

**Official Transcript of Proceedings**  
**NUCLEAR REGULATORY COMMISSION**

Title: Advisory Committee on Reactor Safeguards

Docket Number: (n/a)

Location: Rockville, Maryland

Date: Wednesday, September 4, 2019

Work Order No.: NRC-0552

Pages 1-112

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UNITED STATES NUCLEAR REGULATORY COMMISSION'S  
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

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UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

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666TH MEETING

ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

(ACRS)

+ + + + +

WEDNESDAY

SEPTEMBER 4, 2019

+ + + + +

ROCKVILLE, MARYLAND

+ + + + +

The Advisory Committee met at the Nuclear  
Regulatory Commission, Two White Flint North,  
Room T2B3, 11545 Rockville Pike, at 1:00 p.m., Peter  
Riccardella, Chairman, presiding.

COMMITTEE MEMBERS:

- PETER RICCARDELLA, Chairman
- MATTHEW W. SUNSERI, Vice Chairman
- JOY L. REMPE, Member-at-Large
- RONALD G. BALLINGER, Member
- DENNIS C. BLEY, Member
- CHARLES H. BROWN, JR., Member
- MICHAEL L. CORRADINI, Member
- VESNA B. DIMITRIJEVIC, Member

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WALTER L. KIRCHNER, Member

JOSE MARCH-LEUBA, Member\*

DAVID PETTI, Member

HAROLD B. RAY, Member

DESIGNATED FEDERAL OFFICIAL:

WEIDONG WANG

KENT HOWARD

\*Present via telephone

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

(1:00 p.m.)

CHAIRMAN RICCARDELLA: The meeting will come to order. Today is the first day of the 666th meeting of the Advisory Committee on Reactor Safeguards.

I'm Pete Riccardella, ACRS Chairman.

The ACRS was established by the Atomic Energy Act and is governed by the Federal Advisory Committee Act, FACA.

The ACRS section of U.S. NRC public website provides information about the history of the ACRS and provides FACA-related documents, such as chapter, bylaws, Federal Register Notices for meetings, letter reports, and transcripts of all full and subcommittee meetings, including all slides presented at the meetings.

The committee provides its advice on safety matters to the Commission through its publicly available letter reports. The Federal Register Notice announcing this meeting was published on August 6th and provides an agenda and instructions for interested parties to provide written documents or request opportunities to address the committee, as required by FACA.

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1 In accordance with FACA, there is a  
2 Designated Federal Official for today's meeting. The  
3 DFO for this meeting is Mr. Weidong Wang.

4 During today's meeting, the committee will  
5 consider the following: Advanced Reactor SECY Policy  
6 Paper on Siting, Turkey Point Subsequent License  
7 Renewal, and Preparation of ACRS Reports.

8 There is a phone bridge line. To preclude  
9 interruption of the meeting, the phone will be placed  
10 in a listen-in mode during presentations and committee  
11 discussion.

12 We have received no written comments or  
13 requests to make oral statements from members of the  
14 public regarding today's session. There will be an  
15 opportunity for public comment, as we have set aside  
16 10 minutes in the agenda for comments from members of  
17 the public attending or listening to our meeting.

18 Written communications may be forwarded to  
19 Mr. Weidong Wang, the Designated Federal Official.

20 A transcript of the open portions of the  
21 meeting is being kept, and it is requested that  
22 speakers use one of the microphones, identify  
23 themselves, and speak with sufficient clarity and  
24 volume, so that they can be readily heard.

25 I would like to request that everybody

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1 silence their cell phones or other devices that might  
2 make noise in the meeting.

3 And I also believe we have Member Jose  
4 March-Leuba on a private line calling in. He is  
5 hurricane-bound in Florida, but he will attend  
6 remotely.

7 Jose, are you there?

8 MEMBER MARCH-LEUBA: Yes, I'm here. Thank  
9 you.

10 CHAIRMAN RICCARDELLA: Okay. Very good.

11 So the first topic, as I mentioned, is  
12 Advanced Reactor SECY Policy Paper on Siting, and I  
13 would like to ask the Subcommittee Chairman, Dennis  
14 Bley, to introduce the subject.

15 MEMBER BLEY: Thank you, Mr. Chairman.  
16 And thanks to everyone for having the phones working  
17 today. It's great.

18 We had a subcommittee meeting a few weeks  
19 ago, and most of the members were there. Some issues  
20 were raised, and I hope our presenters from the staff  
21 will address some of those issues if they can.

22 At this point, I will turn the session  
23 over to John Segala, NRO.

24 MR. SEGALA: Thank you, Dr. Bley, and  
25 thank you, Chairman Riccardella, and the other

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1 committee members, for the opportunity to present  
2 today on this important topic of population-related  
3 siting considerations for advanced reactors.

4 As you know, this is a topic that has a  
5 long history. And as Dr. Bley said, we briefed the  
6 subcommittee meeting on August 23rd, and had a lot of  
7 good discussions, and we're prepared today to answer  
8 some of the committee/subcommittee's comments.

9 At the end of this meeting, we'll be  
10 requesting a letter from the full committee on our  
11 draft Commission paper.

12 And with that, I'll turn it over to Bill  
13 Reckley, a senior project manager in my branch.

14 MR. RECKLEY: Thanks, John. As John  
15 mentioned, this paper is related to population-related  
16 siting consideration. I just kind of want to stress  
17 that siting has a lot of different considerations,  
18 both on the site as a potential hazard to the reactor,  
19 and then of course the reactor as a potential hazard  
20 to the environment. And this paper is limited to a  
21 small slice of those issues, which is related to  
22 population around a site.

23 So the purpose of the paper is to provide  
24 the Commission with options and a recommendation on  
25 possible change to the guidance documents. I will get

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1 into some of this in a little more detail, but right  
2 from the beginning emphasize that we don't see at this  
3 time a need to change regulations, but we think the  
4 situation would benefit from revision to the guidance  
5 documents; in particular, Regulatory Guide 4.7.

6 So the paper is laid out with that  
7 purpose, some background in terms of regulations and  
8 guidance, a discussion, which is largely a description  
9 of the options, and then a specific recommendation  
10 from the staff to the Commission.

