inspection.

18 DR. BONACA: Yes.

19 MR. PRATO: What Greg is talking about is
20 the methodology review.

21 DR. BONACA: Okay.

22 MR. PRATO: We actually spent an
23 additional -- there was seven us I believe. And we
24 actually did a verification that what they actually
25 included within the scope of license renewal was

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1 consistent with the methodology, the application and
2 the SER.

3 DR. BONACA: Okay. So there were two
4 visits then to the site.

5 MR. GALLETTI: Right, right.

6 MR. PRATO: When we do that scoping
7 methodology, we do it in really two stages. The first
8 stage is we pick a number of systems that we feel are
9 important, that can be important, that were not
10 included within the scope of the license renewal, and
11 we verify that those systems do not meet the criteria.
12 And once we do that verification, we have a
13 comfortable feeling that they've included all the
14 systems within the scope, and then we go into the
15 screening and the actual scoping activities.

16 DR. BONACA: All right. Two visits there,
17 and this was meant.

18 MR. GALLETTI: Correct, yes. The purpose
19 of our audit was to ensure that the methodology that's
20 been outlined --

21 DR. BONACA: I understand.

22 MR. GALLETTI: -- in the engineering
23 documents is consistent with the regulations.

24 Basically, one of the things that we did
25 in the on-site audit was to review some of the design

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1 documentation as the results of the LRA application.
2 In essence, we looked at what's called the upper level
3 documents. These ULDs are essentially a library of
4 documents that cover systems, structures, events, if
5 you will, design basis events, as well as additional
6 topics. And by looking at those ULDs, as well as
7 looking at what Gary brought up before, the Q list
8 development process, the staff was able to come up
9 with reasonable assurances that the process
10 implemented by the applicant was consistent with 54.4.

11 If I could go on to the specific findings,
12 as a result of our in-house review, as well as our on-
13 site audit, we did find that the applicant's approach
14 was consistent with 54.4 in terms of defining what
15 safety-related equipment was consistent with A-1,
16 understanding their consideration for non-safety-
17 related equipment.

18 And what's been brought up already is the
19 fact that many things we would characterize as non-
20 safety whereby the virtue of the licensees desire are
21 already safety related. And those things above and
22 beyond that, such as the seismic two over one or some
23 internal flooding types of systems and components were
24 brought into play as a result of the review.

25 And, finally, we did verify that the

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1 regulated events, if you will, the ATWS, the station
2 blackout, those sorts of events were well analyzed by
3 the applicant. There is sufficient design
4 documentation available to us to ensure that they had
5 done a credible job of reviewing those events and
6 scoping in the proper equipment components and
7 structures necessary.

8 What we found is that their scoping
9 process was very well defined in their engineering
10 reports, and that the implementation of those
11 processes was very consistent. The audit also
12 provided confirmation that the process implementation
13 was consistent with the descriptions provided in the
14 LRA and also consistent with the specific engineering
15 procedures that the licensee had been developed for
16 that purpose.

17 In conclusion, the staff made a safety
18 finding that the applicant's methodology and
19 implementation was sufficient to develop and we
20 believe maintain the scope of the license renewal
21 application over the period of extended operation.

22 If I could, I'd like to -- if there's no
23 specific questions on those areas --

24 DR. BONACA: Well, I have two questions on
25 scoping that you and you with the applicant may

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1 answer, if I could ask them now.

2 MR. GALLETTI: Certainly.

3 DR. BONACA: Because we're going to be
4 getting into section three, which is more of the aging
5 management problems, right?

6 On scoping, I have just a few questions.
7 One is, I was looking at page 217 of the SER where it
8 talks about the fact that Arkansas included components
9 not addressed in the B&W 2243(a). And I was -- one
10 thing I was aware of is that some of the B&W plant
11 experienced letdown system pressure breakdown,
12 orifices failures. Are those included in the scope?

13 MR. YOUNG: The orifices are included from
14 the viewpoint of pressure boundary, but they don't --
15 I don't believe those particular orifices perform a
16 safety function, so they weren't in there for flow
17 control or anything like that. But they were in there
18 for pressure boundaries, so they were included.

19 DR. BONACA: Pressure boundary. So they
20 are for pressure boundary.

21 MR. YOUNG: Yes.

22 DR. BONACA: Okay. Thank you. The other
23 question I had was -- maybe this is just a confusion
24 on my part -- in the section that speaks about the
25 steam generator, there is a reference to the fact that

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1 the auxiliary feed water in the piping is not in
2 scope. But then when I look at the SER, and
3 specifically it talks about the emergency feed water
4 system, it seems to be in scope, the piping. And I am
5 confused. I mean do you have two different systems,
6 an emergency feed water system and an auxiliary feed
7 water system or is it the same system and then these
8 connect?

9 MR. RINCKEL: This is Mark Rinckel. I
10 believe that was an error in the original application.
11 There was an RAI on that. That piping is in the
12 scope. I've got a picture of it here if you want to
13 see it. But it's the riser piping that goes from the
14 header into the generator.

15 DR. BONACA: If I could see that?

16 MR. RINCKEL: Sure. Oh, wait, let me make
17 sure I brought it.

18 DR. BONACA: So you don't have two
19 systems. Because also I found at times it's referred
20 to as auxiliary feed water system; at times it's an
21 emergency feed water system. I think the application
22 is auxiliary, and the SER is emergency. So I thought
23 maybe they're two different systems. I wanted to
24 understand.

25 MR. RINCKEL: I apologize, I didn't bring

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1 the picture of the generator.

2 DR. BONACA: All right.

3 MR. RINCKEL: But what it is is there is
4 a main feed water header, there's two of them, and
5 there's riser piping that goes up and attaches to the
6 shell of the generator. And all of that's in scope.
7 And emergency feed water has a similar application,
8 but I think it goes almost all the way around, it's a
9 header, and there's riser piping that goes up and
10 attaches to it. All of that is in scope.

11 DR. BONACA: Okay.

12 MR. RINCKEL: And what was in the
13 application was an error. That was clarified in RAI
14 response.

15 DR. BONACA: All right. Is the mechanical
16 seal package of the reactor coolant pumps in scope?

17 MR. YOUNG: Sorry, what?

18 DR. BONACA: The mechanical seal package
19 in scope for the RCPs?

20 MR. YOUNG: No. The seals are replaced
21 based on --

22 DR. BONACA: Because you have periodic
23 replacement.

24 MR. YOUNG: Right. So they don't have a
25 long life.

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1 DR. BONACA: All right. One question I
2 had was regarding the reactor vessel head leakage
3 monitoring piping, which was excluded, and the staff
4 accepted that on the basis that Arkansas estimates
5 that the leak flow would be within the capacity of the
6 makeup system. Could you explain to me what estimates
7 mean?

8 MR. YOUNG: Well, first of all, the head
9 leak-off path is after the first o-ring in the reactor
10 vessel head, and it does have an orifice in it, or a
11 small opening that goes into the piping. So what we
12 did is we did a review on what would happen if that
13 was orifice was exposed to the full RCS pressure and
14 how much flow we would get out and could we handle it
15 with our makeup capacity? And we found that we could.
16 But in reality the path to get there is so torturous
17 that the flow would actually be much lower than that.

18 DR. BONACA: Okay. But still you
19 performed the calculation.

20 MR. YOUNG: Yes.

21 DR. BONACA: All right. So it wasn't just
22 a judgment.

23 MR. YOUNG: Oh, no; you're right. Right,
24 we did some analysis on it.

25 DR. BONACA: Yes, I was just questioning

1 the word "estimates."

2 On the emergency room drains there was a
3 request for additional information, and then you said
4 that there is a drain there that is a 10-inch drain,
5 I believe, that will allow you to prevent flooding.
6 What prevents the drain to be clogged, I mean, and to
7 have the flooding?

8 MR. YOUNG: The drain that was being
9 referred to there is actually a pipe. I think 10
10 inches, is that what --

11 DR. BONACA: Yes.

12 MR. YOUNG: It's a fairly big pipe. It's
13 actually a hole in the wall.

14 DR. BONACA: It's a 10-inch pipe, yes.

15 MR. YOUNG: It's an exterior wall, and
16 it's just a straight pipe right through the wall, so
17 there was no aging mechanism or anything that could
18 come into play.

19 DR. BONACA: So it's not a question of
20 aging. It's a question of -- no, I understand.

21 And I had one more question. It was of
22 the auxiliary building hitting a ventilation. They
23 have a function of maintaining 60 degrees during
24 winter. Now, I don't know, maybe you never get below
25 60 degrees in America, but the question I had was do

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1 you have -- are the heating components in scope?

2 MR. YOUNG: I believe the way that's
3 handled, pressure boundary components are in scope.
4 So any portions of the system that had pressure
5 boundary would be. I don't believe we had -- you're
6 talking about electrical heating elements?

7 DR. BONACA: Yes. Because the 60 degrees
8 contingent is to prevent components from freezing.

9 MR. YOUNG: Right. The electrical
10 equipment, like heating elements and so forth, are
11 considered active, because they have to be energized
12 in order to perform their function. So they were
13 excluded upon that basis.

14 DR. BONACA: Okay. I agree with that.
15 Okay, thank you.

16 MR. GALLETTI: Okay, if I could, I'd like
17 to switch to a quick discussion of the differences
18 between the Oconee review and the ANO review with
19 regard to the scoping methodology, specifically
20 looking at the design basis events, which I understand
21 from previous discussion was a topic of concern.

22 With respect to ANO, clearly, as part of
23 their scoping methodology, they looked specifically at
24 their Chapter 14 accident analysis events. But far in
25 addition to that, as part of their Q list development

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1 process and as part of this ULD development process
2 that we discussed earlier, the applicant went far
3 beyond Chapter 14, clearly looked at all of the FSAR
4 as it related to the events, and then went beyond that
5 still to consider the current licensing basis.

6 And if you look at that supporting
7 documentation, the ULDs and the Q list development
8 process, when we went through that as part of the on-
9 site audit, we were able to take a look specifically
10 at the types of information that the licensee had
11 employed for those reviews.

12 In doing so, we confirmed that they had
13 looked at operational experiences, they had looked at
14 commitments they had made to the NRC regulations, they
15 had looked at exemptions that were made to the
16 license. So they really encompassed all of their CLB,
17 as far as the definition was concerned, in those
18 reviews. And it was a major difference between the
19 two right off the bat.

20 The second difference which was brought up
21 had to do with the definition of safety-related. For
22 the Oconee review, they relied on, basically, three
23 barriers to the release as their definition. For ANO,
24 as was brought up, they relied on basically the 54.4
25 A-1 definition -- A-2? And A-2 definition for what

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1 constitutes safety-related.

2 So in that respect, we were aligned from
3 the very beginning with ANO-1 in terms of coming to a
4 formal and agreeable definition.

5 DR. BONACA: Now, the difference in
6 definition between the Oconee application and the
7 Arkansas, did it lead to significant differences in
8 the equipment that is in scope?

9 MR. GALLETTI: I don't believe it really
10 led to a change in the equipment versus led to an
11 understanding of if the requirement was that you look
12 at these three criterion, instead of doing that you
13 looked at these criterion, what was the nexus? How
14 could the staff make a safety finding that in fact by
15 using these other criteria, that you were using the
16 same approach or was going to have the same effect.

17 DR. BONACA: I don't want to reopen the
18 issue of Oconee. We know that was a difficult scoping
19 process. But as we go forth, for similar plans, I
20 would expect that once we make a determination that
21 certain components had to be scoped, that logic should
22 extend to sister plants. And I'm not saying that
23 they'll identical these plants, but they're very
24 similar.

25 MR. GRIMES: Dr. Bonaca, this is Chris

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1 Grimes. I think Greg has struck on it more from the
2 standpoint of our ability to understand the current
3 licensing basis and the associated intended functions
4 that are relied on is going to be easier when there's
5 a process and a methodology associated with
6 maintaining that Q list that is as comprehensive as
7 the one that Entergy employs at Arkansas.

8 Our struggle at Oconee was more from the
9 standpoint of understanding their licensing basis.
10 With the resultant set of components, we would expect
11 to see only minor differences in plant licensing
12 basis. So it really gets to our ability to understand
13 and have reasonable assurance in the scoping process
14 that is benefitted by a process that maintains the
15 licensing basis with such clarity.

16 MR. GALLETTI: And I guess to close out
17 this discussion, the final change, or difference,
18 between the two applicants was that with the Oconee
19 review, initially they looked at their accident
20 analysis design basis events and then included natural
21 phenomenon and external events. And one of the areas
22 of concern or issue was the anticipated operational
23 occurrences and defining what those are and scoping
24 those in. And there was a lot of discussion between
25 the staff and the licensee on doing that.

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1 With respect to Arkansas, we didn't see
2 the same issue arise, again, as a result of their Q
3 list development process and their ULD development
4 process. Those anticipated operational occurrences
5 were in fact considered during those review programs.

