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ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

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NUCLEAR REGULATORY COMMISSION

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ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

(ACRS)

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PLANT LICENSE RENEWAL SUBCOMMITTEE

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THURSDAY

NOVEMBER 15, 2018

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ROCKVILLE, MARYLAND

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The Subcommittee met at the Nuclear
Regulatory Commission, Three White Flint North, Room
1C3 & 1C5, 11601 Landsdown Street, at 8:30 a.m., Gordon
R. Skillman, Chairman, presiding.

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COMMITTEE MEMBERS:

GORDON R. SKILLMAN, Chairman

MICHAEL L. CORRADINI, Member

RONALD G. BALLINGER, Member

DENNIS C. BLEY, Member*

CHARLES H. BROWN, JR., Member

WALTER KIRCHNER, Member

JOY L. REMPE, Member

PETER RICCARDELLA, Member

MATT SUNSERI, Member

ACRS CONSULTANT:

STEPHEN SCHULTZ

DESIGNATED FEDERAL OFFICIAL:

KENT HOWARD

*Present via telephone

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P R O C E E D I N G S

(8:29 a.m.)

1
2
3 CHAIRMAN SKILLMAN: Ladies and gentlemen,
4 good morning. This meeting will come to order. This
5 is a meeting of the Plant License Renewal Subcommittee
6 of the Advisory Committee on Reactor Safeguards. I'm
7 the Chairman of the Subcommittee.

8 ACRS members in attendance are Dr. Ronald
9 Ballinger, Dr. Peter Riccardella, Dr. Walt Kirchner,
10 Mr. Matt Sunseri, Dr. Joy Rempe, Dr. Michael Corradini.

11 We expect Mr. Charles Brown. We may have Dr. Dennis
12 Bley on the bridge line. Dr. Stephen Schultz is our
13 consultant for this meeting. Mr. Kent Howard of the
14 ACRS staff is the designated federal official for this
15 meeting.

16 The purpose of this meeting is for the staff
17 and NextEra Energy Seabrook to brief the Subcommittee
18 on the Seabrook Station Unit 1 license renewal
19 application.

20 I pause here. We had a meeting on October
21 31st on one topic regarding Alkali Silica Reaction.
22 Today's meeting is not that meeting. Today is the
23 actual license renewal meeting for this nuclear power
24 plant. And the last meeting we had on this action was
25 July 10, 2012.

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1 The Subcommittee will gather information,
2 analyze relevant issues and facts, and formulate a
3 proposed position, as appropriate, for deliberation
4 by the full Committee if needed.

5 I remind everyone here, this is a
6 Subcommittee meeting. Members are free to ask
7 questions as they wish. Then the Subcommittee makes
8 a recommendation to the full Committee. And that full
9 Committee is in two weeks. And it is from the full
10 Committee meeting that the origin of the letter report
11 will come.

12 We welcome Charlie Brown. Charlie,
13 welcome.

14 The ACRS was established by statute, and
15 is governed by the Federal Advisory Committee Act, FACA.

16 That means that the Committee can only speak through
17 its published letter reports. We hold meetings to
18 gather information to support our deliberations.

19 The ACRS full Committee reviews and advises
20 the Commission with regard to the licensing and
21 operation of production and utilization facilities,
22 and related safety issues, the adequacy of proposed
23 reactor safety standards, technical and policy issues
24 related to the licensing of evolutionary and passive
25 plant designs, and other matters referred to it by the

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1 Commission.

2 The ACRS section of the US NRC public
3 website provides our Charter, our By-Laws, our letter
4 reports, and full transcripts of all full and
5 Subcommittee meetings, including slides presented at
6 the meetings. That is a fact, except for where there
7 is proprietary information.

8 The rules for participation in today's
9 meeting were announced in the Federal Register. The
10 meeting was announced as open. But portions can be
11 closed as needed to protect information proprietary
12 to NextEra or its vendors, pursuant to 5 U.S.C.
13 552(b)(c)(iv).

14 We have received written comments from
15 members of the public regarding today's meeting. But
16 we have not received a request for time to make oral
17 statements in advance of today's meeting.

18 A transcript of the meeting is being kept,
19 and will be made available, as stated in the Federal
20 Register notice. Therefore, we request that
21 participants in this meeting use the microphones
22 located throughout the meeting room when addressing
23 the Subcommittee.

24 Participants should first identify
25 themselves, and speak with sufficient clarity and

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1 volume, so that they can be readily heard.

2 A telephone bridge line has been
3 established for this meeting. We have several members
4 of the public, and an ACRS member listening in on the
5 public bridge line. To preclude interruption of the
6 meeting, please mute your individual lines during the
7 presentations and during the Committee discussions.
8 And for all individuals in the room we ask that you
9 please silent your electronic devices.

10 As a matter of administration we have
11 scheduled this meeting without breaks. We commonly
12 have breaks through the meeting. We're not doing that
13 today. We're going to march on through this. And so,
14 we're going to ask you to please excuse yourself quietly
15 when you wish, and return quietly.

16 For the sake of brevity of the meeting,
17 for the potential for those who might wish to travel
18 as early as they can at the end of the meeting, we thought
19 it prudent to not schedule breaks.

20 We will now proceed with the meeting. And
21 I call upon Joe Donoghue to please make introductory
22 remarks.

23 MR. DONOGHUE: Good morning, and thank
24 you, Subcommittee Chairman Skillman, and members of
25 the ACRS License Renewal Subcommittee. I'm Joe

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1 Donoghue. I'm the Deputy Director of the Division of
2 Materials and License Renewal in NRR.

3 We thank the Subcommittee for the
4 opportunity to present the results of the staff's review
5 of the license renewal application for Seabrook Station
6 Unit 1.

7 This review began over eight years ago.
8 The primary contributor to the length of the review
9 was the identification of the alkali silica reaction
10 affecting concrete structures, and the development of
11 methods for assessing and managing this phenomenon as
12 part of the aging management program at Seabrook.

13 On October 31st, as Chairman Skillman
14 mentioned, the Subcommittee heard a detailed
15 presentation by the applicant, and another presentation
16 by the staff on ASR. And we do not plan to revisit
17 that issue today during our formal presentation.

18 Instead, we'll focus on the resolution and
19 closure of the remainder of the open items from the
20 2012 SER with open items that was presented to the
21 Subcommittee.

22 The license renewal presentation will be
23 led by Butch Burton, the license renewal project manager
24 for this review. Part of the management team that are
25 here with me today are Dr. Allen Hiser, Senior Technical

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1 Advisor for License Renewal, Eric Osterle, Chief of
2 the projects branch in our division. And in the
3 audience are other managers from our divisions, and
4 from NRR who contributed to the review.

5 We also have in the audience, and on the
6 phone other NRR staff who supported the review, as well
7 as Region I staff, who performed the facility
8 inspections in support of license renewal.

9 We look forward to a productive discussion
10 today with the Subcommittee. And as always, we'll
11 address any questions on our review that you may have.

12 At this time I'd like to turn the presentation over
13 to the NextEra team, and their Regional Vice President
14 of the Northern Region, Mr. Eric McCartney. Thank you.

15 MR. McCARTNEY: Thank you, Mr. Donoghue.

16 Good morning. My name is Eric McCartney. As Mr.
17 Donoghue mentioned I'm the Regional Vice President for
18 NextEra Energy. I have responsibility for the Duane
19 Arnold Station in Iowa, Point Beach Station in
20 Wisconsin, and the Seabrook Station in New Hampshire,
21 which we're here to talk about today.

22 If I could go to the next page, Ken? Many
23 of the discussion points that I covered last, two weeks
24 ago when we were here, I want to focus again. This
25 is our Nuclear Excellence Model. And this is what sets

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1 the framework for everything we do, and how we've
2 approached the license renewal program, and how we
3 manager our fleets and our station.

4 And one of the key areas that I'll speak
5 to is that the top values are a deep respect for,
6 demonstration of a respect for all activities, with
7 a deep respect for nuclear safety.

8 But you also see in the core principles
9 that effective long range planning is a key element
10 of how we manage our station, and our fleet going
11 forward.

12 Today I have the team here with me. Mr.
13 Mike Collins, he's our engineering director. Ed Carley
14 is our license renewal program manager. And Mr. Ken
15 Brown is our licensing manager.

16 Mike will discuss the current plant status,
17 the things that we've done over the last several years
18 to improve the plant reliability, major plant equipment
19 improvements, and how our engineering programs have
20 set ourselves up for continued long term investment
21 in the operation of the Seabrook facility.

22 And Ken and Ed will discuss the license
23 application, and the activities that we've gone
24 through. I want to keep my remarks brief so that we
25 can focus on the important points of discussion today.

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1 So, thank you, Mr. Chairman.

2 CHAIRMAN SKILLMAN: Eric, before you pass
3 the baton, let me ask you two questions. A critical
4 lesson we all learned out of TMI-2 is respect for this
5 technology, just understanding what it is we're dealing
6 with.

7 And one of the lessons I learned in the
8 years that followed was how, is how important it is
9 for the senior exec who casts the shadow at the site,
10 executes Appendix B to 10 C.F.R. 50, all 18 points as
11 a collage and framework for the site and for the
12 operation.

13 Would you please give us a minute of your
14 understanding, and your philosophy of how you intend
15 to execute the quality assurance program at Seabrook
16 Unit 1?

17 MR. McCARTNEY: Well, Mr. Chairman, as you
18 know the Appendix B program has a large footprint.
19 I spend quite a bit of time engaged in all of the elements
20 of our Appendix B program, from my work order close
21 out, or work order documentation, quality of records.

22 We have an audit program I follow-up
23 actually on a daily basis. We have metrics to assess
24 the quality of how we complete our records program,
25 our records management.

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1 We have our quality control program that
2 we have, that actually is housed on site by reports
3 independently around me, straight to the Chief Nuclear
4 Officer.

5 We do audits of that process. I have daily
6 pull ups with our quality assurance program. We do
7 specific monitoring. And I do personal monitoring of
8 the quality control inspections.

9 We look in our, we have a very robust work
10 activity risk management process. And one of the key
11 areas that we look for are quality control hold points,
12 and quality control checkpoints that we do in all
13 evolutions, whether it be maintenance, modifications,
14 operations activities, especially during our outage,
15 where a number of those activities could create the
16 possibility for latent conditions, that we want to make
17 sure that we detect on a personal basis.

18 We also, one of our key activities is, of
19 course, our Corrective Action Program. I chair, or
20 my plant manager chairs at each of the sites our
21 Corrective Action Program, Daily Management Review
22 Committee. We screen on a daily basis every AR that's
23 written.

24 I review every single log entry, both in
25 the operator logs, the chemistry logs, the engineering

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1 logs, to make sure that there's not a condition that's
2 been documented somewhere that's not been captured in
3 the Corrective Action Program that needs to be captured.

4 And we have a tremendous oversight of how
5 the Corrective Action Program is executed with
6 assessments. We have, I think the last time I spoke
7 to you about a self-assessment program.

8 We use Level 1 assessments, which are done
9 at the site, to be very focused very quickly, to see
10 how effective our Corrective Action Program is, and
11 how corrective, and how timely that Corrective Action
12 Program is. We have a number of metrics that monitor
13 and measure that.

14 And I have direct oversight of those for
15 not only the Seabrook Station, but for all of my
16 stations.

17 We're also, of course, through the
18 engineering program there's a tremendous amount of
19 quality controls that we want to put in place, in terms
20 of managing the risk and the quality of modifications.

21 We have not only our onsite review group.
22 We have a safety review group that reviews of all
23 modifications, plant changes, critical evolutions.
24 We use our infrequently performed and tested evolution
25 program to ensure that we understand the quality and

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1 risk assessment of every evolution that we do, that
2 fits into that category.

3 And then we deploy and enterprise risk
4 process under the learnings from IER 1420, where we
5 take on some projects. For example, at Seabrook we
6 replaced all four feed reg valves in one outage.

7 And we elevated that into our enterprise
8 risk process, to make sure that we had the right third
9 party reviews, engineering validations, and functional
10 validations, to make sure that that process was going
11 to be safe.

12 CHAIRMAN SKILLMAN: Eric, you've
13 explained that you have a strong Corrective Action
14 Program. What is the strength of the link between your
15 Corrective Action Program and your Work Management
16 Program?

17 And I ask that question because in Update
18 60 of the, of your license renewal application you're
19 now carrying 91 action items. And my question is,
20 what's the link between what you have in corrective
21 action, and what you have in work management, to make
22 sure that work gets completed the way it is committed
23 to be completed?

24 MR. McCARTNEY: So, every, our process
25 starts with a single, what we call a single point entry.

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1 So, every condition that requires addressing goes into
2 the single point Corrective Action Program addition.

3 If it gets rolled to a work order, or a
4 work is the right vehicle to correct that condition
5 there's a reference tie in the corrective action
6 document to reference the work order.

7 So, those are tied programmatically. So,
8 the action can't be closed until the work order is
9 closed. And then, we have a follow-up to make sure
10 that those actions are closed as appropriately.

11 And then, there's a closeout mechanism that
12 validates. When we get ready to close that AR, that
13 action request, it validates that the work order has
14 been completed, and the post maintenance testing has
15 been done to ensure that condition has been corrected.

16 CHAIRMAN SKILLMAN: Thank you. Please
17 proceed.

18 MR. McCARTNEY: Thank you. And I'd like
19 to now turn the presentation over to Mr. Brown.

20 MR. BROWNE: Thank you, Eric. Good
21 morning. I am Ken Browne, licensing manager for
22 NextEra Seabrook. I've been at Seabrook for
23 approximately 28 years, beginning in the Operations
24 Department as a non-licensed operator, and then as a
25 license senior reactor operator, working in the control

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1 room at various control room positions, including shift
2 manager, and ultimately operations manager.

3 I've also held the position of training
4 manager for accredited programs, and most recently as
5 licensing reg compliance manager, and sponsor for the
6 station's ASR programs for the past three years.

7 Since Seabrook's last visit to ACRS
8 Subcommittee the station has continued to engage in
9 learning from the industry's best practices, and
10 developing our existing engineering programs, as well
11 as enhancing our aging management plans, to ensure
12 Seabrook is maintained to the highest level of safety
13 and material standards.

14 As the Committee is aware, and as Chairman
15 Skillman mentioned, at our last visit there were a
16 number of remaining open items from our license renewal
17 application. And during this session we are pleased
18 to present the closure of these items. And we welcome
19 the questions from the Subcommittee.

20 You'll note in the chairs we've also
21 brought a number of our program owners from the station,
22 as well as our corporate offices. And we're proud to
23 demonstrate that NextEra Engineering has a healthy
24 blend of experienced program owners, as well as a number
25 of new, enthusiastic new owners that have ownership

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1 in recent years.

2 Again, we look forward to your questions.

3 And I'm going to turn the panel over to Mike Collins,
4 the engineering director, and also Rudy Gil, who has
5 joined us from fleet program engineering.

6 MR. COLLINS: Good morning. My name is
7 Mike Collins. I'm the Engineering Director at Seabrook
8 Station. Thirty-seven years in the industry, 17 years
9 prior to my employment with NextEra with Sonestra
10 (phonetic) Engineering, New Build in continuing
11 services, and then 20 years with NextEra Energy. The
12 last five as Engineering Director.

13 Brief overview of our agenda today. I'll
14 start out with a background discussion. I will make
15 that brief, because all the ACRS panel members are the
16 same members that I reviewed these items with on 10/31.

17 We'll go over most importantly the license
18 renewal project overview. Ed Carley will go through
19 our open actions, and discuss closure of previous safety
20 evaluation report open items.

21 And then we'll present concluding remarks,
22 which will communicate that NextEra Energy Seabrook
23 has met the requirements of 10 C.F.R. 54 for issuance
24 of a renewed license for Seabrook Station Unit 1.

25 Next slide, please. Again, I'll be brief.

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1 Seabrook background. We are a single unite
2 Westinghouse 4-loop pressurized water reactor, with
3 a General Electric turbine generator.

4 Our reactor's housed in a steel lined,
5 reinforced concrete containment structure, which is
6 enclosed by a reinforced concrete containment enclosure
7 structure. Presently rated at 36487 megawatts thermal
8 power, 1250 net megawatts electric.

9 Next slide, please. Again, aerial photo
10 of our plant footprint As we discussed on the 31st,
11 construction of Seabrook Station Unit 2 was terminated
12 in 1984. And its construction permit expired in
13 October 1988.

14 The protected area does not include any
15 items, any other properties from Unit 2. It's
16 specifically Unit 1 components. Next slide, please.

17 Again, overall licensing history.
18 Construction permit July 1976. Our full power
19 operating license March 15th, 1990. We did do a Zero
20 Power Recapture in December 2005.

21 The NRC issued an amendment to the Seabrook
22 facility operating license, extending our expiration
23 date from October 17th, 2026 to March 15th, 2030. Our
24 license renewal application was submitted May 25th,
25 2010. And our present operating license expires March

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1 15th, 2030.

2 Next slide, please. Our present plant
3 status, we just recently completed our latest refueling
4 outage on October 29th of this year. Overall capacity
5 factor, 15 of our 19 cycles has a capacity factor greater
6 than 94 percent. Overall lifetime capacity factor 87
7 percent.

8 As you can see, for cycle 16 through 19,
9 Seabrook has had an excellent operating history over
10 the last cycles. Our next refueling outage is spring
11 2020, which is the end of present operating cycle 20.

12 Our capacity factor performance is representative of
13 our solid equipment reliability, and material
14 condition.

15 Next slide, please. In order to continue
16 to maintain high capacity factors, Seabrook continues
17 to improve equipment reliability and material
18 condition. Recent station improvements include
19 replacement of our safety related vital batteries,
20 replacement of our safety related vital converters.