11 I have tried to collapse all of that in  
12 terms of regulations and guidance onto this one graph.  
13 And you can see up this -- up the left side are the  
14 regulations that most of us are most familiar with,  
15 and that is 10 CFR 100.21, as it relates to defining  
16 exclusion areas, low population zones, and population  
17 center distances.

18 And just to summarize those circles, the  
19 exclusionary boundary is defined actually within  
20 Part 50 and Part 52 as that distance at which an  
21 individual would receive less than 25 rem in two  
22 hours, the worst two hours of an accident.

23 MEMBER BLEY: Bill?

24 MR. RECKLEY: Yes.

25 MEMBER BLEY: You said this only focuses

1 on population, which is the outcome. But it's deeply  
2 involved with all of the other aspects that affect  
3 what the doses are going to be, which you can't  
4 ignore. And I'm going to express a little surprise,  
5 and you may have this covered later, one has to decide  
6 for which accidents they are going to calculate the  
7 doses, which really has to do with a lot more,  
8 including risk.

9 And I'm a little curious why you folks  
10 didn't have an option, maybe I'd call it 3A, that  
11 really tried to be risk-informed about the criteria  
12 that we use. And I don't know if you can plan to get  
13 to that later. If you do, that's just fine.

14 MR. RECKLEY: Yeah. I think in about two  
15 slides I'll try to address that. And if I don't  
16 succeed, you can continue with the question.

17 So, again, the standard definitions down  
18 the left side there, for the low population zone,  
19 which is the distance at which 25 rem would -- less  
20 than 25 rem to an individual for the duration of the  
21 accident, and then a low -- a population center  
22 distance, which is defined in the rules as being one-  
23 and-a-third times the radius of the low population  
24 zone. And that is the minimum distance to which a  
25 reactor could be in relation to a population center of

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1 about 25,000 people.

2 Over on the right side, you have 10 CFR  
3 100.21H, which is a vaguely worded rule.

4 MEMBER CORRADINI: Can I --

5 MR. RECKLEY: Go ahead.

6 MEMBER CORRADINI: I want to repeat  
7 something that I wrote down, but I could have it  
8 wrong, from the subcommittee meeting. The definition  
9 of a population center is a tad fuzzy.

10 MR. RECKLEY: Yes.

11 MEMBER CORRADINI: It's not precise, as I  
12 remember you stating at the time.

13 MR. RECKLEY: Right.

14 MEMBER CORRADINI: True?

15 MR. RECKLEY: Yes.

16 MEMBER CORRADINI: Okay.

17 MR. RECKLEY: Well, it is about 25,000.

18 MEMBER CORRADINI: Well, I guess the  
19 boundary of where I draw -- where I count 25,000  
20 people --

21 MR. RECKLEY: It's a population boundary,  
22 not a political boundary.

23 MEMBER CORRADINI: Okay.

24 MR. RECKLEY: So you look for where the  
25 actual population is. You map that out, and that's

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1 the distance to the population center, not necessarily  
2 the political boundary of a -- you know, an  
3 incorporated town or a city limit.

4 MEMBER CORRADINI: So the centroid of  
5 where the population rises to or near 25,000.

6 MR. RECKLEY: Yes.

7 MEMBER CORRADINI: Okay.

8 MEMBER BLEY: I'm sorry. You said  
9 "centroid," which implies the middle, and it's not.

10 MR. RECKLEY: The edge of the population  
11 boundary.

12 MEMBER CORRADINI: But if it's not the  
13 political boundary, then I could have a farm, a dairy,  
14 since I'm that part of the country, a dairy entity.  
15 And if I add up the 25,000, and the dairy farm is the  
16 closest thing to 25,000, that's the boundary? I'm  
17 still struggling as to how I get the 25,000 if it's  
18 not the center of it.

19 MR. RECKLEY: Right. It did -- take a  
20 case where you just draw where an actual population,  
21 like a town where the residences start. So, in your  
22 case, you would probably skip over the farm, right?  
23 Skip over those couple hundred acres of the farm, even  
24 if they're in the political boundary, and go to where  
25 the actual residences, the suburban type, the actual

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1 -- with some density of that population, draw a circle  
2 around it. This is very inexact.

3 MEMBER CORRADINI: Okay. So that's all I  
4 was trying to get at. It's inexact, and it's a matter  
5 of judgment and conversation, not a clear -- it's not  
6 like a -- it's not like, you know, normal distribution  
7 I take the 595 of the population and it adds up to 25.

8 MR. RECKLEY: For that population center.  
9 Now, when we get to the next one, which is under 121H,  
10 where we're looking at population density, and that  
11 rule is also vaguely worded, it says located away from  
12 population centers in low population densities are  
13 preferred.

14 The way we meet that rule is through the  
15 guidance in Reg Guide 4.7 that looks at population  
16 density of 500 persons per square mile and ever-  
17 increasing radius. So the first mile you couldn't  
18 have more than 1,571 people; in the second mile,  
19 6,000; and it keeps going with those constraints until  
20 you get to the limit of 20 miles. We look at  
21 population density out to 20 miles, and the population  
22 within that 20-mile circle would have to be less than  
23 628,000 people.

24 And so those things in combination are how  
25 you basically address some of the issues and some of

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1 the vagueness that you're referring to.

2 MEMBER RAY: To respond to Mike again a  
3 little bit, I just want to draw attention to the fact  
4 we're talking about densely populated. And the farm  
5 example you gave isn't an example of densely  
6 populated.

7 MEMBER CORRADINI: But I could have -- I  
8 could have -- I won't use a particular town that I am  
9 aware of, but a town in the Midwest which has a  
10 population of suburban -- or of houses, but then as I  
11 move out I could have farms that are closely packed  
12 but that are within the political boundary, but may  
13 not be in the population center.

14 MEMBER RAY: They are not in -- in my  
15 judgment, they are not in a densely populated center.  
16 They are outside the densely populated center.

17 MR. RECKLEY: Right. Even though they  
18 might be in the political boundary. Right.

19 MEMBER RAY: Or in between you and the  
20 densely populated center.

21 MR. RECKLEY: Yes.

22 MEMBER RAY: For example.

23 MR. RECKLEY: Right.

24 CHAIRMAN RICCARDELLA: Bill, I'm sorry.  
25 I wasn't able to attend the subcommittee meeting, but

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1 these -- the 25 rem for the two other zones, that  
2 assumes what some accident under some design -- under  
3 the design basis accident or something.

