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ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

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ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

(ACRS)

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PLANT LICENSE RENEWAL SUBCOMMITTEE

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OPEN SESSION

+ + + + +

WEDNESDAY

MAY 4, 2016

+ + + + +

ROCKVILLE, MARYLAND

+ + + + +

The Subcommittee met at the Nuclear
 Regulatory Commission, Two White Flint North, Room
 T2B1, 11545 Rockville Pike, at 1:03 p.m., Dennis C.
 Bley, Chairman, presiding.

COMMITTEE MEMBERS:

DENNIS C. BLEY, Chairman

MICHAEL L. CORRADINI, Vice Chairman

RONALD G. BALLINGER, Member

DANA A. POWERS, Member

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HAROLD B. RAY , Member

PETER RICCARDELLA, Member-at-Large

GORDON R. SKILLMAN, Member

JOHN W. STETKAR, Member

DESIGNATED FEDERAL OFFICIAL:

KENT HOWARD

ALSO PRESENT:

ALAN COX, Entergy

YOIRA DIAZ-SANABRIA, NRR

BRYAN FORD, Entergy

BART FU, NRR/DLR

ALLEN HISER, NRR/DLR

MICHAEL MANAHAN, Entergy

JANE MARSHALL, NRR/DLR

JAMES NADEAU, Entergy

GREG PICK, NRC, Region IV

PATRICK PURTSCHER, NRR

REBECCA RICHARDSON, NRR

BILL ROGERS, NRR/DLR

EMMANUEL SAYOC, NRR/DLR

ANDREW TAYLOR, Entergy

PATRICK WILLIAMS, Entergy

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GARRY YOUNG, Entergy

*Present via telephone

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P R O C E E D I N G S

1:03 p.m.

MEMBER BLEY: The meeting will now come to order.

And whenever it's your turn to talk, there's a little button that says push right at the front of your microphone, please push it before you talk and then turn it off again because it creates noise on the phone lines.

I'm Dennis Bley, Chairman of this meeting. The purpose of this meeting is to review the License Renewal Application for the Grand Gulf Nuclear Station Unit 1.

ACRS members in attendance are Pete Riccardella, Harold Ray, Dick Skillman, Dana Powers, I think Dr. Corradini will join us shortly, John Stetkar, Ron Ballinger and I believe on the ACRS member phone line we have our consultants, Stephen Schultz or Bill Shack. We'll check that in a minute.

Steve or Bill, if you're on the line, try to talk to me. See if you can get our private line open for a while.

We'll get back to you in a minute once we see if we can make it so you can talk.

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1 Kent Howard of the ACRS staff is the
2 Designated Federal Official for this meeting.

3 And I'd like to welcome you, I'll say
4 back. We almost had a meeting three years ago,
5 most of us were in town, all of you were in town
6 and then it snowed. So, it's been a long time in
7 between. We understand there was a lot of work on
8 at least one of the open items that kept you
9 working on that until now. But, we're glad to have
10 you back.

11 This afternoon, we will hear
12 presentations from the Division of License Renewal
13 Region IV and Entergy Operations regarding this
14 matter.

15 The Subcommittee will gather
16 information, analyze relevant issues and facts and
17 formulate proposed positions and actions as
18 appropriate for deliberation by the Committee.

19 As shown in the agenda, a portion of
20 this meeting may be closed in order to discuss
21 information that is proprietary to the licensee and
22 its contractors pursuant to 5 USC 552(b)(c)(4),
23 Bravo, Charlie 4.

24 Attendance at this portion of the
25 meeting dealing with such information will be

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1 limited to NRC staff, licensee representatives and
2 its consultants and those individuals and
3 organizations who have entered into an appropriate
4 confidentiality agreement with them.

5 During a closed session, I'll request
6 that Entergy staff to survey the attendees in the
7 room and ensure that all participants are cleared
8 for access to their proprietary information.

9 We'll take care of the NRC side of
10 that.

11 In addition, there will be no public
12 phone line open during that closed portion.

13 I think we'll hold -- if things come up
14 that require getting into proprietary information,
15 I'll ask you to stop us, it's kind of you, and
16 we'll save those questions to the end. And, if we
17 have to have a closed session, we will and we'll
18 get public comments before that time.

19 The rules for participation in today's
20 meeting have been announced as part of the Notice
21 of this meeting previously published in the Federal
22 Register.

23 We have not received written comments
24 or requests for time to make oral statements from
25 members of the public regarding today's meeting.

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1 A transcript of this meeting is being
2 kept and will be made available as stated in the
3 Federal Register Notice.

4 Therefore, I request that participants
5 in this meeting use the microphones located
6 throughout the meeting room when addressing the
7 Subcommittee. Participants are requested to please
8 identify themselves and speak with sufficient
9 clarity and volume so that they can be readily
10 heard and recorded for the transcript.

11 There will be a phone bridge line. To
12 preclude interruption in the meeting, the phone
13 will be placed in the listen-in mode during the
14 presentations and Committee discussions.

15 We will open the line for public
16 comment at the appropriate time during today's
17 meeting.

18 We will now proceed with the meeting.
19 Oh, before we do, let me try again. Neither
20 consultants here? Okay.

21 I apologize for that. If they come in
22 later, we'll try again.

23 We will now proceed with the meeting
24 and I call upon Jane Marshall who is the Deputy
25 Director for the Division of License Renewal in NRR

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1 to begin the presentations.

2 Jane?

3 MS. MARSHALL: Thank you, Chairman
4 Bley.

5 As stated, I am Jane Marshall. I am
6 the Deputy Director for the Division of License
7 Renewal in NRR.

8 Members of my management team who are
9 with me here today are Yaira Diaz-Sanabria, she is
10 Branch Chief of Projects Branch 1.

11 And in the audience are Dennis Morey,
12 Brian Wittick and Steve Bloom, also Branch Chiefs
13 in the Division of License Renewal.

14 Joining us by phone today is Greg Pick,
15 the Lead Inspector from Region IV.

16 There are also several members of DLR
17 staff who participated in the Grand Gulf License
18 Renewal review in the audience and they will
19 introduce themselves when providing answers to
20 questions.

21 The staff's presentation will be given
22 by Emmanuel Sayoc who is the Grand Gulf Safety
23 Project Manager.

24 He will be joined at the table by DLR
25 Senior Technical Advisor, Dr. Allen Hiser and a

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1 Safety Project Manager, Phyllis Clark.

2 At today's ACRS Subcommittee meeting,
3 staff will present its completed review and
4 resolution of open items for the license renewal of
5 Grand Gulf Nuclear Station Unit 1.

6 The information we will be presenting
7 was documented in the final SER which was issued on
8 April 4th of 2016.

9 At this time, I'd like to turn the
10 presentation over to Entergy and the Senior
11 Regional Assurance Manager, Bryan Ford, to
12 introduce his team and commence their presentation.

13 MR. FORD: Good afternoon.

14 My name is Bryan Ford. I the Senior
15 Manager, Regulatory Assurance for the South for
16 Entergy.

17 This is an important milestone for
18 Grand Gulf. We, at Entergy, have been working for
19 years to get ready to enter the period of extended
20 operation. We've been doing major equipment
21 upgrades that you will hear about later in the
22 presentation, and putting into effect fleet aging
23 management programs that you'll also hear about
24 later in the presentation.

25 But, it's a very important day for us

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1 and thank you for your time.

2 Who we have with us is Patrick
3 Williams, our Director of Grand Gulf's Engineering;
4 James Nadeau, our Manager of Grand Gulf Regulatory
5 Assurance; and Garry Young, our Director of License
6 Renewal at the table.

7 Also in attendance, we have David Lach,
8 our Fleet Project Manager for License Renewal; Alan
9 Cox, a Senior Consultant for License Renewal; Mark
10 Spinelli, a Senior Lead Engineer for License
11 Renewal; and Andrew Taylor, our Supervisor for
12 License Renewal.

13 We also have various technical staff
14 with us in case we need them to answer questions.

15 Our agenda for this presentation is
16 we're going to give you a description of the Grand
17 Gulf site, talk about plant status, our licensing
18 history some.

19 We're also going to talk about, as I
20 said early, some major equipment upgrades we have
21 done that we think really prepare us for extended
22 life at Grand Gulf.

23 And we're going to talk about the
24 license renewal project itself. We also are going
25 to talk about closure of the previous safety

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1 evaluation open items, the ones from the 2013 SER
2 that we were coming in to talk about the last time
3 we tried to have this meeting.

4 With that, I'm going to turn it over to
5 Patrick Williams to talk about Grand Gulf site.

6 MR. WILLIAMS: Good afternoon.

7 Grand Gulf is located on the
8 Mississippi River southwest of Vicksburg,
9 Mississippi about 30 miles south on Highway 61 near
10 Port Gibson, the exact location.

11 It's a General Electric NSSS with
12 Bechtel as the primary constructor.

13 It's a BWR-6 design with a Mark III
14 containment and Siemens is the vendor for the
15 turbine generator.

16 We have a closed circulating water
17 system with a natural draft tower and a mechanical
18 draft cooling tower as well for supplemental
19 cooling.

20 We run at a 15 percent extended power
21 uprate in 2012 which gives us a licensed thermal
22 power currently of 4,408 megawatts thermal. That
23 gives us around, this morning, our plant status, we
24 were at 1,500 megawatts electric gross, about 60
25 megawatts electric for house loads, so our

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1 resulting for about, you know, in the 1,440 range,
2 somewhere in there. It changes due to the weather,
3 of course.

4 Our staff compliment is about 585
5 people working the station full-time.

6 All right, again, right now, our unit's
7 at full power. We are in 24 fuel cycles. We did
8 our last refueling outage at the end of March,
9 about a month ago. We were actually 34 days online
10 as of this morning.

11 Our next refueling outage is scheduled,
12 it's an RF21, refueling outage 21, in spring of
13 2018.

14 The licensing history, Grand Gulf
15 received its construction permit September 4, 1974,
16 operating license issued November 1, 1984.

17 Commercial operation commenced on July
18 1, 1995.

19 The License Renewal Application was
20 submitted November 1, 2011.

21 The extended power for a license
22 amendment was granted on July 18, 2012.

23 And our current operating license
24 expires November 1, 2024.

25 MEMBER BLEY: That time frame made you

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1 one of those things that were called NTOLs right
2 after the Three Mile Island accident?

3 MR. WILLIAMS: Right.

4 MEMBER BLEY: So, you were one of the
5 first to get your operating license it looks like.

6 MR. WILLIAMS: My understanding as
7 well.

8 Okay, for major equipment replaced,
9 part of the extended power uprate, we did quite a
10 few changes to the power generation side of the
11 site.

12 So, in the first one, we have main
13 transformers. They were basically individual
14 single-phase transformers. We replaced all three
15 single-phase transformers plus the spare that's at
16 the station as well.

17 We changed the high pressure turbine
18 rotor to a new design for extended power uprate, a
19 higher efficiency design.

20 Our main generator swapped out as well
21 and we rewound the stator and put that in and also
22 uprated for the power generation we're looking for.

23 Our generator hydrogen coolers were
24 replaced and those get regular cleanings through
25 the operating cycles during the outages.

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1 We swapped all 20 main steam relief
2 valves out last outage and that'll put us on a
3 regular of a 6, 6 and 8 in subsequent outages as we
4 go forward.

5 Our fuel pool cooling and heat
6 exchanger, we swapped that out and do check that
7 and monitor for thermal performance of that going
8 forward in the outages and we also do cleaning
9 activities on those as well.

10 Our steam dryer was changed out as part
11 of the extended power uprate. We factored in
12 several of the lessons learned from the industry on
13 the reinforced steam dryer and we have no issues
14 with steam carryover following that -- operating
15 after that.

16 And we have had checks each outage
17 afterward to validate no adverse effects and no ill
18 effect in that component. And that one is health
19 as working as you expect it to.

20 One of our reactor feed pump turbine
21 rotors was swapped out, actually, upgraded for EPU
22 and see no issues with that as we go forward in
23 operation.

24 And our auxiliary cooling tower, we
25 added eight cells as part of extended power uprate.

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1 But, this last outage, we went back and the 20
2 original cells, we swapped out all the cooling
3 tower fill.

4 Just over time, the water gets in
5 there, it cruds it up and loses efficiency. That's
6 all been swapped out and we've got about 8
7 megawatts of electric back from that change out
8 this last outage.

9 MEMBER SKILLMAN: Patrick, how often do
10 you use the aux cooling tower?

11 MR. WILLIAMS: Actually, all the time.

12 MEMBER SKILLMAN: All the time?

13 MR. WILLIAMS: Yes, sir.

14 MEMBER SKILLMAN: Okay, thank you.

15 MR. WILLIAMS: And also to ensure we
16 stay full power in the summer months when it's
17 quite hot.

18 MEMBER BALLINGER: You use the same
19 type of valves that you replaced, the relief
20 valves?

21 MR. WILLIAMS: Yes, sir.

22 MEMBER BLEY: Professor, would you turn
23 on the mic?

24 MEMBER BALLINGER: I did turn it on. I
25 learned.

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1 Are they two-stage, three-stage or did
2 you change the type or anything?

3 MR. WILLIAMS: We've got the same type
4 as we had before, sir.

5 MEMBER BALLINGER: Okay.

6 MEMBER CORRADINI: Does Grand Gulf take
7 now containment accident pressure credit in its
8 safety analysis?

9 MR. WILLIAMS: No, we do not.

10 MEMBER BLEY: Right answer.

11 MEMBER CORRADINI: Thank you.

12 MR. WILLIAMS: Okay, the next? Any
13 questions on that slide? Okay.

14 Just some photos for you, this is the
15 high pressure turbine rotor and this the ungraded
16 one we've installed in the extended power uprate.

17 Next, we have a picture of our
18 auxiliary cooling tower.

19 Next, just sort of a general picture of
20 the main generator that was changed out as part of
21 our extended power activities.

22 And then, our next picture is of just
23 the upper portions. In the blue circle up near the
24 top there just shows the steam dryer. Again, that
25 was changed out in the lessons learned factored in

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1 from the industry, we changed that our for a power
2 uprate.

3 And with that, I'm going to turn it
4 over to James Nadeau, the Regulatory Assurance
5 Manager at Grand Gulf.

6 MR. NADEAU: Thanks, Patrick.

7 So, thank you. My name's James Nadeau.
8 I'm the Regulatory Assurance Manager at Grand Gulf.

9 And I'm going to talk about the license
10 renewal project, incorporation of lessons learned
11 from previous applications, application being
12 prepared by an experienced team and the use of the
13 NEI guidance and NUREG and how we met that.

14 And then, also, that we considered the
15 impacts from our power uprate in 2012.

16 Next slide?

17 MEMBER SKILLMAN: Jim, back the slide,
18 please.

19 MR. NADEAU: Sure.

20 MEMBER SKILLMAN: As you lead us
21 through this, would you give us a thumbnail sketch
22 of the degree of thoroughness of your QA program,
23 Appendix B to 10 CFR 50 through all of these
24 activities?

25 MR. NADEAU: The degree of thoroughness

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1 of my Appendix B program, QA program, through all
2 these activities?

3 MEMBER SKILLMAN: That is an
4 intentionally broad question, yes, sir.

5 MR. NADEAU: Okay. Ask some more
6 directed questions if I'm not hitting it.

7 Okay, so let's go to the next slide.

8 All right, so, as we discussed earlier,
9 we did have a previous SER that was issued on
10 January 2013 with four open items. And I have some
11 slides to talk about the four open items and how we
12 addressed those.

13 I'll talk about the degree of
14 thoroughness for QA programs on those slides.
15 Okay?

16 Next slide?

17 So, we had Open Item Number 1, one-time
18 inspection for small bore piping. The question was
19 to go after additional operating experience related
20 to being consistency with the GALL program.

21 We did an operating experience review.
22 The staff asked for more detail and a larger time
23 frame for the OE search. So, we have went back and
24 applied that OE search for the time period that
25 they asked and it identified no instances.

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1 Relative to the thoroughness of the QA
2 program, we're using the same quality programs for
3 that OE program relative to aging management, the
4 GALLs as we do for other programs.