6 In conclusion, there were two open items
7 as a result of the scoping methodology. The first is
8 the applicant needs to provide a technical
9 justification for not including in-line flow orifice
10 flow control intended function to ensure proper sodium
11 hydroxide injection rate for pH control.

12 The second open item we currently have is
13 to have the applicant provide a technical
14 justification for not including fire protection jockey
15 pump, carbon dioxide systems, fire hydrants, the water
16 supply to the low-level rad waste building fire
17 protection system and the piping to the manual hose
18 station as being within the scope of license renewal
19 and subject to an AMR. I believe both of these issues
20 have been previously brought up today.

21 DR. BONACA: As part of this open item is
22 the question also about fire water storage tank. Is
23 there a fire water storage tank or is the source of
24 water --

25 MR. YOUNG: The source of water is our

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1 service water system, the lake, so it's an infinite
2 source.

3 DR. BONACA: Okay. Thank you.

4 MR. GALLETTI: That concludes my
5 presentation. Thank you.

6 DR. BONACA: Thank you. Any other
7 questions for Mr. Galletti?

8 MR. PRATO: Next presentation will be
9 "Common Aging Management Programs," by Meena Khanna.

10 MS. KHANNA: Good morning. My name's
11 Meena Khanna. I'll be talking about common aging
12 management programs, and I guess I'll go ahead and
13 start.

14 A common aging management program, as you
15 already may know, is a program that covers and manages
16 the applicable aging effects of two or more systems'
17 inner structures. Entergy identified 12 common aging
18 management programs in their ANO-1 LRA, and these
19 include the Chemistry Control program, the QA program,
20 structures and system walkdowns, the Heat Exchange
21 Monitoring program, buried pipe inspection, Wall
22 Thinning Inspection program, Boric Acid Corrosion
23 Prevention program, flow accelerate corrosion
24 prevention, leakage detection and reactor building,
25 oil analysis, Reactor Building Leak Rate Testing

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1 program and the ASME ISI program.

2 The staff and the contractors evaluate the
3 Aging management program against the following
4 elements, as discussed in the standard review plan.
5 These include scope, preventive actions, parameters
6 monitored, protection of aging effects, monitoring and
7 trending, acceptance criteria, corrective actions,
8 confirmation process, admin controls and operating
9 experience.

10 Now, there's three of those that are
11 covered under the Corrective Actions program, as was
12 stated in the LRA. For ANO-1, the elements involved
13 corrective actions, confirmation process and admin
14 controls are all discussed in the Corrective Actions
15 program, so we don't address those elements in the SE
16 under those.

17 Okay. For open items, there were no
18 significant open items. However, there are a few
19 minor FSAR supplements that will be needed to be done
20 by Entergy. They're listed in the SE. We don't have
21 to go into those, because they're not really
22 important. They're just basically summaries that need
23 to be beefed up in the FSAR supplement.

24 Okay. Plant differences. If you compare
25 the ANO-1 LRA to the Oconee, basically, with respect

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1 to the common aging management programs, Entergy's
2 description of the aging management programs were
3 written very closely to those for Oconee. And we
4 noted a few differences. If you compared the elements
5 to those of the SRP, there are some differences;
6 however, we were still able to do a parallel review.
7 So, basically, you know, we didn't have a problem in
8 reviewing those programs.

9 ANO-1 applied many of the lessons learned
10 in determining their aging management programs. That
11 was the difference with Oconee. And, finally, the
12 aging management programs for ANO-1 were very similar
13 to those for Oconee. There were only a few
14 deviations, and those were due to site-specific
15 differences or limitations, such as the Buried Pipe
16 Inspection program.

17 DR. BONACA: Okay. Of this common aging
18 management programs, some of them are the new
19 programs, right, like the Buried Pipe Inspection
20 program --

21 MS. KHANNA: Right, exactly.

22 DR. BONACA: -- Heat Exchange and
23 Monitoring program. And some of them are existing
24 programs.

25 MS. KHANNA: Exactly.

1 DR. BONACA: Okay. Now, okay, we have
2 some questions about the new programs. And you use
3 the ten elements of the SRP.

4 MS. KHANNA: Right. We look at the SE.
5 That's how we actually evaluate them against those ten
6 elements.

7 DR. BONACA: That's right.

8 MS. KHANNA: A couple of them were a
9 little different the way they were written up, but you
10 could still get the same information if you read the
11 LRA.

12 DR. BONACA: Okay. For example, the Flow
13 Accelerated Corrosion Prevention program, that's a
14 standard programs or existing program --

15 MS. KHANNA: Right.

16 DR. BONACA: -- that's being used. In
17 fact, those, in the evaluation, it's referring to
18 standards that are in place already.

19 Okay. Any questions for members regarding
20 this? Thank you.

21 MR. PRATO: "Reactor Coolant System,"
22 Andrea Lee.

23 MR. LEE: Good morning. My name is Andrea
24 Lee, and I work in the Materials and Chemical
25 Engineering Branch. I was the technical monitor for

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1 the contract to review the RCS and also the lead
2 reviewer.

3 And in terms of an overview, there were
4 several topical reports for the RCS system. There was
5 one for the reactor vessel, for reactor vessel
6 internals, for piping and also for the pressurizer.
7 And there were several applicant action items in each
8 of those reports, which license renewal applicants
9 have to respond to.

10 Most of the applicant items were addressed
11 in the initial application, but through the request
12 for additional information process, we got expanded
13 information and additional clarifications, which
14 allowed us to draft the safety evaluation report with
15 no open items.

16 In terms of differences in Oconee and some
17 of the other applications, one difference was the
18 Alloy 600 and Alloy 82/182. The applicant is
19 monitoring the locations that are most susceptible to
20 cracking during the period of extended operation. And
21 the method used to identify these locations was a
22 susceptibility model. That model is similar to a
23 model that was accepted for the CRDMs, and that was
24 based on an EPRI model.

25 And just as a summary, the model that was

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1 used, there was a reference Alloy 600 item that was
2 picked. And that item was the pressurizer
3 instrumentation nozzle, and that is a nozzle that was
4 found leaking in 1999 -- or excuse me, 1990. Once
5 that item was selected, there is a relative time to
6 crack initiation that was calculated for the item. So
7 to extend that to the other locations, a
8 susceptibility factor was calculated.

9 And throughout the process there was a
10 comparison of material parameters and other items,
11 such as chemistry, in order to extend that reference
12 to the subject component, Alloy 600 component that was
13 being compared. Once that process was done, there was
14 a susceptibility factor calculated for the new item.
15 And in terms of the items that were determined to be
16 most susceptible, they were all piping components in
17 the pressurizer.

18 Another difference was the way small bore
19 piping was handled. And just as background, small
20 bore piping, as you probably know, is piping that's
21 less than four inches nominal pipe size. And also as
22 background for the ASME code, any piping that's
23 between one inch and four inches, there's no
24 requirement for volumetric examination. There's just
25 a surface. And for any piping less than one inch,

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1 there's no volumetric or surface requirement.

2 So in light of that, and the final safety
3 evaluation for the piping topical, the staff suggested
4 that all applicants do a one-time inspection. And ANO
5 was unique in that they implemented a risk-informed
6 process. And through that process, they picked the
7 most susceptible locations. And from that, they're
8 going to do an ongoing program. And this was already
9 approved for the current license.

10 So it was just extended into, and the
11 materials and the parameters were looked at for the
12 period of extended operation. So because of that
13 extension, it negated the need to have a one-time
14 inspection. This is an ongoing program, which is an
15 improvement than just doing the one-time inspection.

16 And the --

17 DR. BONACA: If I remember now, the
18 previous applications we had one-time inspection in a
19 susceptible location.

20 MR. LEE: Yes.

21 DR. BONACA: Right? So this is now a
22 periodic inspection.

23 MR. LEE: Well, for the -- if I'm not
24 mistaken, for the other applications it was one-time
25 inspection for a susceptible location.

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1 DR. BONACA: Yes, that's right.

2 MR. LEE: And just as a matter of
3 interest, the susceptible locations were the
4 pressurizer spray line, make-up and purification
5 lines, letdown lines, and cold leg section drain
6 lines. And these are all one and a half- or two and
7 a half-inch lines.

8 And during the course of the request for
9 additional information process, we got very detailed
10 in asking, "Well, this is a good procedure for between
11 one and four. Is this extended to less than one?"
12 And throughout the process, it's the same materials
13 and the same kind of considerations, so that was
14 rolled into the evaluation for all of small bore
15 piping. So we didn't have to keep making the
16 distinction between less than one and between one and
17 four.

18 DR. BONACA: Okay.

19 MR. LEE: And that's all that I prepared,
20 unless you have any more questions.

21 DR. BONACA: Now, there are no Class I
22 piping fabricated from CASS-1 at Arkansas-1; is that
23 correct?

24 MR. LEE: Pardon me?

25 DR. BONACA: There are no Class I piping

1 fabricated from CASS component?

2 MR. LEE: No.

3 DR. BONACA: In Arkansas. Now, the SER
4 refers to five leaks associated with RCS small bore
5 piping --

6 MR. LEE: Yes.

7 DR. BONACA: -- which have been identified
8 in the past? And there's a comment that says that the
9 applicant states that all leaks and cracks were caused
10 by vibration of fatigue due to design problems. And
11 how far back in time -- oh, yes, I can see that. As
12 late as 1998, however, it occurred.

13 MR. YOUNG: Yes. Right. What we found
14 was all of those leaks that occurred before, when we
15 did our root cause evaluation, identified some sort of
16 a vibrational problem or a support problem or a change
17 in the way we operated the plant. And the solution in
18 all those cases was to do a design change to correct
19 the problem that caused the cracking.

20 DR. BONACA: Okay.

21 DR. SHACK: I guess I had one question.
22 I'm a little surprised to find that everybody believes
23 Alloy 600 is the more limiting component over the
24 Alloy 82/182, and so that when you look at the most
25 susceptible Alloy 600, you've bounded the 82/182. And

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1 I just wondered if any rethinking of that since the
2 summer incident?

3 MR. LEE: That may be a better question
4 for --

5 MR. RINCKEL: Yes. This is Mark Rinckel.
6 The program that -- Alloy 600 program that Arkansas
7 has relies upon the B&W Owners Group program. And it
8 includes all the Alloy 600 items and all of the Alloy
9 82/182 weld locations. Up until this point, it was
10 pretty much expected that the base metal would be the
11 more limiting item. Recent events may change that.

12 DR. SHACK: Certainly in my laboratory
13 tests I wouldn't believe that.

14 MR. RINCKEL: Well, it was because of the
15 stresses and the way it was fabricated, at least our
16 components and what we had seen before. You know, the
17 nozzle that cracked at Arkansas was the base metal; it
18 wasn't the weld. And so for the B&W design
19 components, that's what we had seen.

20 But this is a living program, and they're
21 going to have to go back and see how this new
22 information affects the ranking. And the ranking was
23 done for ANO, as well as Oconee. Oconee used a
24 similar type ranking process, and identified the top
25 five locations amongst the three. But the program

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1 will evolve, you know, as they get more operating data
2 and so forth.

3 DR. SHACK: Yes. It's hard to look at one
4 without looking at the other.

5 MR. RINCKEL: Yes. So to answer your
6 question, every weld and every Alloy 600 item is
7 catalogued and is in the program. It's how it's
8 treated, you know, will evolve and will change. And
9 it may result in focusing on different locations for
10 inspection.

11 MR. ELLIOT: Barry Elliot, Materials and
12 Chemical Engineering Branch of NRR. As far as a weld,
13 82/182 welds, that's a current problem. We're
14 evaluating -- the industry is a proposing a program
15 right now to evaluate the entire -- all welds in the
16 reactor coolant pressure boundary that are 82/182.
17 And whatever program we come up with for those welds
18 will carry forward into the license renewal term.

19 DR. SHACK: I guess I had one other
20 comment too, and that was in the SER, there was a --
21 they were evaluating the program for thermal fatigue,
22 and they were taking credit for the primary water
23 chemistry. Now, I'll yield to nobody in my dedication
24 to good primary water chemistry, just how much it buys
25 you in terms of thermal fatigue, I'm a little

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1 skeptical.

2 MR. ELLIOT: We agree. And that's why we
3 have the Small Bore Piping program.

4 DR. SHACK: Well, but if you read the SER,
5 it's a preventive factor for thermal fatigue.

6 MR. ELLIOT: Yes. And that's why we have
7 inspections, to find that out.

8 PARTICIPANT: I don't believe that's the
9 only aging management program.

10 DR. SHACK: No. It was just under one of
11 the ten element assessments. I agreed that it
12 certainly does -- you wouldn't want bad water
13 chemistry on top of thermal cycling. Good water
14 chemistry isn't going to save you from thermal
15 cycling.

16 MR. GRIMES: When we go back -- this is
17 Chris Grimes -- when we go back and address the open
18 items in the final safety evaluation, we'll check to
19 make sure we haven't overstated water chemistry.

20 DR. BONACA: Now, my understanding is that
21 for this presentation it includes the reactor vessel
22 and pressurizer, right?