4 MR. RECKLEY: In the traditional sense, it  
5 includes the Reg Guide 1465, the alternate source  
6 term, or before that the TID 14484. Source term, into  
7 the containment, and then with the conditions of the  
8 allowable leakage out of the containment, in a  
9 traditional sense.

10 In a second, I will get to an alternative  
11 to that for advanced reactors.

12 CHAIRMAN RICCARDELLA: Okay. Thank you.

13 MR. SEGALA: And I'd just like to add for  
14 the Reg Guide, it has you project out the population  
15 five years from the initial siting, and it also says,  
16 you know, reactors should not be located at a site  
17 where the population density is well in excess of the  
18 500. So even -- it's a guidance document, so it's not  
19 a strict acceptance criteria, 500.

20 MR. RECKLEY: Keeping in mind that the  
21 rule that we're enforcing says population -- low  
22 population density preferred. It's an unusual rule,  
23 and it dates back to the fact that this siting  
24 guidance and siting as a policy for the Commission  
25 goes back to the beginning, really. This guidance was

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1 first written in 1962.

2 So as we looked at it and interfaced with  
3 stakeholders, there were two issues that we identified  
4 with the planned uses of advanced reactors, and in  
5 particular small modular reactors, and the guidance as  
6 it was written, and called on us to assess whether we  
7 could change the guidance while maintaining  
8 appropriate public safety and conformance to the  
9 rules.

10 The first was the limitation of 500  
11 persons per square mile out to 20 miles, and the  
12 second one -- policy issue was actually the same  
13 population density, but close in to a reactor site.  
14 So if you go back to the previous slide, you can see  
15 a potential use for small modular reactors or advanced  
16 reactors in general would be for remote areas.

17 And so take a remote area, a small town in  
18 Alaska, this would say -- the current guidance would  
19 say that population within the first mile couldn't  
20 exceed 1,500 people. The desire would be to have that  
21 reactor most likely closer to the town than a mile  
22 away, because the reason you want it there is that it  
23 currently has no grid.

24 The other area of concern was within DOE  
25 and other stakeholder interest was the possible use of

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1 reactors to replace retiring fossil units. And they  
2 might be closer to population centers than the 20-mile  
3 criteria or the 15-mile criteria would allow in terms  
4 of populations within that circle being limited to  
5 350,000 in the case of 15 miles.

6 And so if a reactor can safely be put  
7 somewhere, would it make sense to revise the siting  
8 guidance to allow it? And that was the matter that we  
9 were looking at.

10 MEMBER BLEY: Bill, one thing that bothers  
11 me about the right-hand side of this figure is when  
12 you put total populations in there, assuming a  
13 population density, and rings around the reactor, the  
14 population is going to be off somewhere away from the  
15 reactor. And in one direction, the population density  
16 could go quite high, where if you average it in rings  
17 by miles away from the reactor, you could make it look  
18 very low.

19 And is this kind of setting up per mile  
20 rings? Is that specified in the reg guide?

21 MR. RECKLEY: I think there is actually  
22 some look by sector in addition to rings, to totally  
23 avoid what you're saying.

24 MEMBER BLEY: Because you would really be  
25 -- it would really be smooshing out the population

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1 where it isn't and saying I have a low population  
2 density when --

3 MR. RECKLEY: It is looked at in a little  
4 more than just the consent agreements.

5 MEMBER BLEY: Okay.

6 MR. RECKLEY: So with that as background,  
7 some of the additional background and history relating  
8 to siting is in an Oak Ridge report, and I gives the  
9 ADAMS accession number there.

10 They also developed a possible approach,  
11 and I'll be talking about that in a second. That's  
12 Option 2.

13 So the staff developed four options. As  
14 you can kind of get out of this conversation, there  
15 are many ways that one could approach this. So we  
16 could have had many more four options, but we did  
17 narrow it down to try to give the Commission an idea  
18 of different ways that this might be addressed.

19 So one of the things that we did do is  
20 look at the paper and some of the comments and some of  
21 the discussion we had on August 23rd during the  
22 subcommittee meeting. And we're -- in the background  
23 there are some proposed changes that would summarize  
24 what would we -- what we would put in the paper.

25 But there were three main items that I

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1 took away anyway. One was to reinforce that this  
2 guidance is related to unplanned releases and  
3 accidents. There are rules in place for normal  
4 effluents, normal operations. That is continued to be  
5 controlled under those regulations such as 10 CFR Part  
6 20.

7 Another question was on how Option 3 would  
8 be implemented, and this goes to what Dr. Bley was  
9 mentioning. What events do you look at? How are you  
10 getting a source term in order to calculate the dose  
11 for Option 3, which is the one that is based on an  
12 assessment of the individual dose at a distance.

13 And there's two possible approaches that  
14 we've talked about within the paper, and we tried to  
15 clarify a little bit with the footnote in the backup  
16 slides. The first is how we expect it to be pursued  
17 for those that are using the methodology described in  
18 draft Guide 1353 and NEI 18-04. That's the risk-  
19 informed approach that we brought before the committee  
20 six months ago or more.

21 And in that -- if the reactor -- the  
22 designer is using that methodology, they will develop  
23 a mechanistic source term for the event sequences.  
24 They will evaluate all of the event sequences in the  
25 categories of design and beyond design basis events,

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1 and they will assess the offsite consequences.

2 And that would be the dose coming out of  
3 those two event categories that they would compare to  
4 the one rem in a month that we talk about under Option  
5 3. And I'll get -- I know it's a little disjointed  
6 here.

7 But another question that came up was the  
8 -- how multi-unit events are handed. And so that same  
9 footnote we were able -- a different footnote, we were  
10 able to describe that 1353 or NEI 18-04 is done by  
11 plant year. And so they are specifically looking at  
12 multi-unit events or events that could affect more  
13 than one radionuclide source in that event. So  
14 whether it be reactors or off-gas systems or whatever  
15 the source term might be.