5 We use the same tools, same procedures
6 to do the searches, same tools to understand the
7 searches, same programs to understand whether or
8 not there's issues.

9 And if there are issues that are found,
10 same corrective action program per our 10 CFR 50
11 Appendix B program.

12 Gordon -- does he go by Gordon or --
13 okay, Gordon, am I -- is that the level of detail
14 you're looking for?

15 MEMBER SKILLMAN: Yes, thank you. Keep
16 on going.

17 MEMBER RICCARDELLA: Excuse me. You're
18 saying you've never had any cracks in the small
19 bore piping?

20 MR. NADEAU: We did not find any
21 cracking in the small bore piping in those OE
22 searches, that's correct, sir.

23 The second open item was relative to
24 our service water integrity. The use of service
25 water integrity program for managing loss of

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1 material due to erosion, and that's a key term,
2 erosion, was not described in the renewal
3 application.

4 We talked about the corrosion in the
5 license application.

6 The staff challenged us to include
7 erosion and we did include that into our process
8 and resolved that open item.

9 Relative to the use of our quality
10 program in that area, it would be simply that the
11 license renewal program, when we make a change on
12 how we're going to commit or change the program, we
13 use the same processes for revising our procedures
14 that we would for any other quality program,
15 nuclear safety related, Appendix B.

16 Open Item Number 3 was a future review
17 of OE for aging management program. The staff
18 challenged us on, was our existing operating
19 experience program adequate to identify aging
20 management concerns and take action?

21 And through a series of responses for
22 additional information, we provided them adequate
23 detail to show that our operating experience
24 program was sufficiently robust to identify aging
25 management issues from the fleet and from external

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1 sources and get them into our program for
2 correction.

3 Again, this is a standard fleet
4 process. It's within our quality programs and the
5 use of that is one through a very similar process
6 to our corrective action program.

7 And if it ends up being a nuclear
8 safety related or item adverse to a regulation, we
9 call that a condition adverse to quality and we
10 will fix it.

11 Next slide?

12 So, Open Item Number 4 was the neutron
13 fluence calculation method. In our original
14 application, we submitted two or we were using two
15 neutron fluence calculations.

16 And the staff challenged us as to
17 whether or not that was appropriate. We decided to
18 go forward with a one neutron fluence calculation
19 which was a 3D method which has been already
20 approved in a separate license amendment. That was
21 the resolution on that.

22 MEMBER BLEY: When was that one
23 approved?

24 MR. NADEAU: That was approved, what
25 was the last --

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1 MR. FORD: It was a little over a year
2 ago.

3 MEMBER BLEY: Okay.

4 MR. FORD: It was associated with the
5 MELLLA+.

6 MEMBER BLEY: Okay. So, you waited
7 until the MELLLA+ was finished?

8 MR. FORD: It was concurrent with that.

9 MEMBER BLEY: Okay.

10 MR. FORD: It was necessary to --

11 MEMBER BLEY: So, those two things were
12 --

13 MR. NADEAU: Yes, we had --

14 MEMBER BLEY: I was wondering what was
15 going on all this time, but it was really waiting
16 for the MELLLA+?

17 MR. NADEAU: There were a couple of
18 issues that were going on all this time.

19 MEMBER BLEY: Yes.

20 MR. NADEAU: We were caught up in --
21 our original submittal was caught up in the, what
22 do we call it, the waste management, waste
23 confidence ruling and that delayed us.

24 And then, when we decided that we
25 wanted to go with this new fluence method and

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1 recalculate the whole thing, then we had to do the
2 calculations to get that license amendment. And
3 so, that was another piece that slowed down our
4 application.

5 MEMBER CORRADINI: But, it was your --
6 it was the method that had to be checked and looked
7 at by staff?

8 MR. NADEAU: Checked, looked at by
9 staff and issue a --

10 MEMBER CORRADINI: Okay, thank you.
11 Thank you very much.

12 MEMBER SKILLMAN: Jim, I'd like to ask
13 a specific question here. This has to do with the
14 submittal that Grand Gulf made and this has to do
15 with belt line fluence, so this is a very technical
16 question that, perhaps, the answer doesn't need to
17 be entered.

18 But, let me ask the question then we'll
19 decide what to do with the question.

20 MR. NADEAU: Okay.

21 MEMBER SKILLMAN: And I'm going to
22 quote out of your submittal and the submittal is
23 ML15212A747, and it's July 29 of last year. So,
24 it's really not all that ancient.

25 And here's the sentence, in addition,

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1 10 CFR 50 Appendix H requires material surveillance
2 testing only for materials with neutron fluence at
3 the end of the design life exceeding 1E^{17} neutrons
4 per square centimeter.

5 The extended belt line region is thus
6 considered to include the reactor pressure vessel
7 materials with an end of life fluence that exceeds
8 1E^{17} .

9 And here's the question I'm really
10 trying to ask. The elevation range within which
11 the projected fluence exceeds 1E^{17} for 54 EFPY is,
12 now the words that were deleted were, minus 16.5
13 plus 169.5 active fuel, replaced with 199.9 to 420
14 inches relative to the bottom of the vessel.

15 So, my interpretation from this is, in
16 the unrevised version, you had a wide swath of the
17 vessel and this has been scrunched down to
18 approximately 20 inches.

19 Can someone explain that, please? Now,
20 or in another session?

21 MR. NADEAU: Yes, I think that that's a
22 question that I'm going to let Dr. Manahan explain.

23 MEMBER SKILLMAN: And this is
24 Attachment 2, page 2 of 26, the first paragraph on
25 the page of that ML number.

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1 MR. MANAHAN: Mike Manahan, I'm for the
2 Applicant. Is this okay? Is this on?

3 MEMBER SKILLMAN: Yes, sir, yes.

4 MR. MANAHAN: So, what -- I have a view
5 graph we can show you in the proprietary section,
6 if there's still interest after I attempt to a non-
7 slide answer.

8 The original belt line from when the
9 plant was first licensed and their first PT curves
10 were made was taken to be the region over the
11 active fuel.

12 MEMBER SKILLMAN: Yes.

13 MR. MANAHAN: Which is, historically,
14 you know, the case for most plants, as you know.

15 MEMBER SKILLMAN: Yes.

16 MR. MANAHAN: The belt line has now
17 been extended both below the core and below the
18 active fuel and above the active fuel. Okay?

19 And so, I have a graph that I can show
20 you the extension of that.

21 What I believe has happened, I'm not
22 able to read that exact quote, I don't have that
23 report in front of me, I believe that it's the
24 difference between the plant vessel 0 coordinates
25 and the active fuel.

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1 We also, we have two references that we
2 use in the transport fuel and I think that's where
3 the language mix up may have occurred.

4 But, I want to assure you that the
5 current belt line through 54 EFPY is truly extended
6 and it does embrace the lower shell courses and the
7 upper shell courses.

8 MEMBER SKILLMAN: That is what I was
9 trying to make certain.

10 MR. MANAHAN: Yes.

11 MEMBER SKILLMAN: So, later, at least
12 since I've raised the subject and some of my
13 colleagues and I were part of a very intense
14 meeting about this the other day, that view graph
15 might be very helpful.

16 MR. MANAHAN: Yes. Would it be okay
17 with you if we delay until the --

18 MEMBER SKILLMAN: Absolutely.

19 MR. MANAHAN: -- time? I'd like to
20 show that to you.

21 MEMBER SKILLMAN: But, I think I
22 understand what you've said and I'm saying thank
23 you, but I'd sure like to see that view graph.

24 MR. MANAHAN: Right.

25 MEMBER SKILLMAN: Thank you.

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1 MR. MANAHAN: We'll do that. Thank
2 you.

3 MR. COX: Mr. Skillman, this is Alan
4 Cox.

5 I've got another little clarification.
6 I'm looking at the numbers, I found the letter
7 you're talking about, and we went from minus 16 to
8 plus 169, so if I add those up, that's about 186
9 inches.

10 And we went to measurements that are
11 relative to the bottom of the vessel and the
12 distance with the measurements from the bottom of
13 the vessel is roughly 200 to 420.

14 So, it went from less than 200 to 220
15 inches. So, it did expand the region. Those
16 numbers that you see there are for the reference to
17 the bottom of the vessel, that's a larger span than
18 what we started with that was crossed out.

19 MEMBER SKILLMAN: Thank you, Alan.

20 MR. NADEAU: Thanks Mike, thanks Alan
21 for keeping me out of proprietary stuff.

22 So, one slide back, I think. Okay.

23 Okay, we're on neutron fluence
24 calculation and no more questions on that until the
25 proprietary session? Okay.

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1 MEMBER BLEY: Let me interrupt you just
2 a second. I heard some noise.

3 Has either of our consultants come on
4 the line? Bill or Steve?

5 Okay, go ahead.

6 MR. NADEAU: Okay, so our final SER,
7 these four open items were closed out by the staff
8 and we have no confirmatory items.

9 Just a breakdown of our application, we
10 had 44 aging management programs. You can see how
11 we broke them down.

12 And we've got 35 regulatory commitments
13 that we're tracking in our management system. It's
14 a robust system. It's within our quality assurance
15 program. It includes tracking the commitments by
16 owners and due dates and for those commitments that
17 are due upon the application in 2024. There are
18 subcommitments or actions to make sure we will meet
19 those commitments and we're not waiting for 2024.

20 So, robust program in line with our
21 quality assurance program.

22 MEMBER BLEY: James, most of this work
23 was done -- finished three years ago or more,
24 right? Was all of this done under GALL 1 or is
25 updated to GALL 2?

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1 MR. NADEAU: Rev 2.

2 MEMBER BLEY: Rev 2, okay.

3 MR. NADEAU: Next slide?

4 At this point, I'm going to turn this
5 over to Garry Young who is going to talk about our
6 license renewal process for Entergy.

7 MR. YOUNG: Okay, thank you.

8 I'm Garry Young and I'm involved with
9 the license renewal projects for all of the Entergy
10 plants.

11 On the topic of commitment management
12 and controlling the commitments that we've made for
13 license renewal, we're using our fleet program that
14 manages commitments, it's the same program we use
15 for all regulatory commitments and we're using that
16 same program for the license renewal commitments.

17 It's based on an NEI guidance document
18 that's been endorsed by the NRC. And it's also
19 subject to audit by NRR on a three year frequency.
20 In fact, we just had an audit here a couple of
21 years ago on that program.

22 So, we're using -- that's what we use
23 to track our commitments and to implement them.

24 We also -- we have a database that's
25 part of that.

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1 As you heard earlier, the program
2 owners have been identified and assigned actions as
3 appropriate to implement these commitments that
4 have not already been implemented.

5 There are some enhancements to our
6 programs that we will be implementing and there are
7 some new programs.

8 Another aspect of this is that some of
9 these programs that are now being applied to Grand
10 Gulf are -- have already been applied at our other
11 units, older units.

12 So, we're using some fleet procedures
13 that apply to all of our plants. And then, those
14 procedures are updated as we make commitments at
15 various plants and based on operating experience
16 and our corrective action program.

17 So, when these programs are implements
18 at Grand Gulf, they will take into account all the
19 lessons learned from our other projects and from
20 any updated guidance that may be out there.

21 An example of some of these programs,
22 the new programs that we're talking about, would be
23 our cable inspection, or non-EQ cable inspection
24 program, that has not been implemented at Grand
25 Gulf yet but it has been implemented at our other

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1 sites and therefore, we will be using that
2 information and lessons learned to apply at Grand
3 Gulf.

4 So, even though you'll see some of
5 these listed as new programs, we already have
6 experience with many of them and Grand Gulf will
7 benefit from that experience.

8 MEMBER BLEY: Will any of those begin
9 before the period of extended operations?

10 MR. YOUNG: Yes, essentially all of
11 them will. There are some that, in our commitment,
12 we said will be done after the period of extended
13 operation.

14 MEMBER BLEY: Right.

15 MR. YOUNG: But, I would say almost all
16 of them will be done before the period of extended
17 operation. Of course, most of them have already
18 been done. You know, the existing programs and
19 then the ones that are existing with enhancements,
20 those will all be dealt with before the period of
21 extended operation.

22 MEMBER BLEY: And have you already
23 started the ones with respect to the cables that
24 need to be inspected, electrical cables?

25 MR. YOUNG: We've already -- the

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1 program itself has been written but now we have to
2 do into the detail and make the plant-specific
3 application to Grand Gulf. You know, which rooms
4 are we going to do the walkdowns in? That sort of
5 thing.

6 MEMBER BLEY: Okay.

7 MR. YOUNG: But, the guidelines already
8 exist at the fleet level.

9 CHAIRMAN STETKAR: I want to ask --

10 MR. YOUNG: Criteria.

11 CHAIRMAN STETKAR: -- since you brought
12 it up, it's my job to hit you with things that
13 you're not expecting.

14 And I have to apologize because the
15 last time I read everything in total was, according
16 to my notes, three years ago and two months.

17 Back then, there was a discussion of a
18 couple of manholes that contain safety-related
19 cables, manholes 20 and 21, that had a history of
20 water intrusion. And what's the current status of
21 that?

22 If you haven't implemented the program,
23 we're now three-plus years after I read this thing
24 which apparently had been occurring for some time.
25 Are you still getting water in those manholes?

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1 MR. YOUNG: The manholes we're talking
2 about, we've installed solar operated pumps to keep
3 any water out. We're sealing the manholes to
4 prevent water from getting in there. And we do
5 periodic inspections to make sure the water level
6 is below the cables.

7 MEMBER BLEY: What have you been
8 finding?

9 MR. YOUNG: We have seen water in the
10 holes and we've written the condition reports and
11 fixed it. The solar powered pumps are keeping them
12 where we want to be.

13 We have had a condition report, my
14 recollection, where the pump failed and we had to
15 fix it and that kind of thing.

16 But, that information allows us to
17 incorporate for any information we've got on that
18 and should the cables get wetted into our aging
19 management program for that cable.

20 CHAIRMAN STETKAR: That's also true,
21 there was another manhole, 15, that had 115 KV
22 cable in it that you were going to put a sump pump
23 in it, it says.

24 There was a condition report written
25 for it in 2010.

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1 MR. YOUNG: I would like to get back to
2 you on that one because that number does not ring a
3 bell with me.

4 CHAIRMAN STETKAR: That's an installed
5 cable.

6 MR. FORD: We'll check on that and see
7 whether we can get back after reporting.

8 MEMBER STETKAR: That would be good,
9 thanks.

10 MR. YOUNG: Okay, and with that, if
11 there's no more questions, I'll turn it back over
12 to Jim.

13 MEMBER BLEY: Well, I want to dig into
14 one more of those -- we had a bunch of these we
15 were going to dig into back a few years ago.

16 MR. YOUNG: Okay.

17 MEMBER BLEY: I'm going to read from
18 our consultant at that time. Why should I feel
19 confident that this is an effective program on
20 buried pipes and tank inspections when the site
21 operating history indicates a long period of
22 significant degraded performance of the cathodic
23 protection system?

24 It also seemed like the inspection team
25 had difficulty in verifying that all piping

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1 requiring coatings were in fact coated.

2 Can you address that at all?

3 MR. YOUNG: I'll start out.

4 Well, the buried piping inspection
5 program, we have a program already in place at
6 Grand Gulf for that. It's not the GALL Rev 2
7 program --

8 MEMBER BLEY: Okay.

9 MR. YOUNG: -- or the one that's been
10 modified by the more recent ISGs.

11 But, it is in place and we have been
12 collecting operating experience. In addition,
13 we're gathering the experience from our other sites
14 to apply to Grand Gulf.

15 Now, we'd have to go back and check on
16 the details such as the, you know, the question you
17 asked about confirming the coatings on the piping.
18 I don't know the details on that. We'd have to
19 follow up.

20 But, we have been doing or implementing
21 our buried piping inspection program at Grand Gulf
22 and I have not heard of any recent issues of
23 finding degradation. But, I have to -- we'd have
24 to get back with the plant to get any details on
25 that.

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1 MEMBER BLEY: Okay. And I think the
2 inspection report we have from the staff was done
3 way back then.