23 MR. LEE: Yes.

24 DR. BONACA: Not the TLAA portions.
25 They'll be later.

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1 MR. LEE: That will be later.

2 DR. BONACA: And I guess for this
3 component, it's pretty much B&W document supply.

4 MR. LEE: Yes. The only component that
5 did not have a topical was the pump. There may have
6 been another one, but from my recollection, the
7 reactor coolant pump did not have a topical.

8 DR. BONACA: Okay. And there is a
9 specific description here of the programs to manage
10 aging.

11 MR. LEE: Yes.

12 MR. RINCKEL: This is Mark Rinckel. The
13 other component that did not receive or have a topical
14 report was the steam generator, the OTSG. And, again,
15 the review of that was very similar to Oconee, since
16 they have the same OTSG.

17 DR. BONACA: Any comments on that, Bill.
18 You had some comments yesterday.

19 DR. SHACK: I looked at that again. I
20 have no idea -- what is the status of the steam
21 generators at ANO-1? Do they show degradation? Are
22 there plans to replace them or they're still marching
23 along?

24 MR. YOUNG: They're still marching along
25 fairly well, but we are in the early stages of doing

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1 an evaluation for possible replacement because of the
2 industry experience and the Oconee experience. So I
3 think at this point it would be safe to say we don't
4 expect them to last the full 40 years, but they
5 haven't started degrading to the point that we have to
6 make any definite plans for replacement. We're just
7 doing some preliminary plans at this moment.

8 DR. BONACA: Okay. Thank you. Any other
9 questions for Ms. Lee? No, so thanks a lot.

10 MR. LEE: Thank you.

11 DR. APOSTOLAKIS: Speaking of risk-
12 informed stuff, what is the core damage frequency at
13 ANO Unit 1 from the IPE?

14 MR. HARRIS: For the IPE, it was 3.47 E --

15 DR. BONACA: Please introduce yourself.

16 MR. HARRIS: This is Richard Harris at
17 Entergy. For the IPE, I believe the core damage
18 frequency was around 3.67 E minus 5. I may be off a
19 little bit, but it was a net in that area.

20 DR. APOSTOLAKIS: You say from the IPE.
21 I mean have you done anything to it afterwards?

22 MR. HARRIS: Yes. We have done a couple
23 of revisions to --

24 DR. APOSTOLAKIS: And what is it now?

25 MR. HARRIS: The current core damage

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1 frequency is around 5.6 E minus 6.

2 DR. APOSTOLAKIS: Went down by, wow,
3 almost --

4 MR. HARRIS: There are some specific
5 reasons that for. One of the dominant contributors to
6 risk in the IPE was the station blackout sequences
7 lost that power. Since that time, we've put in a SBO
8 diesel, which took us from around 3.6 down to about
9 1.90 minus 5. And then our small break LOCAs became
10 a pretty dominant contributor after that revision.
11 We've since gone to new reg 57.50. We're initiating
12 the frequencies. And that's not the small break LOCA
13 frequencies. Our contributor's down significantly.
14 And there's some other changes included in that, and
15 those are addressed in the environmental report, but
16 those are the main things that took the core damage
17 frequency down.

18 DR. BONACA: And this is only internal
19 events, correct?

20 MR. HARRIS: Yes.

21 DR. BONACA: And you've done the IPEEE as
22 well?

23 MR. HARRIS: Well, we have done IPEEE. We
24 did a vulnerability assessment for fire and a seismic
25 margins method for that portion. We haven't

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1 calculated a core damage frequency for our fire
2 analysis.

3 DR. BONACA: But you will?

4 MR. HARRIS: Well, at this point, we'll
5 see where we're going with that. The intent of the
6 IPEEE effort was to identify vulnerabilities and
7 weaknesses in your operation system, et cetera. And
8 we've done that. And we've met the intent of IPEEE.
9 But there was no requirement to generate a core damage
10 frequency in that effort. And although we did use our
11 PSA models and fire methodology to do screening, we
12 didn't calculate an absolute core damage frequency for
13 fire.

14 DR. BONACA: Well, I guess that's not a
15 question to you, but I'm really curious now how one
16 can find vulnerabilities without calculating the core
17 damage frequency.

18 MR. HARRIS: Well, you can -- what you can
19 do, or what we did, and I think most of the industry
20 did, was we did a screening analysis. By removing
21 those components within the zone that would be
22 affected by a fire in that zone, you can then quantify
23 and determine what your CDF is. And if it's below $1E$
24 minus 7, it screens, you're done. If it's above $1E$
25 minus 7, then you go in and you look and say, "Well,

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1 is this -- does this really fail or does this really
2 impact this equipment? What are the circumstances?"
3 And you work on it until it either screens or it
4 doesn't screen.

5 And once it gets -- if it screens, you
6 stop. If it doesn't screen, then you work on it a
7 little bit more until you get to a point where you
8 feel comfortable that you've adequately assessed that
9 zone. Then you go to the next zone and you do the
10 same thing. But you're not really trying to determine
11 an absolute core damage frequency for each and every
12 zone. You're simply doing a screening analysis.

13 DR. BONACA: Okay.

14 MR. PRATO: The next presentation is on
15 "Engineering Safety Features," by Bart Fu.

16 MR. FU: Again, my name is Bart Fu. I'm
17 with EMCB NRR. I'm also the tech monitor for the ESF
18 section during ANO's license renewal process.

19 Just a brief overview of ESF system. They
20 consist of ECCS actuation part of it. That's the
21 LPI/HPI. And core flood. Then it also includes
22 reactor building spray, reactor building cooling,
23 purging, isolation. There are a few more: sodium
24 hydroxide system, hydrogen control system. So they're
25 designed, again, for the engineered safeguard purpose

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1 in case of a LOCA, in case of -- well, during shutdown
2 you use them to cool the core.

3 Most of the components are made of
4 stainless steel and carbon steels. In a few systems,
5 we've seen 90/10 carbon nickel and also inc alloy 800.
6 And they're exposed to air, ambient air, water and
7 borated water. Those are the environments.

8 Aging effects identified. Major aging
9 effects are pretty much a loss of materials, cracking
10 and fouling. Aging management programs. I believe
11 Meena discussed the common aging management programs
12 a little earlier. For a few of the systems, they have
13 specific aging management programs just for the
14 specific aging effects identified in the process.

15 We don't have any open items. There is
16 one item that was added to the supplemented FSAR.
17 That items calls for a one-time inspection of the
18 piping in the sodium hydroxide system. But all issues
19 are resolved at this point.

20 I was told to focus on the plant
21 differences. Really, as you all are aware of, they're
22 sister plants with Oconee, and even the process is
23 pretty much similar. The way I've seen, you know,
24 they've got, I think, a little bit more streamlined in
25 their process. The few differences that I know of,

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1 one is the hydrogen control system. It was identified
2 and reviewed as part of the auxiliary system in the
3 Oconee's process but as an ESF system, part of the
4 ESF. In ANO's process, under the same -- it should be
5 listed the same system.

6 Under this hydrogen control system, no
7 aging effects were identified for the Oconee's review
8 process, but at ANO, fouling was identified as an
9 aging effect. That was the only difference for this
10 system. And it's actually fouling at the external
11 surface for the EP changers. They're exposed to a gas
12 air environment.

13 The other difference, halide impurities.
14 The concern was raised during the process, and we
15 talked to the plant engineers about the -- we called
16 it a little bit too high of impurities in the sodium
17 hydroxide system -- or sodium hydroxide. And we
18 addressed this issue. And it resolved the item I
19 mentioned that was added to the supplemented FSAR that
20 calls for a one-time inspection of the system.

21 DR. SHACK: I mean there was some
22 difference in the specification for the purchase of
23 the sodium hydroxide that would let you expect more
24 halide here?

25 MR. FU: I'm not sure about Oconee, but at

1 ANO that was the case, yes, because they may have
2 purchased sodium hydroxide from different sources.
3 But when I reviewed the Oconee's SER, this concern
4 wasn't raised. So it could be the sources, but I'm
5 not so sure.

6 DR. SHACK: What temperature is that
7 system? I mean that stuff sits around at room
8 temperature, basically?

9 MR. FU: Right. Ambient air. So we're
10 talking about 90-some.

11 DR. SHACK: Oh, so it's -- yes.

12 DR. BONACA: Much of this piping is
13 exposed to boron, right?

14 MR. FU: Boron streaming.

15 DR. BONACA: I'm sorry? Many of the
16 systems are exposed to boron.

17 MR. FU: Right. Or to water or boron.

18 DR. BONACA: Yes. So I guess -- so this
19 must be controlled by some kind of -- oh, yes, boric
20 acid, corrosion --

21 MR. FU: Right.

22 DR. BONACA: -- carbon. Is this problem
23 looking at piping inside and outside only or just
24 simply focusing on the internal corrosion of piping?

25 MR. YOUNG: Are you referring to the Boric

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1 Acid Corrosion Prevention program?

2 DR. BONACA: Yes, yes.

3 MR. YOUNG: It's external piping carbon
4 steel and components. So the program is basically a
5 walkdown inspection looking for boric acid crystals.
6 And then if we find them, we trace them back to the
7 source and see if it has contacted any carbon steel
8 components. And if so, corrective action is taken.

9 DR. BONACA: Okay. Now, this piping
10 typically sits there standby with boric acid diluted
11 in the water. And what prevents internal corrosion,
12 I guess, is lining of the piping?

13 MR. YOUNG: All of the piping that has
14 borated water in it is stainless steel. There is no
15 carbon steel, right. The only time we get boric acid
16 on carbon steel is if it leaks out and gets on another
17 piping system that is carbon. But all internal
18 surfaces are stainless that have borated water.

19 DR. BONACA: So mostly you're looking at
20 joints, you're looking at --

21 MR. YOUNG: Yes. Flanges --

22 DR. BONACA: Flanges.

23 MR. YOUNG: -- and valve packing and
24 things like that.

25 MR. FU: And just to add to your point,

1 when there's a leak, you see on the external surface
2 of carbon steel, and then they have maintenance rules
3 and other programs to catch it.

4 DR. BONACA: Yes. And so -- I mean this
5 is a standard program, but you come back and there are
6 no changes to it for the extended period of operation.

7 MR. YOUNG: That's correct. That's
8 correct. It's the existing program.

9 DR. BONACA: Okay. Thank you.

10 MR. PRATO: Any additional questions?
11 Thank you.

12 The next presentation will be on
13 "Auxiliary Systems," by Merrilee Banic.

14 MS. BANIC: Good morning. My name is Lee
15 Banic, and it's a pleasure to be here to present our
16 safety evaluation of the 13 auxiliary systems. As the
17 lead technical monitor for the contract on the
18 auxiliary systems for the Materials and Chemical
19 Engineering Branch, I'll be making the presentation.
20 Assisting me is Renee Lee, the technical monitor for
21 the contract for the Mechanical Engineering Branch and
22 Jim Davis of the Materials and Chemical Engineering
23 Branch. Our contractor, Idaho National Labs,
24 performed the review.

25 The ANO-1 auxiliary systems consists of

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1 the following 13 systems: spent fuel, fire
2 protection, emergency diesel generator, auxiliary
3 building sump and reactor building drains, alternate
4 AC diesel generator, halon fuel oil, instrument air,
5 chilled water, service water, penetration room
6 ventilation, auxiliary building heating and
7 ventilation and control room ventilation.

8 We reviewed the application to determine
9 whether the effects of aging on the system components
10 were adequately managed. There were many kinds of
11 components. They include pumps, piping, valves,
12 drains, screens, tanks, cylinders, fans and filters,
13 among others.

14 The environments were water, meaning
15 borated, treated and well water, external buried,
16 external ambient, internal ambient and fuel oil. The
17 aging effects were cracking, loss of material, loss of
18 mechanical closure integrity and fouling.

19 Of the programs we reviewed, most were
20 existing programs proven by operating experience and
21 common to the industry. Many apply to more than one
22 system. The programs are: reactor building leak rate
23 testing, maintenance rule, Oil Analysis program,
24 preventive maintenance, buried pipe inspection, ASME
25 section 11, ISI inspections and augmented inspection,

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1 chemistry monitoring programs, primary, secondary and
2 auxiliary systems, Boric Acid Corrosion Inspection
3 program, spent fuel pool level monitoring, service
4 water, Chemical Control program, fire suppression
5 water supply system and sprinkler system surveillance,
6 fire water piping thickness evaluation, control room
7 halon fire system inspection, emergency diesel
8 generator testing and inspections, reactor coolant
9 pump oil collection system, alternate AC and AC diesel
10 generator testing and inspection, Diesel Fuel
11 Monitoring program, instrument air quality, wall
12 thinning inspection, Heat Exchange and Monitoring
13 program, Service Water Integrity program and testing
14 of the penetration room and control room ventilation
15 systems.

16 We had no open items. We found that ANO
17 has shown that the effects of aging on the auxiliary
18 systems will be adequately managed so that there is
19 reasonable assurance that the systems will perform
20 their intended functions in accordance with the
21 current licensing basis for the period of extended
22 operation.