16 MEMBER CORRADINI: So this is in the  
17 current SECY that we saw?

18 MR. RECKLEY: It was hinted at in the  
19 backup slide. The backup slide hopefully goes into a  
20 little more detail now.

21 MEMBER CORRADINI: In the footnotes, right  
22 under Option 3, it was discussed there; did I miss it?

23 MR. RECKLEY: Well, only vaguely, as  
24 Dr. Bley mentioned. It says --

25 MEMBER CORRADINI: So let me now do -- my

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1 hand calculation is if I have five of these, I have  
2 five plant-years for every real year. That's what you  
3 just said to me. That if I have five of these  
4 collocated and there's a multi-module site, I would --  
5 for every year passing I would take five plant-years  
6 as the frequency effect? That's what I thought you  
7 used by the term "plant-year" in the assessment.

8 MR. RECKLEY: Really, the way that this  
9 methodology works, you're looking at the probability  
10 of an event at the plant. That could be a single-unit  
11 event or a multi-unit event.

12 MEMBER CORRADINI: Okay. So, in other  
13 words, as some licensees might come in and calculate  
14 what is with many on a site, many on a plant site, it  
15 would not be a module, but it would be a module times  
16 some multiplier by some definable review procedure.

17 MR. RECKLEY: Yes.

18 MEMBER CORRADINI: Okay. Very good. I  
19 misunderstood. Thank you.

20 MEMBER REMPE: Since he interrupted you,  
21 I'm looking at page 21 of the backup slides. And I  
22 get the -- that you have -- again, right now, you have  
23 beyond -- design and beyond design basis events if  
24 they use 1353. But if they use a different approach,  
25 it looks like they don't have to consider beyond

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1 design basis events. They only look at possible plant  
2 transients and accidents.

3 MR. RECKLEY: And what we're trying to  
4 define there, and we got into this trouble in the  
5 subcommittee meeting, and part of the problem is after  
6 50 years no one agrees on the terminology, they would  
7 do it the way they do it now.

8 So if you consider NUREG-1465 source term  
9 as a design basis accident source term, then call it  
10 a design basis accident source term. If you consider  
11 it to be a beyond design basis accident source term,  
12 then consider it to be a beyond design basis accident  
13 source term.

14 MEMBER CORRADINI: But it's a source term  
15 with containment performance specified in -- or some  
16 sort of performance measures that are considered to be  
17 conservative.

18 MR. RECKLEY: Yes. And a source term that  
19 was considered to be conservative.

20 MEMBER CORRADINI: Correct. So it's  
21 essentially a non-light water equivalent of 1465 with  
22 Reg Guide 1.183 attributes.

23 MR. RECKLEY: Yes.

24 MEMBER CORRADINI: Okay.

25 MEMBER REMPE: So if I have a small micro

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1 reactor and I don't want to try and do a PRA, I just  
2 want to do a maximum hypothetical release. Does that  
3 mean -- can they argue and say that that's not within  
4 our design basis? That's never going to happen. Do  
5 they have to do a maximum hypothetical release? What  
6 will they do?

7 MR. RECKLEY: We're looking at that now.  
8 So it's a little clearer under the 1353 that they  
9 would categorize it. If they want to propose an  
10 alternative, and we mention this in a section of the  
11 draft guide, that if somebody wanted to use a maximum  
12 hypothetical, they could do that, but that's really a  
13 deviation from the guidance in NEI 18-04 and 1353.

14 So they are going to be coming in on their  
15 own to justify that they have in that case identified  
16 the actual maximum hypothetical accident to use in the  
17 proposal.

18 So these aren't -- anyway, so they would  
19 have to come in and justify that.

20 MEMBER REMPE: It doesn't fall under  
21 Option 3, then. It's something different. I've  
22 forgotten -- it's been a while since I've read the  
23 draft, so --

24 MR. RECKLEY: It could, if they could  
25 convince us that it was a maximum hypothetical. That

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1 would, in effect, bound the beyond design basis event  
2 in DG-1353. And so they could -- they could use this  
3 guidance if they can convince us that they actually  
4 have identified the maximum hypothetical.

5 MEMBER CORRADINI: Can I reverse this? If  
6 I have a particular design with a particular set of  
7 analyses that say nothing rises above five times  $10^{-7}$ ,  
8 one might have to infer some maximum credible accident  
9 to at least decide what the distances are.

10 What if I have Joe's reactor, and Joe's  
11 reactor is so safe that they buy their analysis, show  
12 that nothing rises on a frequency basis above five  
13 times  $10^{-7}$ , with uncertainty, therefore, I have to --  
14 I have to define some maximum credible accident to  
15 decide what the boundary is.

16 We were only talking the reverse  
17 direction. I'm thinking that this other direction is  
18 -- with inherent features of the design and the  
19 passive design, I'm still going to have to identify  
20 something as to decide what the boundary is.

21 MR. RECKLEY: Let me just pass on the  
22 hypothetical. Basically, you're saying if I can -- if  
23 I can design a reactor that has basically no chance of  
24 releasing the radioactive materials, or at least --

25 MEMBER CORRADINI: Frequency under 1353.

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1 MR. RECKLEY: -- of below five times  $10^{-7}$ .

2 MEMBER CORRADINI: Yeah. Because we have  
3 some already that --

4 MR. RECKLEY: I would hope that if  
5 somebody is able to do that, we would say, "Great  
6 job."

7 MS. CUBBAGE: So, Bill, what if you looked  
8 at your Example 3 -- this is Amy Cubbage -- your  
9 slide, it's less than one. Not Slide 3, it's Slide  
10 12. I'm sorry.

11 MR. RECKLEY: Yeah. We'll get there under  
12 that proposal, as to what the siting limitations would  
13 be.

14 MEMBER CORRADINI: But back to Joy's  
15 question, I want to make sure that we're clear. So  
16 now at least in words in the revised SECY, there is a  
17 path where the individual applicants could say we're  
18 going to follow 1353 and those estimates for  
19 mechanistic source term and frequency, et cetera, but  
20 I can also take another path and write my own approach  
21 to a new 1465 that has the appropriate attributes and  
22 is conservative and bounds it.

23 MR. RECKLEY: Yes. We said we would  
24 review that. But, again, that is going to be a  
25 deviation, and we'll review it as a specific proposal.