4 MR. YOUNG: Yes, right.

5 MEMBER BLEY: We haven't had any since
6 then. Okay, thanks.

7 CHAIRMAN STETKAR: Let me, this has to
8 do with buried piping also, that there, again, the
9 inspection report that we have is fairly old, but
10 apparently there were at least operability problems
11 with the cathodic protection system. It's
12 availability wasn't -- was noted as not nearly as
13 high as what would be required according to the
14 requirements.

15 What's your experience with the
16 cathodic protection system availability in the last
17 three, four, five years?

18 Because this inspection reports that I
19 have cite problems up through about 2011 or so and
20 after that, I don't have anything. So, curious
21 about how it's been operating in the last four or
22 five years.

23 MR. YOUNG: We may have to check with
24 the plant to get the latest data on that. Yes, I'm
25 not -- I don't have an answer for you.

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1 MR. TAYLOR: This is Andrew Taylor for
2 Entergy.

3 It's interesting you noted the
4 conditions that had been noted up until 2011. And
5 2011 is when we submitted the application.

6 As Garry said, we have already
7 implemented a program for buried piping under the
8 auspices of NEI 0914.

9 The GALL Rev 2 program with the -- for
10 the changes from recent interim staff guidance,
11 that focuses the plant's attention more on the
12 cathodic protection system.

13 And at this point, I'll say, I'm
14 unaware if they have implemented all of the aspects
15 of the cathodic protection system, minimal
16 protection requirements and things like that.

17 CHAIRMAN STETKAR: I was more concerned
18 about the actual availability of the cathodic
19 protection. Because under the ISG, it's an 85
20 percent availability under the original NACE, it
21 was 90 percent. But, I was curious whether it was
22 -- whether you're close to that 85 percent in the
23 last --

24 MR. TAYLOR: I don't have that
25 information.

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1 MR YOUNG: We'll try to get that for
2 you, yes.

3 MEMBER BLEY: I guess had another. Our
4 consultant pointed out that he noted, and I missed
5 this, that you were still using molybdenum
6 disulfide lubricant in the bolt torqueing program
7 when the rest of industry has stopped its use some
8 time ago.

9 Is that still the case?

10 MR. YOUNG: No, that's -- a corrective
11 action was taken on that as soon as that was
12 identified.

13 MEMBER BLEY: Oh, okay.

14 MR. YOUNG: And that is part of our
15 bolting inspection program is to ensure that we
16 have provision in place so that that product is not
17 even available onsite to be used as a lubricant.

18 So, that's, you know, that was
19 definitely one of those issues where our corrective
20 action program was trigger because that should not
21 have been occurring.

22 MEMBER BLEY: Excellent.

23 MR. YOUNG: Any other questions?

24 MR. NADEAU: Okay, with that, overall
25 conclusion, Entergy is committed to the long-term

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1 maintenance of our facility.

2 You can, as evidence, we talked about
3 that with major equipment upgrades and keeping the
4 plant up to -- keeping the plant performing well.
5 Okay?

6 Entergy is -- we're managing the
7 effects of aging. And we've -- with our time
8 limited aging analysis and Entergy has met the
9 requirements for license renewal and we have no
10 open items remaining.

11 So, from our perspective, we're ready
12 to go on this.

13 MEMBER BLEY: Thanks.

14 Dick, the question you had before and
15 we were going to see something later, is that --
16 that's proprietary?

17 MEMBER SKILLMAN: The gentleman said it
18 was.

19 MEMBER BLEY: Okay, that's what I was
20 double checking on.

21 MEMBER SKILLMAN: It was my
22 understanding what Alan Cox said, he said if you do
23 the arithmetic, the span is what it should be in
24 terms of the fluence region both above and below
25 the top and bottom of the active fuel.

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1 But, so I think my technical concern is
2 resolved but I'd sure like to see that.

3 MEMBER BLEY: Okay, so we'll have a
4 closed session.

5 MEMBER SKILLMAN: That view graph, I
6 think it'll help all of us.

7 Thank you.

8 MEMBER BLEY: Anybody else? Last try
9 for my consultants. Steve or Bill, have you shown
10 up? Okay, thank you.

11 I guess it's time for the staff.

12 MR. FORD: We'll see whether we can
13 find answers to the three questions you left us
14 with and maybe we can come back in our next little
15 piece and answer them and show you the view graph.

16 MEMBER BLEY: Thank you.

17 It's my understanding that you're
18 planning to come back to our full Committee
19 sometime like October?

20 MR. NADEAU: That's correct.

21 MEMBER BLEY: Okay. Is there any
22 anticipation of any changes between now and that
23 time?

24 MR. NADEAU: None.

25 MEMBER BLEY: Okay, thanks.

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1 MR. SAYOC: We're ready.

2 MEMBER BLEY: Go ahead.

3 MR. SAYOC: Good afternoon, Chairman
4 Bley and member of the License Renewal
5 Subcommittee.

6 My name is Emmanuel Sayoc and I am the
7 License Renewal Project Manager for Grand Gulf
8 Nuclear Station Unit 1 License Renewal Safety
9 Review.

10 We are here today to discuss the review
11 of the Grand Gulf license renewal application as
12 documented in the final Safety Evaluation Report
13 which was issued on April 4, 2016.

14 Joining me here at the table is Dr.
15 Allen Hiser, our Senior Level Advisor; Mr. Greg
16 Pick, our Senior Reactor Inspector from Region IV,
17 who led the 71002 inspection and Ms. Rebecca
18 Richardson which will be running the slides for me
19 today.

20 Seated in the audience are members of
21 the technical staff who participated in the review
22 of the license renewal application and conducted
23 onsite audits.

24 Next slide?

25 MEMBER BLEY: Your paper is hitting the

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1 microphone.

2 MR. SAYOC: Sorry about that.

3 I'll begin the presentation with a
4 general overview of the staff's review.

5 Next, Mr. Greg Pick will present the
6 inspection activities observed during the license
7 renewal application, I'm sorry, the license renewal
8 inspection at Grand Gulf.

9 I will then present the main sections
10 of the SER, or Safety Evaluation Report, and the
11 resolution of open items.

12 Next slide?

13 This slide, I won't go in too much
14 detail. It gives a lot of the facility facts.
15 Grand Gulf is a Unit 1 BWR GE 6 Mark III
16 containment design located right outside of
17 Vicksburg, Mississippi.

18 The licensee is Entergy Operations, or
19 Entergy, submitted the license renewal application
20 in October 28, 2011.

21 The current facility operator license,
22 NPF29, will expire in November 2024.

23 Next slide?

24 Entergy submitted a single site
25 application for Grand Gulf which consists of one

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1 boiling water reactor.

2 The staff conducted two onsite audits
3 and one inspection at the site.

4 During the scoping screening
5 methodology audit, the audit team reviewed the
6 Applicant's administrative controls governing the
7 scoping and screening methodology and technical
8 basis for selected scoping and screening results.

9 The staff also reviewed selected
10 examples of component material and environmental
11 combinations.

12 The staff reviewed information
13 contained in the Applicant's corrective action
14 program to identify operating experience relative
15 to plant-specific age related degradation.

16 Finally, they reviewed quality
17 practices applied during the development of the LRA
18 and the training of personnel who participated in
19 the development of the LRA.

20 The results of audit were documented in
21 a report dated June 20, 2012.

22 During the aging management program
23 audit, the audit team examined the Applicant's
24 aging management programs and related documentation
25 to verify the Applicant's claims of consistency

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1 with corresponding AMPs in the GALL report.

2 The staff reviewed the initial 44 AMPs
3 and documented the results in the report dated June
4 8, 2012.

5 Region IV will further discuss
6 activities of the 71002 inspections in a few
7 minutes.

8 Next slide, please?

9 In addition to the audits and
10 inspection already mentioned, the staff conducted
11 in depth reviews and issued Requests for Additional
12 Information.

13 The staff performed its review of the
14 Grand Gulf license renewal application and
15 identified four open items and issued the Safety
16 Evaluation Report with Open Items on January 31,
17 2013.

18 As you know, there has been a bit of a
19 time frame between then and now, mainly due to the
20 fluence methodology calculations. There was a
21 license amendment request that was submitted in
22 November 2014 and that wasn't approved up until
23 August 18, 2015. Okay?

24 And that's, of course, we were able to
25 subsequently issue the final SER in April 2016

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1 after the resolution of those four open items.

2 I will now direct the presentation to
3 Mr. Greg Pick who will discuss inspection
4 activities and results associated with the license
5 renewal review.

6 CHAIRMAN STETKAR: Emmanuel?

7 MR. SAYOC: Next slide?

8 CHAIRMAN STETKAR: Before we go to
9 that, let me ask you something because we have had
10 such a long delay in this.

11 I know that you certain, as you
12 mentioned, followed up on things to close out the
13 open items. Did you go back and follow up on
14 anything else? There are several things, and I'll
15 ask pointed questions later.

16 But, there are several things noted in
17 the SER with open items that we received, more or
18 less, three years ago or plus that said, well, we
19 issued -- there are concerns we have but it doesn't
20 raise to the point of an open item and the
21 Applicant has indicated they're improving things.

22 Did you follow up on any of that stuff
23 also or not?

24 MR. SAYOC: Absolutely, sir. We did
25 have an opportunity to prepare and make sure that

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1 we revisited some of the items that were of concern
2 back then and whatever your questions, we can
3 certainly address them if there are any remaining
4 concerns.

5 CHAIRMAN STETKAR: I'll wait until you
6 get through the rest of the presentation, maybe
7 you'll cover some of these remaining. If we don't,
8 I'll follow up.

9 MR. SAYOC: Okay.

10 MR. PICK: Thank you, Manny.

11 Good afternoon, members of the
12 Subcommittee.

13 I participated in this inspection and I
14 am the Region IV point of contact for license
15 renewal.

16 On our inspection, we verified that the
17 Applicant had properly identified the --

18 MEMBER BLEY: Greg, I'm sorry, I think
19 I got this in your introduction, but I'm not
20 positive. Did you actually participate in this
21 inspection?

22 MR. PICK: I did.

23 MEMBER BLEY: You led it?

24 MR. PICK: I did not lead it.

25 MEMBER BLEY: Oh okay. But, you were

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1 part of it? Thank you.

2 MR. PICK: I was and I was going to
3 make the presentation three years ago.

4 MEMBER BLEY: Yes. We were looking
5 forward to it then.

6 MR. PICK: But, I am the point of
7 contact for the license renewal in the Region.

8 MEMBER BLEY: Okay, thanks.

9 MR. PICK: During our inspection, the
10 team verified that the Applicant had properly
11 identified those structures, systems and components
12 included in scope and made appropriate
13 determinations of non-safety-related systems and
14 components affecting the safety-related components.

15 The Applicant had established adequate
16 programs to implement aging management activities
17 for those in scope structure systems and components
18 as specified in our regulations and their license
19 renewal program.

20 The five inspectors on the team had
21 experience and expertise related to mechanical
22 systems and components, electrical systems and
23 components and structures.

24 During our two week onsite inspection,
25 our review included eight of the ten new aging

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1 management programs and 16 of 34 existing aging
2 management programs.

3 MEMBER BLEY: Let me interrupt you.

4 In the report we got three years ago --

5 MR. PICK: Yes?

6 MEMBER BLEY: -- it said seven of ten
7 new aging management programs. The first question
8 is, why the extra one that you just said?

9 The second is, eight of ten is much
10 more than a sample, it's so close to all of them,
11 how come and if you were going to do that many, why
12 didn't you look at them all?

13 MR. PICK: We didn't look at them all
14 because of resource limitations.

15 MEMBER BLEY: Okay. We came pretty
16 close.

17 MR. PICK: We came pretty close. And
18 either I miscounted when I made this slide or I
19 miscounted back then.

20 Whatever is listed in the report is
21 what we reviewed.

22 MEMBER BLEY: Okay. That was seven of
23 ten.

24 MR. PICK: Anything else?

25 We walked down the numerous structures,

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1 systems and components to assess the adequacy of
2 the Applicant's license renewal boundaries, the
3 plant material condition and conformance with their
4 application and the GALL report.

5 This activity enabled us to assess and
6 evaluate the existing aging management programs and
7 whether they would be successful at managing aging
8 effects for in scope structures, systems and
9 components.

10 Next slide, please?

11 In the area of scoping, the Applicant
12 had included the reactor core isolation cooling
13 system piping and scope, but had not included the
14 gland seal system piping.

15 As a result of our question, they wrote
16 a condition report. As a result of the condition
17 report, the Applicant determined that a
18 condensation environment exists and they revised
19 their application.

20 MEMBER BLEY: There was, in the report,
21 it just struck me as a little odd on this one, that
22 they originally included the gland seal system and
23 then later determined that it was -- had originally
24 been assumed, but actually it was a compressed air
25 system which just seemed like an odd thing to have

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1 happened.

2 I can read that sentence if that helps.

3 MR. PICK: In preparation for this, I
4 read the report.

5 MEMBER BLEY: Okay.

6 MR. PICK: And after reading that
7 language, I believe it's fouled out. The net
8 result was they wrote a condition report and upon
9 their review, they changed their application to
10 include a condensation development.

11 MEMBER BLEY: Okay, thanks. That just
12 really sounded odd to me when I read it.

13 Go ahead.

14 MR. PICK: For the fire water aging
15 management program, the team questioned the plant
16 frequency for inspecting the spray and sprinkler
17 system internals since the aging management program
18 did not describe a frequency.

19 Subsequently, the Applicant revised
20 their application to test and replace their spray
21 and sprinkler heads in accordance with NFPA 25
22 which is what the ISG would require.

23 The flow of accelerated corrosion aging
24 management program did not discuss monitoring of
25 non-susceptible systems for loss of material caused

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1 by flow erosion even though the Applicant trended
2 and tracked this aging mechanism used in their flow
3 accelerated corrosion program for the low pressure
4 core spray, high pressure spray and residual heat
5 removal systems.

6 They also had a slide on this and it
7 was related to one of the open items.

8 For the Oil Analysis Program, the
9 licensee revised their administrative procedures to
10 reflect existing administrative procedures for
11 electronic receipt and review of sample analyses by
12 a lubrication system engineer.

13 Now, I did follow up on this because it
14 seemed like a simple change. They still have a
15 request to change the program and that had not been
16 completed prior to this meeting. But, they have a
17 form to track it.

18 From our walkdowns of numerous plant
19 areas --

20 MEMBER BLEY: Was that built into the
21 corrective action program or where does that live?

22 MR. PICK: It's an administrative
23 process.

24 MEMBER BLEY: Administrative process?

25 MR. PICK: There was nothing wrong with

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1 the way they did business.

2 MEMBER BLEY: Okay.

3 MR. PICK: Other than the procedures
4 didn't reflect it. And now, they have a control
5 mechanism to change the administrative procedure.

6 MEMBER BLEY: Okay, but that isn't?

7 MR. PICK: It has not been done as of
8 yet.

9 From our walkdowns of the numerous
10 plant areas, structure systems and components, the
11 team considered that the plant had good material
12 condition.

13 Next slide, please?

14 The team determined that the Applicant
15 performed scoping and screening in accordance with
16 the rule.

17 The team found that the information was
18 easily retrievable, auditable and consistent with
19 the rule.

20 The team verified that the existing
21 programs effectively managed the aging effects.

22 The team verified that the Applicant
23 tracked the completion of enhancements and the
24 development of new programs in a database.

25 Based on our inspection results, the

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1 team had reasonable assurance that the programs in
2 place or planned will manage the aging effects and
3 ensure that the intended safety functions were
4 maintained for structure systems and components
5 within the scope of the rule.

6 Are there any questions?

7 MEMBER BLEY: I'm curious, has the
8 Region followed up or gotten information from the
9 folks you have onsite about the cathodic protection
10 issue?

11 MR. PICK: I did.

12 MEMBER BLEY: Can you -- well, I ask a
13 detailed question, I'll let you tell us more.

14 MR. PICK: They had written a condition
15 report, put in their corrective action program.
16 They have 93 percent coverage that meet the
17 requirements. There's two areas that don't.