23 For items that are unique or different
24 from Ocone, we had the Buried Pipe Inspection
25 program. This is a new program. ANO's program is

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1 consistent with programs acceptable according to the
2 Generic Aging Lessons Learned Report.

3 DR. BONACA: Okay. I had a question
4 regarding the alternate AC generator. The starting
5 receivers, are they in scope? That wasn't clear if
6 they were in scope.

7 MR. YOUNG: Yes.

8 DR. BONACA: They are in scope.

9 MR. YOUNG: Yes. Everything associated
10 with the, we call them the station blackout diesels,
11 or the alternate AC diesels, were in scope.

12 DR. BONACA: Part of the pressure
13 boundary.

14 MR. YOUNG: Yes.

15 DR. BONACA: The other question I had was
16 instrument air. Now, the passive components or
17 elements of the compressors, are they in scope?

18 MR. YOUNG: No, not the compressors. The
19 only portion of the instrument air that was in scope
20 were the portions that connected directly to a safety
21 system or were part of a reactor building isolation
22 system. But the actual instrument air system itself
23 is not safety grade.

24 DR. BONACA: So you don't have any passive
25 component that you had to look at. I mean you're

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1 looking at it as an active component.

2 MR. YOUNG: Well, the passive equipment
3 that we looked at were pressure boundary on the tubing
4 and the piping and certain valves that we credit to
5 ensure that we don't have a loss of air on those
6 systems that require air. The compressors themselves
7 are not -- we don't depend on them. We have air
8 accumulators for those systems that have a safety
9 function that requires an air supply.

10 DR. BONACA: Okay.

11 MR. YOUNG: Yes.

12 DR. BONACA: All right. Okay. Thanks.
13 On the -- one thing I noticed in many of these
14 programs, some of them make reference to preventive
15 maintenance as a program that supports it; some of
16 them don't. And yet it seems to me that preventive
17 maintenance is part of those components too. It's
18 just an oversight or --

19 MR. YOUNG: No. You're right. Preventive
20 maintenance is a part of every system in the plant.
21 But what we did is on those systems that required some
22 sort of aging management program, we looked to see if
23 we had a preventive maintenance activity that we could
24 credit for that.

25 DR. BONACA: I see.

1 MR. YOUNG: So the ones you see in the
2 document there are those that we specifically credited
3 for an aging management review.

4 DR. BONACA: Because they do perform an
5 aging management role.

6 MR. YOUNG: Right.

7 DR. BONACA: All right.

8 MR. GRIMES: Dr. Bonaca, this is Chris
9 Grimes. And I'd like to add that Safety Evaluation
10 explicitly considered in each of the programs whether
11 or not we felt there was a need to credit some form of
12 preventive maintenance.

13 DR. BONACA: All right. So I understand
14 now. We really have a benefit from it that you can
15 claim for the aging purposes. Otherwise you don't
16 reference that.

17 MR. GRIMES: Yes. The important part is
18 whether or not we felt that was a need to credit a
19 preventive maintenance activity specifically for the
20 purpose of managing the aging effect.

21 DR. BONACA: On the control room, this is
22 part of the system, yes. Are the door seals and other
23 penetrations in scope?

24 MR. YOUNG: Yes. All of the pressure
25 boundary for the control room was in scope.

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1 DR. BONACA: Okay. And I had a question
2 here. I think we discussed it before, the buried
3 piping for the extent on the environment. My question
4 was more like you've had experience with it, because
5 you already set it on a frequency of once almost every
6 five years. Did you have any problems you identified
7 through these inspections in the past?

8 MR. YOUNG: As far as aging problems?

9 DR. BONACA: Yes.

10 MR. YOUNG: The problems that we've found
11 in the past have primarily been associated with some
12 sort of an event.

13 DR. BONACA: Okay.

14 MR. YOUNG: For example, we had an acid
15 leak that was routed through some abandoned piping and
16 got down into some buried piping and ate away the
17 coating and the pipe until a leak occurred.

18 DR. BONACA: Yes.

19 MR. YOUNG: And so as we went down to
20 repair that, we inspected the piping in the area
21 seeing if the acid had exposed any other piping.

22 DR. BONACA: Outside of those kind of
23 failures that you have seen because of root cause --
24 I mean here you have a cause that --

25 MR. YOUNG: Yes.

1 DR. BONACA: -- have you had any
2 experience of failures of buried piping that you did
3 not expect?

4 MR. YOUNG: No, no. We haven't found any
5 instances where the -- all of this piping is coated
6 with a tar-type coating.

7 DR. BONACA: Right.

8 MR. YOUNG: And the only time we've had
9 problems so far has been when that coating was damaged
10 for some reason, such as the acid leak. So as long as
11 the coating is in tact, we haven't seen any problems.

12 DR. BONACA: Okay. Thank you.

13 MR. PRATO: This is Bob Prato. During the
14 inspection, the aging management review inspection, we
15 thoroughly reviewed the Buried Pipe Inspection
16 program. We looked at all the operating history, and
17 we have an extensive write-up in the inspection
18 report, which should be issued in about 30 days.

19 DR. BONACA: Okay. Oh, yes, on the
20 Emergency Diesel Generator Testing and Inspection
21 program, it's interesting that, you know, the
22 frequency of tests and visual exams are managed by
23 plant procedures. Now, question, just for learning
24 purposes, you know, if you make a change to those
25 procedures at some point in the future, for example,

1 by stepping down the frequency of the inspections or
2 tests, okay, how does that tie up to be accident of
3 the aging management commitments?

4 MR. YOUNG: In the diesel, the emergency
5 diesel case specifically, what we found was that the
6 current inspection intervals, which are normally a
7 major inspection every 18 months and then some more
8 minor inspections during the surveillance period,
9 which may be quarterly or monthly, was far more
10 frequent than what's required for aging management.
11 So we went ahead and committed to those programs
12 simply because they're existing programs.

13 But if we were only looking for aging
14 effects, we would have much longer intervals than
15 what's required for the active function of the system.
16 So we're crediting something that is looking for
17 active failures, but we're also finding it would see
18 any evidence of corrosion during those inspections.

19 DR. BONACA: Yes. In some cases, that may
20 not be the case, however. You may have instances
21 where -- I'm trying to understand now, you have
22 commitments in the FSAR addendum, and I understand
23 that. But you must have a configuration management
24 program of some type that ties commitments you made
25 for existing programs tied to aging, to the LRA, so

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1 that you can flag it through that.

2 MR. YOUNG: Right. The way that will work
3 is we will have the commitment in the SAR that
4 changes, the SAR supplement that comes out with the
5 new license. And then that will tag those specific
6 procedures as being associated with a SAR commitment.
7 And then any changes that we would want to make will
8 have to go through the full 50.59 review process to
9 determine if we -- that we're meeting our commitments.

10 DR. BONACA: Yes. Okay, thank you. I
11 don't have any other questions of this issue. Thank
12 you. Any other questions?

13 MR. PRATO: Next presentation is "Steam
14 and Power Conversion System," by George Georgiev.

15 MR. GRIMES: This is Chris Grimes. While
16 George is getting settled in his chair up there, I'd
17 like to mention that we're embarking on an effort here
18 to get about three hours ahead of your schedule. And
19 so for your planning purposes, I think we now have all
20 of the staff representatives to cover the afternoon
21 materials. And so we're going to continue to try and
22 march through and cover the safety evaluation topics
23 hopefully before lunch.

24 DR. BONACA: Now, there is a presentation
25 scheduled also, "The License Renewal Environmental

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1 Review Process."

2 MR. GRIMES: Yes. We can get Mr. Kenyon
3 here. He's not here. He was here. But we can bring
4 Mr. Kenyon in if you want to cover that before lunch.

5 DR. BONACA: Anyway, let's -- why don't we
6 just proceed about half an hour and see where we're
7 going at that point. And then we'll make some
8 decision of how long this meeting will last.

9 Okay. So now we are down to "Steam and
10 Power Conversion Systems."

11 MR. GEORGIEV: Yes, good morning. My name
12 is George Georgiev, and I was the technical monitor
13 for the steam and power conversion system, and ARGON
14 National Laboratory did the actual review.

15 The steam and power conversion system
16 includes four subsystems: Main steam, main treated
17 water, emergency feed water and the condensate storage
18 and transfer system.

19 The materials for those subsystems are
20 mainly carbon, steel. It does include some stainless
21 steel, bronze and copper. The environment in which
22 these systems operate is mostly treated water, which
23 is a high purity water and steam, and the external
24 environment is ambient, inside building environment in
25 the reactor building turbine and the auxiliary

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1 building.

2 There are 11 aging management programs
3 identified in the application. As example, some of
4 them are Flow Accelerated Corrosion Prevention
5 program, ASME Section 11, inspection -- Wall Thinning
6 Inspection program, maintenance rule and some others.

7 The components for those systems are
8 standard piping components: piping, valves, pumps,
9 feedings, there are some coolants and heat exchanges.
10 And it's nothing unusual.

11 The aging effects that the application
12 identified with these systems is general corrosion,
13 selective leaching involving CASS and peeling and
14 stress corrosion. Again, those are expected
15 degradation effects for these type of materials and
16 environment.

17 We did not identify any open items. And
18 as far as plan differences and Oconee and Arkansas one
19 very minor. Like, for instance, in the materials
20 area, in the Oconee application, there was copper
21 nickel for tubes used here. They have something else.
22 They do have copper tubes in some of their coolers.
23 As far as the aging management programs in this plant,
24 there are 11 aging management programs and Oconee's,
25 there were only four aging management programs

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1 identified to control aging effects.

2 And that's basically it. That concludes
3 our presentation.

4 DR. SHACK: When I read the report, I was
5 sort of interested in the flow-assisted corrosion,
6 that they had done 900 inspections and replaced 125
7 components. That seemed to me a larger number. But
8 I assume all that was really in the secondary system,
9 by and large.

10 They're relying on check works, which, as
11 I understand it, would monitor sort of the most
12 susceptible regions, and then you would do an
13 analytical thing to sort of assure yourself that
14 you're okay. Are they actually directly making
15 ultrasonic measurements on any part of the feed water
16 system or the main steam or those would all rank low
17 in the susceptibility and so they're monitoring
18 something else directly?

19 MR. GEORGIEV: I believe that the latter
20 is the case in the system, including the steam and
21 power conversions and the lower side. However, they
22 do have a Wall Thinning program, which is separate for
23 the steam and power conversion system. They take
24 measurements of the management and compare, you know,
25 how it is to what it was before.

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1 DR. SHACK: So there are direct wall
2 thinning measurements then, for example, in the feed
3 water system?

4 MR. GEORGIEV: That's right, yes, there
5 is. But it's more in conjunction with the wall
6 thinning problem. See, in this plant, they have
7 subdivided. They have 11 programs, and Oconee, they
8 have four. And part of the reason, I believe, was
9 explained earlier.

10 They went back to their procedures, their
11 way of doing business. And whatever they can use
12 within these programs and procedures that could be
13 used to do an aging management, they use it. And in
14 doing that, I guess, they ended up with 11 programs.
15 They also have more of Section 11 type of inspection
16 in this steam and power conversion than Oconee had.
17 And maybe I should let them explain better why they
18 set it up the way they set it, but that's how it is.
19 The staff believes it's --

20 DR. SHACK: Yes. Somehow I had
21 interpreted the wall thinning as some sort of --
22 you're looking for general corrosion, but I wouldn't
23 have thought that you were doing that on systems that
24 you were monitoring for flow-assisted corrosion.

25 MR. YOUNG: That's correct. The Flow

1 Accelerated Corrosion program deals with those systems
2 that have that potential effect, and we do do
3 ultrasonic inspections in certain locations to measure
4 the actual loss of material and then to trend it to
5 see if we have a situation where we need to replace
6 the piping or just continue to monitor it.

7 Then there were some other piping systems
8 that were identified in this review that could be
9 subject to wall thinning for reasons other than flow
10 accelerated corrosion. That's the Wall Thinning
11 program that was referred to. So it does not include
12 any systems that have flow accelerated corrosion
13 problems, because that's covered under that program,
14 under the FAC program.

15 DR. SHACK: So, again, coming back to my
16 question then, is any part of the feed water system
17 directly monitored under the DFAC program or it's one
18 of the less susceptible ones, and so you're looking at
19 something else as the lead component?

20 MR. YOUNG: I'm not familiar enough with
21 that program to say which one is the lead. I know we
22 do a lot of ultrasonic inspections during an outage,
23 but I can't tell you specifically which system is
24 included in that at this point. We can try to get an
25 answer for you, though.

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1 DR. SHACK: It just seemed to me on sort
2 of a risk-informed perspective, I'd worry a lot more
3 about losing that feed water system than I would many
4 of the other pipes that you're probably directly
5 monitoring.