21 Our three generator step-up transformers
22 have been replaced. And we have completed our
23 mechanical stress improvement process. Has been
24 completed for all of our reactor vessel nozzles.

25 Our service water piping is an ongoing

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1 issue to replace all above ground piping with high alloy
2 AL6XN. We had no issues on our last operating cycle
3 with any leakages, or any pressure boundary concerns
4 on our service water system.

5 We've upgraded our in-core detector
6 system. Our process control circuit cards have been
7 fully replaced, 159 single point vulnerability circuit
8 boards have been replaced. And our solid state
9 protection system circuit cards, 133 cards have all
10 been replaced with new upgraded circuit boards.

11 Two outages ago we sent out our rod control
12 motor generator sets for a full reconditioning and
13 refurbishment. And lastly, our present reactor
14 coolant pumps have installed the shutdown reactor
15 coolant pump seals.

16 MEMBER REMPE: Excuse me.

17 MR. COLLINS: Sure.

18 MEMBER REMPE: Could you elaborate a
19 little bit more on what you did with the in-core
20 detectors?

21 MR. COLLINS: We replaced the, oh, the
22 whole system with new in-core detectors. And we also
23 replaced the seal table assemblies that we had had
24 issues with leakage on, with an upgrade design, to make
25 sure we don't have any further concerns during our

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1 cycles with leakage.

2 MEMBER REMPE: And the detectors? They
3 were SPNDs? Or what were they? And you kept the same
4 type of detectors?

5 MR. COLLINS: Yes, we did.

6 MEMBER REMPE: Okay. Thank you.

7 DR. SCHULTZ: Is it a fixed detector system
8 now only?

9 MR. COLLINS: Correct. It is no longer,
10 original design was movable. That's been abandoned.
11 And we now are purely fixed. We withdraw them,
12 certainly, during the outage, for our core alterations.
13 But it is a fixed system.

14 DR. SCHULTZ: And at this point all of the
15 detectors are operational?

16 MR. COLLINS: There is one detector that
17 we had an issue with leakage on, that we cut and capped
18 the cycle. All the other detectors are operable.

19 DR. SCHULTZ: So, how many do you have out
20 of how many that are operational now?

21 MR. COLLINS: Fifty-six out of 57.
22 Fifty-six out of 57.

23 DR. SCHULTZ: Understood. Thank you.

24 MR. COLLINS: At this time I will turn over
25 the discussion to Mr. Ed Carley.

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1 CHAIRMAN SKILLMAN: Before you do that,
2 let me go through a number of items. Because you're
3 kind of in the, if you go back to the previous slide
4 you're kind of in the hardware, and here's our machine
5 --

6 MR. COLLINS: Yes, sir.

7 CHAIRMAN SKILLMAN: -- discussion. And
8 so, I've gone through 887 pages of the SER, and pulled
9 out a couple of things I'd like to ask you about, and
10 get on the record.

11 MR. COLLINS: Very good.

12 CHAIRMAN SKILLMAN: Talk to us for two
13 minutes about external flooding, and the NextEra vision
14 regarding sea level rise over the next 20 years?

15 MR. COLLINS: Very good. So, we've always
16 had a flooding analysis at Seabrook Station, certainly
17 after the Fukushima event. We went through all the
18 required regulatory reviews and inspections. And
19 also, that rolled into our, certainly our flex
20 improvements that we made at the station.

21 Presently, with margin, looking at our
22 flooding conditions, we have no issues with entrance
23 of, at that point, seawater into any of our structures.

24 We did do upgrades on doors for sweeps in
25 that type discussion. We do have adequate runoff from

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1 the station, with regards to extreme weather events,
2 as far as precipitation.

3 But again, we are two and a half miles back
4 from the Atlantic Ocean. We have marsh out in front
5 of the station. But with regards to maximum flooding
6 criteria for the station, there's presently margin
7 within our design for that.

8 CHAIRMAN SKILLMAN: Michael, what has your
9 experience been? We saw in the storm that come up the
10 East Coast, brought Oyster Creek to within inches of
11 being flooded.

12 And Exelon thought that they were well
13 protected. And they learned on a huge storm surge they
14 were not as well protected as they thought they were.

15 What has the experience been up on your part of the
16 Atlantic coast relative to strong storm driven
17 flooding?

18 MR. COLLINS: So, in my experience, I've
19 been at the station for 20 years now. We do go water
20 solid in the marsh area around the station itself.
21 But our grade is at 20 foot above sea level. And there's
22 been no impact or fear of impact of storm surge that
23 would impact the station.

24 CHAIRMAN SKILLMAN: Very good. Next
25 question. This had to do with the dewatering and end

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1 leakage. This is a cousin of the ASR discussion. But
2 it really gets to, the plant was designed so that there
3 would not be water ingress. But there is.

4 MR. COLLINS: Yes, sir.

5 CHAIRMAN SKILLMAN: What happened?

6 MR. COLLINS: So, original design of the
7 station was to be built on bedrock. During original
8 construction we did have dewatering pumps running all
9 the time. The design of the station was to put a
10 membrane around our concrete structures, and then to
11 backfill around our structures to the present grade.

12 Obviously that membrane has failed in
13 several areas around the station. That has allowed
14 the ingress of water through our concrete structures,
15 into our lower level elevations. We had a good
16 discussion on what the issues with that were on October
17 31st.

18 We do have active dewatering wells running
19 at the station. Certainly not to the extent that we've
20 dried the station out completely. But we have made
21 improvements with the ingress of water into the station.

22 And we are committed to continue to explore
23 ways to continue to minimize the ingress of water into
24 our lower level concrete structures.

25 CHAIRMAN SKILLMAN: Thank you. Emergency

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1 feedwater pump house. The text in the SER communicates
2 the emergency feedwater pump house heating system is
3 designed to maintain the pump house at or above 50
4 degrees Fahrenheit when the outside temperature is zero
5 degrees Fahrenheit or above. Sounds okay. What
6 happens when it's below zero degrees Fahrenheit?

7 MR. COLLINS: Certainly with the operator
8 rounds, and us monitoring the station for required,
9 temperature requirements for any area, whether it's
10 emergency feedwater control room, battery rooms.

11 If in fact we do, the heating system can't
12 maintain that, which obviously is a possibility, then
13 certainly at that point we would add augmented heat,
14 if required, through our formal process.

15 That would be considered a temporary
16 modification, which goes through the 50.59 process.
17 And we would manage that to keep that system operable,
18 but degraded.

19 CHAIRMAN SKILLMAN: Fair enough. Okay.
20 Canopy welds. These inspections include robotic bare
21 metal examination at the top of the head, and a robotic
22 ultrasound examination of the J groove welds in the
23 penetration tube between the bottom of the head.

24 The applicant stated that no unacceptable
25 indications were discovered. Would you describe what

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1 an acceptable or unacceptable indication is, and what
2 the current status is of canopy welds?

3 MR. COLLINS: And I'll have Rudy Gil to
4 answer that question.

5 CHAIRMAN SKILLMAN: Rudy, good to see you
6 again.

7 MR. GIL: Thank you, Gordon. Yes. Rudy
8 Gil. And since I hadn't had a chance to introduce
9 myself, I'm the fleet programs engineering manager.
10 Forty years' experience in nuclear power. Probably
11 about half of it in design, the other half in programs
12 area. So, the, I run the fleet organization where we
13 have the majority of the programs for the site.

14 So, the question that you were asking
15 related to the reactor vessel head penetrations. So,
16 the last inspection that we performed was in 2014.
17 And that is performed with ultrasonic methods. And
18 we had no indications of any degradation on the
19 penetrations. Our next inspection is planned for our
20 next outage in 2020.

21 CHAIRMAN SKILLMAN: Thank you, Rudy.
22 Next question has to do with liner inspections. There
23 was a moisture barrier on concrete floor issue. What's
24 the current status of your liner inspections, please?
25 This is also codified in your Commitment 50.

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1 MR. COLLINS: Do you want to take that?

2 MR. GIL: Yes. I can cover that also.

3 Rudy Gil. Yes. So, that, those inspections have been
4 incorporated into our IWE program. We had identified
5 the issue that you mentioned several years back. We
6 have since come back and performed another inspection
7 in that area.

8 During those inspections we were able to
9 perform inspections of the liner areas that would be
10 affected. Found no issues associated with it. And
11 basically, the, not finding anything is part of it.
12 But also understanding why it is that we're not finding
13 anything.

14 And based on the conditions that the, that
15 those plates are in, even with the water that was found,
16 the chemistry associated with it would not be conducive
17 to degradation of the liner plate. But those are now
18 part of our program. And we would on a periodic basis
19 come back and inspect those.

20 CHAIRMAN SKILLMAN: Okay. Thank you,
21 Rudy. Reactor vessel studs. Understand, I'm going
22 through the aging management reviews, and the AMP work
23 that was done.

24 You cut one off. And you found one that
25 was not elongated sufficiently. That's old

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1 information. What's the current status of your 54
2 studs? Are they all in place? Are any degraded?

3 And for the elongation issue, was that a
4 stud tensioner issue? Was that an operator error
5 issue? Was it a, you didn't, someone didn't read the
6 pressure on the stud tensioner accurately?

7 So, two questions. What's the current
8 status of your 54 studs? And number 2, for the
9 elongation issue, what happened?

10 MR. GIL: I'm not familiar with the
11 elongation issue.

12 MR. COLLINS: Yes. The present condition
13 of -- This outage we had -- So this, all our reactor
14 studs are intact. This outage we had no issues with
15 disassembly and reassembly. As a matter of fact, we
16 replaced our vessel studs with newly refurbished studs
17 this outage.

18 CHAIRMAN SKILLMAN: And the new studs meet
19 the maximum 150 ksi tensile requirements?

20 MR. COLLINS: I, Chairman, I don't know
21 that specifically off the top of my head. But I've
22 heard no issues with regards to design. I will take
23 a follow-up after this.

24 (Simultaneous speaking)

25 MR. CARLEY: I can answer that question.

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1 CHAIRMAN SKILLMAN: Go ahead, Ed.

2 MR. CARLEY: We do have one stud that we
3 are tracking that does not meet that requirement. I
4 cannot tell you if that stud is currently installed
5 or not. But we do have an action item to remove that
6 stud prior to PEO.

7 CHAIRMAN SKILLMAN: I saw that. Okay.
8 Thank you. That's sufficient. Michael, you don't
9 have to follow-up. I made my point.

10 MR. COLLINS: Understood.

11 CHAIRMAN SKILLMAN: Divider plate.
12 Divider state in your steam generator inspections.
13 What's the status?

14 MR. GIL: So, the divider plate
15 inspections, we perform a visual inspection of that
16 divider plant every time we go in and do a primary side
17 steam generator inspection.

18 We have completed the evaluations through
19 the EPRI work that was done. And that work envelopes
20 the conditions in our steam generators. So, basically
21 our commitment going forward is to perform the visual
22 inspections.

23 And that, of course, is not, we're not
24 waiting for a period of extended operation for that.

25 That is done currently, every time we inspect the

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1 primary side of the steam generators.

2 CHAIRMAN SKILLMAN: Rudy, what is the
3 frequency of inspecting on primary, on the steam
4 generator?

5 MR. GIL: The allowed, from a technical
6 specification standpoint, is the, basically every other
7 outage would be the maximum allowed for our steam
8 generators.

9 CHAIRMAN SKILLMAN: Okay. Thank you.
10 All right. One or two more. Spent fuel pool leakage.
11 You made two commitment in 67 and 68. Those
12 commitments were completed.

13 And that basically involved assessing the
14 concrete. And I'm just curious, how can assessing the
15 concrete assure no further leakage of the pool? How
16 do you confirm your pool is not leaking?

17 MR. COLLINS: That's done routinely with
18 the telltale drains. And the chemistry samples that
19 water on a routine basis, to make sure we don't have
20 any spent fuel pool water exiting the pool itself.

21 CHAIRMAN SKILLMAN: Fair enough. Okay.
22 This question has to do with the TLAA, time limit aging
23 analysis, on the hot leg surge nozzle, and the hot leg.
24 And you might, if you understand the acronyms, HLSN,
25 and the PSL.

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1 So, it's the hot leg, and it's the nozzle.
2 And it is the question about the cumulative usage
3 factor for that nozzle. And my question is, what's
4 the status?

5 MR. COLLINS: I'll turn it over to Dave
6 --

7 CHAIRMAN SKILLMAN: I'd be glad to take
8 a follow-up on this one.

9 MR. COLLINS: Dave Gerber. Actually,
10 Dave Gerber can come up to the microphone, he'll answer
11 that question for you, sir.

12 MR. GERBER: Hello. I'm Dave Gerber from
13 Structural Integrity Associates. And I've worked on
14 this TLAA. The hot leg surge nozzle we've determined
15 is the critical location for cumulative usage factor.

16 And we've done several analyses. Some,
17 one more refined than the other. And we've discovered
18 that the, well, the CUF itself is below one.

19 CHAIRMAN SKILLMAN: It's currently below
20 one, projected to potentially be higher than one.

21 MR. GERBER: The CUF is designed for, is
22 analyzed to be below one at 60 years. The CUREN, on
23 the other hand, is going to exceed one at the current
24 analysis. And more refined analysis is committed to
25 there.

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1 CHAIRMAN SKILLMAN: Dave, thank you for
2 your input. When will the additional analysis be
3 provided to NextEra?

4 MR. GERBER: We have not been engaged to
5 do that yet. But it, the commitment, 44, I believe
6 it is 44.

7 CHAIRMAN SKILLMAN: Yes. I apologize if
8 that sounded like a commercial move. That isn't --

9 MR. GERBER: Yes.

10 CHAIRMAN SKILLMAN: -- what I was trying
11 to communicate. My real question is, what's the CUF
12 going into the PEO? And what is the assurance that
13 NextEra has that this nozzle is either good to go for
14 20, or it can be monitored progressively to ensure that
15 it stays where it should be, in terms of CUF?

16 MR. GERBER: The CUF is already been
17 evaluated. This is the non environmental CUF, which
18 is what is required --

19 CHAIRMAN SKILLMAN: Okay.

20 MR. GERBER: -- prior to PEO. That is
21 already been determined to be below one for --

22 CHAIRMAN SKILLMAN: For the --

23 MR. GERBER: -- 60 years.

24 CHAIRMAN SKILLMAN: -- plus 60? For the
25 plus 20?

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1 MR. GERBER: Yes.

2 CHAIRMAN SKILLMAN: Okay. That's
3 silence. That's enough. Thank you.

4 MR. GERBER: All right. Thank you.

5 CHAIRMAN SKILLMAN: It's on the record.

6 MR. GERBER: Thanks.

7 CHAIRMAN SKILLMAN: Thank you for your
8 patience with my questions. Let me ask my colleagues.

9 I know that a number of my colleagues were going through
10 detailed technical issues. Let me see if they might
11 wish to ask a question at this point in the meeting.

12 We have time. Colleagues, anybody have any technical
13 comments for the NextEra team?

14 DR. SCHULTZ: Dick, I have a general
15 question related to the equipment, and the commitments.

16 It probably is good to ask it here. And it's really,
17 the general question is, there are, as you said earlier,
18 Nik, 91 commitments that are part of the program at
19 this time.

20 And as one goes through those commitments,
21 at least it seems to me that there are several specific,
22 and some general areas where one might -- Well, let
23 me back up. There's only a few of the commitments that
24 are marked completed. The remain, most of the
25 remainder of the commitments are marked, will implement

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1 this prior to 2030.

2 There are some of the commitments that seem
3 to me to be ones that I would have put into the Corrective
4 Action Program for, not necessarily immediate
5 attention, but certainly to get them into the Seabrook
6 program sooner than in the next ten years.

7 Just one example is, there's several
8 commitments associated with the fire water system.
9 And the guidance that is driving that is more than five
10 years old. Your program plan associated with license
11 renewal is more than five years old.

12 It would seem to me that some of the
13 commitments that you have to implement later on could
14 certainly have been implemented either prior to today,
15 or should be implemented soon, sooner than in the next
16 ten years.

17 Because they're, it seems to me they're
18 fundamental improvements that you know well, and would
19 in fact be program improvements that have been
20 recognized in the industry. And certainly have been
21 implemented at sites where their license renewal
22 program is already in play.

23 So, the general question is, and maybe
24 we'll get to this later in the presentation. But in
25 these areas is your implementation program really that

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1 you're going to hold on all of these commitments until
2 2029? Or do you have a plan that's active, and
3 connected into your Corrective Action Program today?

4 MR. CARLEY: So, in that regard all of
5 those enhancements, program enhancements have been
6 entered into the Corrected Action Program. Many have
7 been incorporated into the programs.

8 We have not officially called them closed
9 in the commitment list because we have not done the
10 validation that all the exceptions and enhancements
11 for each individual program have been implemented.
12 So, we are actively tracking those.

13 We are actively still engaged in making
14 those changes in the program proactively at this point
15 in time. Of those 91 commitments we do consider ten
16 of those closed, eight of which we've formally
17 communicated to the staff. We have two that are
18 recently been identified that could be closed.

19 There are 56 that are program enhancements,
20 as you had talked about. None of those are officially
21 closed. But as you said, many of them have been
22 implemented into the programs. And as we go through
23 the implementation project plan we will validate that
24 the documentation is in place that would officially
25 close those.

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1 DR. SCHULTZ: Thank you. Appreciate the
2 status.

3 CHAIRMAN SKILLMAN: Please proceed.

4 MR. COLLINS: At this point I'm at the end
5 of my discussion. I'm sorry. Apologize. At this
6 point I'll turn the program over to Ed Carley.