18 They had an annual inspection in '13,
19 '14 and an interrupted potential survey in '15.

20 They've implemented -- from reading
21 those reports and looking at the subsequent
22 reports, they've continued to implement the
23 recommendations of their consultant that does this
24 testing for them.

25 They have six stations that were

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1 implemented in 2009 to '10, cathodic protection
2 stations. The last report recommended that they
3 add two more to get the rest of the full coverage
4 they need.

5 MEMBER BLEY: Okay.

6 MR. PICK: They're also able to get
7 coverage by changing the voltage and current on
8 their rectifier units.

9 MEMBER BLEY: Sure. Have you seen
10 anything about -- has the reliability, the
11 availability -- has the system been operating more
12 consistently than in the past?

13 MR. PICK: It has, it has.

14 MEMBER BLEY: Anything quantitative you
15 can say about that?

16 MR. PICK: Pardon me?

17 MEMBER BLEY: Anything quantitative you
18 can say about that, like what it looks like?

19 MR. PICK: From reading the reports, I
20 believe that would be an answer better left to the
21 Applicant.

22 But, from reading the reports --

23 MEMBER BLEY: They didn't quite tell
24 me.

25 MR. PICK: Well, I talked directly to

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1 the individuals at the site --

2 MEMBER BLEY: Okay.

3 MR. PICK: -- in anticipation of this
4 question because I realize, if it's three years
5 later, someone's going to ask what's been done.

6 MEMBER BLEY: Yes. Anyway, the program
7 looks good and you don't have a real handle on --

8 MR. PICK: It looks good.

9 MEMBER BLEY: -- how --

10 MR. PICK: And they're making
11 adjustments in accordance with their corrective
12 action program for the -- based on the contractor
13 reports.

14 Each inspection, they've found
15 something wrong, the subsequent report has found it
16 corrected.

17 So, based on that trend, I would say,
18 yes, they're going to manage the system to ensure
19 that they meet the requirements of the new ISG for
20 buried piping.

21 MEMBER BLEY: That's what I was looking
22 for.

23 CHAIRMAN STETKAR: I've got one for
24 you. Again, it's my job to --

25 MR. PICK: That's all right.

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1 CHAIRMAN STETKAR: -- hit you from left
2 field.

3 In the 2012 audit report, there are
4 discussions of -- let me get you on topic here
5 first so you can start thinking while I'm babbling.

6 Containment leak rate testing, okay, so
7 start thinking about that.

8 Apparently, there had been some -- the
9 Applicant did a self-assessment, according to my
10 notes here, in 2009 that revealed a decreasing
11 trend in performance from containment leak rate.

12 Your 2012 audit report says containment
13 leak rate program lacks effectiveness in its
14 implementation. Now, that's pretty strong words.

15 And it says the staff plans to request
16 Applicant to identify measures to be taken to
17 improve the program's effectiveness prior to the
18 period of extended operation.

19 In the SER, the headquarters staff now,
20 and I'll pit you against each other, said, yes, the
21 Applicant has taken steps and we found -- didn't
22 find any bad operating experience and we have
23 confidence that it's going to be okay.

24 Given the fact that, again, we've had
25 now three, four years intervening, have any

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1 insights on what they're doing in that area? How
2 they're doing?

3 MR. PICK: One second, please?

4 You used the phrase audit report, your
5 question is unfamiliar with me. I just went
6 through my inspection report.

7 CHAIRMAN STETKAR: It's not the
8 inspection report. I literally used the phrase
9 audit report because it's the -- I think it's the
10 scope in these -- I'm not sure which audit report.

11 It's under LRA AMP B.1.15 containment
12 leak rate, if that helps you or it's the inspection
13 report 4B 3.2 for that.

14 But my -- the quote that I had about
15 containment leak rate program lacks effectiveness
16 came from the audit report.

17 MR. PICK: All I can address is from
18 our review as an inspection onsite and reviewing
19 test results. We did not come to a similar
20 conclusion as that.

21 CHAIRMAN STETKAR: Okay.

22 MR. SAYOC: Was that an audit report
23 related to the AMP, is that what you're reading
24 from?

25 CHAIRMAN STETKAR: I suspect it was the

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1 AMP audit report. And I do have a quote here that,
2 from the inspection report, that says, they've
3 implemented a performance-based leak rate test
4 program and it's done according to the record
5 frequency.

6 Well, that's testing according to the
7 required frequency and having leakage every time
8 you test is one thing, testing according to the
9 required frequency and not having leakage every
10 time you test is something else.

11 So, I don't know what was intended by
12 the original AMP audit report that said it lacked
13 effectiveness because it didn't elaborate. I don't
14 know whether they concluded that it just wasn't
15 sufficient or whether there was operating
16 experience to give them concern.

17 MR. PICK: I think we're going to have
18 to get back to you on that. I'm not even sure that
19 we have the reviewer in the audience.

20 CHAIRMAN STETKAR: Okay. Because,
21 again, in the SER, and I checked this, you know,
22 it's one of those issues that the text hasn't
23 changed anywhere else, it says the staff has noted
24 that the Applicant has taken steps to assure
25 satisfactory program performance including, and

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1 there's a list of bullets of things that they've
2 said they're going to do.

3 And I'm just curious about, you know,
4 whether we have any evidence of people doing
5 anything?

6 MR. SAYOC: Okay, we'll take an action
7 item to get back to you.

8 CHAIRMAN STETKAR: Thank you.

9 MR. SAYOC: Is there anybody from the
10 staff that can add to the member's question?

11 BERNARD: Let me try to address that.

12 MEMBER BLEY: Please state your name
13 and identify yourself for the record.

14 BERNARD: This is Bernard and I did
15 participate in the original audit report and the
16 audit.

17 And reviewing from operating
18 experience, they had some issues with some leakage,
19 valve leakages.

20 However, they made the Appendix J
21 requirements of 10 CFR Part 50, the overall leakage
22 requirements that calculated into the containment
23 leakage.

24 CHAIRMAN STETKAR: Okay, thank you.

25 Can you -- since you participated and

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1 you're here, what does it say -- I just hang up on
2 things when people say a program lacks
3 effectiveness without knowing what that means.

4 BERNARD: Okay.

5 CHAIRMAN STETKAR: As I said, you know,
6 not doing inspections or not doing the tests is one
7 thing, but doing the test and perennially finding
8 leakage might mean that the program isn't very --
9 the integrated program, not the testing program,
10 that, you know, fixing stuff that they find.

11 So, I don't know why, you know, what
12 triggered that -- your concern.

13 BERNARD: To the best of my
14 recollection, and this here goes years back.

15 CHAIRMAN STETKAR: Yes.

16 BERNARD: I believe there was a self-
17 assessment and in the self-assessment, again, to
18 the best of my recollection, there were indications
19 of the language that you're reading.

20 And I pursued this further to make sure
21 that there were no issues on the containment
22 leakage. And when I looked at the leakage that
23 there was and how much of this affected the
24 Appendix J requirements, the plant met the Appendix
25 J requirements.

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1 CHAIRMAN STETKAR: So, you're -- okay.
2 Okay, so your ultimate conclusion says that,
3 despite any concerns that they may have had in
4 their self-assessment or anything --

5 BERNARD: That's right.

6 CHAIRMAN STETKAR: -- that you may have
7 identified during your audit, they still met the
8 Appendix J?

9 BERNARD: And again, to the best of my
10 recollection, I believe they had some staff changes
11 in between.

12 CHAIRMAN STETKAR: Yes, I don't care
13 why or -- I just care whether it --

14 BERNARD: But, I'm trying to recollect
15 --

16 CHAIRMAN STETKAR: -- what, you know,
17 what the issue is. So, okay, thank you. That
18 actually does help, thank you very much.

19 BERNARD: Do you still want us to get
20 back with you?

21 CHAIRMAN STETKAR: No, I think, you
22 know, I think I've -- from you, I think I have a
23 sense of how all of the words that I'm reading
24 between audit reports and inspection reports and
25 then final text in the SER now seem to hang

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1 together for me a little bit better.

2 So, thank you, I think that's fine.

3 BERNARD: You're welcome.

4 MR. SAYOC: Are there any other
5 questions at this time?

6 MR. PICK: Back to you, Manny.

7 MR. SAYOC: Okay, thank you, Greg.

8 In the next few slides, I'll be
9 presenting the results of the -- as described in
10 the final SER.

11 SER Section 2 described the scoping and
12 screening of structures and components subject to
13 aging management review.

14 The staff reviewed the Applicant's
15 scoping and screening methodology, procedures,
16 qualifying controls applicable to the LAR
17 development and training of the project personnel.

18 The staff also reviewed various
19 summaries of the safety-related systems, structures
20 and components, or SSEs, non-safety SSEs affecting
21 safety -related components and SSEs relied upon to
22 perform functions in compliance with the
23 Commission's regulations applicable to Grand Gulf
24 which are fire protection, environmental
25 qualifications, station blackout and anticipated

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1 transients without SCRAM.

2 Based on the review, the results of the
3 scoping and screening audit and additional
4 information provided by the Applicant, the staff
5 concludes that Applicant's scoping and screening
6 methodology was consistent with the standard review
7 plan and requirements of 10 CFR Part 54.

8 Next slide?

9 MEMBER SKILLMAN: Manny, let me ask
10 this question. The information that we have
11 indicates that the staff independently selected
12 from a random list, 85 components from
13 approximately 111,500 components.

14 And that number is apparently accepted
15 as statistical appropriate number for this
16 screening.

17 How is 85 out of 111,500 acceptable?

18 MR. SAYOC: Okay, you're referring to
19 the scoping and screening audit, right?

20 MEMBER SKILLMAN: Yes.

21 MR. SAYOC: Okay, do I have Mr. Rogers,
22 Billy Rogers in the audience?

23 MEMBER SKILLMAN: I'll be quick to add,
24 we asked the same question of the LaSalle team last
25 week, so -- week before last.

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1 MR. ROGERS: Hi, this is Bill Rogers
2 from DLR staff.

3 So, we considered that, we addressed
4 the question recently, so I'll try to give you a
5 bit more comprehensive answer.

6 The two numbers in there are not
7 necessarily mathematically related. The larger
8 number is to give the reader a scope of the size or
9 a thought on the size of the population that we're
10 considering.

11 And the number that we use, which I
12 think in this case was 85 components, that's a
13 number that we put together based on our experience
14 to give us a large enough selection to give us --
15 be able to allow us to draw a meaningful conclusion
16 on the adequacy of the implementation of their
17 program.

18 MEMBER BLEY: That's not on a
19 statistical basis but on an engineer level of
20 comfort is what you're saying?

21 MR. ROGERS: It is, and I'll try to
22 serve this a little different than last time.

23 We did look at the numbers and we had
24 one of the staff members help us come up with a
25 population that would give us a large enough -- not

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1 large enough population, but within the amount of
2 resources that we have to apply to it during the
3 week of the audit.

4 You know, we have a limited amount of
5 time, so we used a number that was provided to us
6 and that we looked at our resources and we came up
7 with this population.

8 It's large enough that we get some
9 meaningful information, but it's not too large that
10 we can't accomplish during the week.

11 And it actually has been very effective
12 for us, that population.

13 MEMBER BLEY: Do you know what that
14 number was that you were provided with?

15 MR. ROGERS: Eighty-five.

16 MEMBER BLEY: Oh 85?

17 MR. ROGERS: Yes, yes, it was.

18 Now --

19 MEMBER BLEY: And that came -- I didn't
20 understand who that came from.

21 MR. ROGERS: It came from someone on
22 our staff. The person that does this, the staff
23 member that does that task, he worked with another
24 member of the staff that is a statistician and they
25 work together to come up with kind of a general

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1 constant number.

2 But, it is not a statistical
3 correlation between the two. It's just a good
4 engineering population.

5 MEMBER BALLINGER: Let me ask the
6 obvious question. If you were not resource
7 limited, what would the right number be?

8 MR. ROGERS: Well, that's a good
9 question. But, that information is also reviewed
10 by other people on the staff.

11 So, if you think about what the purpose
12 of this audit, of the scoping and screening
13 methodology audit, we're looking at the process
14 that they use to develop to gather the information
15 that goes in the application. It's the process.

16 In order to do a good service to the
17 review and the process, we looked a limited amounts
18 of implementation, enough to see that the process
19 is functional and is being applied in a consistent
20 manner to give the information that would be
21 expected from it.

22 So, there's several things that we do
23 during that audit that are duplicated by other
24 staff members.

25 Their, for example, review of the

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1 systems, we looked at three systems in this audit,
2 standby service water, the diesel and the switch
3 yard. That information is reviewed incomplete by
4 other members of the staff.

5 But, we use it to provide us a sense of
6 how well the process was developed and how well
7 it's being implemented. But, it's used to actually
8 critique the process not the implementation.

9 Often, we do find areas of
10 implementation which need to be corrected and in
11 the Section 2.1 of the SER, there are RAIs, there's
12 at least, I think out of the four that we wrote for
13 this audit, there were two RAIs which led to
14 additional SSEs being included within the scope of
15 license renewal.

16 But, in general, the implementation
17 review activities in that particular audit are due
18 to reflect on the adequacy of the process that was
19 developed.

20 MEMBER BALLINGER: Again, so the number
21 of the systems chosen are really based on resource
22 limitations and I presume some kind of engineering
23 judgment as to which systems are -- could be, let's
24 say, more relevant than others?

25 I mean --

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1 MR. ROGERS: Yes, sir. So, this type
2 of audit has been in effect for 15 years, at least.
3 And I've been leading these audits for the majority
4 of those 15 years in some capacity or another.

5 And we choose what we can do to help us
6 understand the process, but it is limited by time
7 and resources.

8 MEMBER BALLINGER: So, there's no --

9 MEMBER POWERS: Well, you're very
10 apologetic about this, but I just didn't factor in
11 the calculation.

12 If they had one percent failure rate
13 it's better than 90/10. Is there a chance that you
14 trip it up with 85 samples?

15 MR. ROGERS: Yes. Well, yes, the --

16 MEMBER POWERS: I mean, that's not a
17 bad statistic. That's not bad at all. I mean, if
18 you're resource limited, you're doing a preview and
19 they've got a one percent failure rate, you're
20 going to make it up with better than 90 percent
21 chance.

22 MEMBER BALLINGER: And there's no issue
23 with what I would call target fixation in the sense
24 that you choose the same ones all the time?

25 MR. ROGERS: Well, no, and for the

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1 different pieces, so for the -- what we started
2 with, the point of selecting components from the
3 larger database, we do that randomly to avoid that.

4 So, many of those might be associated
5 with house loads and would not even be evaluated
6 necessarily. The system would get thrown out.

7 Some of the systems we review are based
8 on experience where we do identify areas where
9 there might be need for increased consideration,
10 but that's on the whole system reviews, not the
11 sample populations.

12 MEMBER BALLINGER: Thank you.

13 MR. ROGERS: You're welcome.

14 MEMBER POWERS: Thank you. Good, thank
15 you.

16 MR. SAYOC: Thank you, Billy.

17 Are there any questions before I go on
18 with the presentation at this point?

19 Okay, SER Section 3.0 covers the
20 staff's review of the Applicant's aging management
21 programs.

22 For giving an aging management review,
23 the staff reviewed the item to determine whether
24 it's consistent with the GALL report.

25 Section 3.1 to 3.6 include the aging

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1 management review items in each of the general
2 system areas within the scope of license renewal.

3 If an aging management review is not
4 consistent with the GALL report, then the staff
5 reviewed the Applicant's evaluation to determine
6 whether the Applicant has demonstrated that the
7 effects of aging will be adequately managed so that
8 the intended function will be maintained consistent
9 with the current licensing basis for the period of
10 extended operation.

11 Next slide?

12 MEMBER BLEY: Okay, so, in slide 19 of
13 the Applicant's presentation, they came up with at
14 least 44 matches and 10 new programs, that matches,
15 that's good.

16 Thirty-four existing programs, that
17 matches.

18 They had ten existing programs with no
19 enhancements and 24 existing programs will be
20 enhanced and you come up with one of those that's
21 plant-specific and nine that are consistent.