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1           MEMBER REMPE: And in that deviation, do  
2 they get to stop at accidents, or do they need to go  
3 to beyond design basis? Because the footnote to me  
4 implies they don't have to go to beyond design basis.  
5 They get to stop at accidents.

6           MR. RECKLEY: Well, keep in mind that the  
7 light water methodology, with the stylized events and  
8 the use of 1465, is light water reactor.

9           MEMBER CORRADINI: But what generated the  
10 1465 source term are severe accidents that are beyond  
11 the design basis.

12          MEMBER REMPE: Right.

13          MEMBER CORRADINI: So I would assume in  
14 light way they would have to come up with a class of  
15 potential accidents that are beyond their design base,  
16 and then basically encapsulate with conservative  
17 calculations to be the equivalent of a 13 --

18          MEMBER REMPE: Put Slide 21 up, if you  
19 would, just for a minute. This is the revised --

20          MEMBER BLEY: I'd remind all of the  
21 members we have only allotted an hour for this follow  
22 up to the subcommittee.

23          MEMBER CORRADINI: Sorry.

24          MEMBER REMPE: That's what is kind of  
25 bothering me, the mark-out of including design basis.

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1 MR. RECKLEY: And the reason I marked that  
2 out -- I can put it back in, to be honest. The reason  
3 I put it out -- struck it out was because it causes so  
4 much confusion in what we do now, not in what we would  
5 propose to do under 1353.

6 The source term that we use, whether you  
7 calculate it under 1465 or the old TID, is called  
8 different things by different people. And so that's  
9 the concern.

10 So what I tried to do was to strike out  
11 the confusion and say, "Do it by NUREG-800, the  
12 standard review plan, and do it by Reg Guide 1.183,"  
13 that defines how that is done, and try to avoid the  
14 confusion of the terminology, because sometimes it's  
15 called maximum credible, sometimes it's called maximum  
16 hypothetical, sometimes it's called design basis.

17 MS. CUBBAGE: And if you look at the  
18 sentence in question, striking the beyond design  
19 basis, the words prior to that are talking about a  
20 wide range of potential accidents.

21 MR. RECKLEY: Right.

22 MS. CUBBAGE: And that's not limited to  
23 DBA.

24 MEMBER REMPE: Okay.

25 MR. RECKLEY: And then the third bullet

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1 there is the rationale for option three that was  
2 discussed. We didn't change the paper.

3 We maintained the basis as the existing  
4 criterion on population density, 500 people per square  
5 mile, the compatibility with the methodology in DG-  
6 1353, and that's where we're getting the one rem over  
7 a month for the analysis of the event sequences, and  
8 engineering judgment for a multiplier that should take  
9 that radius and multiply it by two. The --

10 MEMBER BLEY: Bill, right there, owing you  
11 had the 30 days instead of --

12 MR. RECKLEY: Instead of 96 hours.

13 MEMBER BLEY: -- 96 hours, I get how  
14 you're using 1353 to come up with the event sequences  
15 to look at. What seems odd to me is, since we've  
16 looked at 1353 and you guys have developed it, which  
17 is looking for a risk informed --

18 MR. RECKLEY: Right.

19 MEMBER BLEY: -- approach, you could have  
20 followed on with a risk informed approach to the  
21 criteria, but you've put in what smelled like  
22 arbitrary criteria once again, and why?

23 MR. RECKLEY: Again, as I said in the  
24 beginning, we could have come up with a lot of  
25 different alternatives.

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1           When we came up with option three, we were  
2           trying to look at what, the limitations designers were  
3           currently facing and whether we could come up with an  
4           option that would maintain safety, but give them the  
5           flexibility in siting, and after that, to stay as  
6           simple as we could.

7           And really, as simple as we could was to  
8           maintain the same criterion, 500 persons per square  
9           mile, and then to introduce, as you mentioned, which  
10          has got a risk informed element in it, the calculation  
11          of the consequences, the one rem over a month.

12          And then the way we did the multiplier, to  
13          be honest, I guess I can be honest, right, when we  
14          first proposed this to stakeholders, our proposal was  
15          two times the EPZ, and the reason it was two times the  
16          EPZ is because that's roughly how it works out now.  
17          The EPZ is 10 miles. We measure population density  
18          out to 20 miles, so it's two times the EPZ.

19          As we interfaced with stakeholders, we  
20          were convinced that linking it directly to the  
21          emergency planning arena was probably not wise, and so  
22          we withdrew the EPZ calculation and replaced it with  
23          the LMP one rem over a month calculation.

24          I understand it's similar and they're not  
25          unrelated, but it's a different parameter by a bit,

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1 but we kept the two. We kept the factor of two.

2 And footnote seven in the draft that you  
3 have says the result of that will be that the area in  
4 which we look at population density will be roughly  
5 equivalent or slightly greater than two times the EPZ  
6 and that's because the EPZ is two rem, I mean one rem  
7 in the worst 96 hours. The LMP criterion is one rem  
8 over the month.

9 MEMBER CORRADINI: And the times two is  
10 just a factor of safety?

11 MR. RECKLEY: Yes, and again, in the  
12 beginning, it was tied to the current practice --

13 MEMBER CORRADINI: Okay.

14 MR. RECKLEY: -- and we just maintained  
15 that.

16 MEMBER CORRADINI: So just to repeat the  
17 subcommittee, so is the staff planning to do any  
18 calculations to understand the technical basis of all  
19 of these choices?

20 MR. RECKLEY: The difficulty is -- the  
21 short answer is no, and the reason is there's too many  
22 variables in play, and that's because a large part of  
23 what we're trying to do is to introduce a sense of a  
24 societal measure without defining a societal measure,  
25 and if you wanted a calculation that would push us in

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1 the direction of having to define some things in order  
2 to back out what the appropriate number would be.

3 And so we thought about it and really  
4 thought that it would be wiser just to pick a number.  
5 If it comes across as engineering judgment, which, I  
6 guess, in many parlances would also be synonymous with  
7 arbitrary, that's where we are.