7 MEMBER BALLINGER: I have another
8 question. I've been paging through things here. The
9 nozzle that's, the subject nozzle with the fatigue usage
10 factor that Dick Skillman mentioned --

11 CHAIRMAN SKILLMAN: That's the hot leg
12 surge nozzle.

13 MEMBER BALLINGER: It's the hot leg surge
14 line. Has that had mechanical stress improvement?
15 Because one of the slides says mechanical stress
16 improvement process completed on all reactor vessel
17 nozzles. Is that one of them? Okay. So, that one
18 has had a mechanical stress improvement?

19 MR. CARLEY: Yes. So, the one that is
20 identified in the application originally with the flaw
21 was the first one that was done. And then, NextEra
22 proactively, at a later outage, did the remaining seven.

23 MEMBER BALLINGER: Okay. So, the answer
24 to that question is yes, right?

25 MR. CARLEY: Correct.

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1 MEMBER BALLINGER: That's --

2 MEMBER RICCARDELLA: Let me --

3 MEMBER BALLINGER: -- what I'm trying to
4 get at. What's the answer to the question?

5 MEMBER RICCARDELLA: Let me, I think we
6 have a miscommunication. You're talking reactor
7 vessel --

8 MEMBER BALLINGER: Yes. The specific
9 nozzle --

10 MEMBER RICCARDELLA: Now --

11 MEMBER BALLINGER: I'm sorry.

12 MEMBER RICCARDELLA: And the question had
13 to do with hot leg surge nozzle.

14 MEMBER BALLINGER: Hot leg surge nozzle.

15 MR. GIL: Yes. So, the hot leg surge
16 nozzle. What I'd like to do is have Scott Boggs, from
17 our programs group. And he can specifically answer
18 that question.

19 MR. BOGGS: Good morning. My name's Scott
20 Boggs. I work in the Fleet Programs Engineering Group.

21 I have been doing that for 32 years. I work in reactor
22 vessel integrity, alloy 600, and material degradation
23 programs.

24 The mechanical stress improvement has been
25 applied to the dissimilar metal welds on the reactor

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1 vessel inlet and outlet nozzles, all eight of those
2 nozzles. The hot leg surge nozzle that you're asking
3 about is a stainless to stainless --

4 MEMBER RICCARDELLA: Okay.

5 MR. BOGGS: -- connection. No MSI, or
6 mechanical stress improvement has been performed on
7 that nozzle.

8 MEMBER RICCARDELLA: Okay. Thank you.

9 CHAIRMAN SKILLMAN: Ed, go ahead. Thank
10 you.

11 MR. CARLEY: Good morning. I'm Edward
12 Carley. I'm the license renewal supervisor at NextEra
13 Seabrook. I'm a 35 year veteran of Seabrook Station,
14 holding various positions in several organizations,
15 including quality assurance, maintenance, projects,
16 licensing, and engineering.

17 In 2008 I joined the team tasked with
18 developing the Seabrook license renewal application
19 as the time limit and aging analysis and environmental
20 lead.

21 The license renewal application was
22 prepared onsite by Seabrook Station personnel. The
23 project team included a number of long time site
24 employees, like myself, having system engineering,
25 design engineering, and license operating experience

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1 at the plant, and who were familiar with the plant
2 history.

3 Contractors experienced in license renewal
4 all met with the project staff, along with a number
5 of retirees familiar with the history and construction
6 of the station. The application was prepared utilizing
7 the guidance of the standard review plan, NEI-95-10
8 and NUREG-1801, commonly referred to as the GALL.

9 NextEra corporate fleet support the
10 project with experienced people, and provided our
11 oversight. Members of the benchmarked sites to gain
12 from their experience, both in preparing the license
13 renewal application and writing this for
14 implementation.

15 Our technical leads participated in, and
16 hosted industry working groups, meetings at Seabrook
17 Station. Quality assurance audits were conducted
18 during the course of the project to confirm we were
19 following the defined processes.

20 Industry peers reviewed both our technical
21 reports, and assembled the application to assure we
22 were aligned with current standards. A review of GALL
23 Rev 2 was performed, and changes made to the LRA where
24 appropriate.

25 Since submittal of the application more

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1 than 62 supplements, and eight annual updates were
2 provided to address staff REIs and proactive changes
3 related to the application, and to address deltas from
4 GALL Rev 1, and the issuance of interim staff guidance
5 documents.

6 Next slide, please. The first phase in
7 the development of the station's license renewal
8 application was the scoping and screening of components
9 subject to aging management review.

10 Utilizing the extent of design and
11 component records of the site scoping was performed
12 to the criteria of 10 C.F.R. 54(a)(i) for safety related
13 structure and system components, (a)(ii) for
14 non-safety-related structure system components
15 affecting safety-related functions, and (a)(iii) for
16 regulated events related to environmental
17 qualification, station blackout, pressurized thermal
18 shock, and anticipated transients without scram.

19 Next slide, please. Seabrook also
20 addressed analysis that were time limited, once again
21 utilizing Seabrook's comprehensive searchable records
22 on our licensing basis. Key word searches were
23 performed on this to ensure we identified any potential
24 TLAA's.

25 We also reviewed design calculations and

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1 other plant submittals, interviewed site engineers.
2 Seabrook also benchmarked TLAAAs against 19 other
3 applications. Overall, Seabrook looked at 69
4 potential TLAAAs in this application by review of recent
5 PWR and common architect engineer submittals.

6 In regards to neutron fluence, fluence for
7 the vessel shells and welds was determined for 60 years
8 of operation. We evaluated and identified materials
9 in the extended beltline.

10 The upper shelf energy was determined to
11 exceed the minimum accepted limit of 50 foot pounds.

12 The lowest was identified as 59.5 foot pounds. For
13 pressurized thermal shock limits were below the
14 allowable screening criteria, with the highest level
15 being 123.3 degrees Fahrenheit.

16 Next slide, please. Okay. The list
17 represents consistency with the GALL Revision 2, as
18 finally documented in the safety evaluation report.
19 As shown here, Seabrook has had 20 existing programs,
20 and 15 new programs. We do have six slight, six plant
21 specific programs, as listed here, two of which we
22 discussed back on October 31st for ASR and building
23 deformation.

24 Next slide, please. In regards to license
25 renewal implementation, as we discussed a few minutes

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1 ago, Seabrook has developed a project plan for
2 implementation, and has comprehensive fleet level
3 processes and procedure for AMP implementation, and
4 managing the aging effects up to and through the period
5 of extended operation.

6 Next slide, please. As discussed, the SER
7 was issued September 28th, 2018. The current SER has
8 no open items, and no confirmatory items. The next
9 few slides I'll just give a high level overview of how
10 we closed the original open items from the SER in 2012.

11 CHAIRMAN SKILLMAN: Before you do that let
12 me --

13 MR. CARLEY: Certainly.

14 CHAIRMAN SKILLMAN: I was going to ask this
15 question to the staff. But in a prior slide you kind
16 of tripped my switch. So, let me ask this question,
17 and it might come back to Michael.

18 This has to do with A1 and A2 structures.
19 Intake transition structure. Now, this plant has an
20 engineering marvel. You have your intake tunnels that
21 go deep into the Atlantic Ocean. They go out quite
22 a ways.

23 But there's an intake transition
24 structure. This non seismic Category 1 structure
25 provides seawater to the service water pump house, and

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1 the circulating water pump house from the Atlantic Ocean
2 and intake tunnel.

3 In addition, it serves as a surge chamber.

4 It stabilizes changing water levels. So, it's not
5 Seismic 1. What role does this have in your ultimate
6 heat sink?

7 MR. COLLINS: We assume that with regards
8 to everyday operation of the station, certainly
9 circulating water and service water goes through that
10 structure.

11 If we were to have a seismic even that did
12 in fact fail our tunnels coming in from the ocean, then
13 we'd rely solely on our safety related seismic
14 mechanical force draft cooling tower, our standby
15 cooling tower, as we know it at the station.

16 CHAIRMAN SKILLMAN: Thank you. Thank
17 you. Okay.

18 MR. CARLEY: Okay. The first item related
19 to our steam generator tube integrity program. In the
20 original license renewal application operating
21 experienced the potential for degradation of the steam
22 generator tube to tube sheet welds that could impact
23 the program for adequately managing aging effects
24 during the period of extended operation.

25 The staff identified an open item. As a

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1 result of the concern the management of the degradation
2 of those welds was unclear.

3 In addition, the staff requested NextEra
4 address foreign operating experience, and where primary
5 water stress corrosion and cracking have been
6 identified in steam generator divider plate assemblies
7 made with alloy 600.

8 NextEra submitted license amendment
9 request, Amendment 131 for Seabrook, which provided
10 permanent application of the steam generator tube
11 alternate repair criteria.

12 In addition, Seabrook submitted a response
13 to the, excuse me, a supplement to the license renewal
14 application, which incorporated recurring inspections
15 of the divider plate assembly in the steam generating
16 AMP, in accordance with the inspection guidelines of
17 ISG-2016.01.

18 MEMBER BALLINGER: I should probably
19 remember this. But how are the tubes inserted into
20 the tube sheet? How are they, are they rolled? Are
21 they hydraulically expanded? How are they put in
22 there?

23 MR. GIL: Rudy Gill, with NextEra Energy.
24 I don't have those specifics. Kester Thompson, who's
25 our steam generator program owner, will come up to the

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1 podium and address that question.

2 MR. THOMPSON: Good morning. My name is
3 Kester Thompson. I'm the steam generator program
4 owner. And I'm also the aging management program owner
5 for steam generators for Seabrook Station, and for the
6 fleet.

7 With regards to how the tubes are placed
8 in the tubes, they are hydraulically expanded.

9 MEMBER BALLINGER: Hydraulically
10 expanded?

11 MR. THOMPSON: Yes.

12 MEMBER BALLINGER: Thank you.

13 MEMBER RICCARDELLA: They meet the
14 criteria? Excuse me. While you're still there. And
15 they do meet all the criteria associated with the
16 alternate repair criteria, in terms of --

17 MR. THOMPSON: Yes. With regards to
18 alternate repair criteria, or H_STAR, yes.

19 MEMBER RICCARDELLA: Thank you.

20 MR. CARLEY: Next slide, please. In
21 regards to the pressure temperature limits. At the
22 time of the application NextEra had submitted a license
23 amendment request in accordance with 10 C.F.R. Part
24 50, Appendix Golf.

25 The staff had concerns that pressure

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1 temperature limits did not consider ferritic
2 non-beltline materials in the reactor vessel.

3 Since this open item was issued NextEra
4 has addressed the staff's concerns with two separate
5 license amendment requests, which address the
6 non-beltline materials.

7 The latest license amendment request,
8 Amendment 151, approved P-T limits consistent with
9 Appendix Golf for 10 C.F.R. 50, for 55 effective years,
10 which covers the period of extended operation.

11 MEMBER RICCARDELLA: Just for my, just out
12 of curiosity, you mentioned 123 degree is the maximum
13 end of life. But is that in a beltline region, or
14 non-beltline?

15 MR. GIL: Rudy Gil. NextEra Energy. I
16 will have Scott Boggs, who is our program owner, come
17 to the podium to answer that question. Thank you.

18 MR. BOGGS: Scott Boggs, again. Yes, that
19 is in a beltline. It's a limiting plate material.

20 MEMBER RICCARDELLA: Okay. So, the
21 extension to non-beltline materials was not --

22 MR. BOGGS: We prepared a nozzle beltline,
23 or nozzle extended beltline curves, and demonstrated
24 that they were to the left and above the P-T limit
25 curves. So, they were non limiting.

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1 MEMBER RICCARDELLA: Thank you.

2 MR. CARLEY: Okay.

3 CHAIRMAN SKILLMAN: I think we're on Slide
4 18. There you go.

5 MR. CARLEY: Yes. Next slide, please.
6 Thank you. In relation to the open item related to
7 treated borated water, GALL Revision 1 and 2 did not
8 recommend one-time inspections to detect potential
9 degradation in the stainless steel components exposed
10 to treated borated water, because it was believed that
11 boron would mitigate potential aging effects for
12 stainless steel components.

13 Post submittal of the Seabrook license
14 renewal application the staff issued ISG 2011-01, aging
15 management of stainless steel structures and components
16 in treated borated water, and opened the associated
17 open item to address the staff's concern that the
18 original basis stated in the GALL was inadequately
19 supported.

20 NextEra evaluated the changes recommended
21 in the ISG, and revised its associated items requiring
22 aging management review to include a one-time
23 inspection to detect potential loss of material,
24 cracking, or reduction of heat transfer for stainless
25 steel components exposed to treated borated water.

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1 Next slide. Next item was related to the
2 bolting integrity program. After the submittal of the
3 Seabrook license renewal application a seal cap
4 enclosure was installed on a safety injection check
5 valve during a mid-cycle forced outage, due to system
6 leakage from the valve.

7 The open item addressed that once a seal
8 cap enclosure is installed the bolting component
9 external surfaces within the enclosure are no longer
10 visible for direct inspection.

11 At the time Seabrook had one seal cap
12 enclosure that was used to surround a pressure retaining
13 bolts of a check valve, to encapsulate the water
14 leakage.

15 To resolve the open item Seabrook removed
16 the seal cap enclosure in 2012, and performed a
17 replacement of the valve to address system leakage.
18 Removal of the seal cap's enclosure restored the
19 original configuration.

20 With the removal of the seal cap enclosure
21 the existing aging management program is sufficient
22 to age manage the bolting and components of external
23 surfaces.

24 CHAIRMAN SKILLMAN: And was that the
25 single and only instance where this action was taken?

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1 MR. CARLEY: Yes. It was the only seal
2 cap enclosure we had installed.

3 CHAIRMAN SKILLMAN: Thank you.

4 MEMBER KIRCHNER: Just for the record, Ed.
5 So, you corrected the problem of leakage with the
6 valve?

7 MR. CARLEY: Correct.

8 MEMBER KIRCHNER: Okay.

9 MR. CARLEY: Yes. The valve was cut out
10 and replaced.

11 MEMBER KIRCHNER: Okay. Fine. And the
12 new one doesn't leak?

13 MR. CARLEY: That is correct.

14 CHAIRMAN SKILLMAN: Which valve --

15 MEMBER KIRCHNER: Thank you.

16 CHAIRMAN SKILLMAN: -- was that?

17 MR. CARLEY: It's a safety injection check
18 valve. Next open item to discuss is a open item related
19 to operating experience. The license renewal
20 application did not initially have a detailed
21 discussion of how OE would be used continually to
22 identify aging issues, evaluate them, and as necessary
23 enhance AMPs, or develop new AMPs.

24 ISG 2011-05 clarified the NRC's staff
25 acceptance criteria to better address the ongoing

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1 review of operating experience. The ISG also provided
2 us a framework to ensure operating experience review
3 activities will adequately address operating
4 experience concerning age related degradation and age
5 management during the term of the renewed license.

6 To resolve this open item Seabrook license
7 application was updated to document program aspects
8 of evaluating aging related OE in accordance with the
9 ISG.

10 CHAIRMAN SKILLMAN: And let me ask this
11 question. It's not intended to be pejorative. But
12 I need to ask it. Within the population of plants in
13 the country there are some that were described as mom
14 and pop operations.

15 Those were plants that were a large
16 distance from their headquarters. And the staffs at
17 those plants, in some cases, made it up as they went
18 along. And they got sorted out in the course of time
19 through a number of tools.

20 But one of the hallmarks of those plants
21 was that they did not adhere, or didn't even pay
22 attention to operating experience. It was as if that
23 was somebody else's problem, and it can't happen here,
24 and certainly not on my watch. Is that what happened
25 here? And if that is what happened, what made it

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1 change?

2 MR. COLLINS: I'd guess I'd ask for a
3 clarification as far as what are you related to as what
4 happened here?

5 CHAIRMAN SKILLMAN: Operating experience.

6 The issue here was that operating experience was not
7 being incorporated. That suggests that perhaps the
8 plant staff was not really alert to what was going on
9 outside. Or if they were, they weren't doing anything
10 with that information. It was as if that's somebody
11 else's problem. That can't happen here.

12 And if you look at the plants that have
13 fallen in the 95-002, 95-003, and particularly the ones
14 that went into 0350, not taking into consideration
15 operating experience was a common factor.

16 The folks just weren't keeping track of
17 what else was going out, and going on in the industry.

18 Of if they did know what was going on in the industry
19 they weren't being introspective, asking, can that
20 happen to me too?

21 So, I'm just kind of trying to get a sense
22 of perhaps the change in your site culture between 2012
23 and 2018. And what might have created this open item
24 back in 2012? Because that's where this came from.

25 MR. CARLEY: Right. So, I think I want

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1 to clarify that when the open issue was that our AGL
2 application in aging management program did not
3 properly reflect how we were addressing OE. From the
4 station and the fleet we had a very robust operating
5 experience program that's tied to our Corrective Action
6 Program.

7 And it was well implemented, to the point
8 we were probably a little blind to the fact that it
9 wasn't a solid program that was in place for the station,
10 and did not need to be further discussed or repeated
11 in the application. But based on the guidelines of
12 the ISG we did incorporate it.

13 CHAIRMAN SKILLMAN: So, you're saying this
14 was primarily an administrative issue?

15 MR. CARLEY: Yes, I am.

16 CHAIRMAN SKILLMAN: Fair enough. Thank
17 you. Please proceed.

18 MR. CARLEY: Okay. Sorry. Next item is
19 related to the IWE program. This was related to the
20 accumulation of water in the annulus area, and
21 potentially degrading the containment liner.

22 And as we discussed earlier before, to
23 address this item Seabrook performed ultrasonic testing
24 in 2014 of the moist, area above the moisture barrier.
25 Results documented no sign of degradation of the liner.

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1 Ultrasonic testing is also scheduled to be performed
2 again in 2021.