22 So, I guess that must be the dangling
23 one that's different between you two. Can you
24 resolve this for me?

25 MR. SAYOC: Yes, actually, we had a

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1 last minute audit. We compared notes and I
2 actually did a slide 0, so now you have eight
3 consistent, I don't know if you noticed, eight
4 consistent on 20 consistent with the --

5 MEMBER BLEY: Oh, that's different from
6 the one you gave me.

7 MR. SAYOC: Yes, and what I -- what we
8 discovered is that in the SER, we discovered that
9 service water integrity, it was listed as the
10 staff's results as existing and consistent. But,
11 it was actually existent with enhancements. So,
12 that's where the difference is.

13 MEMBER BLEY: Say that again?

14 MR. SAYOC: So, the --

15 MEMBER BLEY: We've got --

16 MR. SAYOC: So, the plant's integrity
17 was a program within an enhancement and that was
18 not accurately conveyed in the summary table
19 Section 3.0. So, we caught that and so, we've
20 looked up in the SER, there was an enhancement to
21 service water integrity and that's where that base
22 for the slide is.

23 MEMBER BLEY: So, when they said ten
24 with no enhancements --

25 MR. SAYOC: Yes, so you have eight that

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1 are consistent.

2 MEMBER BLEY: Yes.

3 MR. SAYOC: Right? And then you have
4 the two consistent with exceptions. So, eight and
5 two, that's where you have the ten without
6 enhancements.

7 MEMBER BLEY: Oh, consistent with
8 exceptions?

9 MR. SAYOC: Yes, so that counts, you
10 know, without enhancements.

11 MEMBER BLEY: Okay.

12 MR. SAYOC: That's how you have ten
13 without enhancements.

14 MEMBER BLEY: Okay.

15 MR. SAYOC: I think that will probably
16 clarify --

17 MEMBER BLEY: Okay.

18 MR. SAYOC: -- things for you.

19 MEMBER BLEY: I was just trying to
20 reconcile them and wondering, because we always do
21 a tally up and I don't want to be terribly confused
22 here. That makes sense. I'm good.

23 Thank you.

24 MR. SAYOC: Okay, then I'll describe 44
25 aging management programs, 34 of which were

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1 existing and 10 are new.

2 The slide identifies Applicant's
3 disposition of the AMPs and the resulting
4 disposition in the final SER as a result of the
5 staff's review.

6 Two plant-specific AMPs were provided,
7 all with exceptions of plant-specific AMPs were
8 evaluated by the staff for consistency with the
9 GALL report.

10 On the basis of its audit and the
11 review of the AMPs evaluated against the GALL
12 report, the staff concluded that there were 17 that
13 were consistent and 20 were consistent with
14 enhancements, 3 were consistent with enhancements
15 and exceptions, 2 were consistent with exceptions
16 and 2 were plant-specific.

17 Let's now cover the resolution of the
18 open items related to the aging management
19 programs.

20 Next slide?

21 MEMBER BLEY: They still don't add up,
22 I'm sorry. Go back, I guess I missed something.

23 Eight and 2 is 10; 20, 23, 24, okay,
24 they do add up. Oh, but my old paper, there was
25 the problem, the old paper said 20 consistent, 19

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1 consistent. I found the other mistake. Okay.

2 Thank you.

3 MR. SAYOC: The first open item was
4 related to the one-time inspection small bore
5 piping program. The Applicant stated that its new
6 one-time inspection small bore piping program was
7 consistent with GALL report AMP XI.M35, one-time
8 inspection of ASME coat class 1 the small bore
9 piping.

10 During this audit, the staff reviewed
11 the Applicant's claim of consistency with the GALL
12 report and compared each of the program elements to
13 the corresponding program elements of GALL report,
14 AMP XI.M35.

15 Open item 3031 33-1 on one-time
16 inspection of small bore piping program is related
17 to its plant operating experience review.

18 The staff noted that the extent of its
19 OE review only included license event reports,
20 interviews with staff plant personnel and a
21 condition report review which initially covered the
22 last ten years of plant operation.

23 The staff noted that this wasn't
24 consistent with the GALL program guidance and
25 issued an RAI requesting that the AMP provide the

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1 methodology and results of a complete search and
2 review of records in the condition reporting system
3 covering the entire history of license operation.

4 Next slide?

5 In response to the RAI, the licensee
6 applied a condition report review to the entire
7 history of the plant and the staff determined that
8 the licensee methodology is appropriate because the
9 key words are directly applicable to instances of
10 age-related cracking of class 1 small bore piping.

11 The staff found that this information
12 supports Applicant's finding that there were no
13 instances of age-related cracking of class 1 small
14 bore piping during this period.

15 Because Applicant has completed a
16 satisfactory review of the plant-specific operating
17 experience covering the complete operating history
18 of the plant and its review identified no instances
19 of age-related cracking applicable to class 1 small
20 bore piping, the staff determined that the
21 Applicant's operating experience review is
22 consistent with the GALL report guidance and that
23 the Applicant had demonstrated applicability of the
24 GALL report AMP XI.M35 at Grand Gulf.

25 MEMBER BLEY: This is just a follow up

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1 on what Pete asked earlier, I haven't sat in on all
2 of these license renewals, but it strikes me this
3 is pretty rare that we get a case where there's no
4 history of cracking.

5 MEMBER RICCARDELLA: What was the
6 period that they went back and looked at?

7 MR. SAYOC: Let's see here, the period
8 -- hang on a second -- originally, it was the -- it
9 covered the last ten years of plant operation and
10 the staff basically issued an RAI to cover the
11 entire history of the plant.

12 MEMBER RICCARDELLA: The entire
13 history? That's the only BWR I know that hasn't
14 had pipe issues, heat cracking.

15 CHAIRMAN STETKAR: Do we know what the
16 -- I had a note written again back from history
17 here, in the SER, do we have -- do you know what
18 the total population in scope small bore butt welds
19 and socket welds are? I'm sure Allen does, he's
20 shaking his head.

21 So, do -- someone does. I mean is it
22 200 or is it 200,000?

23 MR. FU: Bart Fu, Division of License
24 Renewal, NRC.

25 The number, based on the RAI response,

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1 if I remember, yes, 195 for butt welds, 408 for
2 socket welds. And we're talking about class 1.

3 CHAIRMAN STETKAR: Yes, 195 and 408?

4 MR. FU: Right.

5 CHAIRMAN STETKAR: So, that's, for
6 reference, that's kind of a smaller population than
7 we're used to seeing in many of the plants where
8 it's -- right?

9 MR. FU: It's probably in that range.

10 CHAIRMAN STETKAR: Is it?

11 MR. FU: Of socket well bore rates,
12 yes. So, three, two, yes, it would be 300.

13 MEMBER RICCARDELLA: Allen just said
14 something that might shed some light on this.
15 Vibration fatigue doesn't count?

16 MR. SAYOC: It does. Well, I mean age-
17 related degradation is the objective of the
18 program.

19 CHAIRMAN STETKAR: Well, there have
20 been a lot of questions in the past on these about
21 whether is it vibration-related or age-related.

22 MR. HISER: Isn't there a provision in
23 the AMP that if it's vibratory, the design changes
24 have been made and it's corrected the problem, then
25 it's no longer thought to be age-related, it's more

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1 of a design installation issue.

2 MEMBER BLEY: Ah, so you may have had
3 some, but if they were redesigned, they don't
4 count?

5 MR. HISER: From the perspective of the
6 necessity for a periodic program versus a one-time,
7 that's true, but I believe, Bart, did you say for
8 Grand Gulf that they've had zero?

9 MR. FU: Right. For Grand Gulf, we did
10 --

11 MEMBER BLEY: No, not the one, there's
12 been zero, yes.

13 MR. FU: -- and we did an independent
14 search, we didn't find any. And we also issued an
15 RAI and requested the Applicant to perform a
16 complete search and review of the, you know, the
17 class 1 cases and they didn't find any.

18 It's not unusual. Some plants, we've
19 seen it and then they have used the periodic
20 program, I mean, plant-specific program to perform
21 periodic inspections.

22 For example, just recently, Byron or
23 Braidwood, one of them, I forgot which one, yes.

24 CHAIRMAN STETKAR: You're right, one of
25 -- I don't remember which one either, but it was

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1 one of the four units.

2 MR. FU: Yes.

3 MEMBER BLEY: Okay, thanks.

4 MR. SAYOC: Okay, next slide?

5 The second open item pertained to the
6 service water integrity program which the Applicant
7 described as an existing program which was
8 consistent with GALL report and XI.M20.

9 Open cycle cooling water system for
10 managing loss of material, for following an open
11 cycle cooling water systems.

12 Recent Grand Gulf plant experience --
13 sorry, recent Grand Gulf plant-specific operating
14 experience condition reports discuss minor erosion
15 in the valve plant's connection in the standby
16 service water system.

17 Proposals were made to include this
18 valve in appropriate program, GGNS-MS46 entitled
19 Plant Project Plan for Maintaining Internal
20 Corrosion, Erosion in a Moderate Energy Piping
21 Component.

22 Although the program plan identified in
23 the SSW system as a susceptible system --

24 I'm sorry, let me repeat that.

25 Although the program plan identified

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1 the SSW system as a susceptible system in a
2 moderate energy program, it was not clear to the
3 staff whether the components of the SSW system were
4 being managed for loss of material due to erosion
5 because it was not described in the LRA, nor
6 discussed in the onsite program evaluation
7 documentation.

8 The staff issued multiple RAIs to
9 establish the susceptibility of the SSW system due
10 to loss of material due to erosion to clarify
11 whether or not the management of loss of material
12 by the service water integrity program also managed
13 erosion and if the site procedure, GGNS-MS46 is
14 cited as accredited or accredited in any AMP
15 managing loss of material.

16 In particular, the staff issued RAI
17 B141-3B requesting the Applicant provide additional
18 detail in the LRA table such as the AMR items
19 associated with erosion aging mechanism that were
20 identified, to confirm that the onsite AMP program
21 documentation will be updated to include GGNS-MS46
22 and to update appropriate sections of the LRA to
23 reflect the aging management activities performed
24 by the service water integrity program.

25 Next slide?

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1 The Applicant's response to this RAI is
2 that the revised LRA Sections A1.41 and B1.41 to
3 state that the service water integrity program also
4 includes inspections for loss of material due to
5 erosion and included an enhancement to revise the
6 program documents to include inspections for this
7 aging mechanism.

8 In addition, the plant stated that the
9 loss of material due to erosion is being managed
10 through a combination of AMPs, including service
11 water integrity program, (coughing) and preventive
12 maintenance program and flow accelerated corrosion
13 program.

14 As a result, the Applicant added new
15 AMR items with plant-specific notes stating that
16 the aging effect of loss of material for the
17 associated components is related to erosion.

18 In addition, the Applicant revised LRA
19 AMPs sections of the flow accelerated corrosion
20 program and the periodic surveillance and
21 preventive maintenance program to reflect their use
22 of managing loss of material due to erosion.

23 Finally, the Applicant provided a table
24 with the most recent inspection results for
25 components to the MS46 database that are being

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1 monitored for erosion and established corrective
2 actions to address discrepancies in the database
3 which prevented the determination of appropriate
4 dates for the next inspection for some components.

5 Accordingly, the staff found
6 Applicant's response to the RAI B1.41-38 is
7 acceptable and the staff's concerns were resolved.

8 Open item 3.0.3.1 39-1 was, therefore,
9 resolved.

10 Next slide, please?

11 MEMBER SKILLMAN: Manny, let me ask a
12 question on this particular item, please?

13 On this open item, some of the
14 information that we in the ACRS have is information
15 that provides this statement or two statements, and
16 I'd like you and Greg to perhaps weigh into this.

17 The Applicant revised LRA Sections
18 A1.41 and B1.41 to state that the service water
19 integrity program also includes inspections for
20 loss of material due to erosion and included a new
21 enhancement to revise program documents to include
22 inspections for this aging mechanism.

23 In separate correspondence associated
24 with a pre-decisional enforcement conference dated
25 August 8, 2013, the Applicant stated that its

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1 previous response had incorrectly stated that GGNS-
2 MS46 is not credited for managing loss of material
3 due to erosion.

4 As part of the current response, the
5 Applicant stated that it had identified
6 discrepancies in the GGNS-MS46 database during the
7 development of its RAI response and this condition
8 had been entered into its corrective action
9 program.

10 What I interpreted, when I read this,
11 was there was a database issue but there was also
12 an enforcement conference process underway that
13 perhaps affected this.

14 But, my first question is, extent of
15 condition? Can you explain what this set of
16 wording is pointing to, please?

17 MR. PICK: I can -- this is Greg Pick,
18 I can answer this question.

19 The flow accelerated corrosion engineer
20 and the program owners onsite tracked using the
21 flow accelerated corrosion database flow erosion.

22 They had aging mechanisms onsite that
23 they tracked and they knew about. That information
24 wasn't reflected in the application or their
25 programs and we were trying to get that in there.

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1 The other systems affected were high
2 pressure core spray, low pressure core spray,
3 residual heat removal. So, they covered the extent
4 of condition. They were doing the right things.

5 For service water integrity, I
6 coordinated with the reviewer. The two programs
7 pointed to different things and they were
8 confusing.

9 The subject of that enforcement
10 conference was the information provided to us on
11 the docket was inaccurate.

12 They actually received a 54.13 by --

13 MEMBER BLEY: Tell us what that is.

14 MR. PICK: Incomplete and inaccurate
15 information related to the applicant process,
16 because we reviewed a very small sample and we need
17 it to be accurate.

18 And the reviewer for the FAC and the
19 reviewer for service water integrity was the same
20 individual who used to be an inspector. And he was
21 able to see the inconsistencies.

22 They put that in the corrective action
23 program and they figured out that they did not have
24 enough checks and balances.

25 I was also the individual that closed

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1 out that corrective action that the licensee
2 implemented, coordinating with the DLR reviewer.

3 MEMBER SKILLMAN: So, what is current
4 status, please?

5 MR. PICK: That would be a better
6 question answered by the Applicant.

7 Here is what I believe happens, when
8 they're submitting the water for license renewal
9 application which they put on the docket, these
10 folks that do license renewal, corporate folks,
11 when they provide an answer to us, the site people
12 need to do an independent check and there's an
13 extra sign off that that independent check occurred
14 so that we don't get inaccurate information.

15 So, it was almost an information
16 transfer process.

17 MEMBER BLEY: Given the way you started
18 that, would the licensee like to add to that, I
19 mean the Applicant?

20 MR. NADEAU: Hi, my name is Jim Nadeau.
21 I'm the Regulatory Assurance Manager.

22 And how Greg characterized this is
23 exactly accurate. We did not provide clear and
24 accurate information in our license response. We
25 recognized that after it was called out.

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1 We've done a root cause on it,
2 identified that our issue was specifically
3 associated with our selection on the personnel we
4 were using to certify and concur with the
5 information going into the license amendment.

6 We did an internal extent of condition.
7 We took corrective actions and we have focused on
8 that for the last three years on making sure that
9 we've got really good information going to the
10 regulator.

11 And in our conversations with the
12 regulator, they agree with -- that our current
13 submittal quality is much better.

14 MEMBER SKILLMAN: Thank you.

15 Mr. Chairman?

16 MR. SAYOC: On to our third open item.
17 LRISG 2011-5 Appendix A establishes a new SRP-LR
18 Section A.4.

19 This section provides a framework for
20 ongoing activities to address operating experience
21 concerning age-related degradation and aging
22 management during the term of renewed operating
23 license.

24 The LRA described that the operating
25 experience program, or OEP, and the corrective

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1 action program, or CAP, will be used to evaluate
2 operating experience to ensure that the AMPs will
3 continue to be effective in managing the aging
4 effects for which they are credited.

5 However, the staff determined that the
6 LRA does not provide specific details on how the
7 OEP and the CAP will be used to monitor operating
8 experience related to aging on an ongoing basis.

9 The staff issued several RAIs prompting
10 the Applicant to describe the OEP and the CAP
11 programs and associated activities in the
12 identification and evaluation of aging issues and
13 AMP effectiveness.