6 MR. YOUNG: Well, I know that the way the
7 program was set up, we're looking for those areas that
8 are the most susceptible to FAC, and it has to do more
9 with geometry and the way the system --

10 DR. SHACK: Right, rather than risk.

11 MR. YOUNG: Right. Yes. In fact, I don't
12 think risk even comes to play on the FAC program.

13 MR. FU: Are you satisfied, sir?

14 DR. SHACK: Yes.

15 DR. BONACA: Any other questions? None,
16 so thank you.

17 MR. FU: Thank you.

18 MR. PRATO: Next presentation is going to
19 be on "Structures and Structural Components," by David
20 Jeng.

21 MR. JENG: Good morning. I am David Jeng.
22 I'm a member of the Mechanical Engineering Branch in
23 Division Engineering. And being there was for us to
24 perform the review of the structure sections. And I
25 participated in the review after the submittal.

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1 I'm here to provide you an overview of the
2 structures and structure components review. The
3 applicant adopted so-called commodity grouping
4 approach in which they put together some materials and
5 environment items in different buildings as one
6 commodity group in just the aging management.

7 So among the commodity groups, they have
8 presented to us the steel structure -- concrete,
9 prestress concrete, threaded fasteners, fiber, and as
10 an embankment elastomas integral. These are the
11 sibling categories. They categorized, and each of
12 them they addressed their aging effect, their
13 environment, and how they propose to manage -- they
14 are proposing aging management programs.

15 The materials. Among the key materials
16 are structure steel, carbonized steel, standard steel,
17 concrete precision wires, fire protection material
18 like receiving for the penetrations, elastomas,
19 neoprenes, careful material and PVC water stopped.

20 With regard to the environment, I think
21 that, yes, so-called protected environment,
22 unprotected environment, high humidity, high
23 temperature, environments and high radiation
24 environment and also some roll water, baronated water,
25 or boric acid concentration and concrete environment.

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1 These are the key environments which we have
2 developed.

3 Income of aging effects. The major aging
4 effects are the loss of material, cracking and also
5 the change of material properties. And also, in the
6 case of prestress concrete component, we have a loss
7 of prestress due to reaction and cracks of the
8 preceding wires.

9 And we have not identified any open items.
10 As regard to any difference between the Oconee and the
11 ANO plant, there are a few minor differences. In the
12 case of Oconee, they used Keowee dams and the
13 hydraulic unit to provide power. ANO, we did not have
14 that kind of need. Also, Oconee had the so-called
15 safe-shutdown facility, which is sort of unique, as
16 compared to ANO-1 situation.

17 And in the case of ANO-1, they have
18 adopted so-called emergency cooling pond, which is the
19 major supplier of water for emergency situations. And
20 they had to perform annual inspection to make sure the
21 pond is maintained. And what they do is they do an
22 inspection to check the pond water and make sure the
23 volume is there. So this is sort of unique in the
24 case of ANO-1 compared to Oconee.

25 And there are other differences, such as

1 the trash racks in the infrastructure, which in the
2 case of ANO-1 was not within the AMR domain. And in
3 the case of the Oconee, the turbine building -- they
4 are part of the turbine building susceptibility, so
5 they had to address that portion. And this is the
6 difference between the two plants.

7 So these are the key differences between
8 the two sister plants. And my presentation concludes
9 at this point.

10 MR. GRIMES: Actually, I think they're
11 first cousin plants, but --

12 (Laughter.)

13 MR. JENG: First cousin plants.

14 DR. BONACA: Now, under the structural
15 steel portion, there's always a reference to an aging
16 effect being loss of material for the reactor building
17 liner plate. I just have a question regarding the
18 steel liner of the containment. Are there concerns
19 with any corrosion of steel liner outside of the steel
20 liner plate that has been addressed?

21 MR. JENG: In so far as the particular
22 issue, in the section of the steel liner operating
23 floor, unless there's some expansion allowances, in
24 the past history many plants did encounter some
25 difficulties, corrosion, due to seepage of the waters.

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1 But staff has paid attention in this area. In past
2 LRA evaluations, we asked applicant to talk about
3 their previous experience. In the case of ANO-1, I
4 think they have not encountered this situation which
5 we're concerned. So they are maintaining a good shape
6 of these interfaces.

7 DR. BONACA: So you have a program to look
8 at it? I mean are you walking down, typically, those
9 locations?

10 MR. YOUNG: Yes. All of the reactor
11 building liner drills are subject to a visual
12 inspection on a certain frequency. And then we if see
13 any sort of signs of degradation that could indicate
14 that there may be problems with the buried part of the
15 liner, or the embedded part of the liner, then we
16 would have to come up with some evaluations of
17 programs to deal with that. But we haven't had any
18 problems.

19 DR. BONACA: Because the steel liner goes
20 into the concrete --

21 MR. YOUNG: Yes.

22 DR. BONACA: -- and that ties into the
23 liner plate.

24 MR. YOUNG: The base.

25 DR. BONACA: So there is a portion which

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1 is not visually accessible.

2 MR. YOUNG: Yes. Right. But if we don't
3 see any signs of any problems at the surface, where
4 the water or whatever might get into it, then right
5 now that's our program to determine that there
6 shouldn't be any problems further down.

7 DR. BONACA: Okay. Regarding the
8 concrete, I was looking at page 232. There was a
9 request on the part of the NRC regarding aging effects
10 in an accessible area. And the response from Arkansas
11 was that the concrete used in those inaccessible areas
12 was a high cement contained, low water cement ratio
13 and proper curing. And that's the reason why the
14 applicant stated that we don't have to have an aging
15 management program, and the staff accepted that.

16 I was kind of -- I mean that kind of claim
17 could be made about any component which is not
18 accessible. And I'm not an expert in concrete
19 structures, just I wanted to understand how you got
20 the confidence that in fact because of these
21 assertions, you don't need to look at these
22 inaccessible structures.

23 MR. JENG: Okay. In the issue, really,
24 most concern the situation where in a containment it's
25 the basement level. The liner is about two feet deep

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1 of concrete. And the concern was if there was some
2 significant cracks on this two-foot concrete and the
3 water may seep in to become the agent for causing
4 degradation of the liner underneath that.

5 The staff originally pulls the requirement
6 that applicant should have an aging management
7 program. But soon the interaction and discussion
8 under the context of the LAR report discussion, most
9 of the staff and the applicant comes to a conclusion
10 that if you are ever to conclude it's of high quality,
11 low probability --

12 DR. BONACA: I see.

13 MR. JENG: For this reason -- on top of
14 that, they had the maintenance program to perform the
15 regular inspection, as required by the program. And
16 this, too, we come to the conclusion that --

17 DR. BONACA: Okay. I understand. And you
18 have solid records that shows that you have high
19 cement contained to low water cement ratio and proper
20 curing?

21 PARTICIPANT: Yes, we do.

22 MR. YOUNG: Yes. We went back to our
23 construction records to document that.

24 DR. BONACA: Again, on the effects of
25 aging on the building, I guess, in the tendon gallery,

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1 there's a statement that says, "The applicant states
2 that they have not observed abnormal levels of
3 humidity during four contaminants in the tendon access
4 gallery." And then there's a statement that says,
5 "Corrosion was identified in components during a ten-
6 year and 15-year in service tendon inspections. But
7 this loss of material did not adversely effect the
8 intended function of these components.

9 Now, I can agree that you had not enough
10 corrosion to affect the function. What does it give
11 you the comfort that we don't need to look at it in
12 the future?

13 MR. JENG: We do look at it in the future,
14 according to the tendon program. Yes, it is power.
15 It's on the side of the anchor of the tendon --

16 DR. BONACA: Yes, that's right.

17 MR. JENG: -- which is part of their
18 regular movement. So it's to be looked at --

19 DR. BONACA: Oh, so it's back to the
20 program already. The inspection and of course there
21 will be corrective action if he gets to the point.

22 MR. JENG: Yes.

23 DR. BONACA: Now, you still have an issue
24 of criteria for corrective action on the tendons that
25 you have an open item on, right? I thought there was

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1 an open item.

2 MR. JENG: That's only --

3 PARTICIPANT: On TLAA, sir.

4 DR. BONACA: Okay. All right. Thank you.

5 I have no further questions on this.

6 MR. JENG: Thank you.

7 MR. PRATO: Last presentation on the aging
8 management review will be by Duc Nguyen on the
9 electrical systems.

10 MR. NGUYEN: Good morning. My name is Duc
11 Nguyen, and I am a technical monitor in the electrical
12 system performed by the INEL, Idaho National
13 Engineering and Environmental Lab.

14 Today, I'm going to present the aging
15 management program for the electrical system. The
16 applicant yielded commodity component to identify the
17 long-lived passive electric component. That required
18 the aging management review. And you know most
19 electrical components are active, and therefore only
20 three commodity time will identify.

21 The first one is the connector, terminal
22 block and the cable. The environmental -- this can
23 affect the aging of this component, including the
24 radiation environment and the potential humidity
25 environment and chemical environment.

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1 Also, cable and connector also subject to
2 the frequent manipulation. When you disconnect and
3 connect them more than once, many times, it can create
4 a problem, especially to have a very low voltage
5 current, low voltage implementation cable and
6 connector. That can create a problem. That is
7 sensitive to small variation.

8 Talking about the aging effect, the aging
9 effect of the connector it would include the potential
10 aging. Aging mechanism will be the corrosion of
11 metal, electrical tresses, water, humidity effect,
12 mechanical tresses and thermal radiation, aging of the
13 organic components. However, the corrosion is not
14 expected because the connector usually in the -- not
15 so bad on dry condition, not in the humidity
16 condition. So it's not supposed to have any corrosion
17 effect.

18 And mechanical tress is not significant,
19 because, you know, connector does not provide any
20 mechanical support. So the mechanical tress is not
21 the problem. And electrical tresses. Usually,
22 connector can handle lots of current, so electrical
23 trussing not a problem. I had the applicant identify
24 the number of splices that can have the moisture and
25 the temperature effect. And to manage that, they do

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1 the Component Inspection program to manage that.

2 Also, the applicant also identified
3 connector that is subject to frequent manipulation,
4 like the multi-pin connector screw terminal and the
5 battery terminal post. The effect of frequent
6 manipulation can create wear, loose fitting, cracking,
7 and this can be detected by visual inspection. So
8 they do the good maintenance practice. That means
9 when you disconnect or connect something, they use a
10 good maintenance to check the resistance of that
11 connection.

12 And connector that are the terminating
13 impeding sensor circuit also has been identified by
14 the applicant. Oxidization and corrosion of the
15 connector pin could interfere with the operation of
16 these circuits. And in order to ensure this does not
17 happen, Electrical Component Inspection program will
18 be established to periodically inspect this connector.

19 And about a terminal block, the only thing
20 that can affect the aging of the terminal block is the
21 frequent manipulation. But the applicant identified
22 that, you know, the procedure will call for lifting of
23 the lead from the terminal block for testing purpose.
24 This will be to control the aging effect of frequent
25 manipulation.

1 And the last one is the cable. Cable can
2 have potential aging mechanism due to corrosion of the
3 conductor electrical tresses. Water and humidity
4 affect terminal degradation, aging and mechanical
5 tresses. About corrosion of the conductor, I think
6 it's not a problem, because, you know, conduction
7 usually covered by insulator. So corrosion of the
8 conductor is not a problem.

9 Electrical tresses can be a problem,
10 because the omit hitting can be significant for the
11 cable. That I wrote in they're continually open with
12 a high current, relative to that and past the limit.
13 However, most of this component, you know, only ruling
14 the normal operation, this component had very low
15 current. Only during the action condition then they
16 can create a high current. But it doesn't happen very
17 often.

18 Another concern is exposed to the wet
19 environment can be significant aging effect for the
20 medium or high voltage cable, especially the medium
21 cable that you have buried in the conducted. This can
22 have significant effect.

23 Chemical attack of the organic material
24 also can be potential effect of this cable. Radiation
25 tests are not significant because this is not a cable.

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1 So the radiation tests for this is less than one to
2 the eight rad, so it's not a problem. To manage this
3 aging effect, the applicant does the Component
4 Inspection program. They use the Inspection program
5 to manage the aging effect of this component.

6 Right now I would like to talk about an
7 open item that we have. We have the concern about the
8 unacceptable cable, because in the Component
9 Inspection program, there's only visual inspection.
10 And there's only visual inspection with acceptable
11 cable, not unacceptable. And they view the acceptable
12 cable to compare to with unacceptable, and we think
13 that's no comparable, because you cannot do visual
14 inspection for inaccessible cable. And we have a
15 concern with that one. So that one is an open item
16 right now.

17 DR. BONACA: The concern is that the
18 environment may be --

19 MR. NGUYEN: Different from the
20 acceptable.

21 DR. BONACA: -- different from what they
22 should assess.

23 MR. NGUYEN: Yes, yes. Especially water
24 tree, you know, moisture intrusion, and it can crack
25 the insulation of the cable.