3 In addition, a recurring maintenance
4 activity has been established in the site's
5 preventative maintenance program to inspect the annulus
6 area on a weekly basis, to verify it's kept in the
7 dewatered state.

8 Next slide. And just for completeness of
9 the, all of the open items, the last relates to the
10 structure's monitoring program. And this was related
11 to ASR in its aging management program, which was
12 discussed on October 31st.

13 CHAIRMAN SKILLMAN: I would like to ask
14 one question that emerged as I was reading the safety
15 evaluation, and the AMPs, and the application. To what
16 extent will the BDM, the building deformation
17 management program understand differential building
18 movement?

19 I searched on movement. I searched on that
20 word. And my presumption is it's addressed. But I
21 was not able to find it. Can you speak to that for
22 a minute, please? I'm concerned with, concern is not
23 the right word.

24 What was the target of my comment is,
25 buildings that have moved even by three or four

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1 centimeters, and an adjacent building that has
2 penetrations, or electrical conduit, or piping that
3 might be in shear as a consequence of that differential
4 movement

5 And I was trying to satisfy myself that
6 that was addressed in the text. And I was not able
7 to find that.

8 MR. CARLEY: Okay. So, in regards to a
9 monitoring program for that. We do a, every two year
10 walkdown to determine if there is equipment that has
11 been affected by deformation. And we look for, you
12 know, changes to the seismic gap seal, misaligned
13 piping, flex conduits, which we had shown in the
14 pictures, all of which are indications.

15 Also too, each building has gone through
16 a very comprehensive susceptibility evaluation, which
17 identifies the areas that we should be monitoring from
18 a structural standpoint, which are the most susceptible
19 to review, to movement that we should concentrate on.

20 But there is also just a overall walkdown that's
21 performed every two years.

22 CHAIRMAN SKILLMAN: Okay. Thank you.

23 MR. CARLEY: On that, I'll turn the slide
24 back over to Mr. Browne for concluding remarks.

25 PARTICIPANT: Mike Collins.

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1 MR. CARLEY: Oh, Mike Collins. Okay.
2 Sorry.

3 MR. COLLINS: With regards to concluding
4 remarks, Seabrook is committed to continuous material
5 and equipment reliability improvement in long term
6 operation of the unit.

7 Seabrook will manage the effects of aging
8 in accordance with 10 C.F.R. 54.21(a)(i). Seabrook
9 has evaluated time limited aging analysis that require
10 evaluation under 10 C.F.R. 54.218.

11 In closing, NextEra Energy Seabrook has
12 demonstrated compliance with the requirement of 10
13 C.F.R. 54 for issuance of a renewed license for Seabrook
14 Station, Unit 1. Thank you for your time this morning.

15 CHAIRMAN SKILLMAN: NextEra team, thank
16 you very much. Colleagues, do you have any questions
17 for the NextEra team, before we change out to the NRC
18 team?

19 MEMBER KIRCHNER: Dick, I have one.

20 CHAIRMAN SKILLMAN: Yes, sir. Go ahead,
21 Walt.

22 MEMBER KIRCHNER: It's a follow on to
23 Steve's question. When I look at the license renewal
24 commitment list there are quite a few significant
25 activities completed. And then there are a number of

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1 items that to me maybe it ties back to operational
2 matters that --

3 Let me pick one, so that I can focus my
4 question. It was the, let's see, just bear with me
5 a moment. A little bit further down. It had to do
6 with the diesel generators and the air, auxiliary air
7 system and compressors.

8 It's eluding me. Here it is, 61,
9 compressed air monitoring program. I was surprised
10 to see this on the list. I just would expect you would
11 be doing this anyway. This one refers to, replace
12 flexible hoses associated with diesel generator air
13 compressors on a frequency of every ten years.

14 I would just expect that that would be an
15 ongoing operating maintenance issue, not a license
16 renewal issue, per se. I'm thinking of my own vehicles,
17 and such, where you, that frequency you start worrying
18 about whether your radiator hoses and such are holding
19 up.

20 So, it's an observation. It's not a
21 criticism. It just strikes me though, something like
22 that is what you would expect in the normal operation
23 in the plant, and not to be flagged at the same level
24 as, I'll pick something, reactor vessel integrity
25 program. So, just an observation.

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1 MR. COLLINS: With regards to that, you
2 are correct. On a daily basis our monthly operability
3 runs of the engines. I don't know the specific, why
4 we specifically committed to that.

5 But to answer your question is, again,
6 monthly surveillances of the engines. Our air
7 receivers need to be at a certain pressure in order
8 to roll the engine. Those are maintained. Operators
9 watch that pressure. So the answer to your question
10 is, yes, we do watch those on a daily basis.

11 MEMBER KIRCHNER: Thank you.

12 CHAIRMAN SKILLMAN: Walt, I appreciate
13 your reason and comment. But I want to challenge the
14 idea that there are some things that are important,
15 and some that are not important.

16 MEMBER KIRCHNER: No. I didn't want to
17 imply that at all.

18 CHAIRMAN SKILLMAN: I look at this and I
19 see 4160. I see ECCS emergency core cooling electrical
20 power. So, this is as important as anything in the
21 plant. This is very important.

22 MEMBER KIRCHNER: Yes. Okay.
23 Inversely, that's my point.

24 CHAIRMAN SKILLMAN: Fair enough. Okay.
25 Thank you, Walt. Colleagues, any other questions?

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1 Roland? Charlie? They replaced a whole bunch of
2 electrical stuff. No watch dog timers, in other words?

3 MEMBER BROWN: It's a standard combination
4 of logic solid state stuff, not microprocessor based.
5 So, it's kind of like the old stuff mimicking it, doing
6 the same thing.

7 CHAIRMAN SKILLMAN: Okay.

8 MEMBER BROWN: At least based on my
9 understanding.

10 CHAIRMAN SKILLMAN: Thanks, Charlie.
11 Matt? Nothing?

12 MEMBER BROWN: Am I wrong? They're just
13 solid state cards, right? There's no microprocessor?
14 That's the flavor I got. Thank you.

15 PARTICIPANT: I was primarily interested
16 in the materials program. And they look like they've
17 done a good job.

18 CHAIRMAN SKILLMAN: Pete?

19 MEMBER RICCARDELLA: Well, of course my
20 primary of interest are the materials aging and
21 degradation programs. I have to, first I have to recuse
22 myself from any considerations on the fatigue
23 evaluations. But the other program, and I'm going to
24 rely on my colleagues to provide a comprehensive review
25 of those.

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1 The other materials aging issues that I've
2 reviewed, PWFCC, RPV, neutron embrittlement, steam
3 generator integrity, and of course on October 31st the
4 ASR program, appear to be well addressed by the
5 applicant's TLAA's and AMPs.

6 CHAIRMAN SKILLMAN: Thank you, Pete.
7 Mike Corradini?

8 MEMBER CORRADINI: I'm fine.

9 CHAIRMAN SKILLMAN: Joy?

10 MEMBER REMPE: No comment.

11 CHAIRMAN SKILLMAN: Walt?

12 MEMBER KIRCHNER: No thank you.

13 CHAIRMAN SKILLMAN: And Steve?

14 DR. SCHULTZ: No further comment. I
15 thought on the operating experience implementation,
16 which in fact goes way back, that item was closed in
17 2012 I believe.

18 I'm interested in getting the staff's
19 perspective on their take on how Seabrook has over the
20 last several years implemented the operating
21 experience, not only from the fleet, but also the
22 national experience.

23 CHAIRMAN SKILLMAN: Steve, thank you.
24 With this pause here I want to thank Eric McCartney
25 and his team, Rudy, Michael, Ed, and Ken. Thank you.

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1 You've been thorough. You've answered our questions.

2 We're going to do a team change out, and
3 ask Butch and Eric, or whoever will take the stand for
4 the NRC. If those of you would like to take a five
5 minute bio break, maybe this would be a good time.
6 And we'll start up in just several minutes.

7 (Whereupon, the above-entitled matter went
8 off the record at 9:42 a.m. and resumed at 9:49 a.m.)

9 CHAIRMAN SKILLMAN: Ladies and gentlemen,
10 let's begin. We are back in session. And we turn the
11 podium over to the NRC staff. Butch, go ahead.

12 MR. BURTON: All right. Thank you. Good
13 morning, Chairman Skillman and members of the License
14 Renewal Subcommittee. My name is Butch Burton, and
15 I'm the project manager for the staff safety review
16 of the Seabrook Station, Unit 1 license renewal
17 application.

18 We're here today to discuss the staff's
19 review of the Seabrook license renewal application as
20 documented in the safety evaluation report, or SER,
21 issued on September 28, 2018. Joining me here today
22 at the table are Dr. Allen Hiser, senior technical
23 advisor in NRR's Division of Materials and License
24 Renewal, and Mr. Niklas Floyd, senior reactor inspector
25 from Region I.

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1 In addition, we have a number of technical
2 staff in the audience and on the phone who were involved
3 in the resolution of the open items that we'll be
4 discussing later today.

5 In addition, we pulled together many of
6 the staff who were involved in the review beyond the
7 resolution of the open items. And I will note, it being
8 back in the 2010/2011 timeframe, there are a number
9 of staff who are no longer here. And I hope to think
10 that it wasn't because of the review. But we do have
11 people, hopefully, that can answer any questions that
12 you may have beyond the open items.

13 I'll begin the presentation with a general
14 overview of the staff's review. Nik will then present
15 the 71002 license renewal inspection results. I'll
16 then present the main sections of the staff's safety
17 evaluation report and the staff's resolution of the
18 remaining open items.

19 On May 25th, 2010, NextEra Energy Seabrook
20 submitted an application for renewal of the Seabrook
21 operating license for an additional 20 years, or until
22 March 15th, 2050. For the review of the Seabrook
23 license renewal application, the following audits and
24 inspections were conducted onsite.

25 First, in September 2010, the staff

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1 conducted an audit to review the applicant's
2 administrative controls governing the scoping and
3 screening methodology and the technical basis for the
4 scoping and screening results. The staff documented
5 the scoping and screening methodology audit in a report
6 dated February 4th, 2011.

7 Second, during two weeks in October 2010,
8 the staff audited the applicant's aging management
9 programs, or AMPs, and related documentation to verify
10 the applicant's claim that the programs were consistent
11 with those described in the NRC's generic aging lessons
12 learned, or GALL report, and, considering any
13 enhancements or exceptions to the AMPs, whether the
14 programs were adequate to manage aging during the period
15 of extended operation.

16 The staff considered plant conditions and
17 operating experience during the audits and documented
18 the results in a report dated March 21st, 2011.

19 Third, during the three weeks in March and
20 April 2011, Region I inspectors conducted a 71002
21 inspection in support of the review of the Seabrook
22 license renewal application and documented the results
23 in a report dated May 23rd, 2011.

24 Fourth, during the last week of April 2018,
25 Region I inspectors conducted a second 71002 inspection

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1 on aging management programs for concrete structures
2 affected by alkali-silica reaction, known as ASR.
3 Region I documented the results of this focused
4 inspection in a report dated August 10th, 2018. And
5 this issue was discussed with the subcommittee at its
6 October 31st meeting.

7 In June 2012, the staff issued a safety
8 evaluation report for the Seabrook license renewal
9 application with seven open items which are listed on
10 this slide.

11 In September 2018, the staff issued a
12 second safety evaluation report which resolved the
13 seven open items. Today, we'll discuss the staff's
14 resolution of the first six of these seven open items.

15 The staff's resolution of the seventh open item was
16 discussed previously with the subcommittee at its
17 October 31st meeting.

18 I'll now turn the presentation over to Nik
19 Floyd.

20 MR. FLOYD: Thanks, Butch. Good morning,
21 everyone. My name is Nik Floyd. I am the senior
22 reactor inspector from Region I office. My branch is
23 the one responsible for performing license renewal
24 inspections. The 71002 license renewal inspection
25 reviews the scoping and screening of components for

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1 10 CFR 54.4(a)(2).

2 For Seabrook, this inspection involved a
3 team of four experienced regional inspectors with
4 expertise in civil, electrical, nuclear, and mechanical
5 engineering that was onsite for three weeks. Among
6 other things, this team reviewed ten of the 13 new aging
7 management programs and nine of the 29 existing aging
8 management programs.

9 The team also walked down numerous
10 accessible systems, structures, and components, or
11 SSEs, to assess the adequacy of the applicant's license
12 renewal application boundaries, materials condition,
13 and conformance with the application and the GALL
14 report.

15 Next slide please. During the course of
16 the inspection, the team made several observations.
17 I'll cover a few of them. This pertains to the 2011
18 inspection. Overall, the walk-downs, the team
19 determined the material condition of the facility was
20 good with the exception of the below-grade areas such
21 as in the residual heat removal vaults.

22 Based on the team's review of the
23 supporting documents and its walk-downs of the
24 facility, it was apparent that NextEra had allocated
25 resources to enhance the physical plant procedures and

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1 processes.

2 For example, NextEra had embarked on a
3 multi-year program to overhaul the cathodic protection
4 system to bring it into conformity with the GALL
5 guidance in support of the varied piping and tanks
6 inspection program. They upgraded the cathodic
7 protection system to be consistent with the GALL by
8 the time the application was submitted.

9 Another observation, the team identified
10 an issue where the lubricating oil and hydraulic fluids
11 for a particular charging pump were not being tested
12 for water content, despite being water cooled. The
13 applicant issued a condition report to correct this
14 issued and enhance the program to provide the frequency
15 and sample requirements for all pumps.

16 A third observation, the team identified
17 a discrepancy in the original license renewal
18 application regarding the materials used in the
19 firewater piping. The applicant corrected this via
20 a supplement to its license renewal application.

21 Regarding the ASME Section 11, subsection
22 IWL program for containment inspections and the
23 structures monitoring program, the team noted that a
24 technically acceptable training system was not
25 implemented to establish the status of observed cracks

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1 and that the qualification and certification of
2 inspectors and examiners was not explicitly established
3 and documented to ensure the assignment of qualified
4 individuals for the inspections.

5 In response, NextEra enhanced its
6 implementing procedures to include a commitment
7 clarifying the definition of responsible engineer.

8 In addition, the team reviewed photographs
9 of pattern cracking on the primary containment wall
10 in the annulus region. The annulus region appeared
11 to have approximately six feet of water for an extended
12 period of time due to ground water infiltration.
13 NextEra implemented work orders to keep the area drained
14 and committed to maintain the area in a de-watered
15 state.

16 The team also identified that NextEra's
17 program for managing the effects of ASR on concrete
18 structures was incomplete. The resolution of this
19 issue was discussed previously with the subcommittee
20 meeting at its October 31st meeting.

21 Next slide please. In summary, the team
22 concluded that NextEra had performed its license
23 renewal scoping and screening in accordance with the
24 license renewal rule. The team found that the
25 necessary information was easily retrievable,

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1 auditable, and consistent with the rule.

2 The team verified that the implementation
3 of existing programs, with the exception of ASR, was
4 effective in managing aging, and that the new and
5 existing programs provided reasonable assurance that
6 aging effects will be managed.

7 The team also verified that NextEra had
8 a process to track the completion of enhancements and
9 developments of new programs.

10 Based on the inspection results, the team
11 determined that the programs in place or planned, as
12 described in NextEra's application, will manage the
13 aging effects and ensure the maintenance of intended
14 safety functions of systems, structures, and components
15 within the scope of the rule.

16 Next slide. The NRC conducted a second
17 71002 license renewal inspection during the week of
18 April 30th, 2018, to determine whether the actions taken
19 by NextEra since the previous 71002 inspection in 2011
20 were adequate to manage the aging and concrete
21 structures affected by ASR.

22 As discussed in detail during the October
23 31st subcommittee meeting, the team determined that
24 there was reasonable assurance that the effects of aging
25 due to ASR will be managed through the period of extended

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1 operation.

2 If there are no further questions, I will
3 turn the presentation back to Butch.

4 DR. SCHULTZ: Nik, I've got one question.

5 And we can talk about it later if that makes more sense.

6 But it again goes back to operating experience. And
7 I'm going to the first inspection in 2011.

8 The conclusion of that inspection was that
9 everything was okay except for ASR issues that were
10 identified. Then we had open items identified a year
11 later associated with operating experience.

12 And my question is wouldn't that have been
13 an issue that would have been identified during
14 inspection? Or was the inspection focused on the
15 technical condition of the plant?

16 Because the conclusion of the 2011
17 inspection, I know this goes back probably before your
18 time, at least in your position, but the conclusion
19 was everything looks good. But in fact, if operating
20 experience wasn't being taken into account with regard
21 to the overall program plan for license renewal,
22 something was missing. And that fact was identified
23 the next year. But can you respond now, and then we
24 can come back to it later on the closure of the open
25 items.

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1 MR. FLOYD: I can give you a partial
2 response now. Also with me on the telephone is the
3 senior reactor inspector who conducted that inspection
4 back in 2011.

5 DR. SCHULTZ: Great.

6 MR. FLOYD: So he could probably provide
7 more detailed information on the specific operating
8 experience elements that were inspected per the AMPs.
9 But the inspection in 2011, being the 71002, the
10 primary focus was just on the scoping and screening,
11 and then the AMPs as a whole for managing aging effects.

12 How they incorporated the operating experience, I'll
13 defer to Michael Modes. He's on the telephone.

14 In terms of the current license and what's
15 conducted at the site, we the NRC, specifically the
16 resident inspectors, they review the CAP process every
17 day. And I know you spoke about the license and all,
18 but I'll talk about the process up to and including
19 the second inspection.