8 MEMBER CORRADINI: Okay.

9 MEMBER BLEY: Well, it's not always  
10 arbitrary.

11 MR. RECKLEY: No.

12 MEMBER BLEY: To help you finish --

13 MR. RECKLEY: Yes, we're going to go  
14 through it.

15 MEMBER BLEY: -- when you get to option  
16 two, since you don't favor option two --

17 MR. RECKLEY: Yeah.

18 MEMBER BLEY: -- and nobody on the  
19 Committee favors it, going through the details is very  
20 plodding and slow.

21 MR. RECKLEY: Right, okay.

22 MEMBER BLEY: Just give the overview of  
23 what it was trying to do.

24 MR. RECKLEY: Okay, I'll go quickly then  
25 through the options. Option one is just the status

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1 quo. So we've talked about that already under what  
2 the current requirements are, so I'll skip through  
3 that one.

4 The option two description is the best in  
5 this slide in which a rough equivalent societal risk  
6 measure is defined as the area times the source term  
7 factor times the people per square mile. Slide nine  
8 gives the same example I used during the Subcommittee.

9 If you assume a proportional reduction in  
10 the area of contamination with the dose factor, which  
11 would be roughly proportional to power level, you can  
12 work through an example, as is given on this slide,  
13 where instead of 1,200 square miles for a small  
14 reactor, you would be facing a contamination area of  
15 more like 63 square miles.

16 MEMBER BLEY: The bottom line is you're  
17 scaling on power.

18 MR. RECKLEY: Yes, in the paper, we  
19 proposed to take the source term factor and equate it  
20 to power level. Again, the whole thing is a rough --  
21 it generally holds, but it's not an exact correlation  
22 if you try to back it out.

23 So some of the advantages, it's relatively  
24 simply. It does allow designs, attributes to  
25 considered somewhat, primarily in the area of power.

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1 Disadvantage listed there, will face some negative  
2 perceptions no matter what changes to siting criteria  
3 we pursue.

4 So going onto the recommended approach,  
5 option three, again, the rules stay the same, so you  
6 maintain the exclusionary boundary and low population  
7 zone.

8 The guidance would be changed in Reg Guide  
9 4.7 to call out that for plant designs that could show  
10 that the event sequence doses for plants that have  
11 event sequence doses that exceed one rem TEDE over a  
12 month beyond the site boundary, we would look at  
13 population density and we would look at it somewhat  
14 similar to what we do now, the population density of  
15 500 persons per square mile, and we would look, as we  
16 just talked, over the radial distance equal twice the  
17 radius at which one rem was estimated.

18 MEMBER BLEY: Can I correct my earlier  
19 comment? I went back and looked at 42 and 47, 4.7.  
20 They only do the averages over the rings. They don't  
21 do any sector thing in there, at least in the table I  
22 was looking at.

23 MR. RECKLEY: I'll look in mine actually.  
24 Is that what you look at, just the rings, or do you  
25 look at sectors, Rao or Michelle?

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1 MR. TAMMARA: My name is Rao Tammara. I  
2 do the chapter two. Yeah, it is the rings.

3 MR. RECKLEY: Okay, I stand corrected.  
4 I'm sorry.

5 MR. TAMMARA: The definition is you can go  
6 to the total population divided by the area.

7 MEMBER BLEY: And that kind of says we're  
8 averaging --

9 MR. RECKLEY: Yes.

10 MEMBER BLEY: -- over all of these people  
11 --

12 MR. RECKLEY: Right.

13 MEMBER BLEY: -- too, so.

14 MEMBER PETTI: So, Bill, that last bullet  
15 says "for event sequences greater than one rem." What  
16 if the reactor has no event sequences greater than  
17 one?

18 MR. RECKLEY: We'll get there in a second.

19 MEMBER PETTI: Okay, great.

20 MR. RECKLEY: Next slide. So you can look  
21 at this option, and during the Subcommittee and on  
22 this slide, I tried to boil it down to one slide, at  
23 three cases.

24 One, you have event sequences with  
25 significant doses approaching 25 rem offsite, in which

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1 case you'll have traditional exclusionary boundaries,  
2 low population zones, population center distances  
3 calculated per the rule.

4 In addition to that, whatever distance you  
5 calculate one rem over the month, you would look at  
6 500 people per square mile out to twice that radius.  
7 So you have both the rule and the guidance affecting  
8 the total population and also the population center  
9 distance.

10 In the second, you have no event sequences  
11 with offsite doses approaching 25 rem, but you do have  
12 event sequences that are exceeding one rem over the  
13 month following an event. So with no doses of 25 rem,  
14 you have the low population zone collapse to the site  
15 boundary, but with event sequences that have doses  
16 over one rem, you're still going to look at population  
17 density and keep it less than 500 people per square  
18 mile out to twice the radius at which you calculate  
19 one rem.

20 Then in the third case under this option,  
21 you have no event sequences that exceed one rem at the  
22 site boundary, so the only thing that remains in play  
23 is the rule that says keep reactors away from densely  
24 populated centers of about 25,000 people.

25 So what we tried to show in the graph is

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1 if you have a population center of 25,000, the reactor  
2 would be outside that population center. If it's less  
3 than 25,000, you could be within, and the reason we  
4 were looking at it like this is going back to the  
5 first problem statement.

6 We don't currently know of reactors who  
7 are looking at remote siting, I mean remote areas,  
8 isolated communities that would be serving a  
9 population center of greater than 25,000, so this  
10 would allow a reactor, if it could otherwise make the  
11 safety case, to be within a small town in a remote  
12 area.

13 MEMBER BLEY: You've dropped the  
14 population density?

15 MR. RECKLEY: At that point, yes.

16 MEMBER BLEY: Because even though the  
17 population center might be fewer than 25,000 people,  
18 there could be a small area within it with really high  
19 --

20 MR. RECKLEY: That's right.

21 MEMBER BLEY: -- population density?

22 MR. RECKLEY: Right, but again, this is  
23 limited to those reactors that could show no event  
24 sequences where you exceed one rem --

25 MEMBER BLEY: At the boundary.

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1 MR. RECKLEY: -- at the boundary.

2 MEMBER CORRADINI: So, can I -- so let's  
3 go to NUREG 1537, non-power reactors. I can think of  
4 some of the bigger ones of those that don't meet the  
5 right-hand side of the lower one to the right, so am  
6 I concerned?