1 DR. BONACA: This is a separate issue from
2 GSI 168.

3 MR. NGUYEN: Yes, different.

4 DR. BONACA: Yes. And Arkansas has
5 committed to essentially meet the requirements of GSI
6 168 once that is resolved?

7 MR. NGUYEN: That, let me ask Arkansas.
8 Maybe they can answer that question.

9 DR. BONACA: For medium voltage cables,
10 irrespective of accessible even. The concern which
11 has been raised through GSI 168 is the ability of
12 maintaining, for example, the environmental capability
13 once they are heated and in wet condition for a long
14 time. I mean because there has been testing that has
15 shown that under LOCA conditions, for example, they
16 would fail in a gross fashion. Has this issue been
17 addressed here?

18 MR. GRIMES: I'm going to attempt to
19 explain that the resolution of GSI 168, as I
20 understand it at this point, is being treated on a
21 manufacturer basis; that is, that the testing results
22 raise some question about the qualification techniques
23 by -- manufacturer now escapes me. But we're pursuing
24 those results primarily from the standpoint of
25 reflecting on the lessons learned from the testing.

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1 But otherwise, I believe that when GSI 168 is
2 ultimately concluded, and my recollection is it hasn't
3 been concluded yet, that it's still in a process of
4 trying to draw the generic insights.

5 But we still rely on compliance with EQ
6 rule as an acceptable way to establish a qualified
7 life. And the process by which one maintains
8 qualified life to reflect on testing insights and
9 whether or not the qualification basis needs to be
10 revisited at any point, either in the current term or
11 the extended period of operation.

12 DR. BONACA: The reason I asked that
13 question is that, first, the issue of GSI 168 is
14 pretty high on the agenda of this Committee of the
15 ACRS. And second, for Oconee, if I remember, we had
16 an implicit discussion in the SER regarding the in
17 fact medium voltage cables.

18 MR. GRIMES: Non-EQ medium voltage cables.

19 DR. BONACA: And the need for walkdowns of
20 those components. Yes, I agree with you, that the EQ
21 program requirements are sufficient to --

22 MR. NGUYEN: Wait, wait. This one is not
23 EQ. We talk about the non-EQ cable. GSI 168, I think
24 they talk about EQ cable, so that's a different issue
25 here. We're talking about here a non-EQ medium

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1 voltage.

2 MR. PRATO: Cables found outside, exposed
3 to the environment, buried.

4 MR. NGUYEN: Yes, buried.

5 MR. PRATO: And could be exposed to
6 groundwater.

7 DR. BONACA: Sure. And I can see this,
8 and you're asking for a program.

9 MR. GRIMES: If I could suggest, this is
10 equivalent to the open item that we had on Calvert and
11 Oconee and are still pursuing in generic aging lessons
12 learned in terms of establishing some consistent basis
13 for concluding that on the treatment of the potential
14 for moisture intrusion on medium voltage buried
15 cables.

16 DR. BONACA: Yes. Well, the reason why I
17 raised that issue was only because of the
18 characterization of buried cable. I thought that the
19 open issue for Oconee was all medium voltage cable.

20 MR. GRIMES: No. It was inaccessible,
21 whether the inaccessibility comes through being buried
22 or being hidden in a conduit. But the issue is
23 referred to both ways, as buried or inaccessible. But
24 essentially it's the same issue.

25 DR. SHACK: But didn't Oconee have a

1 program to look for sort of warm temperature --

2 DR. BONACA: That's right.

3 DR. SHACK: -- or radiated conditions on
4 the medium --

5 DR. BONACA: Absolutely.

6 DR. SHACK: It was non-EQ, but it was a
7 general kind of --

8 DR. BONACA: They offered the program, and
9 the program essentially was addressing all cables.
10 They had pictures of cable they had identified in
11 locations where clearly it was accessible, because I
12 took pictures of it, and it was showing the damage of
13 high heat and water intrusion on the jacket of cable.

14 DR. SHACK: That's what I recall. They
15 looked at the cabling and then they looked where the
16 cabling would be in a high temperature, high radiation
17 area, and then they would do inspections there.

18 DR. BONACA: Right.

19 MR. NGUYEN: We talk about inaccessible
20 cable, and I believe at Oconee they committed to test
21 everything for this kind of cable. Look at the
22 manhole to see if the water collects so they can make
23 a comparison to see how the inaccessible cable -- but
24 they commit to do the test.

25 DR. BONACA: They committed to do

1 walkdowns and inspect and repair the cable that showed
2 clear degradation. That's all they did.

3 MR. GRIMES: But my recollection is Dr.
4 Shack is correct, that it's not simply water intrusion
5 by itself that causes a concern about potential
6 degradation of the cable insulation. It's the
7 condition of buried cables or inaccessible cables that
8 also are exposed to other stressors that might cause
9 -- that would provide a basis for you to infer from
10 conditions of accessible cables the point at which
11 buried cables would become in jeopardy and would need
12 to be explicitly checked. And that was the nature of
13 the program.

14 MR. YOUNG: If I may here, as far as the
15 Arkansas situation, we have committed to an Electrical
16 Component Inspection program that's similar to Oconee
17 for the accessible cables in high temperatures and so
18 on. So we are on the same path with them there. This
19 open item dealt with those limited set of cables that
20 were buried or inaccessible, and we are working on
21 writing a resolution on those that will also match the
22 Oconee resolution which is to do some sort of testing
23 on these cables that may be exposed to that kind of
24 environment.

25 DR. SHACK: Is this testing a leakage

1 current thing or something?

2 MR. YOUNG: It's somewhat undefined at
3 this point, and -- yes, Jeff, go ahead.

4 MR. RICHARDSON: Yes. This is Jeff
5 Richardson with Entergy. Right now, the way the
6 electrical component -- our response to this
7 particular issue is being formed. The test is non-
8 specific. There are several different tests that have
9 been proposed, including power factor type testing.
10 We're not going specifically. It will be condition
11 driven based on the cable and the situation. But the
12 test --

13 DR. SHACK: But you'll do testing of some
14 sort.

15 MR. RICHARDSON: Yes. The plan at this
16 point, or the direction we're taking at this point is
17 to follow Oconee's lead into the medium voltage
18 inaccessible cables that are within the scope. Where
19 appropriate, where they're exposed to either extended
20 periods of being exposed to water and also in
21 conjunction with thermal stresses such as high system
22 voltage, greater than 25 percent system voltage for a
23 period of time, then those would be subjected to some
24 form of testing to be determined as appropriate for
25 those conditions.

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1 DR. BONACA: So there is a commitment you
2 said, and that's going to be in the FSAR.

3 MR. YOUNG: Yes. We've already got a
4 commitment to the visual inspection portion of it.
5 And in response to this open item, we'll make a
6 commitment for the varied cable portion.

7 DR. BONACA: Let me just make an
8 announcement outside of schedule here. I've been told
9 the Agency will close at 12 noon, which is now.
10 Because, I guess, of weather conditions, they're
11 sending people away. I would like to propose the
12 following here: We don't have much left on the
13 agenda, and I think we can condense the overview on
14 the license renewal and environmental review process.
15 So I would like to do is to continue. Just take five
16 minute break right now and then continue this meeting
17 for next half an hour. That should be allowing to go
18 to discussion, and then end the meeting. I think we
19 can do that.

20 MR. GRIMES: Dr. Bonaca, the staff is
21 ready, willing and able. We want to march through the
22 time limit at aging analysis. I sent a runner to try
23 and track down Mr. Kenyon so that we can try and get
24 through the environmental review as well.

25 DR. BONACA: Well, let's try to do that.

1 MR. GRIMES: Okay.

2 (Whereupon, the foregoing matter went off
3 the record at 12:00 p.m. and went back on
4 the record at 12:08 p.m.)

5 DR. BONACA: We want to review the TLA.
6 I believe that's the next step of the agenda.

7 MR. ELLIOT: My name is -- my assistant
8 here is not here. My name is Barry Elliot. I'm with
9 the Materials and Chemical Engineering Branch of NRR.

10 There are ten TLA issues that cover
11 mechanical areas, materials areas, corrosion areas.
12 So it covers a broad spectrum of Division of
13 Engineering functions. People who have reviewed these
14 area functions are Hanz Asher, Carol Lauron, John
15 Fair, Cliff Munson, Amar Pal, Mark Hartzman, Andrea
16 Lee and Jay Rajan.

17 The first TLA is reactor vessel neutron
18 embrittlement. There are two regulations that are
19 reviewed with respect to this issue. They are the PTS
20 rule, which is 10 CFR 50.61 and Appendix G of the
21 regulations, which establishes upper-shelf energy
22 requirements.

23 In this case, the applicant did a plant-
24 specific PTS evaluation. And as far as the upper-
25 shelf energy, it would be a plant-specific upper-shelf

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1 energy evaluation. And it turns out that as far as
2 the upper-shelf energy, all the forgings would be
3 above 50-foot pounds at end of license, end of renewal
4 license. However, the welds would not -- and an
5 Appendix K analysis was done to show that it had
6 adequate safety margins. These methodologies are the
7 same as those used by Oconee, the only difference
8 being the plant-specific variability.

9 The next issue is metal fatigue. The
10 applicant evaluated the impact and environmental
11 effects on the reactor coolant pressure boundary
12 components. And the evaluation indicated that the
13 surge line and the high pressure injection make-up
14 nozzle and safe ends may exceed a cumulated usage
15 factor of one during the period of extended operation.
16 As a result, the applicant proposes a program which
17 will include one or more of the following options:
18 refinement of the fatigue analysis, repair,
19 replacement and management of the effects of fatigue
20 by a program that would be approved by the staff.

21 Essentially, this is very similar to what
22 Oconee did. The difference is that Oconee is counting
23 the cycles and may have to perform corrective action
24 similar to ANO-1. ANO-1 already extrapolated a number
25 of transients in 60 years and has identified the

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1 potential locations with usage factors that may exceed
2 one.

3 DR. SHACK: But they also do a monitoring
4 program, don't they, so they'll be able to actually --

5 PARTICIPANT: Count.

6 DR. SHACK: Yes, count.

7 MR. ELLIOT: Yes, they do that.

8 MR. FAIR: This is John Fair with the
9 staff. They haven't proposed to do this by a
10 monitoring program similar to Oconee, but they do have
11 a cyclic -- they do keep track of cyclic transients.
12 But they don't propose to use the program to manage
13 the effect. So they did an up-front calculation,
14 whereas Oconee is going to monitor cycles.

15 MR. ELLIOT: The next issue is
16 environmental qualification. The applicant evaluated
17 environmental impact of extended operation on all
18 long-life, passive and active electrical components
19 within the scope of the rule. And the components
20 either had analysis that remained valid for the period
21 of extended operation, had analysis that projected to
22 the end of the period of extended operation or had a
23 program to reanalyze or replace components prior to
24 exceeding the qualified life of the component. This
25 is very similar to the program for Oconee.

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1 Next issue is concrete reactor building
2 tendon prestress. The applicant indicates concrete
3 reactor building tendon prestress that we've managed
4 during the period of extended operation, using ASME
5 code, Section 11 In-Service Inspection program. This
6 is an open issue for us, because although this is
7 similar to Oconee, in the case of Oconee, they have
8 addressed the program in sufficient detail and given
9 us sufficient characteristics to approve the program.
10 In the case of ANO-1, they have not, and they must
11 address the attributes and characteristics that are in
12 this overhead. And then we'll be able to resolve this
13 issue.

14 The reactor building liner plate fatigue
15 analysis. The applicant had demonstrated that the
16 original fatigue analysis is valid for the extended
17 period of operation. In this case, the methodologies
18 used by Oconee and ANO-1 are the same. Individual
19 plant-specific transients may be slightly different.

20 Next issue, aging of Boraflex and spent
21 fuel pools. Boraflex is a neutron absorber. It is
22 used to maintain subcriticality margin in the spent
23 fuel during storage or transfer of fuel. Tech specs
24 require applicants to maintain the subcriticality
25 margin. The applicant has determined that the

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1 Boraflex has degraded more rapidly than expected and
2 will not last through the current 40 years. They've
3 done an analysis, and that's the results.

4 As a result, in order to satisfy the
5 license renewal rule, they're going to have to propose
6 a program to monitor the aging of the Boraflex. This
7 is an open issue at the moment for ANO-1. They have
8 to propose a program. Oconee has already a defined
9 program, and that's the difference.

10 Next issue, as far as reactor vessel
11 underclad cracking, the issue here is that when B&W
12 fabricated the vessels, the course grade forgings had
13 cracks in them during fabrication, intergranule
14 separations during the cladding operation. We're
15 talking about defects on the order of a tenth of an
16 inch. This was evaluated in the first 40 years, and
17 in the next 60 years the evaluation goes to higher
18 neutron fluences and also more fatigue crack growth.

19 The analysis was a fraction mechanic
20 analysis, and it was determined to be acceptable by
21 the staff for the 60-year license. Both Oconee and
22 ANO referenced the B&W topical report, which contained
23 analysis applicable to both Oconee and ANO-1.