20 DR. SCHULTZ: I appreciate getting that
21 on the record.

22 MR. FLOYD: Yes. So the resident
23 inspectors, they review the CAP process every day.
24 That's a corrective action program. And that program
25 serves as the clearing house for the licensee to

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1 implement and to input different sorts of operating
2 experience from the industry, also the NRCs generic
3 communications. And the residents will review that
4 and then basically conduct a review at that time.
5 That's one piece of operating experience.

6 The other part that we look at is if there's
7 any kind of materials failures or even a pump. It
8 doesn't have to be materials, it could be even an active
9 component failure.

10 At that time, what we'll do at the NRC
11 regional office is we'll conduct an inspection, be it
12 a problem identification resolution sample, an
13 operability sample, and we'll look at past performance
14 of the licensee.

15 And one of those aspects is operating
16 experience, was it within their ability to foresee and
17 correct? And part of that's operating experience.
18 Is there anything that they should have had knowledge
19 wise to prevent that failure?

20 So we have performed the review to look
21 at past experience back to the 2010 timeframe. There
22 were no significant issues that I could identify that
23 would indicate a deficiency in the operating experience
24 area, if that answers your question.

25 DR. SCHULTZ: In terms of programmatic

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1 elements that are available to NextEra, they've
2 indicated that they've got a strong program associated
3 with sharing their fleet experience with the Seabrook
4 Station. In your review, can you validate that that
5 is, in fact, the case?

6 MR. FLOYD: I do. And I have reviewed the
7 operating experience procedure. I can't speak to the
8 specifics of their interaction between the fleet and
9 the site. I know that doesn't answer your question.
10 I'll defer to Dr. Hiser.

11 MR. HISER: This is Allen Hiser, the staff
12 Allen. I think the open item was not so much a perceived
13 efficiency at Seabrook in terms of any of their
14 procedures. It was the fact that we just wanted more
15 information on the docket in their application to
16 describe how they would use future OE, whether it's
17 from the plant, from sister plants within the NextEra
18 fleet, but also industry-wide experience and how that
19 would be back-feed into the aging management programs.

20 So it wasn't a deficiency in their existing
21 program or the current activities that they had. It
22 was more looking forward for the future.

23 DR. SCHULTZ: And what you've just said
24 is that the concern was focused particularly on aging
25 management experience.

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1 MR. HISER: Correct.

2 DR. SCHULTZ: And does that include in
3 terms of application as well as, you know, the going
4 forward implementation? In other words, did they look
5 --- was the concern did they look deeply enough at the
6 other applications associated with aging management
7 programs?

8 MR. HISER: Yeah. I think when we get to
9 the slide on this ---

10 DR. SCHULTZ: Go ahead.

11 MR. HISER: -- we also wanted him to
12 address how they had incorporated OE for their existing
13 programs as described in the application but also to
14 ensure that, for new programs, that they accounted for
15 all of the OE that was relevant, both from onsite and
16 from the industry.

17 DR. SCHULTZ: Good, thank you. I'll wait
18 for the rest at the time we talk about that slide later.

19 Thank you.

20 MR. BURTON: All right. We are on Slide
21 9. In the next few slides, I'll present the results
22 of the staff's review of the Seabrook license renewal
23 application as described in the staff safety evaluation
24 report.

25 Section 2 of the safety evaluation report

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1 describes the scoping and screening of systems,
2 structures, and components subject to aging management
3 review, or AMR, during the audit in 2010, the staff
4 review of NextEra scoping and screening methodology,
5 procedures, quality controls applicable to the
6 development of the license renewal application, and
7 training of project personnel.

8 The staff also reviewed the various
9 summaries of the safety related SSEs, non-safety
10 related SSEs affecting safety functions, and SSEs
11 relied upon to perform functions applicable to Seabrook
12 in compliance with the Commission's regulations for
13 fire protection, environmental qualification, station
14 blackout, pressurized thermal shock, and anticipated
15 transients without SCRAM.

16 Based on its review, results from the
17 scoping and screening audit, and additional information
18 provided by NextEra, the staff concludes that the
19 applicant's scoping and screening methodology and its
20 implementation were consistent with the standard review
21 plan, or SRP, for license renewal and the requirements
22 of 10 CFR 54.4(a).

23 Section 3 of the safety evaluation report
24 covers the staff's review of NextEra's AMR items for
25 managing aging in accordance with 10 CFR 54.21(a)(3).

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1 Sections 3.1 through 3.6 include the AMR items in each
2 of the general system areas within the scope of license
3 renewal.

4 It should be noted that NextEra prepared
5 its license renewal application in accordance with
6 Revision 1 of the Standard Review Plan and Revision
7 1 of the GALL report which were the guidance documents
8 in place at the time that the license renewal
9 application was developed.

10 However, revisions to these guidance
11 documents were issued in December 2010. As a result,
12 the staff reviewed the Seabrook license renewal
13 application in accordance with the updated Revision
14 2 of the SRP and the GALL report.

15 Where Revision 1 and Revision 2 guidance
16 differed, the staff issued requests for additional
17 information to resolve the differences and complete
18 its review.

19 CHAIRMAN SKILLMAN: Was that done in each
20 and every case where there was a difference?

21 MR. BURTON: Yes, sir, it was.

22 CHAIRMAN SKILLMAN: Thank you, Butch.

23 MR. BURTON: Yes. For a given AMR item,
24 the staff reviewed the item to determine whether it
25 as consistent with the GALL report.

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1 If an AMR item was not consistent with
2 Revision 2 of the GALL report, the staff reviewed
3 NextEra's evaluation to determine whether NextEra had
4 demonstrated that the effects of aging will be
5 adequately managed so that there is reasonable
6 assurance that the intended functions will be
7 maintained consistent with the current licensing basis
8 for the period of extended operation, as required by
9 10 CFR 54.21 (a) (3) .

10 The license renewal application that was
11 submitted in 2010 described a total of 42 aging
12 management programs, 13 of which were new, and 29 of
13 which were existing.

14 As a result of the staff's review, two
15 additional plant-specific aging management programs,
16 the ASR Monitoring Program and the Building Deformation
17 Program, were developed to address the management of
18 structures affected by ASR for a total of 44 aging
19 management programs.

20 All AMPs, with the exception of the
21 plant-specific AMPs, were evaluated by the staff for
22 consistency with Revision 2 of the GALL report. For
23 the plant-specific AMPs, the staff evaluated them
24 against the program elements defined in Appendix A1
25 of the SRP.

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1 I'll now discuss the staff's resolution
2 of the seven open items identified in the 2012 safety
3 evaluation report with the exception of the ASR open
4 item which was discussed at a previous subcommittee
5 meeting.

6 We took the open items somewhat out of
7 order. We wanted to start with operating experience
8 which actually, I think, speaks to some of Dr.
9 Schultz's comments as well as your opening question
10 to NextEra regarding Appendix B and some of those
11 things. And I think this starts to hit on it.

12 Because unlike the other open items which
13 are specific to a specific technical issue or a specific
14 aging management program, this is more generic, applies
15 across a number of aging management programs, and so
16 it was very important that we make sure that this
17 operating experience was being applied and implemented
18 in a consistent way. So we wanted to start resolution
19 of our open items with this one.

20 The first open item had to do with operating
21 experience. Specifically, the staff had found that
22 NextEra had not fully or clearly described in the
23 license renewal application how it will use operating
24 experience to ensure that the aging management programs
25 will remain effective for managing aging effects

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1 throughout the period of extended operation.

2 The SRP notes that operating experience
3 consists of three attributes. Number one, that the
4 AMP should discuss how future plant-specific and
5 industry-wide operating experience will be used to
6 confirm the effectiveness of current AMPs and to
7 determine the need for new AMPs.

8 Number two, AMPs should discuss the
9 operating experience with existing AMPs, including past
10 corrective actions resulting from the program
11 enhancements or additions to show where the existing
12 programs have succeeded or failed at identifying
13 age-related degradation in a timely manner.

14 And number three, that new AMPs should use
15 other relevant plant or industry operating experience
16 to inform the relevance and effectiveness of the new
17 programs and to commit to a review of future experience
18 with the programs to confirm their effectiveness.

19 The staff was concerned that NextEra had
20 not clarified how it would implement actions to monitor
21 operating experience on an ongoing basis or how it would
22 use the information to ensure the continued
23 effectiveness of the AMPs. It was also not clear to
24 the staff whether new AMPs will be developed as needed.

25 The staff subsequently issued requests for

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1 additional information requesting that NextEra
2 describe the programmatic activities that will be used
3 to identify and evaluate aging issues and, as needed,
4 enhance existing programs or develop new programs.

5 The staff also issued interim staff
6 guidance, or ISGs, in the form of License Renewal ISG
7 2011-05 regarding the review and use of operating
8 experience.

9 Subsequently, NextEra provided detailed
10 information on how it considers operating experience
11 on an ongoing basis and provided specific information
12 on how the operating experience review activities
13 address issues related to aging. NextEra addressed
14 the key issues identified in the ISG.

15 On the basis of this information, the staff
16 determined that NextEra's programmatic activities for
17 the ongoing review of operating experience were
18 consistent with the SRP and the ISG. Therefore, this
19 open item was closed.

20 DR. SCHULTZ: The open item, at least on
21 your slide, and I don't have a recollection of the dates
22 back in 2011 and '12, but on the earlier slide you
23 indicated that it was the SER in June of 2012 that
24 identified this as an open item.

25 MR. BURTON: Yes.

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1 DR. SCHULTZ: Okay. And they sent you
2 this letter in January of that year. So was the staff
3 still --- does that mean the staff was still evaluating
4 the information that NextEra had submitted when the
5 June 2012 SER was issued?

6 MR. BURTON: Well, what ---

7 DR. SCHULTZ: Or do you just want to
8 capture the fact that this was an open item that was
9 addressed by this?

10 MR. BURTON: Yeah, I see Jim Medoff raising
11 his hand in the back to perhaps address your question.

12 DR. SCHULTZ: Thank you. I just -- and
13 then I have a follow-up question.

14 MR. MEDOFF: This is Jim Medoff of the
15 staff. One of the things you have to understand is
16 that this was an application that got put on hold for
17 six, seven years. So the instructions to the staff
18 were that we weren't supposed to do any reviews between
19 2012 and when the review commenced in 2017. We weren't
20 allowed to charge time to it.

21 Because the ASR issue was put in the Part
22 50 space for addressing the issue and then later on
23 bringing it back into aging management when the review
24 got resumed. So anything in between the time that the
25 application got put on hold and the time we resumed

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1 the review of the application, we didn't do any review.

2 So I just want to clear that up for you.

3 MR. BURTON: Well, and I do want to
4 supplement that. One of the things that we are required
5 to do is under -- the applicant is required to submit
6 annual updates to changes in their current licensing
7 bases. So the staff is required to perform those
8 reviews to see how that may have changed any of the
9 insights that they gained from their review.

10 In addition, any guidance such as ISGs that
11 are issued in that intervening timeframe, applicants
12 are also required to go back and consider those and,
13 again, how that may impact in their aging management
14 programs. And the staff looks at that. And that's
15 exactly what happened in this case with the ISG which
16 was issued in 2011.

17 So when the SER with open items was issued
18 in 2012, we were in the process of, as well as next
19 year, were in the process of evaluating against that
20 newly issued ISG. And, you know, sometimes there are
21 timing issues and things like that.

22 But until we got on the record, in-house,
23 their resolution to that ISG, we were working on that.

24 The SER, our final judgement in the SER found that
25 they met the guidance in the ISG which satisfied our

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1 concern.

2 DR. SCHULTZ: Good. And that now reflects
3 on kicking my memory that our last meeting, previous
4 meeting on this application was in the mid-spring of
5 2012.

6 MR. BURTON: Right.

7 DR. SCHULTZ: So that was just before some
8 of this happened, before and after that.

9 So the next question would be, with regard
10 to operating experience and the licensee's explanation,
11 amplification, additional information presented in
12 2011, has the staff then found -- and I presume based
13 upon closure that you have -- that they have
14 demonstrated follow through on their overall program
15 to incorporate the operating experience in their
16 submittal?

17 MR. FLOYD: So as far as ongoing
18 implementation, right now, because they're not into
19 the period of extended operation, they'll manage the
20 operating experience to the Part 50, the current
21 license. And they'll do that kind of through some of
22 the processes that I explained earlier.

23 Kind of an example, because you asked
24 earlier about how are they --- what's your staff's
25 review on how are they implementing that through their

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1 own programs and procedures, not to open up the door
2 to ASR again, but one of the areas that we saw operating
3 experience and how it applies to aging management was
4 through their testing program and onsite monitoring.

5 As new issues came up, that fed back into
6 their existing programs and whether or not those were
7 adequate to manage aging effects. And as a result,
8 they enhanced the programs and, in fact, created two
9 new plant-specific programs. So that's just one
10 example of them implementing the operating experience
11 process.

12 But as far as ongoing monitoring and
13 implementation operating experience, it'll be through
14 the current license. And that's something that we
15 monitor from the resident inspectors in the regional
16 office. I don't know if that answers your question.

17 DR. SCHULTZ: It does, thank you very much.

18 But the other part of that is our comments earlier
19 about some of the commitments that are made in their
20 submittal which seem to be items that are operational
21 and relatively ready, at the time identified, to be
22 implemented. And they've listed those as commitments
23 to be implemented prior to the license renewal period.

24 So how does the staff view those
25 commitments that seem like, programmatically, they

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1 ought to have been put in place or should be put in
2 place sooner than later?

3 MR. OESTERLE: Yeah, this is Eric Oesterle
4 from the staff. So those types of commitments, we view
5 those as from the perspective of what is necessary for
6 license renewal, and what is necessary in terms of aging
7 management to ensure that the intended safety functions
8 can be performed during the period of extended
9 operation.

10 And we don't look at it from the perspective
11 of when is it best, from maybe a business case, to
12 implement these programs. We look at it more from the
13 perspective of these programs need to be implemented
14 no later than. And we're not looking at what is the
15 most efficient time for implementing these programs.

16 That's more of an operational issue that gets handled
17 under Part 50.

18 MR. FLOYD: I can add to that. So the
19 aging management programs, for several of them there's
20 already existing plant programs in the current license.

21 So those are programs that are being implemented, in
22 many cases, under the Appendix Bravo quality assurance
23 program. And so they will be inspected and reviewed.

24 Another chance that the staff has at
25 continuing the review would be before they enter, the

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1 licensee enters the period of extended operation, in
2 which case we'll conduct a -- it's called a post site
3 approval inspection, the IP 71003 license renewal
4 inspection.

5 And in that case, that occurs approximately
6 one to two years prior to the refueling outage. And
7 we'll go through, and we'll look at that list of
8 commitments and see have they been satisfied or are
9 they planning to satisfy them prior to entering the
10 period of extended operation.

11 And an element to add to that is in the
12 operating experience between pretty much now and then,
13 are they managing the aging effects in accordance with
14 those commitments and those aging management programs?

15 So it's another touch we have on it between the current
16 licensing reviews and then prior to entering the period
17 of extended operation.

18 DR. SCHULTZ: Yeah, thank you. Go ahead,
19 Ron.

20 MEMBER BALLINGER: So I --

21 DR. SCHULTZ: And let me just a comment,
22 because it's directly in response. Perhaps the
23 corrective action program will take care of our concern
24 in this regard. That is, NextEra said that these items
25 were going into their corrective action program.

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1 I presume that the corrective action item
2 is going to have those things that are, in fact, ripe
3 for implementation now, done sooner than later.
4 Because most licensees don't like a lot of things piling
5 up in their corrective action program. They like to
6 get them done.

7 MR. FLOYD: That would be correct.

8 MEMBER BALLINGER: So maybe I'm misreading
9 this table then. If you look at Item Number 90, which
10 is the last one, easy to find, "Implement the PWR
11 internals program. The program will be implemented
12 in accordance with MRP 2278," da-da-da-da. It says
13 prior to the period of extended operation.

14 I would be astounded if it wasn't already
15 implemented.

16 MR. HISER: Actually, that program is
17 really a license renewal program.

18 MEMBER BALLINGER: Yeah.

19 MR. HISER: So it is not necessary that
20 it be implemented today. It really addresses aging
21 issues that are not thought to be applicable until
22 you're beyond 40 years.

23 Things like baffle bolts, things like that,
24 are addressed sort of as special issues by the industry.

25 But depending on where the Seabrook plant is in terms

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1 of its age, its materials, its configuration, it may
2 not be doing any inspections if they're not necessary.

3 MEMBER BALLINGER: I'm confused. But
4 that's just me.

5 MR. FLOYD: Mel Gray, the branch chief from
6 I Branch, wants to give a comment.

7 MR. GRAY: Good morning, Mel Gray out of
8 NRC, Region I. I oversee the in-service inspections
9 and engineering inspections.

10 These commitments, MR -- in vessel
11 commitments, whether it's BWRVIP, that's for boiling
12 water reactors, or MRP, materials or liability
13 programs, PWRs, those are being implemented outside
14 of license renewal. They're off the shelf programs
15 that are either taken as is or enhanced. And so we
16 get, in the region, we get a good look at those
17 implementations as part of every outage.

18 We will select risk-informed samples.
19 Some will be things like baffle bolts. Some will be
20 other internals. So we do get insight on performance
21 well before they may become regulatory requirements
22 under a renewed license. They're still activities we
23 scrutinize closely. So thanks, I just wanted to add
24 that.

25 MR. FLOYD: Yeah. And many of those

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1 programs, while covered under aging management license
2 renewal, they are industry mandatory programs. And
3 those are directly inspected by our staff.

4 MEMBER BALLINGER: I guess my only point
5 is why do you have to say that that has to be implemented
6 prior to license -- extended operation if they're
7 already implemented?

8 MR. BURTON: Well, I guess the reason we
9 have to say that because it is a license renewal review,
10 yeah. And I guess I'm going show my age.