14 However, the staff did not determine
15 whether the OEP and the CAP programmatic activities
16 were fully consistent with areas for the review
17 guidelines in SRP-LR Section A.4.2 as described by
18 the Applicant.

19 These areas include identification of
20 age-related operating experience, information
21 sources, evaluation of AMP implementation results,
22 coding and trending of age-related degradation
23 applicable to the plant, content of personnel
24 training and operating experience reporting.

25 The staff issued RAIs 3.0.5-1 A through

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1 C. These items are identified -- are the subject
2 of open item 3.0.5-1.

3 Next slide, please?

4 In response, the Applicant stated that
5 the CAP is used to address equipment degradation
6 due to the effects of aging, including when the
7 degradation is identified from information other
8 than the operating experience program.

9 Sources of information in the operating
10 experience program include plant-specific and
11 industry information, revisions to the GALL report,
12 other NRC and industry guidance documents and
13 standards applicable to aging management as well as
14 AMP implementation results.

15 Extent of condition reviews are used to
16 determine the scope of corrective actions which
17 include enhancement of AMPs or development of new
18 AMPs as appropriate.

19 Evaluation of age-related operating
20 experience include the consideration of information
21 such as the affected SSEs, materials, environments,
22 aging effects, aging mechanisms and AMPs.

23 That Applicant established a specific
24 code for identification of all aging management
25 issues at the plant and will periodically review

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1 the information in this corrective action program
2 to identify and evaluate adverse trends.

3 In terms of training it's operating
4 experience team, the Applicant described the scope
5 of key personnel training, the periodic nature of
6 the training particularly during personnel turnover
7 and stated that the training covers topics of age-
8 related degradation and aging management.

9 For operating experience reporting, the
10 plant reports its plant-specific operating
11 experience to the industry per guidelines in INPO
12 12-009, INPO Consolidated Event System, which
13 includes findings of root cause investigation
14 reports, LERs, submitted under 10 CFR 57.73 and
15 plant event notices submitted under 10 CFR 50.72.

16 Next slide? I'm sorry, previous slide,
17 yes.

18 The staff determined that the
19 Applicant's programmatic activities for the ongoing
20 review of operating experience are consistent with
21 the guidance of SRP-LR Section A.4.2 and will
22 ensure that the license renewal AMP are and will
23 continue to be effective in the management of aging
24 effects.

25 The staff concerns was resolved, open

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1 item 3.0.5-1 was, therefore, closed.

2 Next slide?

3 Section 4 identifies time-limited aging
4 analysis, or TLAAs. Section 4.1 discusses the
5 staff's review of the Applicant's identification of
6 applicable TLAAs.

7 The staff evaluated the Applicant's
8 basis for identifying those plant-specific or
9 generic analysis that needed to be identified as
10 TLAAs and determined that the Applicant has
11 provided an accurate list of TLAAs in subpart of 10
12 CFR 54.21(c)(1).

13 Section 4.2 through 4.7 discusses
14 staff's review of applicable Grand Gulf TLAAs as
15 shown.

16 The staff reviewed the information
17 provided by the Applicant and concluded, with one
18 exception, that the TLAAs were either remain valid
19 for the period of extended operation, the TLAAs
20 have been projected to the end of period of
21 extended operation or the effects of aging on those
22 intended functions will be adequately managed for
23 the period of extended operation as required by 10
24 CFR 54.21(c)(I), (ii), and (iii) respectively.

25 Next slide?

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1 The staff reviewed the Applicant
2 fluence analysis for the reactor vessel consistent
3 with the review procedures of SRP-LR Section 4.2
4 which indicates that Applicant identifies (a) the
5 neutron fluence for reactor vessel at the
6 expiration of license renewal period, (b) the staff
7 approved methodology used to determine the neutron
8 fluence and 8 whether the method follows the
9 guidance of NRC Reg Guide 1.190.

10 In its review, the staff determined
11 that the Applicant's fluence method was
12 inconsistent with NRC Reg Guide 1.190 which states
13 -- which does not address the use of a method
14 combining fluence results from two different
15 methods.

16 As a result, the staff requested a
17 sufficient technical basis for combining the
18 fluence results in order to ensure adequate
19 analytical uncertainty.

20 Alternatively, the staff requested the
21 Applicant to provide results from a single method
22 which is within the scope of Reg Guide 1.190.

23 The staff noted that the method used to
24 perform the MPM pre-EPU fluence calculations is not
25 documented in the NRC approved method.

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1 Therefore, the staff noted that a
2 detailed description of the calculational method
3 and their qualification as pertaining to Grand Gulf
4 must be submitted to the NRC for staff review and
5 approval for referencing in the LRA.

6 Next slide?

7 The Applicant fluence applied and NRC
8 approved single neutron fluence calculation method,
9 the Applicant submitted a license amendment request
10 to adopt the MPM method of calculating reactor
11 vessel neutron fluence values as a single fluence
12 method in accordance with the Reg Guide 1.190.

13 In a separate licensing action, the
14 staff approved this method on August 18, 2015 with
15 Amendment Number 204 to License Number NPF-29,
16 thus, incorporating the method into the current
17 licensing basis of Grand Gulf.

18 As part of the license amendment
19 review, the staff confirmed the MPM method
20 including analytical uncertainty analysis adheres
21 to Reg Guide 1.190.

22 The staff also confirmed that the
23 Applicant adequately updated the neutron
24 embrittlement TLAA's using the 54 EFPY fluence
25 projections based on the approved MPM method.

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1 In summary, the staff found that the
2 Applicant adequately evaluated the TLAAs for their
3 reactor vessel neutron fluence because, (1) that
4 the Applicant adequately identified neutron fluence
5 calculations as a neutron embrittlement TLAA; (2)
6 the Applicant incorporated the staff approved
7 fluence method into this current license basis
8 through the license amendment process; and (3) the
9 Applicant performed 54 EFPY fluence calculations in
10 accordance with the staff approved method as is
11 consistent with the Reg Guide 1.190.

12 And finally, the Applicant's analysis
13 provides neutron fluence projects to the end of the
14 period of extended operation in accordance with 10
15 CFR 54.12(c)(ii).

16 Open item 4.2.1-1 was, therefore,
17 closed.

18 Next slide?

19 In conclusion, on the basis of its
20 safety review, the staff determined that the
21 requirements of 10 CFR 54.29(a) were met for the
22 license renewal of Grand Gulf Nuclear Station Unit
23 1.

24 This concludes my presentation. Now,
25 if there are any questions, the staff will take

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1 them at this time.

2 CHAIRMAN STETKAR: Yes, I promise to
3 hit you, if you listened to some my questions for
4 the Applicant and they were along the lines of,
5 well, we've heard things or we read things three
6 years ago and I was trying to probe about how
7 things have changed in the interim.

8 A question I had written down three
9 years ago, in the SER it's -- if you want to look
10 it up quickly, it's Section 3.0.3.1.10 -- but, in
11 particular in that area, it talks about an
12 inspection program for inaccessible thermal
13 sleeves.

14 MR. SAYOC: You said thermal sleeves?

15 CHAIRMAN STETKAR: Thermal sleeves,
16 yes, it mentions, if I read through the thing, it
17 mentions, in particular, low pressure core
18 injection or coolant injection, LIPC, and it says
19 other reactor vessel thermal sleeves.

20 And I went back and I looked at the LRA
21 and Grand Gulf refers to a BWR VIP-18 Revision 1 as
22 the basis for their inspection program for those.

23 And in the SER, at least three years
24 ago, it said BWR VIP-18 Revision 1 is under NRC
25 review and your conclusion was, well, because it's

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1 under review and they're relying on it, what
2 they're committing to is okay.

3 Have you finished the review yet?

4 MR. SAYOC: The review of the --

5 CHAIRMAN STETKAR: BWR VIP-18 Revision
6 1, is it done yet? It would be a yes or no.

7 If it is done, then the SER is in error
8 because it's not factually true.

9 If it's not done, I'd like to know how
10 come it's dragging on so long?

11 MR. PURTSCHER: My name is Pat
12 Purtscher. I'm with the Vessels and Internals
13 Branch.

14 And the review for VIP-18 Rev 1 was
15 completed.

16 CHAIRMAN STETKAR: Okay. So, we have
17 now a factual misstatement in the SER because
18 nobody went back and reread the SER 695 pages, by
19 my count, to see whether or not it contained, in
20 2016, factual misstatements.

21 I didn't read 695 pages to try to find
22 this because I had this question three years ago
23 and it said when will you complete your review?

24 MS. RICHARDSON: Is it on page 695 or -

25 -

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1 CHAIRMAN STETKAR: No, no, it's
2 actually --

3 MS. RICHARDSON: -- or pages of the
4 SER?

5 CHAIRMAN STETKAR: No, go to the
6 section -- but don't correct just this one, my
7 message is, somebody's got to read through this
8 thing and find out whether it's factually correct
9 in 2016.

10 MS. RICHARDSON: I was just trying to
11 understand which SER we were looking at because the
12 final SER is 770 pages, so --

13 CHAIRMAN STETKAR: Well, I have a Word
14 version that was sent to me of the final SER.

15 MS. RICHARDSON: Okay.

16 CHAIRMAN STETKAR: So, I don't know, it
17 might be PDF or something.

18 MS. RICHARDSON: Okay.

19 CHAIRMAN STETKAR: So, all I have is a
20 Word file that says -- was sent to me that says
21 final SER, so --

22 MS. RICHARDSON: Okay.

23 MR. SAYOC: Okay, we'll take that --

24 CHAIRMAN STETKAR: The page -- the body
25 count of the pages was only meant to elaborate the

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1 fact that I haven't read every single page of the
2 final version.

3 MEMBER CORRADINI: But, I guess the
4 counter question is, do you have the right one in
5 front of you?

6 CHAIRMAN STETKAR: Well, that would be
7 good because, if somebody could find quickly
8 Section, and again, if you do a quick search, it's
9 3.0.3.1.10 and it's -- but it's well down in the
10 body of that.

11 If you get to that section and then you
12 search on -- well, you can't do it by hand easily,
13 BWR VIP-18, you'll find it.

14 And I can't give you a page number
15 because we're obviously --

16 MS. RICHARDSON: 3.0.3.1.10.

17 MR. SAYOC: Okay. We'll verify.

18 CHAIRMAN STETKAR: Well, but it --

19 MEMBER BLEY: Where do you stand? And
20 John's question leaves me with a question, is there
21 now a PDF version of this? Is there a final SER
22 that -- maybe the version we have was the draft
23 final and you've changed it since we got it?

24 MR. SAYOC: It hasn't been changed
25 since it was submitted shortly after April 4th.

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1 But, we do note your comment and make sure that the
2 SER actually reflects the completed nature of the
3 staff's review.

4 MS. DIAZ-SANABRIA: This is Yaira Diaz,
5 the Branch Chief for the Safety Projects.

6 We only issue one final SER, so you
7 shouldn't have a different document in front of
8 you.

9 MEMBER BLEY: The Word document we have
10 is good?

11 MS. DIAZ-SANABRIA: Well, we only issue
12 one document. We didn't issue a Word document
13 versus a PDF. We only issue one document, either a
14 Word document or a PDF document.

15 MEMBER BLEY: Okay.

16 MS. DIAZ-SANABRIA: So, you should have
17 the --

18 CHAIRMAN STETKAR: My --

19 MS. DIAZ-SANABRIA: -- correct version.

20 CHAIRMAN STETKAR: My file date is
21 April 5th. The title, let's see, let me go back to
22 this, all it says is April 2016.

23 MS. DIAZ-SANABRIA: Yes, we normally
24 look back into --

25 MEMBER BLEY: But, John's question is

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1 deeper. If you look back and in fact, it's the way
2 it appears to us --

3 CHAIRMAN STETKAR: I actually quoted --
4 I checked in the file that I have in front of me
5 dated April 2016 and that --

6 MEMBER BLEY: The same as the one we
7 used to have?

8 CHAIRMAN STETKAR: Revision BWR VIP-18,
9 Revision 1, is under NRC review, which was
10 identical to what it said in the draft SER with
11 open items that we had three years ago. It has not
12 been changed.

13 MS. DIAZ-SANABRIA: Yes, we --

14 CHAIRMAN STETKAR: I wouldn't have
15 brought this up had it been changed.

16 MS. DIAZ-SANABRIA: We normally don't
17 comment and we definitely will go back, take a look
18 at the final SER and correct anything that doesn't
19 reflect the accuracy of it.

20 Being three years ago, we had a shuffle
21 of several reviewers, so it's been quite
22 challenging on our part, as well, to do that.

23 CHAIRMAN STETKAR: But, again, we, as
24 the ACRS, will be asked to review the final -- and
25 write a letter on the final SER.

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1 MS. DIAZ-SANABRIA: That is correct.

2 CHAIRMAN STETKAR: That final SER ought
3 to be factually correct when the ACRS is asked to
4 review it. And that's not just closure of the four
5 open items or whatever, it's cover to cover
6 factually correct --

7 MS. DIAZ-SANABRIA: Right.

8 CHAIRMAN STETKAR: -- when it's issued
9 in 2016.

10 MS. DIAZ-SANABRIA: Right. And we will
11 make sure that the full Committee has the accurate
12 one.

13 CHAIRMAN STETKAR: Thank you.

14 MEMBER BLEY: Anything else from the
15 Committee?

16 Okay, at this time, we're going to open
17 the phone line and see if there are any comments
18 from the public listening in.

19 And I will -- while we're opening the
20 phone line, I will ask is there anyone in the
21 audience here in the meeting room who would like to
22 make a comment? If so, please come to the
23 microphone and identify yourself.

24 MR. FORD: Bryan Ford with Entergy.

25 If you'd like us to come back and

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1 answer the couple open items we walked away with,
2 we --

3 MEMBER BLEY: Right now, please do that
4 and we'll leave the other phone line open until
5 then.

6 Go ahead.

7 MR. WILLIAMS: All right. This is
8 Patrick Williams, Entergy Director at Grand Gulf.

9 We had several questions from the
10 follow up.

11 One question was related to the
12 reliability and availability of our cathodic
13 protection system being consistent with the staff
14 summary. Our last summer's review showed 93
15 percent result for our survey.

16 MEMBER BLEY: That was coverage or
17 unavailable?

18 MR. WILLIAMS: Pardon, that's coverage.

19 MEMBER BLEY: Coverage?

20 CHAIRMAN STETKAR: Well, I was asking
21 for about availability.

22 MEMBER BLEY: Okay.

23 MR. WILLIAMS: Okay, the next half of
24 the question is the availability. So, I asked the
25 engineers the blanket question, hey, how's it look

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1 for recent history?

2 The last couple of years, that's his
3 time of doing this program, a 100 percent
4 availability, monthly checks to validate and
5 rectify our voltages by a system engineer, all
6 staff.

7 MEMBER BLEY: Thank you very much.

8 CHAIRMAN STETKAR: Thank you.

9 MR. WILLIAMS: We had -- you had
10 questions about manhole 20, 21 and 15.

11 CHAIRMAN STETKAR: Yes.

12 MR. WILLIAMS: The question regarding
13 de-watering consistency.

14 CHAIRMAN STETKAR: Right.

15 MR. WILLIAMS: The answer is similar to
16 all three of these, checked quarterly, solar pump
17 to validate that they're completely de-watered.
18 Any issues arising, we go back and resolve the
19 issue.

20 MEMBER BLEY: Say the last part of that
21 again?

22 MR. WILLIAMS: So, if we do find any
23 water in those manholes or a defective pump or
24 anything, we write a condition report in our
25 corrective action program and go back and make sure

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1 we rectify that issue promptly and solve that.

2 MEMBER BLEY: Okay. Whoever was
3 talking at the time had mentioned that you did have
4 a case where one of those pumps failed. I didn't
5 ask this at the time, but I meant to, did the
6 cables actually flood in that case or not?

7 MR. NADEAU: Yes, there was water over
8 the cables. It's important to point out, and you
9 probably already know this, but the issue was not
10 with wetting of the cables, it was for long-term
11 submergence.