7 In other words, the NIST reactor on the  
8 Gaithersburg campus probably doesn't meet the bottom  
9 one to the right unless I say that the campus itself  
10 is a low population center. Is that what you said  
11 over the phone? Did I --

12 MR. RECKLEY: Yes, that you could look at  
13 the campus again, it's a huge campus, and look at it  
14 in the context of how far are you actually away from  
15 a population, a dense population?

16 MEMBER KIRCHNER: Bill, what Mike brought  
17 up, it was in my mind and I didn't work through this  
18 in advance. Would this be consistent with the rule  
19 for non-power reactors, research reactors and such?  
20 In other words, would they collapse to the same  
21 answer?

22 MEMBER BLEY: I'm not sure. I mean, we  
23 did the NIST reactor --

24 (Simultaneous speaking.)

25 MEMBER BLEY: We did the NIST reactor a

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1 few years ago and they really had almost a nil source  
2 term. I don't remember the details. I doubt that --

3 MEMBER CORRADINI: But, except for the  
4 Gaithersburg campus, they're in a population area that  
5 would be greater than 25,000.

6 MEMBER BLEY: Yes.

7 MEMBER REMPE: But to meet it, Steve,  
8 right --

9 MR. LYNCH: Yeah.

10 MEMBER REMPE: -- pointed out the very  
11 restrictive criteria, but I have another question I  
12 want to ask after that, but go ahead and repeat what  
13 you said at the meeting.

14 MR. LYNCH: Sure, yeah, I can. Yeah, this  
15 is Steve Lynch. I'm currently the Acting Chief of the  
16 Advanced Reactor Licensing Branch and I'm also working  
17 with the Research and Test Reactors Licensing Branch.

18 As far as the siting of a NIST reactor,  
19 yes, it is in a population center that may be greater  
20 than 25,000, but one of the differences, at least  
21 under its current licensing basis, is the more  
22 restrictive dose at the site boundary.

23 I believe that NIST is licensed such that  
24 the maximum dose at the site boundary is limited to  
25 100 millirem, so I think that is one of the different

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1 considerations with that facility to address  
2 consistency with the NPUF rule.

3 MEMBER CORRADINI: But if it were one rem  
4 instead of 100, if it was a factor of 10 larger, would  
5 I really change anything? I understand what you're  
6 saying, but it still doesn't change anything from a  
7 health hazard standpoint.

8 MR. LYNCH: Could you clarify what you're  
9 asking with the --

10 MEMBER CORRADINI: What I'm saying is if  
11 the NIST reactor were to have done a calculation --  
12 I'm using them as a government example. I have other  
13 examples that I could bring up. But if it were,  
14 instead of 0.1 rem, it was one rem at the boundary, it  
15 still is not a health hazard, so it wouldn't require  
16 evacuation, so --

17 MR. LYNCH: Correct.

18 MEMBER CORRADINI: -- it's equivalent.  
19 It's an equivalent question.

20 MR. LYNCH: Correct, and I think that's  
21 where the NPUF rule comes in. So the 100 millirem was  
22 a conservative number that, in the absence of accident  
23 dose criteria for non-power reactors in the  
24 regulations, facilities such as NIST had voluntarily  
25 used as their accident dose criteria.

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1           With the NPUF rule, accident dose criteria  
2           for research reactors will be set at one rem. And as  
3           we were saying, if, at the site boundary, it's  
4           demonstrated that, for the duration of an accident,  
5           dose is at less than one rem, there would be no  
6           offsite emergency planning needed.

7           MEMBER REMPE: So this ties into the  
8           question I've been wanting to ask. During the  
9           Subcommittee meeting, I believe the question was  
10          raised on how do you do this calculation? Is it a  
11          conservative calculation? Is it best estimate? And  
12          I thought that some changes would be made to the draft  
13          SECY to clarify what you wanted.

14          MR. RECKLEY: And again, that was what we  
15          were trying to do with the change to the footnote, so  
16          it you look at --

17          MEMBER REMPE: But show me how that's --  
18          on page 21's footnote or which footnote? Maybe I  
19          missed it.

20          MR. RECKLEY: Yes, basically on slide 21  
21          that lays out two approaches as we had currently  
22          identified.

23          MEMBER REMPE: Put the slide up there and  
24          show me that it tells me to do conservative or best  
25          estimate. I get the first part for 1353, but for a

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1 different approach --

2 MR. RECKLEY: For 1353, you're going to be  
3 doing the design basis event or beyond design basis  
4 event best estimate calculations.

5 MEMBER REMPE: What about the applicant  
6 using a licensing approach different from that in  
7 1353? How do I know that guy has to do a conservative  
8 calculation or a best estimate one?

9 MR. RECKLEY: For the other set that we  
10 can know how they do it, right, but there's a  
11 hypothetical that we don't know what they'll be  
12 proposing, so it's hard to address, but for the other  
13 ones that we know, which would be light water, small  
14 modular reactors, the option that they have is to use  
15 the existing guidance for light water reactors, which  
16 would be to use the source term out of NUREG 1465.

17 That's considered to be a conservative  
18 source term, but, so it's not taken, for example, like  
19 the advanced reactor approach in DG-1353, but it would  
20 be best estimate calculations, using best estimate  
21 calculations.

22 It would be the more traditional approach  
23 that you would find in the siting calculation in a  
24 current FSAR for a currently operating reactor. Those  
25 are the two that we know because we've seen them

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1 before.

2 People can propose alternatives. A light  
3 water SMR could propose something similar to, but  
4 deviations from the guidance that's in 1465, and we've  
5 seen some of that where the guidance is used in some  
6 respects, but it's tweaked to reflect specific design  
7 details, specific release paths and filtering that  
8 might occur, that might not be in a traditional light  
9 water reactor containment.

10 In your case of the maximum hypothetical,  
11 they could propose that and we'd have to review it on  
12 its merits. I don't really have any specific guidance  
13 on how somebody would do a maximum hypothetical except  
14 for almost by definition, it's not best estimate  
15 because they're making up something that's  
16 intentionally conservative.

17 MEMBER BLEY: But your expected response  
18 to that question would have been the second insert you  
19 put up there, is that right?