11 CHAIRMAN SKILLMAN: Let me get oriented
12 here just for a second. If you look at the --- if I
13 look, when I went and looked at the license renewal
14 application, 2012/2013, and you recognize that there
15 have been 20 updates since then, and the current
16 commitment list is really Appendix A to the license
17 renewal application, so if you go back six years, there
18 were 40 or 42 commitments, and now there're 91.

19 And there are some big, heavy hitters in
20 there that include ASR. But there are other ones that
21 deal with all types of technological changes. And so
22 the commitment list is really the appendix to the
23 license renewal application.

24 The family of AMPs, and AMRs, and TLAAs
25 is really on a different track. And items that come

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1 out of that find their way into the commitment list.

2 And so they're not exactly the same thing, but they
3 run in parallel, if that's a fair description.

4 MR. BURTON: And I'll just add one thing.

5 And I hate to show my age here, but I was the safety
6 project manager for the Plant Hatch license renewal
7 which was the number three LRA that was submitted in
8 the early 2000s.

9 I was also the safety project manager for
10 the Fort Calhoun license renewal application which was
11 the first plant that actually implemented GALL. So
12 I do have what I would call anecdotal experience that,
13 as we've watched the implementation of some of the
14 commitments of prior applicants, it is very often that
15 those commitments are actually satisfied well before,
16 for the reasons that we've discussed, well before the
17 period of extended operation starts, just as a practical
18 matter.

19 MEMBER BALLINGER: You don't look that
20 old.

21 MR. BURTON: Thank you. Tell my wife
22 that, please.

23 MR. OESTERLE: Yeah, this is Eric Oesterle
24 from the staff. Another way to look at this is that
25 even if there are existing programs in place that the

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1 applicant has, they still have to identify, in their
2 license renewal, application those programs that they
3 --- those existing programs that they are taking credit
4 for to comply with the license renewal regulatory
5 requirements.

6 And so that's one of the reasons why we
7 need to see that in the application and why it gets
8 referred to in the commitment table so that there can
9 be an inspection on implementation of that commitment,
10 such that we can demonstrate that it satisfies the
11 license condition that gets included in the renewed
12 license.

13 MR. BURTON: And I'm glad we had this as
14 a conversation. Because, like I said, operating
15 experience is something that applies across the board.

16 And so it is vitally important that we understand that
17 it's being used effectively to identify whether these
18 aging management programs are working the way they were
19 intended, whether they need to be revised and updated,
20 or whether new AMPs need to be implemented.

21 And it's the operating experience, both
22 plant-specific as well as industry-wide, that helps
23 us make that determination. So I know this was kind
24 of a long conversation, but I think it was a good one.

25 And I think it was necessary. Other ---

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1 CHAIRMAN SKILLMAN: Let's proceed.

2 MR. BURTON: Okay. Slide 13, bolting
3 integrity program. The second open item had to do with
4 the bolting integrity program. Specifically the NRC
5 staff noted that seal cap enclosures, which are used
6 to encase leaking or potentially leaking valves, can
7 contain water leakage. And therefore, the use of such
8 enclosures should be accounted for in the license
9 renewal application to ensure proper aging management.

10 For example, the environment within seal
11 cap enclosures may be submerged environment rather than
12 the air environment of the original component design.

13 Also, the seal cap enclosures may prevent direct
14 inspection of bolting and component external surfaces.

15 The staff was concerned that NextEra may
16 have used or currently uses seal cap enclosures to
17 contain water leakage and noted that the license renewal
18 application did not contain any AMR items that addressed
19 bolting and external surfaces in the potentially
20 submerged seal cap enclosure environments.

21 It was also unclear to the staff how
22 components within the seal cap enclosures will be age
23 managed since direct inspection is not possible.
24 Furthermore, it was unclear to the staff whether seal
25 cap enclosure configurations will be used during the

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1 period of extended operation.

2 In June 2012, NextEra provided additional
3 information to address the staff's concern, including
4 the statement that the single steel cap enclosure in
5 place at Seabrook will be removed.

6 In December 2012, NextEra confirmed that
7 the seal cap enclosure was put in place for one cycle
8 and that the valve was out and replaced at the next
9 outage. The replacement of the valve eliminated the
10 need for the enclosure.

11 On the basis of this information, the staff
12 determined that its concern was addressed, and
13 therefore this open item was closed. And we talked
14 about the earlier today.

15 The third open item had to do with the ASME
16 Code, Section 11, Subsection IWE Program.
17 Specifically, in response to the staff's concerns
18 regarding water accumulation in the containment
19 annulus, NextEra committed to keeping the annulus free
20 of water.

21 However, NRC inspectors noted that the
22 method being used was a portable pump. The staff was
23 concerned that the applicant had not implemented any
24 permanent measures for de-watering or had not revised
25 its procedures for routine inspection of this area to

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1 ensure that the area remained de-watered.

2 By letter dated June 30th, 2015, NextEra
3 confirmed that the on-going de-watering activities have
4 been incorporated into Seabrook's preventive
5 maintenance program to specifically maintain the
6 containment structure in de-watered state. On the
7 basis of this information, the staff determined that
8 its concern was addressed. Therefore, this open item
9 was closed.

10 And I know, to some extent, we're kind of
11 going over old ground, because this was covered by
12 NextEra But this is the staff's perspective.

13 The fourth open item had to do with the
14 steam generator tube integrity program. Specifically,
15 in the license renewal application, operating
16 experience indicated the potential for primary water
17 stress corrosion cracking of the steam generator
18 tube-to-tubesheet welds that could impact the
19 applicant's program for adequately managing aging
20 effects during the period of extended operation. The
21 staff was concerned that the management of the
22 degradation of the welds was unclear.

23 In response to a staff request, NextEra
24 committed to submit a plant-specific AMP to manage
25 potential cracking due to primary water stress

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1 corrosion cracking at least 24 months prior to the
2 period of extended operation.

3 The plant-specific program would either,
4 one, perform a one-time inspection of the
5 tube-to-tubesheet welds or, two, perform an analytical
6 evaluation that redefined the reactor coolant pressure
7 boundary to not include the tube-to-tubesheet welds
8 and have the redefinition approved by the NRC as part
9 of a license amendment request.

10 Subsequently, NextEra requested, and the
11 NRC approved, an amendment to permanently apply steam
12 generator tube alternate repair criteria which allowed
13 the licensee to exclude the tube-to-tubesheet welds
14 from the reactor coolant pressure boundary.

15 This license amendment satisfied the
16 commitment since the tube-to-tubesheet welds were no
17 longer part of the reactor coolant pressure boundary.

18 And therefore, no plant-specific AMP was required.

19 MEMBER KIRCHNER: May I ask you a question
20 at this point? What does that, in practice, mean when
21 you redefine the reactor coolant pressure boundary?
22 Does that impact Chapter 15 analyses as an example?

23 MR. HISER: Oh boy. No, it doesn't. What
24 it basically means is that there's structural and
25 leak-tight integrity of that tube-to-tubesheet joint,

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1 if you will, without crediting the weld. So the rolling
2 that was done when the tubes were inserted in the
3 tubesheet, that is sufficient to maintain integrity
4 from both the structural perspective and also from the
5 leak-tightness perspective.

6 MEMBER KIRCHNER: So I get that. I just
7 find the declaration that it's not part of the pressure
8 boundary is rather odd. Let me just say it. I mean,
9 the tubesheet --

10 MR. HISER: Well, clearly they're still
11 there.

12 MEMBER KIRCHNER: It's still there. The
13 tubesheet's still there. If the tubesheet fails, you
14 have a break with our without the weld. So it's still
15 part of the pressure boundary.

16 MR. HISER: Yeah. These welds are just,
17 in effect, seal welds between the tube and the
18 tubesheet. So the fact that they're excluded means
19 that the integrity of the welds themselves are not
20 important.

21 MEMBER KIRCHNER: They're on the secondary
22 side.

23 MR. HISER: Yes.

24 MEMBER KIRCHNER: Right. So you're just
25 saying that ---

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1 MR. HISER: No, no, no. They're on the
2 primary side.

3 MEMBER KIRCHNER: Primary side?

4 MR. HISER: Yeah.

5 MEMBER RICCARDELLA: Westinghouse
6 conducted a big program about ten years ago. I was
7 actually part of but the consulting that I monitored.
8 They looked at coefficient friction and the
9 variability of coefficient friction ---

10 MEMBER BLEY: Did he turn on his mic?

11 MEMBER RICCARDELLA: I did, it's on. I'm
12 sorry. The question is what depth do you need this
13 H-STAR number to ensure that the tubes won't pull out
14 even if the welds aren't there. And if you meet that
15 criteria then you have -- you don't need to consider
16 the weld and consider that part of the pressure
17 boundary.

18 MEMBER BALLINGER: Again, those tubes are
19 fully expanded?

20 MEMBER RICCARDELLA: Hydraulically.

21 MEMBER BALLINGER: They're hydraulically,
22 but fully expanded, not partial depth?

23 MEMBER RICCARDELLA: I think that's part
24 of the eight star ---

25 MEMBER BALLINGER: Yeah, that's what I'm

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1 trying to --- it has be full depth?

2 MR. HISER: Well, whatever the analysis
3 criteria were, the plant had to then demonstrate that
4 it met those criteria.

5 MEMBER BALLINGER: Three or four different
6 categories.

7 MR. HISER: That's correct.

8 MEMBER RICCARDELLA: But eight star
9 doesn't necessarily have a full depth of the tubesheet.
10 It's just how much depth you need before the tube
11 collapses.

12 MR. BURTON: Okay. Continuing on, we're
13 on the same slide. Also in December 2010, the staff
14 requested that NextEra address foreign operating
15 experience in steam generators similar to the Seabrook
16 steam generators where primary water stress corrosion
17 cracking had been identified in steam generator divider
18 plate assemblies made with Alloy 600.

19 In January 2011, NextEra confirmed that
20 the Seabrook steam generator divider plate material
21 was Alloy 600 and made a commitment to perform a one-time
22 inspection of the divider plate assembly.

23 Subsequently, the staff issued interim
24 staff guidance which provided additional aging
25 management guidance on primary water stress corrosion

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1 cracking of divider plate assemblies and
2 tube-to-tubesheet welds.

3 In 2017, NextEra submitted a supplement
4 to the license renewal application which incorporated
5 recurring inspections of the divider plate assembly
6 into the steam generator AMP, in accordance with the
7 guidance in the ISG, and removed the commitment, since
8 following the guidance in the ISG made the commitment
9 unnecessary.

10 On the basis of this information, the staff
11 determined that its concerns were addressed, and
12 therefore this open item was closed.

13 MEMBER KIRCHNER: Let me ask a process kind
14 of question. As a result of --- this is similar to
15 the operating experience questions earlier. So there
16 is staff guidance that is out there. If there's another
17 license renewal application, are you confident that
18 the staff guidance for this issue is clear enough that
19 a subsequent applicant can successfully navigate it
20 and not wind up with an open item on this particular
21 issue?

22 MR. HISER: Absolutely. The GALL
23 report, Revision 2, isn't just the book that's bound
24 in blue covers. It includes all the ISG. So there're
25 sort of mini revisions, if you will, of the GALL report.

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1 MR. BURTON: Yeah. And I will add, as a
2 process question, generally there is a certain
3 revision of the SRP in GALL that's out on the street.
4 After that, we may issue ISGs, other guidance. But
5 the intent is that at the next revision of the GALL
6 in SRP those will be incorporated.

7 Now, if between now and then an applicant
8 submits a license renewal application, process-wise,
9 one of the things that we do is we have extensive
10 pre-submittal interactions with an applicant. And
11 part of those discussions is to make crystal clear what
12 is it that's going to apply to them in their application,
13 so to include everything in the current revision of
14 the GALL in the SRP plus any additional guidance that's
15 been issued.

16 MR. OESTERLE: Yeah, this is Eric
17 Oesterle. And I will add to that, that when the staff
18 issued guidance for subsequent license renewal
19 applications, that guidance incorporated all of the
20 ISGs that were issued subsequent to issuing Sub Rev
21 2 of the GALL report.

22 And the language in the SRP -- SLR guidance
23 in the GALL SLR report indicates that even applicants
24 for initial license renewal can follow that guidance.
25 And by doing so, they will have captured all of the

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1 new issues that were identified and addressed by the
2 staff in terms of staff guidance documents.

3 MR. BURTON: Okay. Slide 16, the fifth
4 open item had to do with treated borated water.
5 Specifically, one-time inspections of stainless steel
6 components exposed to treated borated water were not
7 required by the NextEra one-time inspection program.

8 This was consistent with both Revisions
9 1 and 2 of the GALL report which did not recommend
10 one-time inspections to detect potential degradation
11 in stainless steel components exposed to treated
12 borated water. Because it was believed at the time
13 that the boron would mitigate potential aging effects
14 for stainless steel components.

15 However, the staff could not identify an
16 adequate basis for this position and determined that
17 the presence of boron, in and of itself, would not
18 prevent degradation. And, as such, a one-time
19 inspection was warranted.

20 The staff issued this determination in an
21 ISG and identified this concern as an open item for
22 Seabrook. In response, NextEra revised its associated
23 AMR items to include a one-time inspection to detect
24 potential loss of material, cracking, or reduction of
25 heat transfer for stainless steel components exposed

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1 to treated borated water.

2 The staff concluded that the addition of
3 the one-time inspections to the NextEra program to
4 detect potential degradation of stainless steel
5 components exposed to treated borated water was
6 consistent with Revision 2 of the GALL report as
7 modified by the ISG. And therefore, the open item was
8 closed.

9 Section 4 of the Safety Evaluation Report
10 identifies Time Limited Aging Analyses, or TLAAAs.
11 Section 4.1 documents the staff's evaluation of the
12 applicant's identification of applicable TLAAAs.

13 The staff evaluated the applicant's basis
14 for identifying those plant-specific or generic
15 analyses that need to be identified as TLAAAs and
16 determined that the applicant had provided an accurate
17 list of TLAAAs as required by 10 CFR 5421(c)(1).
18 Sections 4.2 through 4.7 document the staff's review
19 of the applicable TLAAAs as shown.

20 Based on its review and the information
21 provided by the applicant, the staff now concludes that
22 either, one, the analyses remained valid for the period
23 of extended operation. Or, two, the analyses had been
24 projected to the end of the period of extended
25 operation. Or, three, the effects of aging on the

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1 intended functions will be adequately managed for the
2 period of extended operations, as required by 10 CFR
3 5421(c)(1), sub-paragraphs 1, 2, or 3, respectively.

4 The sixth open item had to do with pressure
5 temperature limits. Specifically, Appendix G of 10
6 CFR Part 50 requires that pressure temperature limits
7 consider all ferritic beltline and non-beltline
8 materials in the reactor vessel.

9 The staff was concerned, however, that the
10 methodology used to calculate the PT limits for 20
11 effective full-power years, or EFPY, in the license
12 renewal application may not have appropriately
13 considered non-beltline materials.

14 In a separate Part 50 licensing action,
15 the applicant requested approval of PT limits that would
16 extend the operating time of the curves from 20 to 23.7
17 EFPY.

18 The applicant addressed the non-beltline
19 materials as part of its license amendment request.
20 The applicant demonstrated that the limiting beltline
21 materials bound the non-beltline materials, and the
22 staff approved the license amendment request to amend
23 the PT limit curves.

24 The approval of the license amendment
25 request addressed the staff's concern and, therefore,

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1 this open item was closed.

2 Subsequently, in November 2015, the staff
3 approved a license amendment request to revise the PT
4 limits up to 55 EFPY which NextEra mentioned in its
5 presentation.

6 The staff has reviewed NextEra's responses
7 to the open items identified in the Safety Evaluation
8 Report with open items issued in June 2012 and finds
9 that all of the open items have been satisfactorily
10 resolved and closed.

11 With the closure of the open items, the
12 staff finds that NextEra has met the requirements of
13 10 CFR 5429(a) for the license renewal of Seabrook
14 Station, Unit 1.

15 More specifically, the staff finds that
16 actions have been identified and have been or will be
17 taken at Seabrook Station, Unit 1, such that there is
18 reasonable assurance that the activities authorized
19 by the renewed license will continue to be conducted
20 in accordance with the current licensing basis and that
21 any changes made to the plant's current licensing basis
22 are in accord with the Atomic Energy Act and the
23 Commission's regulations.

24 This concludes the staff's presentation.

25 And we'll be happy to take any remaining questions

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1 you may have.

2 CHAIRMAN SKILLMAN: Butch, thank you.
3 Colleagues, any questions for the NRC staff? I do have
4 one, but let me ask my colleagues to go first if they
5 choose to. Anybody? Steve, go ahead.

6 DR. SCHULTZ: Butch, I have a follow-on
7 question. And I just really would like to get something
8 on the record. Because if you read over the commitment
9 list, there is now --- and you mentioned a few ---
10 there's a number of items that are identified as before
11 the period of extended operation, there will be a
12 one-time inspection.

13 Is it just presumed that a one-time
14 inspection has coupled with it an action plan associated
15 with what might be found in that one-time inspection
16 to move forward with a program that would allow
17 operation, if there're some elements identified that
18 need attention?

19 MR. BURTON: Yeah. That's a good
20 question. There's a philosophy behind one-time
21 inspections. When it's generally determined that a
22 one-time inspection would be satisfactory, it's
23 generally because a determination was made, or that
24 was a belief that aging effects would either not occur
25 at all during the period of extended operation or that

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1 they would occur so slowly that they would not impact
2 any safety function. That's the philosophy behind it.

3 But to be sure, there is an opportunity
4 to perform a one-time inspection. Usually it can be
5 implemented by a date certain, or oftentimes these are
6 done at opportune times. Like, if there's some piping
7 being dug up, things like that, they take that
8 opportunity. But that's the philosophy behind it.