24 Next issue is the reactor vessel
25 instrumentation nozzle. The applicant has evaluated

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1 the impact of flow-induced vibration on reactor vessel
2 instrumentation nozzles. Analyses have been projected
3 to the end of the period of extended operation. The
4 flow-induced vibration stresses are below the
5 extrapolated fatigue limit. Oconee and ANO-1 used the
6 same methodology in evaluation of flow-induced
7 vibration -- well, ANO-1 used the same methodology as
8 used in Oconee reactor vessel internals.

9 DR. SHACK: Do they do this because
10 they've actually had a flow-induced vibration problem
11 or is this just part of their basic design?

12 MR. FAIR: This is John Fair again. This
13 is part of the basic design on this. They just
14 extrapolate out the originally designed for -- what is
15 it, 12 cycles or something like that? And they
16 extrapolate it out in order of magnitude, very
17 conservative extrapolation.

18 MR. RINCKEL: This is Mark Rinckel with
19 Framatome. There were problems with the original end
20 core modern system design. There were three-quarter-
21 inch on 60 pipe that went at the bottom of the vessel.
22 Those cracked off at Oconee at one, and then they
23 built them up and repaired them all. And then this
24 fatigue analysis that John's referring to was with
25 regard to the new design.

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1 DR. SHACK: So you basically just beefed
2 the up enough --

3 MR. RINCKEL: We beefed up, yes.

4 DR. SHACK: -- so the stresses are very
5 low.

6 MR. RINCKEL: Yes. They were not designed
7 proper to begin with, and that was corrected.

8 MR. ELLIOT: The next issue is a leak
9 before break. The applicant did a -- there was a
10 leak-before-break analysis done in the first 40 years.
11 The applicant has evaluated the impact of fatigue
12 crack growth and thermal aging on leak-before-break
13 analysis of the reactor coolant system, main coolant
14 and piping. The floor growth analysis remains valid
15 for the period of extended operation. And the flaw
16 stability analysis used lower bound casts, fostering
17 a stainless steel fracture toughness properties for
18 the reactor coolant pump nozzles in adjacent welds.

19 And the adjacent wells will have adequate
20 fresh stuff at the end of the period of extended
21 operation. That's the result of the analysis. Ocone
22 and ANO-1 used the same basic approach.

23 The last issue is the reactor coolant pump
24 motor flywheels.

25 DR. SHACK: Excuse me, that must be a

1 postulated flaw assumption, right?

2 MR. ELLIOT: Yes, it is a postulated flaw.

3 DR. SHACK: What's the postulated flaw?

4 MR. ELLIOT: It's a leak before break.

5 You have to have a leakage size.

6 DR. SHACK: Oh, okay, okay.

7 MR. ELLIOT: It's criteria. There's

8 leakage-size flaw, and then there's a stability flaw.

9 There's two size flaws, and that depends on the

10 leakage and the size of the pipe and everything. So

11 there's not one flaw; it's a through-wall flaw.

12 DR. SHACK: It's a through-wall flaw.

13 MR. ELLIOT: It depends on the size of the

14 pipe and --

15 DR. SHACK: They're not just counting to

16 go through the wall. They're actually looking at the

17 through-wall flaw and making sure it's stable.

18 MR. ELLIOT: Right. That's for the

19 stability analysis. For the fatigue analysis, it

20 starts with a small flaw.

21 And then the final issue is the reactor

22 coolant pump motor flywheels. The applicant has

23 evaluated the impact of fatigue on the growth of

24 cracks in the reactor coolant pump flywheel bore

25 keyways. This is another postulated flaw. There is

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1 no flaw there. And the analysis is projected --
2 growth remains acceptable for the period of extended
3 operation. There is nothing unique about this
4 analysis. This is standard fatigue crack growth
5 analysis.

6 Any questions?

7 DR. SHACK: Is that in a standard design
8 procedure for all coolant pumps with keyways? Do they
9 have to do this?

10 MR. ELLIOT: No. There is a different
11 here, now that I think about it, a little different.
12 They did the analysis -- in the case of Oconee, they
13 proposed a program. Instead of doing the analysis to
14 the reactor pumps, they do inspections, periodic
15 inspections. So you have this alternative. You can
16 either do analysis or you can do inspections. And at
17 ANO-1 they chose the analysis, and Oconee chose the
18 inspections. And this is a continuation of each of
19 their licensing bases. The ANO-1 licensing basis was
20 the fatigue study, and the Oconee licensing basis was
21 the inspection program.

22 DR. BONACA: Okay. One last question I
23 have is regarding the Boraflex. So the expectation is
24 that there will be a solution needed prior to entering
25 the 20 additional years of life.

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1 MR. PRATO: In reality -- this is Bob
2 Prato -- in reality, they had submitted a program that
3 was consistent with Oconee. We asked for some
4 additional description in our RAIs, and that's when
5 they found the data would -- that the Boraflex would
6 not last the current licensing term.

7 DR. BONACA: All right.

8 MR. PRATO: They did not respond to our
9 description. They said it's no longer TLAA. Staff
10 took exception. So, basically, what they're going to
11 provide is that same program they had initially with
12 the additional information we requested in our RAI.
13 And from the staff's perspective, that should resolve
14 the issue.

15 DR. BONACA: Okay. Thank you.

16 MR. ELLIOT: Thank you.

17 MR. PRATO: That concludes the safety
18 inspection review. Tom Kenyon, for the environmental
19 evaluation review, will give his presentation at this
20 time.

21 DR. BONACA: And the plan we have right
22 now is to have a brief overview of this environmental
23 review process, maybe ten minutes or so. Then I would
24 like to just have a brief discussion among the members
25 here, and then a decision on how we're going to

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1 address this at the full committee next week.

2 MR. GRIMES: Yes, sir. Dr. Bonaca, this
3 is Chris Grimes. I would like to introduce Tom
4 Kenyon, who's the Environmental Project Manager for
5 Arkansas. I would like to remind you that the staff
6 made presentations to the Committee about the
7 regulatory guide and the standard review plan for the
8 environmental process. Tom's going to just basically
9 run through the main features of the review process
10 and our NEPA obligations. And he should be able to do
11 that in about ten minutes.

12 DR. BONACA: Okay.

13 MR. KENYON: I'll try. My name is Tom
14 Kenyon. I'm an Environmental Project Manager with the
15 Generic Issues Environmental, Financial and Rulemaking
16 Branch. I've been asked to make a presentation
17 regarding the environmental review process that we
18 undertake under the license renewal reviews.

19 I plan to talk a little bit about the
20 statutory requirements. We'll focus on the National
21 Environmental Policy Act. I'll be talking about the
22 review process that we go through and give you an idea
23 of the schedule. My goal is to just kind of put into
24 perspective the environmental protection activities
25 that we undergo for license renewal purposes. And the

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1 presentation is for information only. We're not
2 asking for a letter in this area. Of course, you
3 always have the option, if you want to, to provide
4 your views.

5 DR. BONACA: We don't intend to write a
6 letter on this now.

7 MR. KENYON: Thank you. Some of you may
8 recall that Barry Saltman had made a presentation like
9 this a couple years ago, and I think it's safe to say
10 right now that not a whole lot has changed, other than
11 we've implemented the process, we've completed the
12 review on two plants, Calvert Cliffs and Oconee, and
13 we're undergoing a review right now of three
14 additional plants.

15 As you well know, the NRC is governed by
16 the Atomic Energy Act and the Energy Reorganization
17 Act of '74. There are a number of other statutes that
18 define our mission in terms of the environmental
19 protection mission as well, but I'm going to focus on
20 the National Environmental Policy Act.

21 This slide gives you -- it's a slide of
22 all of the -- the entire license review process. The
23 top path shows the path that you're used to working
24 in. The Part 54 review includes the inspection
25 activities, it includes the safety review that Mr.

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1 Prato is involved in, and of course, it includes the
2 ACRS' review as well. Now, the bottom path is the
3 path that we follow as part of our Part 51 review.
4 And I'm going to go into more detail about each one of
5 these steps as we go through this presentation.

6 Now, I'm going to give you a bit of
7 background on the National Environmental Policy Act.
8 It was enacted in 1969, and it requires all federal
9 agencies to use a systematic approach to consider the
10 environmental impacts of certain decisionmaking
11 proceedings. It's a disclosure tool that involves the
12 public and involves the process in which we gather
13 information, we document the findings that we have and
14 then we invite public participation to evaluate it.

15 The NEPA process results in a number of
16 different documents, but the one that we're going to
17 focus on is the Environmental Impact Statement, which
18 describes the results of our detailed review, that is
19 the environmental impacts for major federal actions
20 that have the potential to significantly affect the
21 quality of the human environment. And the NRC has
22 already determined that NEPA -- I'm sorry, that
23 license renewal is just such a major federal action.

24 Now, to implement NEPA, the staff has its
25 regulations in Part 51. And the regulation describes

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1 the process that we undertake, it outlines the
2 contents of the Environmental Impact Statements, and
3 it also defines the objective of our review. And I'm
4 going to have to read this, because it's a big
5 unwieldy. Our objective is "To determine whether the
6 adverse environmental impacts of license renewal are
7 not so great that preserving the option of license
8 renewal for energy planning decision-makers would be
9 unreasonable."

10 Now, that's a quote from the regulations.
11 It's Part 51.95. I prefer to just think of it as
12 we're trying to determine whether or not the
13 additional 20 years of operation is acceptable from an
14 environmental standpoint.

15 Now, if I could go back to the previous
16 slide for a second. Early on when it was decided --
17 when we were developing the license renewal process
18 back in the '80s and '90s, it was recognized that the
19 original Environmental Impact Statements that were
20 developed to support the construction permits and the
21 operating licenses about 20 or more years ago would
22 have to be updated to reflect the additional 20 years.
23 And so the NRC undertook a rulemaking effort to modify
24 Part 51 and to have it reflect the license renewal
25 process.

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1 As part of the rulemaking effort, the
2 staff developed a generic Environmental Impact
3 Statement, known as the GEIS, which took a systematic
4 look at the thousands of hours of operation of the
5 nuclear power plants to help us identify where our
6 potential environmental impacts could occur. In
7 addition, the staff developed regulatory guidance, the
8 Environmental Standard Review plan, and a regulatory
9 guide.

10 Now, the GEIS was used, as I said earlier,
11 as a supporting document for the Part 51 rulemaking,
12 but it's also an integral part of our review process,
13 and so I wanted to go in a little bit of detail as to
14 what's enclosed in that document. The GEIS was
15 published as NUREG-1437 and was issued in 1996.
16 During the development, the staff met with the states,
17 the Presidential Council on Environmental Quality.
18 They met with the Environmental Protection Agency and
19 other groups, and they had a series of public
20 workshops to develop the final GEIS.

21 And suffice it to say that during this
22 period the staff was trying to identify what
23 environmental impacts needed to be reviewed in license
24 renewal. And we identified a total of 92 issues.
25 When the staff evaluated those issues, they found that

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1 some -- noticed that some of those were generic in
2 nature; that is that they are common to all plants or
3 a class of plants regardless of where they're sited.
4 And so the NRC wanted to kind of categorize them
5 differently, and so we came up with this Category 1,
6 Category 2 scheme, Category 1 being, of course,
7 generic issues, and Category 2 requiring plant-
8 specific review.

9 Now, I did not mean that we do not look --
10 well, I'm trying to figure out what I can skip
11 through. An example of Category 1 issue is a the off-
12 site radiological impacts. And the staff took a look
13 to see if whether or not it was likely that there
14 would be an increase in off-site radiological impacts
15 due to the increased operation. So they did a
16 historical review and determined that the public --
17 and determined that the doses to the public have been
18 maintained below those allowed by the regulations.

19 And staff has not been able to see any
20 reason why the doses would increase due to the
21 extended operation, provided that the control programs
22 and the monitoring programs are maintained and
23 implemented acceptably. So because the expected
24 radiological impacts apply to all plants in a similar
25 manner and that the impact is considered small at all

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1 the plants, the staff concluded that this could be
2 addressed on a generic basis.

3 Now, that does not mean that we do not
4 need to look at this issue anymore. What it means is
5 that we look only to see if there's significant new
6 information that would cause us to change the
7 conclusions that we made five years ago. As you can
8 see, there are 69 issues that were resolved in this
9 manner, considered generic issues, and the remainder
10 of the 23 issues that were identified need to be
11 addressed on a plant-specific basis.

12 Now, when the staff completed the GEIS in
13 '96, we evaluated it to determine their impact
14 significance, in terms of whether or not their
15 environmental impacts are likely to be small, moderate
16 or large. And what we determined was that the generic
17 issues, the Category 1 issues, all had a small impact
18 on the environment, and that the impacts of Category
19 2 issues could range across the full gamut, from small
20 to large, depending on the particular site and the
21 particular issue. I guess I don't know need to show
22 that slide.

23 Now, this slide shows a little more detail
24 about the NEPA process. There are certain steps that
25 we have to follow, and these steps are consistent for

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1 all Environmental Impact Statements that are prepared
2 by federal agencies for any major federal action. The
3 first step is the notice of intent. It lets the
4 public know that we're going to prepare for an
5 Environmental Impact Statement. It is issued in the
6 Federal Register shortly after the acceptance review
7 is completed.