12 So, the -- by having the pumps in there
13 and the PMs, we can get the water down and not have
14 a long-term submergence issue.

15 MEMBER BLEY: That makes sense. I
16 assume, well, maybe I shouldn't assume, after they
17 have been flooded, did you test them?

18 MR. NADEAU: That's a level of detail I
19 don't know.

20 MEMBER BLEY: I'd be interested if, you
21 know, when you come back in October you can tell
22 me.

23 Something else, did you have more
24 things to report to us? Okay, thanks.

25 The phone line is open, is there anyone

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1 on the phone line who would like to make a comment?
2 Please identify yourself and make your comment.

3 Speak now or you won't get another
4 chance because we're going to turn off the phone
5 line and very soon, we will go into closed session.

6 Thank you.

7 At this time, I'd like to go around the
8 table and ask the members if they have any
9 comments. We like to do that in public session.

10 Pete?

11 MEMBER RICCARDELLA: I have no
12 comments.

13 MEMBER BLEY: Dick?

14 MEMBER SKILLMAN: No further comments,
15 thank you.

16 MEMBER BLEY: Dana?

17 MEMBER POWERS: No real comment. I'd
18 just like to say that, Mr. Pick, your presentation
19 was excellent.

20 MR. PICK: Thank you.

21 MEMBER BLEY: John?

22 CHAIRMAN STETKAR: Nothing more, sir.

23 MEMBER BLEY: I would like to thank
24 everybody for coming here. I'd like to thank you
25 for coming a little late from Region IV, Greg. And

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1 the Applicant for coming again. I'm sorry we
2 snowed you out the last time, but we would have
3 needed a meeting anyway, I suppose.

4 At this time, I will ask the Applicant
5 and Greg to clear the room of anybody who shouldn't
6 be here for the closed session. It's going to be a
7 very short one.

8 (Whereupon, the above-entitled matter
9 went off the record at 2:57 p.m.)

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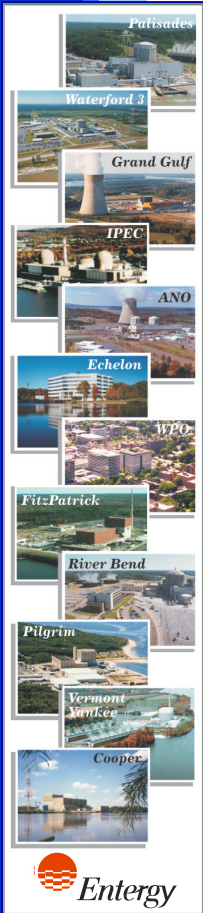
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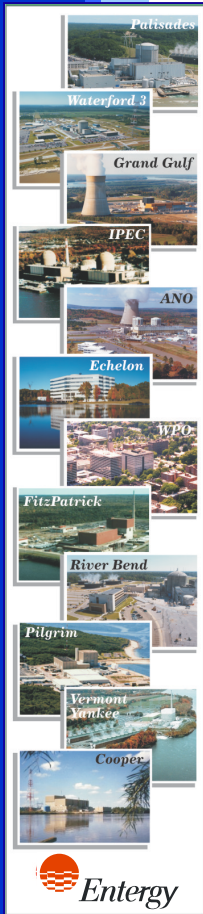
Grand Gulf Nuclear Station

ACRS License Renewal Subcommittee May 4, 2016



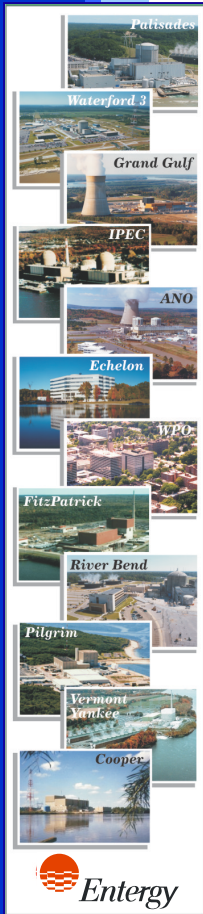
Entergy Nuclear Personnel in Attendance

Bryan Ford	Sr. Manager, Fleet Regulatory Assurance
Patrick Williams	Director, GGNS Engineering
James Nadeau	Manager, GGNS Regulatory Assurance
Garry Young	Director, License Renewal
David Lach	Fleet Project Manager, License Renewal
Alan Cox	Senior Consultant
Mark Spinelli	Sr. Lead Engineer, License Renewal
Andrew Taylor	Supervisor, License Renewal



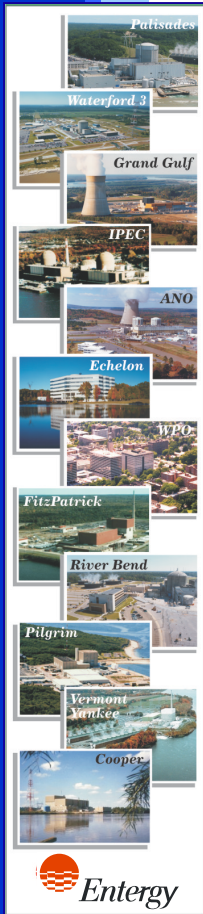
Agenda

- **Background**
 - Site Description
 - Plant Status
 - Licensing History
 - Major Equipment Upgrades
 - License Renewal Project
- **Presentation Topics**
 - Closure of Previous Safety Evaluation Report (SER) Open Items



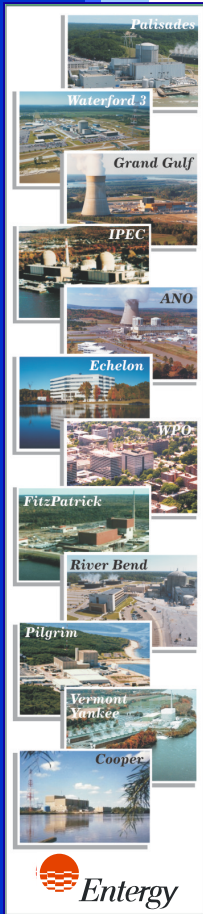
GGNS Site Description

- Located on Mississippi River Southwest of Vicksburg, MS
- General Electric (NSSS) - Bechtel (constructor)
- BWR-6, Mark III Containment
- Siemens Turbine Generator
- Closed Circulating Water System with Natural Draft and Mechanical Draft Cooling Towers
- 15% EPU Implemented in 2012
- Current Licensed Thermal Power
4408 MWt
- Staff Complement: Approximately 585



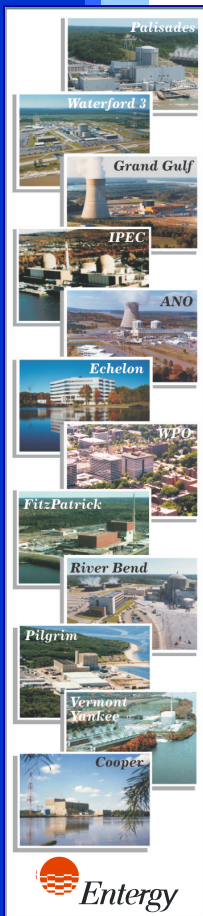
GGNS Plant Status

- Plant Status
 - On-line full power
 - 24 month cycle
- Last Refueling Outage
 - RF20 (Spring 2016)
- Next Refueling Outage
 - RF21 (Spring 2018)



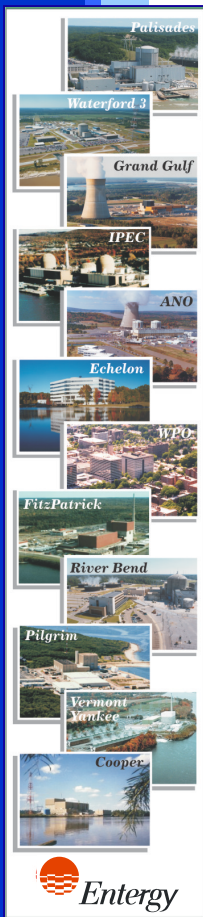
GGNS Licensing History

Construction Permit	September 4, 1974
Operating License	November 1, 1984
Commercial Operation	July 1, 1985
LR Application Submitted	November 1, 2011
Power Uprate License Amendment	July 18, 2012
Operating License Expires	November 1, 2024

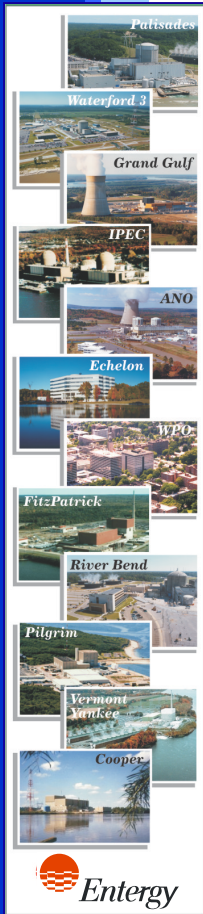


Major Equipment Replaced

- Main Transformer
- High Pressure Turbine Rotor
- Main Generator
- Generator Hydrogen Coolers
- Main Steam Relief Valves
- Fuel Pool Cooling & Cleanup Heat Exchanger
- Steam Dryer
- Reactor Feed Pump Turbine Rotor
- Auxiliary Cooling Tower



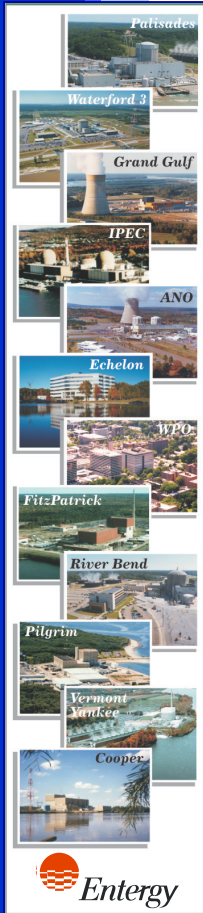
High Pressure Turbine Rotor



Auxiliary Cooling Tower

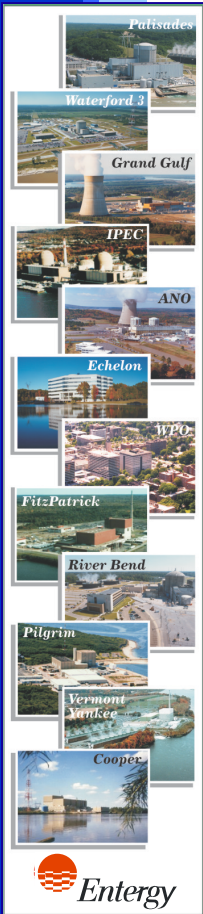
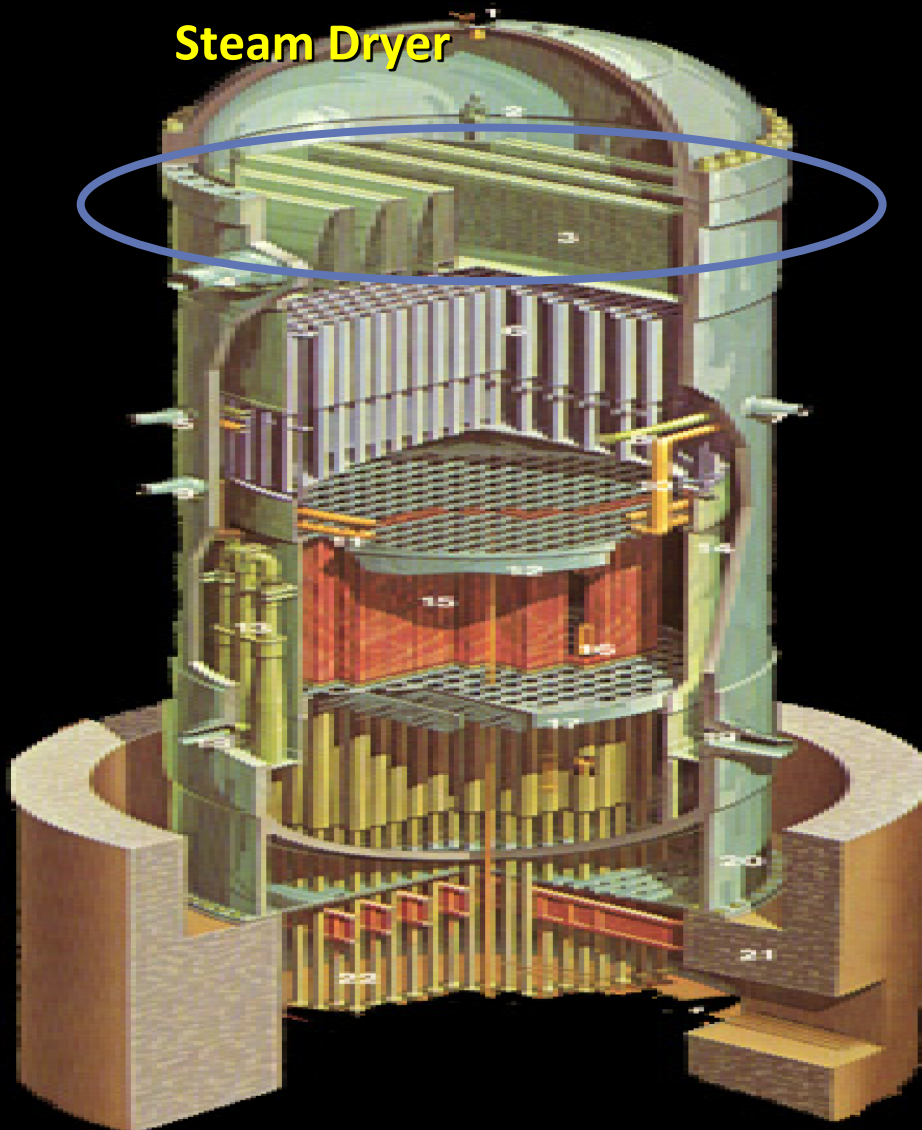


Main Generator



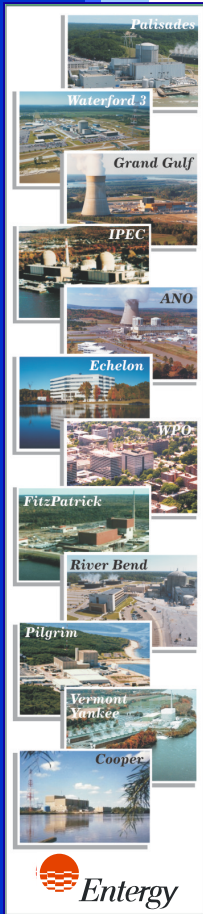
Steam Dryer

Steam Dryer



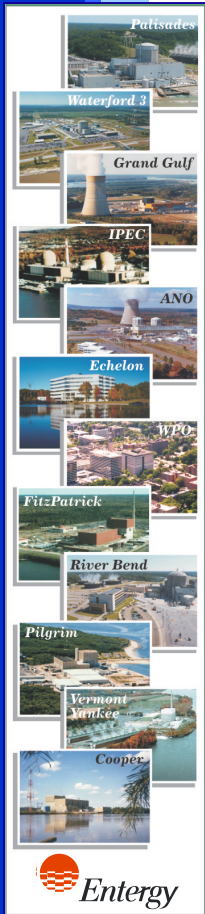
GGNS License Renewal Project

- Incorporated Lessons Learned from Previous Applications
- Application Prepared by an Experienced, Multi-Discipline Entergy Team (using corporate and on-site resources)
- Used NEI 95-10 Guidance
 - Scoping and screening process
 - License Renewal Application format and content
- Used Revision 2 of NUREG-1801
- Considered the Impact of Power Uprate



SER w/Open Items Issued January, 2013

- All Items are now Closed
 1. One-Time Inspection – Small-Bore Piping Program
 2. Service Water Integrity (SWI)
 3. Future Review of Operating Experience for Aging Management Programs
 4. Neutron Fluence Calculation Method