9 But there is an understanding that, when
10 you perform that one-time inspection, if the results
11 don't conform with your assumptions that, again, either
12 there is no aging management, or aging effects, or the
13 aging effects are occurring faster than you had
14 anticipated, then part of that is to go back and say,
15 well, perhaps we need to have an ongoing aging
16 management program to address what we're seeing as
17 opposed to a one-time inspection to confirm what we
18 thought was occurring. So that's kind of the
19 philosophy.

20 MR. HISER: And that would be part of the
21 corrective action program.

22 MR. BURTON: Right.

23 MR. HISER: And just to be clear, if they
24 were to find a problem that indicates a potential safety
25 issue was in existence or imminent, then they would

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1 require corrections of that issue immediately.

2 But the prognosis for the potential to
3 implement a new program would be one of the potential
4 consequences coming out of that finding and the
5 corrective action program review.

6 DR. SCHULTZ: Thank you both for your
7 explanations. That helps a lot. Thank you.

8 MR. HISER: Sure.

9 CHAIRMAN SKILLMAN: Let me ask this
10 question. My question focuses on the Nickel Alloy
11 Nozzle and Penetrations Program. So it's a specific
12 question, and it really has to do with text in the safety
13 evaluation. And the text is on Page 3-206, just as
14 a reference.

15 This is the conclusion that the staff wrote
16 relative to the Nickel Alloy Nozzles and Penetrations
17 Program. "On the basis of its technical review, the
18 staff concludes that the applicant demonstrated that,
19 through the use of this AMP, the effects of aging of
20 nickel alloys may be adequately managed so that the
21 indebted functions under consideration will be
22 maintained consistent with the CLB."

23 This is the single and only instance in
24 the whole document where you use the word "may." If
25 you search "may," you'll find maybe and some other words

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1 that contain M-A-Y. But this is the only place where
2 the conclusion uses the word "may" versus the word will.

3 MR. BURTON: Hum, okay.

4 CHAIRMAN SKILLMAN: So I bring that to your
5 attention so that you'll know at least one member of
6 the ACRS used a very thick magnifying glass. And
7 I'm wondering if you may want to consider, at some future
8 revision, changing that word "may" to "will."

9 MR. BURTON: Okay. Yeah, that's noted.
10 I'll go back, and we'll check with the reviewer for
11 that portion if they actually ---

12 CHAIRMAN SKILLMAN: It's odd that the word
13 "may" was used.

14 MR. BURTON: Yeah.

15 CHAIRMAN SKILLMAN: Because it isn't used
16 in this context anywhere else through this very thorough
17 document.

18 MR. BURTON: Yeah.

19 CHAIRMAN SKILLMAN: So it kind of --- at
20 least it popped out at me.

21 MR. BURTON: Yeah. My guess is that we
22 just want to be inconsistent. But I'll follow-up on
23 that and just make sure. And if there is an issue of
24 some kind, you know, we'll ---

25 CHAIRMAN SKILLMAN: I will comment, first

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1 of all, it's a nit, I acknowledge that. Second of all,
2 why the change in tone? Because the tone has been so
3 consistent through the whole document.

4 MR. BURTON: Yeah.

5 CHAIRMAN SKILLMAN: Will, will, will.
6 And here comes this "may" on a very important AMP.

7 MR. BURTON: Okay. Got it on my to do
8 list.

9 CHAIRMAN SKILLMAN: One more time,
10 colleagues, any other questions for the NRC staff?

11 Before we go to anyone in the room or the
12 public, I would like to ask NextEra one question. And
13 it comes from the discussion that we just had about
14 the steam generator tubes, the reactor coolant system
15 pressure boundary, and the exclusion of the boundary
16 based on the expanding of the tubes of the mandrel.

17 How many tubes are plugged at this plant?

18 Is there someone from NextEra can give us an idea,
19 please? If so, please come to the mic and just tell
20 us what you know, please.

21 MR. GIL: This is Rudy Gil, fleet programs
22 manager for NextEra Energy. Currently, our total
23 number of tubes is 195 tubes. This is less than one
24 percent of the total tubes in our steam generators.

25 CHAIRMAN SKILLMAN: So each generator is

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1 6,000 to 7,000 tubes, a number in that neighborhood,
2 approximately, just to get it in perspective?

3 MR. GIL: Each steam generator has
4 approximately 5,600 tubes.

5 CHAIRMAN SKILLMAN: Approximately 5,600.

6 MEMBER RICCARDELLA: What is the tube
7 material?

8 MR. GIL: It is Alloy 600, thermally
9 treated. Thermally treated Alloy 600.

10 CHAIRMAN SKILLMAN: So out of
11 approximately 12,000 tubes, 11,200 tubes.

12 MR. GIL: We have four steam generators.

13 CHAIRMAN SKILLMAN: Oh.

14 MEMBER BALLINGER: I should add that of
15 those tubes that are plugged most of them were a result
16 of an anomaly in the manufacture of the tubes. So those
17 tubes were not plugged because of an ongoing degradation
18 mechanism that you would expect to have in thermally
19 treated, properly thermally treated Alloy 600 tubing.

20 CHAIRMAN SKILLMAN: Ron, thanks. Rudy,
21 thank you.

22 MEMBER REMPE: Well just, while you're
23 there, Ron sort of answered it, but it sounds like there
24 was a big increase at one point. But now are you seeing
25 an increase during inspections, or is it decreasing

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1 on what you were finding with respect to the tube
2 thickness during the inspections?

3 MR. GIL: Yeah. So, as you said, part of
4 the question was already answered.

5 MEMBER REMPE: Yes.

6 MR. GIL: Probably the, for clarification,
7 the majority of the tubes are plugged because of wear
8 at the two support plates. That again occurred early
9 in the process.

10 We have very little wear that we're dealing
11 with at this point in time which is really what you
12 would expect in the industry with time in these steam
13 generators. So we're really not seeing anything
14 significant. We're plugging very few tubes. Most of
15 them we do preventively, just to make sure that we don't
16 have an issue in the future.

17 MEMBER REMPE: Okay, thank you.

18 CHAIRMAN SKILLMAN: Rudy, thank you. Dr.
19 Bley, Dennis, you're on the line. I don't know how
20 much you've heard, but if you have any questions or
21 comments, I'd sure appreciate it if you would
22 communicate.

23 Hearing none, Theron, would you make sure
24 that the public line is open? It's open.

25 Before we go to the outside, is there any

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1 individual in the room that would care to come to the
2 microphone and make a comment, please? If so, you are
3 welcome to do so.

4 Seeing none, thank you. To those who may
5 be listening in and who would like to make a comment,
6 we invite you to simply say hello at this point so that
7 we know you're out there.

8 MS. GILMORE: Hello.

9 CHAIRMAN SKILLMAN: Thank you.

10 MR. HOFFMAN: Hello.

11 MR. BOSSING: Hello.

12 CHAIRMAN SKILLMAN: Well, good morning.
13 And to any of you that answered, or others, if you wish
14 to make a comment, please introduce yourself, and then
15 please make your comment.

16 MS. GILMORE: This is Donna Gilmore. I
17 have a question. These plants were engineered for 40
18 years. And I know there are parts of it that are not
19 inspectable. How do you determine or how do you have
20 confidence that the parts you cannot inspect are going
21 to be acceptable for the re-license period?

22 CHAIRMAN SKILLMAN: We thank you for your
23 comment. Your comment is noted.

24 Would anybody else care to make a comment,
25 please?

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1 MR. HOFFMAN: This is Ace Hoffman. And
2 I did not hear anything about what you're going to do
3 about the spent fuel once you've created another couple
4 of million pounds of it over the next 20 years.

5 The interim storage site that's planned
6 for New Mexico, which probably won't ever be built,
7 but at any rate its capacity is already filled up with
8 what already exists. So shouldn't what you're going
9 to do with the waste be part of the aging management
10 plan? Thank you.

11 CHAIRMAN SKILLMAN: Sir, thank you for
12 your comment?

13 Does anybody else wish to make a comment,
14 please?

15 MR. BOSSING: Yes, hello. Thank you,
16 Chairman Skillman. My name is Mike BOSSING. Thanks
17 for the opportunity to address the Committee. I want
18 to express my appreciation for the diligent review by
19 the ACRS Subcommittee.

20 I also want to acknowledge the NRC staff's
21 efforts during this eight-year review period for the
22 license review application and subsequent SER. In my
23 opinion, the review has been thorough, and detailed,
24 and demonstrates NextEra has followed the license
25 renewal process. Thank you, Chairman.

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1 CHAIRMAN SKILLMAN: Thank you, sir.

2 Anybody else out there that would like to
3 make a comment, please?

4 MR. MIRANDA: Yes. My name is Sam
5 Miranda. Hello?

6 CHAIRMAN SKILLMAN: Go ahead, Sam.

7 MR. MIRANDA: I had submitted some
8 comments in writing. And I'd like to have an answer
9 to one question I had regarding Condition 3 events.
10 And Condition 3 events are defined as accidents that
11 could occur as often as once in the lifetime of a plant.

12 And when that was written, the lifetime
13 of a plant was 40 years. So now it's going to be 60
14 years, maybe 80 years. What provision has been made
15 for the potential increase in Condition 3 events? This
16 is just an average. I'm not saying it's going to
17 happen, but it could possibly happen.

18 And so the incident at Three Mile Island
19 in 1979 was a Condition 3 event, a stuck open pressurize
20 relief valve. So I'd like to see that looked into.

21 CHAIRMAN SKILLMAN: Sam, thank you for
22 your comment. We do have your comment in writing, and
23 we will put it on the record.

24 Is there anybody else that would like to
25 make a comment, please? Please do so at this time.

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1 Hearing none, Throne, you can close the
2 line.

3 At this point, I'm going to ask my
4 colleagues for any final comments that they may have
5 about today's proceeding. And I'll start with Dr.
6 Ballinger, please. Ron?

7 MEMBER BALLINGER: Nothing from me,
8 thanks.

9 CHAIRMAN SKILLMAN: Charlie Brown?

10 MEMBER BROWN: Nothing else for me either,
11 thank you.

12 CHAIRMAN SKILLMAN: Mike?

13 MEMBER CORRADINI: I appreciate the
14 presentation from both the applicant and the staff.
15 No other comments.

16 MEMBER RICCARDELLA: No further comments.
17 I made my comments after Seabrook's presentation.
18 Thank you.

19 CHAIRMAN SKILLMAN: Dr. Rempe?

20 MEMBER REMPE: I don't have any additional
21 comments except, again, thanking the staff and the folks
22 from NextEra for their presentations and everyone's
23 work on this effort.

24 CHAIRMAN SKILLMAN: Thank you. Dr.
25 Kirchner?

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1 MEMBER KIRCHNER: No further comments.
2 Thank you. Thank you all.

3 CHAIRMAN SKILLMAN: Dr. Schultz?

4 DR. SCHULTZ: I also would like to thank
5 the staff and NextEra for the presentations this morning
6 and also for the detailed responses to our questions
7 and to the discussions that we've had on the record
8 which have been very helpful in clarifying both the
9 application and the review. Thank you.

10 MR. HISER: Chairman Skillman, can I add
11 just one little bit.

12 CHAIRMAN SKILLMAN: Dr. Hiser?

13 MR. HISER: I just had a message from one
14 of our staff that Seabrook has full depth hydraulic
15 expansion in the tubesheet. So the tubes are fully
16 expanded within the tubesheet.

17 MEMBER BALLINGER: And they were full
18 depth from the start.

19 MR. HISER: Yes.

20 MEMBER BALLINGER: Yeah.

21 CHAIRMAN SKILLMAN: Thank you, thank you.

22 I would like to make just one or two comments. First
23 of all, the depth of the application is extraordinary.

24 The three volumes of the license renewal application,
25 the multiple RAIs, the 60-some updates, and the 91

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1 commitments to date present a thorough defense for
2 license renewal.

3 We expended a full day on October 31,
4 approximately 60 to 70 people, on alkalized silica
5 reaction. We will write a separate letter on that
6 technical topic independent from the letter on license
7 renewal.

8 I want to compliment the staff for a very
9 thorough safety evaluation report. And I would just
10 note that one had to be particularly careful going
11 through the SER, because there were portions of it that
12 were dated 2011 and 2012 and then updates into 2015
13 and into 2018. So in a way, it was a work in progress.

14 But all the action items from 2012 have
15 been addressed. And it appears to me that all of the
16 critical items that need attention have been codified
17 into the commitment list in NextEra's license renewal
18 application.

19 In other words, there is correspondence
20 between the NRC staff action and the NextEra action
21 to make sure that the items that needed attention and
22 need committed to have been addressed or will be
23 addressed before the PEO. So thank you.

24 And thank you to those of you who traveled.
25 Safe travels on your way home. This meeting is

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1 adjourned.

2 (Whereupon, the above-entitled matter went
3 off the record at 11:04 a.m.)

4

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Seabrook Station ACRS License Renewal Subcommittee

November 15, 2018



The foundation for everything we do are the Values and Core Principles of our Nuclear Excellence Model



Nuclear Excellence Model



Personnel in Attendance

- Eric McCartney Regional Vice President - Northern Region
- Michael Collins Engineering Director
- Ken Browne Licensing Manager
- Edward Carley License Renewal Supervisor
- Rudy Gil Programs Engineering Manager

Agenda

Background

- Plant
- Status
- Licensing

License Renewal Project Overview

- Scoping
- Time Limited Aging Analysis
- Application of GALL
- Commitment Process

Closure of Previous SER Open Items

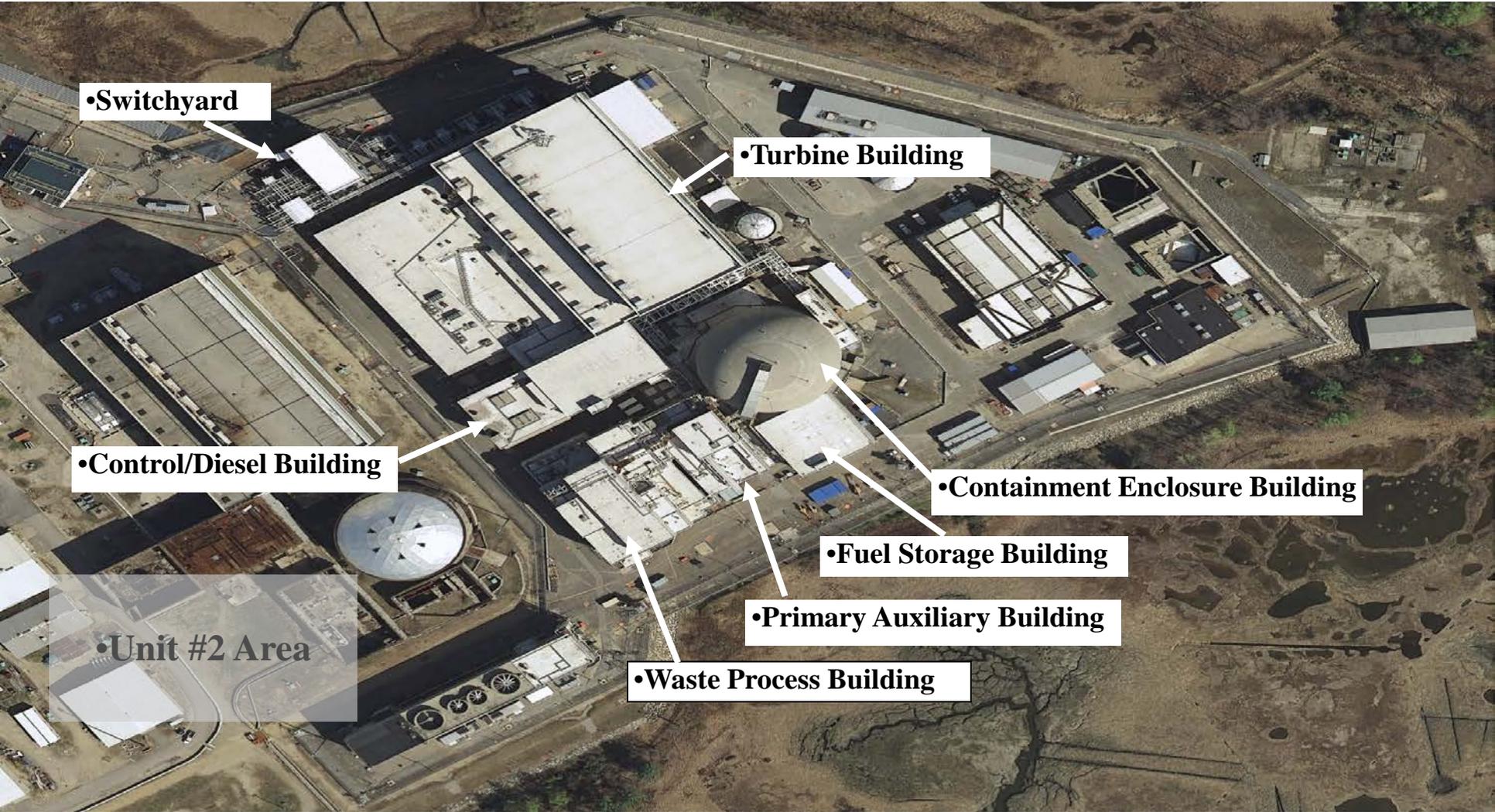
Concluding Remarks

NextEra Energy Seabrook has met the requirements of 10 CFR 54 for issuance of a renewed license for Seabrook Station Unit 1

Seabrook Background

- **Seabrook Station is a single unit Westinghouse 4-loop pressurized water reactor with a General Electric turbine generator**
- **Located in the Town of Seabrook, New Hampshire**
 - Two miles west of the Atlantic Ocean
 - Approximately two miles north of the Massachusetts state line
 - Approximately 15 miles south of the Maine state line
- **Reactor housed in a steel lined reinforced concrete containment structure which is enclosed by a reinforced concrete containment enclosure structure**
- **3648 MWt Thermal Power; ~ 1,250 net megawatts electric**
- **Atlantic Ocean is the ultimate heat sink.**
 - A Seismic Cat I mechanical draft cooling tower provides additional safe shutdown capability.