8 To prepare for our reviews, we've
9 assembled a team of NRC staff with backgrounds in a
10 specific technical and scientific disciplines that is
11 needed to do these reviews. We have people with
12 backgrounds in biology, ichthyology, zoology. There
13 some people with human health backgrounds. And they
14 have generalists like me, project managers who
15 coordinate the reviews.

16 In addition, to supplement the expertise
17 of the staff, we've engaged the assistance of various
18 national laboratories to ensure that we have a well-
19 rounded knowledge base to do these reviews. For every
20 review, we put a team together of about 20 people.

21 The next step is the scoping process,
22 during which we tried to narrow down the scope of the
23 Environmental Impact Statement for the plant that
24 we're looking at. And we solicit public input. The
25 scoping process runs for about a minimum of 30 days

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1 and could be as long as -- what we've been doing,
2 because we have to gain some experience, we've been
3 allowing for a 60-day comment period. About midway
4 into the comment period, we have two public meetings
5 near the site where we describe what we do, and we try
6 to solicit public input. We also perform a site
7 visit, and we obtain information from the applicant
8 during the site visit and from federal, state and
9 local authorities.

10 Now, during this time, we seek information
11 to define the scope of the plant-specific
12 Environmental Impact Statement and determine what
13 needs to be studied in detail and what is not
14 appropriate to address. We start with the potential
15 list of 92 issues that came from the GEIS, and then we
16 try to determine which ones are applicable and which
17 are not.

18 In addition, we require the applicant to
19 submit an evaluation and to let us know whether or not
20 they're aware of any new, significant information that
21 could affect our conclusions on Category 1 issues.
22 And during the scoping phase, of course, we take a
23 look and see what the members of the public have to
24 say and other federal, state and local authorities.
25 And if something new and significant information does

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1 arise, then we review it on a plant-specific basis.
2 And if not, we adopt the generic conclusions from the
3 GEIS, and we incorporate those conclusions into our
4 plant-specific review.

5 Category 2 issues, of course, we look at
6 at the plant, and we obtain information during our
7 site audits. And finally, we also try to find out if
8 there's any new issues that we hadn't considered in
9 the GEIS five years ago. And if a significant new
10 issue does come up, then we would review that as if it
11 were a Category 2 issue.

12 The most important thing about this slide
13 that I wanted to point out was that -- I'm sorry.

14 MR. GRIMES: Tom, if I could suggest, if
15 you'd go to 15, because you basically covered what the
16 process steps are, and just flash 15 and 16 for the
17 areas review.

18 MR. KENYON: And then finish up.

19 MR. GRIMES: Yes.

20 MR. KENYON: Okay. This gives you an idea
21 of the ecological issues. The next slide shows you
22 the kind of issues we look at in terms of social
23 economics and environmental justice.

24 DR. APOSTOLAKIS: How do you do social
25 economics?

1 MR. KENYON: Well, we have a sociologist,
2 and we go out and we interview a number of different
3 people, like the local businessmen; we talk to local
4 charities; we try to get a flavor for what would be
5 the impact of the plant not being there, in terms of
6 what it would do to their tax base, that sort of
7 thing. It's kind of a different kind of review.

8 When you're talking to the people who run
9 the charities, you know, when they think of the plant
10 leaving, in some cases there would be a significant
11 impact; in other cases, these people that they take
12 care of are probably not likely to be working at the
13 plant to start with. Okay?

14 DR. APOSTOLAKIS: Okay.

15 MR. KENYON: I'll just breeze through this
16 real quickly. There are issues that are not
17 considered in the environmental review, such as the
18 need -- this is by regulation. The other important
19 thing I wanted to point out is that we don't look at
20 the safety-related issues. That's left up to Mr.
21 Prato, and we don't get involved in his review.

22 DR. APOSTOLAKIS: So let me understand
23 this. A coal fire plant is not licensed by the
24 federal government; is that true? Are they licensed
25 by the federal government?

1 MR. KENYON: I don't know that they're
2 licensed by the federal government, but there's a
3 number of environmental statutes that they have to
4 meet, and they're covered by the Environmental
5 Protection Agency.

6 MR. GRIMES: We have to be careful with
7 our choice of terms, because I would contend that
8 there's an EPA permit requirement that is not like our
9 licensing process, but it is a federally imposed
10 restriction. Hydroelectric facilities are licensed by
11 FERC in a process that looks very much like ours.

12 DR. APOSTOLAKIS: So, ultimately,
13 everybody does an Environmental Impact Statement.

14 MR. GRIMES: Yes. Ultimately, everybody
15 does an Environmental Impact Statement but with a
16 particular focus.

17 MR. KENYON: And that concludes my
18 presentation, unless you have any other questions. I
19 did provide you with the document of the last
20 Environmental Impact Statement that we produced on
21 Oconee just to give you an idea of what we do.

22 DR. BONACA: Thank you; appreciate it.

23 MR. GRIMES: I'd also like to add that Tom
24 made a point that during the process that they go
25 through, they reach out to the public in order to find

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1 out what the public's interests are. But the
2 environmental review does not address safety-related
3 issues. So if safety issues are brought to them, they
4 refer them to the safety review, and Mr. Prato checks
5 to make sure that they're being covered as part of our
6 review process. But we don't necessarily tailor a
7 safety evaluation to address the public's interest in
8 issues like waste or so forth. But we do keep the two
9 trains separate during the review process.

10 DR. BONACA: Thank you for the
11 presentation. And I would like to thank also the
12 applicants and Framatome's support for the
13 presentations; very informative for the application
14 that was -- well, I'll comment on that. And also the
15 staff for the presentations we received.

16 And I would like to go around the table
17 and ask the two surviving members of the Subcommittee
18 here if they have any additional insights to whatever
19 they provided me before regarding the presentations.

20 I would like to just make a few comments.
21 One is that I spent quite a bit of time reviewing the
22 application as well as the SER, and I thought that the
23 application was effective. I thought the SER was
24 complete and effective. I thought that definitely
25 there were a lot of lessons learned that were used to

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1 make this application and the review more complete.
2 I think that it was easy to trace the issues.

3 And I also appreciate the staff's
4 willingness to make this presentation on a comparison
5 basis. It was helpful for us, because I mean we spent
6 quite a bit of time on Oconee, and it was a profit for
7 us to benefit from the experience in our review of
8 Arkansas, and that took place.

9 I felt that the scoping process was
10 thorough and part was helped by very effective quality
11 listing that already Arkansas seemed to have. That
12 was quite helpful. We didn't go through the pain and
13 suffering that we had in previous applications. That
14 was good. I thought that it was pleasing to see that
15 there wasn't too much of a focusing on legalistic
16 narrow limits in the extent in which management
17 programs were implemented.

18 There was some expansion to give proper
19 consideration to important items, and that was
20 important. And because of that, I feel that there are
21 very few open items. That's one of the reasons. And
22 I don't think those items are contentious. The way I
23 see it there is no measure of contention there. So I
24 don't see any show stoppers from a perspective of the
25 review of the staff, as well as a review of the CRS.

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1 What I would recommend is that we do not
2 have an interim report. And I would like to have your
3 thoughts, Chris, regarding this.

4 MR. GRIMES: My view is we don't need one.
5 I think that we've benefitted from your review, and
6 the level of detail that you've gone into is evident,
7 and the feedback is helpful, and we're going to
8 reflect on ways that we can improve the safety
9 evaluation just based on the exchange that we'd had.
10 But unless you have any particular views on the
11 issues, we don't need an interim report in order to
12 proceed, and we'll plan on coming back to the
13 Subcommittee again to report on the resolution of the
14 open items and --

15 DR. BONACA: And we will plan to write a
16 letter at that time.

17 MR. GRIMES: Correct.

18 DR. BONACA: We will write just one
19 letter. That was part of our plan, in fact, when we
20 go to a second and third review of a similar type
21 plan, unless there are major issues to which we can
22 contribute observations, then we'd have simply a final
23 report, which we plan to have on this plant.

24 What I would propose, then, is that I'll
25 report these conclusions to the full committee next

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1 week. That will take probably 15 to 20 minutes, maybe
2 half an hour at the most. And I would request that
3 the staff supports me maybe with a couple of people
4 there present in case there are any specific questions
5 from the members of the full committee. And that's
6 what I would like to do.

7 So for that presentation we do not need
8 applicants present, right, at this stage. We will
9 plan to have you come at the final -- when we receive
10 the final SER with the closed open items. And then we
11 will have a full presentation in front of the
12 Committee at the time, and then we'll write a full
13 report.

14 So if there are no disagreements, that's
15 pretty much what we're trying to do. We will somewhat
16 change the schedule --

17 DR. APOSTOLAKIS: How much time are we
18 scheduled for?

19 DR. BONACA: We're scheduled for an hour
20 and a half, George.

21 DR. APOSTOLAKIS: But we will take only
22 half an hour?

23 DR. BONACA: About half an hour, yes.
24 We'll take a half an hour and --

25 DR. APOSTOLAKIS: We'll do something else.

1 DR. BONACA: Oh, yes. We've got a lot
2 things to do.

3 DR. APOSTOLAKIS: We can finish the safety
4 research.

5 DR. BONACA: No. With that, I'm pleased
6 to see that even our review was facilitated by the
7 lessons learned. So with that, if there are no
8 further comments --

9 MR. GRIMES: Dr. Bonaca, I have a couple
10 of questions, though, that I'd like to pose before you
11 adjourn. The first is I'd like to ask -- you
12 mentioned during the course of the presentation
13 several times that you had some questions: The
14 question on the reactor vessel level measurement
15 device --

16 DR. BONACA: Yes.

17 MR. GRIMES: -- the nature of the seven
18 new programs, the clarity of the SER as it relates to
19 the B&W integrated internal's activities. Dr. Shack
20 asked about impurities in the sodium hydroxide and FAC
21 on the feed water. And I wanted to know whether or
22 not there were any of those questions that you'd like
23 us to pursue further and get back to you?

24 DR. BONACA: Not for my part, no. I was
25 satisfied that it was more like I needed

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1 clarification. In many cases -- in my case, it was
2 the point I made that the application said something
3 and the SER contained resolutions of issues that were
4 not reflected in the application.

5 MR. GRIMES: I understand. And as I said,
6 that was useful for us, and we'll reflect on that when
7 we close the open items to see if we can improve the
8 clarity of the SER in those areas.

9 The other question I had is the style of
10 this presentation was largely built off of Oconee, but
11 I would expect that when we bring Hatch to the
12 Subcommittee at the end of March that we do something
13 that largely focuses on BWR uniqueness and perhaps the
14 particular issues that we felt were challenging
15 because of the boiling water reactor. So in that
16 sense, we would have a presentation that would be
17 organized in much the same way, allow about the same
18 order and level of detail, and highlight unique BWR
19 challenges rather than differences from previous
20 reviews.

21 DR. BONACA: I agree with that. That
22 seems to be a positive approach. The thing that I
23 would like to make sure, of course we have not
24 reviewed the BWR/VIP documents; we're reviewing them
25 now.

1 MR. GRIMES: We have a separate meeting
2 scheduled for the VIP, the day before.

3 DR. BONACA: That's right. I was
4 referring to the full committee meeting we have the
5 week after that. So if I understand it, the SER for
6 Hatch will be very much based on -- okay, but we're
7 saying we're going to deal with them separately.

8 MR. GRIMES: Right. We would attempt to
9 try and cover as much of the VIP during the first
10 meeting as possible so that the focus of the second
11 meeting would largely be the same kind of format as
12 today -- scoping -- our methodology, scoping, aging
13 management programs in each of the areas. And then
14 wherever VIP occurs, we'd refer away from that and
15 concentrate on the other aspects of the Hatch review
16 that were unique and challenging from an aging
17 management perspective.

18 DR. BONACA: And I agree with that.
19 Actually, that would be helpful for another reason,
20 that although we think of these plants very
21 differently, but in many of the support system we find
22 similarities. And to the extent to which you can
23 capture the experience we have for those similarities,
24 that helps. I mean, clearly, emergency systems and
25 the steam -- well, not completely, but many portions

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1 would be singular.

2 Any other questions?

3 MR. GRIMES: That's everything I need.

4 Thank you.

5 DR. BONACA: Questions or comments from
6 members?

7 DR. SHACK: I like the format of the
8 license renewal report. I thought it was rather
9 helpful to get through it. It was easier reading than
10 the first two that we went through. For the SER, how
11 about a list of the initials up front. For those of
12 us that ULDs don't slip off our tongue, and when I
13 come back in two weeks I forget what a ULD is again.

14 MR. GRIMES: Acronyms up front, right
15 behind the executive summary.

16 DR. BONACA: If there are no further
17 comments, I'll adjourn the meeting. Thank you very
18 much.

19 (Whereupon, the Subcommittee meeting was
20 concluded at 12:49 p.m.)

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: ACRS Plant License Renewal

Docket Number: (not applicable)

Location: Rockville, Maryland

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.



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