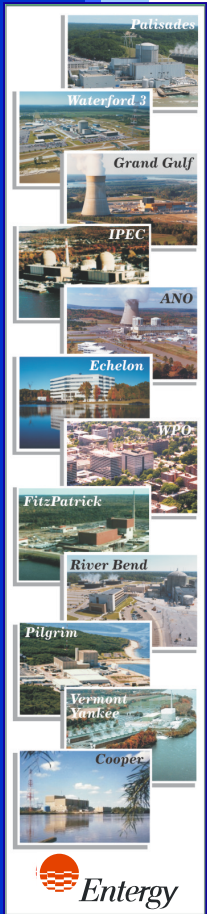


Open Item 1 – One-Time Inspection – Small-Bore Piping Program

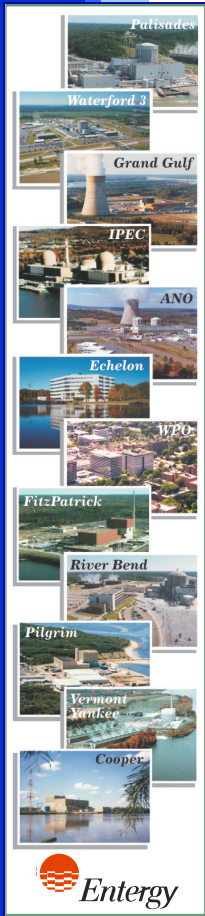
Open Item: Additional GGNS operating experience requested to address consistency with GALL Report AMP XI.M35, “One-Time Inspection of ASME Code Class 1 Small-Bore Piping

Resolution:

- Additional OE Searches Completed
- Identified No Instances of Cracking due to the Effects of Aging



Open Item 2-Service Water Integrity



Open Item: Use of Service Water Integrity Program for managing loss of material due to erosion was not described in the License Renewal Application

Resolution:

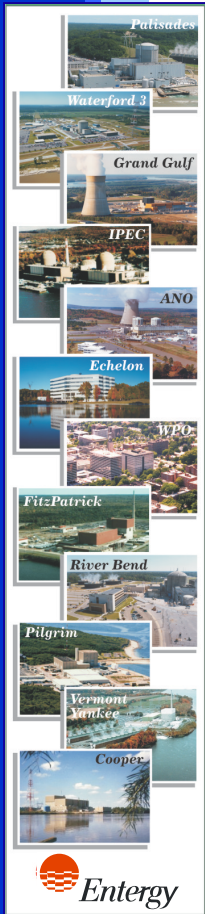
- Revised program description to include inspections for loss of material due to erosion
- New enhancement to describe inspections for this aging mechanism in program documents

Open Item 3- Future Review of OE for Aging Management Programs

Open Item: Additional information requested to demonstrate the review and reporting of operating experience was consistent with the guidance in SRP-LR Section A.4.2 and ISG-2011-05

Resolution:

Additional information provided that confirms the ongoing review of OE will ensure that AMPs continue to be effective in managing aging effects for which they are credited.

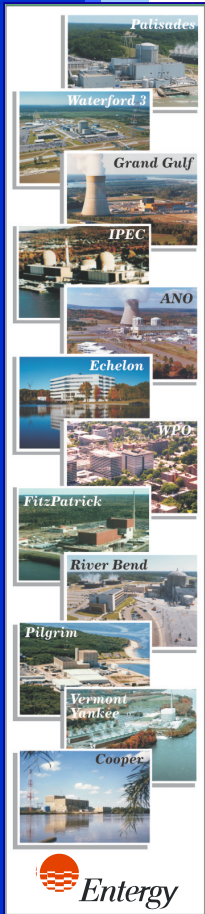


Open Item 4-Neutron Fluence Calculation Method

Open Item: Additional information requested on Neutron Fluence Calculation Methods

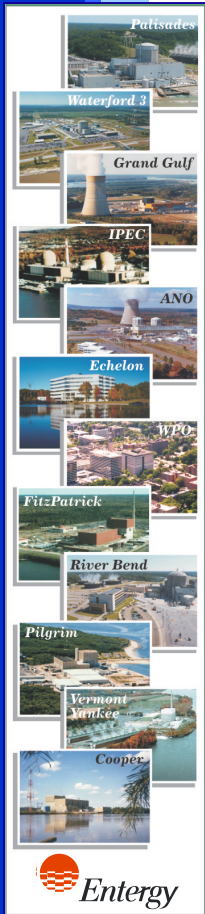
Resolution:

- GGNS Provided an NRC-Approved Single Method Consistent with Regulatory Guide 1.190
- Reactor Pressure Vessel Fluence was Determined for 0 to 54 Effective Full Power Years using MPM Methodology



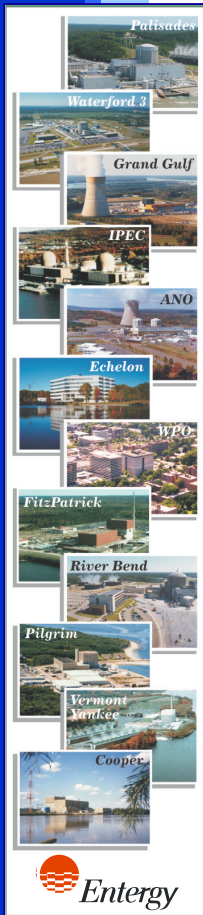
FINAL SER

- The Staff Closed the Open Items
- Final SER Issued April 4, 2016
 - No Open Items
 - No Confirmatory Items



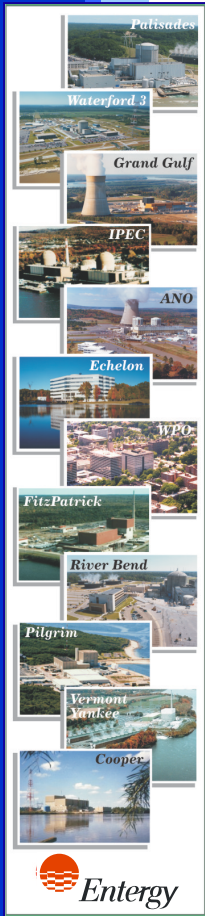
Aging Management Programs and Regulatory Commitments

- **44 Aging Management Programs**
 - 10 Existing Programs with no Enhancements
 - 24 Existing Programs will be Enhanced
 - 10 New Programs
- **License Renewal Commitments**
 - 35 Regulatory Commitments Tracked in the Commitment Management System
 - Enhancement of Existing Programs - 25
 - Implementation of New Programs – 10



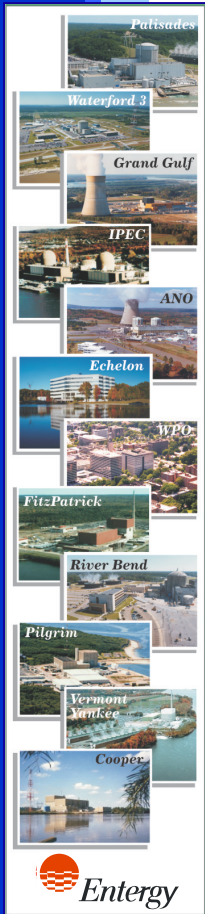
Program/Commitment Implementation

- Commitments Controlled & Managed
- Entergy has Significant Experience with License Renewal
- Similar new AMPs and AMP enhancements have been successfully implemented at other Entergy plants

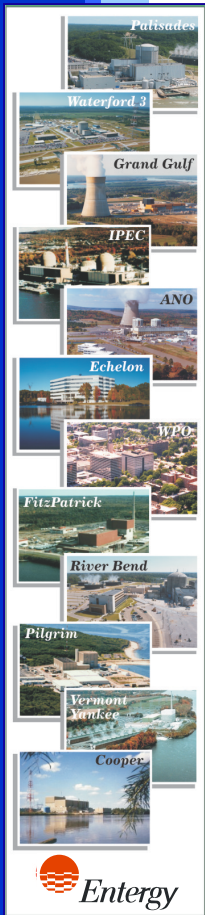


Conclusion

- Entergy is committed to the long-term maintenance of the facility.
- Entergy will manage the effects of aging in accordance with 10 CFR 54.21(a)(1)
- Entergy has evaluated time-limited aging analyses that require evaluation under 10 CFR 54.21(c)
- Entergy has met requirements for License Renewal and no open items remain.



Comments and Questions





**Advisory Committee on Reactor Safeguards
License Renewal Subcommittee
Grand Gulf Nuclear Station, Unit 1
(GGNS)**

Final Safety Evaluation Report (FSER)

May 4, 2016

Emmanuel Sayoc, Project Manager
Office of Nuclear Reactor Regulation

Presentation Outline

- Overview of Grand Gulf license renewal review
- Region IV 71002 Inspection, License Renewal Inspection
- SER Section 2, Scoping and Screening review
- SER Section 3, Aging Management Programs and Aging Management Review Results
- SER Section 4, Time-Limited Aging Analyses
- Conclusion

GGNS

Facility Facts

- **BWR (GE 6) with Mark III containment design**
- **Approximately 25 miles south-southwest of Vicksburg, MS**
- **License Renewal Application (LRA) submitted October 28, 2011**
 - Applicant: Entergy Operations Inc. (Entergy)
 - Facility Operating License Nos. NPF-29
 - Current License Expiration Date: November 1, 2024

License Renewal Review (Audits and Inspections)

- Scoping and Screening Methodology Audit
 - January 9-12, 2012
- Aging Management Program (AMP) Audit
 - January 23-February 3, 2012
- Region IV 71002 Inspection (Scoping and Screening & AMPs),
 - August 6-23, 2012

SER Overview

- Staff has completed its initial review in accordance with the SRP-LR and 10 CFR Part 54
- Safety Evaluation Report (SER) with Open Items (OIs) issued January 31, 2013
- SER contained 4 OIs, now closed:
 - One-Time Inspection – Small-Bore Piping
 - Service Water Integrity
 - Operating Experience
 - Neutron Fluence
- Final SER was issued in April 2016

Regional Inspections

Scope

- Non-safety systems affecting safety systems
- Aging management programs

Inspection

- August 6 – 23, 2012
- Team inspection on-site for 2 weeks

Regional Inspections

Results

- Added air environment to RCIC system and removed gland seal piping from scope
- Will identify frequency of spray and sprinkler inspections in accordance with NFPA 25
- Revised FAC program AMP to include flow erosion in safety systems
- Revised Oil Analysis Program to reflect the current administrative practices
- Found good material condition of structures, systems and components

Regional Inspections

Conclusions

- Scoping and screening performed in accordance with 10 CFR 54
- Information easily retrievable and auditable
- Existing programs effectively managed aging effects
- Corrective actions are being tracked for completion
- Reasonable assurance that aging effects will be managed and intended functions maintained

SER Section 2 Summary

SSCs Subject to Aging Management Review

- Section 2.1, Scoping and Screening Methodology
- Section 2.2, Plant-Level Scoping Results
- Sections 2.3, 2.4, 2.5 Scoping and Screening Results

Section 3: Aging Management Review

- Section 3.0 – AMPs
- Section 3.1 – Reactor Vessel, Internals, and Reactor Coolant System
- Section 3.2 – Engineered Safety Features,
- Section 3.3 – Auxiliary Systems
- Section 3.4 – Steam and Power Conversion System
- Section 3.5 – Containments, Structures and Component Supports
- Section 3.6 – Electrical and Instrumentation and Controls System

SER Section 3

3.0.3 - Aging Management Programs

Applicant's Disposition of AMPs

- 10 new programs
 - 9 consistent
 - 1 plant specific
- 34 existing programs
 - 12 consistent
 - 19 consistent with enhancements
 - 1 consistent with exceptions
 - 1 consistent with enhancements and exceptions
 - 1 plant specific with enhancement

Disposition of AMPs in Final SER

- 10 new programs
 - 9 consistent
 - 1 plant specific
- 34 existing programs
 - 8 consistent
 - 20 consistent with enhancements
 - 2 consistent with exceptions
 - 3 consistent with enhancements and exceptions
 - 1 plant specific with enhancement

OI 3.0.3.1.33-1: One-Time Inspection – Small-Bore Piping Program

- Issue: Operating experience review not consistent with guidance in the Generic Aging Lessons Learned (GALL) Report AMP XI.M35
- Staff issued request for additional information (RAI) B.1.34-2c, requesting:
 - a) complete plant OE search
 - b) review results of plant-specific OE

Closed OI 3.0.3.1.33-1

- **RAI Response:**
 - Scope of search covered OE for complete operating history of plant
 - Sources - condition reports, maintenance history, licensee event reports, interviews, quality assurance documentation, Inservice inspection reports
 - Provided key-words appropriate for age related cracking
 - Identified no instances of SBP cracking
- **Resolution:** Program is consistent with the GALL Report; Open item is therefore closed

OI 3.0.3.1.39-1: Service Water Integrity (SWI)

- Issue: Staff identified site-specific OE showing loss of material due to erosion
 - Procedure MS-46 used for erosion inspection, but not officially used to manage erosion in AMPs,
 - Unclear if loss of material due to erosion was being managed in the SWI AMP
- Staff issued RAI B.1.41-3b, requesting the applicant provide:
 - Details on components affected by erosion aging mechanism
 - Clarification on MS-46 inclusion in AMPs and LRA
 - How loss of material due to erosion is managed

Closed OI 3.0.3.1.39-1

- **RAI Response:**
 - Loss of material due to erosion being managed with SWI Program, Periodic Surveillance and Preventive Maintenance Program, and Flow Accelerated Corrosion Program
 - Inspection enhancement to SWI Program, updated LRA
 - Corrective Action to track inspections discrepancies for components in the MS-46 database
- **Resolution:** Loss of material due to erosion is being managed; open item is therefore closed

OI 3.0.5-1: OE for AMPs

- Issue: Staff could not verify applicant's OE Program consistency with the framework in SRP-LR Section A.4
- Staff issued RAIs 3.0.5-1a-c, requesting the applicant provide further information on SRP-LR Section A.4.2 areas of further review
 - Age-related OE - identification, sources, reporting
 - evaluation of AMP implementation results
 - coding and trending of age related degradation
 - content of personnel training

Closed OI 3.0.5-1

- **RAI Response:**
 - Corrective Action Program with OE addresses degradation due to aging effects
 - Consider plant-specific and industry OE, NRC/industry guidance and standards, AMP implementation results
 - Evaluate AMP effectiveness, enhance or develop new AMPs
 - Coded and trended
 - Training covers age-related degradation/management
 - Report plant-specific OE
- **Resolution:** OE Program is consistent with SRP LR Section A.4.2; open item therefore closed

SER Section 4: TLAA

Time-Limited Aging Analyses

- 4.1 Identification of TLAAAs
- 4.2 Reactor Vessel Neutron Embrittlement
- 4.3 Metal Fatigue
- 4.4 Environmental Qualification of Electric Equipment
- 4.5 Concrete Containment Tendon Pre-stress Analyses
- 4.6 Containment Liner Plate, Metal Containments, and Penetration Fatigue Analyses
- 4.7 Other Plant-Specific TLAAAs

OI 4.2.1-1: Neutron Fluence

- Issue: GGNS used two fluence calculation methods:
 - MPM Technologies, Inc. (MPM) method for pre-EPU fluence
 - General Electric-Hitachi (GEH) method for post-EPU fluence
 - MPM and GEH fluences are added together without an adequate technical basis
- Combined approach not consistent with RG 1.190
 - LRA did not sufficiently describe the combined approach,
 - Uncertainties associated with both fluence calculation methods expected to propagate
- Staff requested justification for the combined approach or to use a single fluence method consistent with RG 1.190 (RAI 4.2.1-2c)

Closed OI 4.2.1-1

- **RAI Response:**
 - Applicant submitted a single MPM fluence method for NRC approval
 - Staff approved use of MPM method, consistent with RG 1.190 for GGNS CLB (August 18, 2015, License Amendment)
 - Applicant updated RV neutron embrittlement TLAAs in LRA Section 4.2, 4.7, and UFSAR supplement
- **Resolution:** Fluence projections identified as TLAA and staff-approved fluence method incorporated into the CLB consistent with RG 1.190; Open item therefore closed

Conclusion

On the basis of its review, the staff determines that the requirements of 10 CFR 54.29(a) have been met for the license renewal of Grand Gulf Nuclear Station, Unit 1