Plant Site



•Switchyard

•Turbine Building

•Control/Diesel Building

•Containment Enclosure Building

•Unit #2 Area

•Fuel Storage Building

•Primary Auxiliary Building

•Waste Process Building

Licensing

Construction Permit (CPPR-135)	July 1976
Zero Power Operating License (NPF-56)	October 1986
Low Power Operating License (NPF-67)	May 1989
Full Power Operating License (NPF-86)	March 15, 1990
Commercial Operation	August 1990
Operating License Transfer to FPL Energy (NextEra)	November 2002
Stretch Power Uprate (3587 MW)	February 2005
Zero Power Recapture (3.4 years)	December 2005
Measurement Uncertainty Uprate (3648MW)	May 2006
LR Application Submitted	May 25, 2010
Operating License Expires	March 15, 2030

Plant Status

Current Plant Status

- **Completed latest refuel outage (OR19) 10/29/18**
- **Capacity Factor 15/19 cycles > 94%**
 - Lifetime 87%
 - Lifetime excluding refueling outages 95.2%
 - Cycle 19: 99.86%
 - Cycle 18: 98.34%
 - Cycle 17: 99.27%
 - Cycle 16: 99.71%
- **Next Refuel Outage – Spring 2020 (End of Cycle 20)**

Capacity factor performance is representative of solid equipment reliability and material condition

Recent Station Improvements

- Vital Batteries
- Vital Inverters
- Generator Step-Up Transformers
- Mechanical Stress Improvement Process completed for all Reactor Vessel Nozzles
- Service Water Piping (AL6XN)
- Incore Detectors
- Process Control Single Point Vulnerability Circuit Cards
- Solid State Protection System Circuit Cards
- Rod Control Motor/Generator Sets
- Shutdown Reactor Coolant Pump Seals

NextEra Energy Seabrook is committed to continuous improvement

Project Overview - Scoping

- Experienced, multi-discipline Site Team developed the License Renewal Application (LRA)
 - Contractors experienced in License Renewal Application development
 - Personnel familiar with Seabrook Station design and operation
- Incorporated lessons learned from previous applications
- Guidance of NEI 95-10 and NUREG 1800
- NUREG-1801 (GALL) Rev1
 - GALL Revision 2 review was performed and changes were made to the LRA
 - LR-ISG Topics Incorporated into Seabrook LRA

Project Overview - Scoping

- Utilized site component database, controlled drawings, design and licensing documents
- SSCs Evaluated to Scoping Criteria 10CFR54.4 (a)(1), (a)(2) and (a)(3)
- Identified SSCs that perform or support an intended function
- Non-Safety Affecting Safety (a)(2)
 - Reviewed safety related equipment locations
 - Conservative “spaces” approach
 - Performed walk-downs for verification
- Use of commodity groups when evaluations were best performed by component type rather than SSC

Project Overview – TLAA

Design and Licensing Basis reviewed for potential TLAA's

- Keyword Search (UFSAR, NUREG-0896, Calcs, Specs)
- Review of previous LRA applications

Neutron Fluence

- Determined fluence for operation to 60 years
- Materials in the extended beltline identified and evaluated
- Upper Shelf Energy values exceed the minimum acceptance limit of 50 ft-lbs
- PTS limits are below the maximum allowable screening criteria

Metal Fatigue

- Cumulative Usage Factor evaluated for 60 years
- Evaluated Environmentally Assisted Fatigue for NUREG/CR-6260 locations.

Project Overview – GALL Application

44 Aging Management Programs

GALL Consistency

- 29 Existing Programs
 - Consistent 8
 - Consistent with Enhancements 12
 - Consistent with Exceptions 2
 - Consistent with Enhancements and Exceptions 5
 - Plant Specific 2
 - Nickel Alloy Nozzles and Penetrations
 - Boral Monitoring
- 15 New Programs
 - Consistent 7
 - Consistent with Enhancements 1
 - Consistent with Exceptions 2
 - Consistent with Enhancements and Exceptions 1
 - Plant Specific 4
 - Buried Piping and Tanks Inspection
 - 345kV SF6 Bus
 - Building Deformation Management Program
 - Alkali-Silica Reaction Management Program

License Renewal Implementation

- **Implementation Project Plan Developed**
- **Process and Procedures established for:**
 - Aging Management Plan (AMP) Implementation
 - Problem / Deficiency Identification
 - Internal and External Operating Experience
 - Program Documentation and Records
 - Completion of License Renewal Commitments
 - 10 CFR 54.37(b) Process

Safety Evaluation Report

SER Issued September 28, 2018

- No open items
- No confirmatory items

Closure of Open Items from previous SER (2012)

- OI 3.0.3.2.2-1— Steam Generator Tube Integrity
- OI 4.2.4-1— Pressure-Temperature Limit
- OI 3.2.2.1-1— Treated Borated Water
- OI 3.0.3.1.7-1— Bolting Integrity Program
- OI B.1.4-2— Operating Experience
- OI 3.0.3.1.9-1— ASME Section XI, IWE Program
- OI 3.0.3.2.18-1— Structures Monitoring Program

Steam Generator Tube Integrity Program

OI 3.0.3.2.2-1

- a. Cracking of tube-to-tubesheet welds due to primary water stress corrosion cracking (PWSCC) on the primary coolant side of the steam generator.
- b. Potential degradation (PWSCC) of steam generator (SG) divider plate assemblies based on industry experience (foreign).

Resolution

- a) Amendment No. 131 to Facility Operating License provided for the permanent application of SG tube alternate repair criteria.
 - Tube-to-tubesheet welds are permanently excluded from the reactor coolant pressure boundary.
- b) Per Supplement 53 to the LR application, Seabrook will follow the guidance in LR-ISG-2016-01.
 - Evaluation completed to demonstrate that results of the industry (EPRI) analyses for PWSCC of the divider plate assemblies are bounding for the Seabrook SG divider plate assemblies.

Pressure-Temperature Limit

OI 4.2.4-1

- Consistency of methods used to develop the P-T limits with 10CFR50 Appendix G

Resolution

- Amendment No. 151 issued to Seabrook Station Facility Operating License, approved P-T Limits for 55 EFPY consistent with 10CFR50 Appendix G.

Treated Borated Water

OI 3.2.2.1-1

- LR-ISG-2011-01 issued with guidance for managing the aging effects of stainless steel structures and components exposed to treated borated water.

Resolution

- License Renewal Application updated to add affected components to the One Time Inspection Program population consistent with LR-ISG-2011-01.

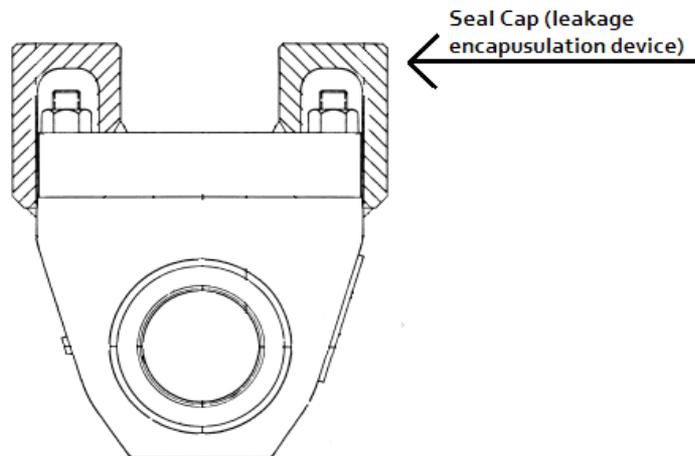
Bolting Integrity Program

OI 3.0.3.1.7-1

- Once a seal cap enclosure is installed, the bolting and component external surfaces within the enclosure are no longer visible for direct inspection.

Resolution

- NextEra removed the seal cap enclosure (OR15, 2012).



Operating Experience

OI B.1.4-2

- Describe the programmatic details used to continually identify, evaluate and use Operating Experience.

Resolution

- LRA has been updated to document programmatic aspects of evaluating aging related OE consistent with LR-ISG 2011-05.

ASME Code Section XI Subsection IWE Program

OI 3.0.3.1.9-1

Accumulation of water in the Containment Enclosure Building annular space can potentially degrade the containment liner plate.

Resolution

LRA updated to: Perform confirmatory UT testing of the containment liner plate in the vicinity of the moisture barrier every 5 cycles.

Implemented measures to maintain the exterior surface of the Containment Structure, from elevation -30 feet to +20 feet, in a dewatered state.

Structures Monitoring Program

OI 3.0.3.2.18-1

- Aging management of concrete structures affected by Alkali-Silica Reaction (ASR).

Resolution

- LRA updated to augment existing Structures Monitoring Program by addition of plant specific Alkali-Silica Reaction (ASR) and Building Deformation (BM) Aging Management Programs as discussed in 10/31/2018 ACRS sub-committee meeting.
- Aging management of ASR has been integrated into the Section XI IWL Program. Inspection, tracking and evaluation are in accordance with guidance of ACI 349.3R.

Concluding Remarks

- Seabrook is committed to the continuous improvement and long-term operation of Seabrook Station
- Seabrook will manage the effects of aging in accordance with 10 CFR 54.21(a)(1)
- Seabrook has evaluated time-limited aging analyses that require evaluation under 10 CFR 54.21(c)
- Seabrook has met the provisions of 10 CFR 54 for issuance of a renewed license

NextEra Energy Seabrook has demonstrated compliance with the requirements of 10 CFR 54 for issuance of a renewed licensed for Seabrook Station Unit 1



Advisory Committee on Reactor Safeguards
License Renewal Subcommittee

Seabrook Station, Unit 1
Safety Evaluation Report (SER)

November 15, 2018

Division of Materials and License Renewal
Office of Nuclear Reactor Regulation

Presentation Outline

- Overview of Seabrook License Renewal Review
- Region I 71002 Inspection: License Renewal Inspection
- SER Section 2: Scoping and Screening Review
- SER Section 3: Aging Management Review
- SER Section 4: Time-Limited Aging Analyses
- Conclusion

License Renewal Review: Audits and Inspections Onsite

Audit / Inspection	Dates
Scoping & Screening Methodology Audit (ML110270026)	September 20 – 23, 2010
Aging Management Program (AMP) Audits (ML110280424)	October 12 – 15, 2010 October 18 – 22, 2010
Region I 71002 Inspection: Scoping, Screening, and AMPs (ML111360432)	March 7 – 11, 2011 March 21 – 25, 2011 April 4 – 8, 2011
Region I 71002 Inspection: AMPs for Alkali-Silica Reaction (ASR) (ML18222A292)	April 30 – May 3, 2018

SER Overview

- SER with 7 Open Items issued June 2012
 1. Bolting Integrity Program
 2. ASME Code Section XI, Subsection IWE Program
 3. Steam Generator Tube Integrity Program
 4. Operating Experience
 5. Treated Borated Water
 6. Pressure-Temperature Limit
 7. Structures Monitoring Program/ASR
- Open items closed on September 28, 2018

71002 Inspection in 2011

- **Scope:**
 - Scoping and screening of components per 10 CFR 54.4(a)(2)
 - Walk down of accessible areas
 - Review of a sample of AMPs
- Team of 4 conducted on-site inspection for 3 weeks:
 - Weeks of March 7, March 21, and April 4, 2011
- Inspection Report issued May 23, 2011 (ML111360432)





71002 Inspection: Observations

- Buried Piping and Tanks Inspection
- Lubricating Oil Analysis
- Fire Water System
- ASME Section XI, Subsection IWL
- Structures Monitoring Program
- Water intrusion was noted during walk-down of residual heat removal vaults
 - Deposits
 - Brown Stains (Membrane Failure)
- Applicant's review of the effects of ASR on structures was incomplete at the time of the inspection

71002 Inspection: Conclusions

- Scoping of SSCs and application of the AMPs to those SSCs were acceptable
- Except for the ASR issue, inspection results provided reasonable assurance that aging effects will be managed and intended functions maintained during the period of extended operation
- Documentation supporting the application was auditable and retrievable

71002 Inspection in 2018

- **Scope:**
 - Focused review of AMPs for ASR
 - Walk down of a sample of structures
 - Review of the structures monitoring program database
- Team of 2 conducted on-site inspection for 1 week:
 - Week of April 30, 2018
- Inspection Report issued August 10, 2018 (ML18222A292)



SER Section 2

- **Structures and Components Subject to Aging Management Review (AMR)**
 - 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

SER Section 3

- **Aging Management Review Results**
 - Section 3.1: Aging Management of Reactor Vessel, Internals, and Reactor Coolant System
 - Section 3.2: Aging Management of Engineered Safety Features
 - Section 3.3: Aging Management of Auxiliary Systems
 - Section 3.4: Aging Management of Steam and Power Conversion Systems
 - Section 3.5: Aging Management of Containments, Structures, and Component Supports
 - Section 3.6: Aging Management of Electrical Commodity Group

SER Section 3

Section 3.0.3 - Aging Management Programs (AMPs)

Applicant's Disposition of AMPs

- 13 new programs
 - 6 consistent
 - 1 consistent with enhancements
 - 3 consistent with exceptions
 - 3 consistent with enhancements and exceptions
- 29 existing programs
 - 10 consistent
 - 10 consistent with enhancements
 - 3 consistent with exceptions
 - 4 consistent with enhancements and exceptions
 - 2 plant specific

Final Disposition of AMPs in SER

- 15 new programs
 - 7 consistent
 - 1 consistent with enhancement
 - 2 consistent with exceptions
 - 1 consistent with enhancements and exceptions
 - 4 plant specific
- 29 existing programs
 - 8 consistent
 - 12 consistent with enhancements
 - 2 consistent with exceptions
 - 5 consistent with enhancements and exceptions
 - 2 plant specific

Operating Experience (OpE)

- Open Item B.1.4-2
 - NextEra did not fully describe how it will use future OpE to ensure AMPs will remain effective for managing the aging effects during the period of extended operation
- Resolution:
 - In a letter dated January 20, 2012, NextEra provided detailed information on how it considers OpE on an ongoing basis and how the OpE review activities address issues related to aging

Bolting Integrity Program

- Open Item 3.0.3.1.7-1
 - A seal cap enclosure was installed on a valve
 - The recommended inspections for the Bolting Integrity Program, external visual examinations to detect leakage, would not be effective at detecting potential degradation of the closure bolting
- Resolution:
 - Seal cap enclosure was removed
 - There are no plans to install new seal cap enclosures

ASME Code Section XI, Subsection IWE Program

- Open Item 3.0.3.1.9-1
 - NextEra had not implemented procedures and inspection requirements to keep the annular space between the containment and containment enclosure buildings in a dewatered state. Water accumulation in the annular space can potentially degrade the containment liner plate.
- Resolution:
 - NextEra revised its program to include specific provisions in preventive monitoring and maintenance program to maintain the containment annulus in a dewatered state.



United States Nuclear Regulatory Commission

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U.S. NRC Steam Generator (SG) Tube Integrity Program

- Open Item 3.0.3.2.2-1
 - Management of cracking on the primary coolant side of steam generator tube-to-tubesheet welds due to primary water stress corrosion cracking
 - Provide information on the one-time inspection of the SG divider plate assembly

- Resolution:
 - Amendment No. 131 approved the permanent application of SG tube alternate repair criteria, which allowed the licensee to exclude the tube-to-tubesheet welds from the reactor coolant pressure boundary
 - An LRA supplement implemented LR-ISG-2016-01, which incorporated recurring inspection of the SG divider plate assembly into the SG Tube Integrity AMP

Treated Borated Water

- Open Item 3.2.2.1-1
 - LR-ISG-2011-01 revised GALL Report Revision 2 to include a one-time inspection in addition to managing aging effects with the Water Chemistry Program for stainless steel components exposed to treated borated water
- Resolution
 - NextEra revised its associated AMR items to include a one-time inspection to detect potential loss of material, cracking, or reduction of heat transfer for stainless steel components exposed to treated borated water

SER Section 4

- **Time-Limited Aging Analyses (TLAAs)**
 - 4.1: Identification of TLAAs
 - 4.2: Reactor Vessel Neutron Embrittlement Analyses
 - 4.3: Metal Fatigue Analyses
 - 4.4: Environmental Qualification of Electric Equipment
 - 4.5: Concrete Containment Tendon Prestress Analyses
 - 4.6: Containment Liner Plate, Metal Containment, and Penetrations Fatigue Analyses
 - 4.7: Other Plant-Specific TLAAs

Pressure-Temperature Limits

- Open Item 4.2.4-1
 - Methodology used to calculate P-T limits must consider beltline and non-beltline ferritic materials, per 10 CFR Part 50 Appendix G.
 - The NRC determined that the applicant's operating P-T limit curves may not appropriately consider non-beltline ferritic materials.
- Resolution:
 - License amendment request to extend the P-T limit curves to 23.7 EFPY included consideration of non-beltline ferritic materials.
 - NRC staff approved the amendment
 - The applicant adequately demonstrated that the P-T limit curves are controlling for the entire RPV.
 - Approval of amendment closed Open Item 4.2.4-1.

Conclusion

On the basis of its review, the staff finds that the requirements of 10 CFR 54.29(a) have been met for the license renewal of Seabrook Station, Unit 1.