20 MR. RECKLEY: Yes, well, only in that we  
21 didn't want to repeat a lot of the stuff from 1353  
22 that describes how that's done and from that SECY  
23 paper. What we were adding, because that's where I  
24 thought the question was, was more what would a light  
25 water reactor, what would somebody that's not using

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1 1353 do?

2 And again, the easiest to describe is a  
3 light water reactor approach, and then they always  
4 have an option of proposing something on their own and  
5 they would have to justify it on their own merits.

6 MEMBER REMPE: So I guess I was expecting  
7 from the Subcommittee meeting that there would be  
8 something about, that would say, "By the way, if you  
9 have something that's not a light water reactor or not  
10 the 1353 approach, we'd expect it to be darn  
11 conservative," and I guess I don't see that here, but  
12 maybe there's some other thing that gives them a clue.

13 MEMBER CORRADINI: What I'm hearing Bill  
14 say is what's in blue is a conservative approach in  
15 the light water world.

16 MR. RECKLEY: Right, they could propose  
17 something.

18 MEMBER CORRADINI: And expecting an  
19 equivalency in the non-light water world if something  
20 comes up, and that's how they judge it.

21 MR. RECKLEY: Thank you, but it's going to  
22 be a different source term than what's defined in  
23 1465. You have different fuels, different --

24 MS. CUBBAGE: And I might add, this is Amy  
25 Cabbage again, that we're going to need to figure that

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1 out to do the other part of siting, to figure out do  
2 they meet the dose limits? Can they have a certain  
3 EPZ? And then this is just going to leverage that  
4 same number.

5 So the intent of this document wasn't to  
6 define how every possible person is going to come up  
7 with their source term, but given a certain source  
8 term, how would we translate that into different  
9 population density requirements?

10 I know that's not satisfying to you  
11 because it's kind of like, well, but separately, we  
12 have activities ongoing to look at source term and  
13 other matters, and I think it's pretty clear from the  
14 LMT guidance how you would do it. It's clear from the  
15 light water world how you would do it. If someone  
16 wants to come up with a different approach, we'll just  
17 have to face that, and we'll need to figure that out  
18 to give them a license regardless of this siting  
19 issue.

20 MEMBER BLEY: As you folks described, this  
21 is a high level SECY.

22 MR. RECKLEY: Yes.

23 MEMBER BLEY: There's a lot of details for  
24 implementation.

25 MR. RECKLEY: That you'll see when we do

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1 the Reg Guide.

2 MEMBER BLEY: That's what I wanted to get  
3 to. Your intent is to do a Reg Guide to support this  
4 to cover --

5 MR. RECKLEY: Yes.

6 MEMBER BLEY: -- these details.

7 MR. RECKLEY: This will be a change --

8 MEMBER BLEY: Because it's either going to  
9 work well or not depending on that guidance.

10 MR. RECKLEY: Right, and so our plan and  
11 what we call out in the paper is whatever option is  
12 chosen, except for option one, which is status quo, it  
13 would involve changing Regulatory Guide 4.7 to add  
14 this as an alternative to the current approach of 500  
15 persons per square mile out to 20 miles.

16 MEMBER BLEY: Okay.

17 MR. RECKLEY: Moving on then to the last  
18 option, option four, I'll just briefly touch on it.  
19 I don't believe there was a lot of support for this  
20 one either. This was to develop broader societal risk  
21 measures.

22 These are measures that would look at  
23 potential doses to individuals and also population  
24 doses. It would look at effects on economies, land  
25 availability, displacement, decontamination costs,

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1 broader societal costs, and this kind of approach has  
2 been talked about for decades, and usually avoided for  
3 some of the disadvantages there. It talks a lot of  
4 time to develop.

5 It would be a significant change from the  
6 current siting, kind of treated as an independent  
7 element because both the design and the site would be  
8 looked at together, and so depending on how you did  
9 it, you could have a design that would be acceptable  
10 for one site and not acceptable at another site as a  
11 result of the societal measures.

12 MEMBER BLEY: As a -- you know, you  
13 introduced this in the SECY as this is a really good  
14 idea if you could implement it.

15 MR. RECKLEY: Yes.

16 MEMBER BLEY: The trouble is in  
17 implementation.

18 MR. RECKLEY: Right.

19 MEMBER BLEY: We heard comments from  
20 others that kind of focused on land contamination. We  
21 had a meeting a couple of years ago on this issue of  
22 societal risk, and especially because that was the big  
23 thing that went --

24 MR. RECKLEY: Right.

25 MEMBER BLEY: -- they had over in Japan.

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1 We calculate, or we used to calculate land  
2 contamination as part of the risk assessments. We  
3 don't always report them, but we could.

4 You could have kind of a three prime  
5 that's the way it is, but adds a land contamination  
6 factor as a surrogate for possible societal risk  
7 measures. I don't know how easy it would be to reach  
8 agreement on what a criteria ought to be for that.

9 MEMBER KIRCHNER: I think, again, you'd  
10 have to first resolve the low dose issue, which has  
11 proven intractable for years and years despite  
12 evidence to the contrary.

13 MR. RECKLEY: And we do use, when we do  
14 our regulatory analysis --

15 MEMBER KIRCHNER: But with a criterion, a  
16 cutoff somewhere.

17 MEMBER BLEY: Right.

18 MR. RECKLEY: And we point out --

19 MEMBER KIRCHNER: And that would  
20 difficult.

21 MR. RECKLEY: We point out in the paper  
22 that in terms of regulatory analyses that we do for,  
23 like, rule changes, you can identify a delta, but it's  
24 an existing situation, a plant modification that we  
25 may require or not require.

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1           You've got like a situation, then you can  
2 assess, and we do consider these factors when we do  
3 the regulatory analysis in the cost benefit  
4 assessment. What gets difficult is when you don't  
5 have a binary thing to compare.

6           Then as Walt was mentioning, you need to  
7 come up with some other criteria and it's been very  
8 elusive, and that is why we have not recommended this  
9 option, although as Dr. Bley mentioned, if one could  
10 do it, it would be the best measure of the actual  
11 impact of a reactor on a particular community.

12           So it's just that we don't think it's  
13 practical. So we recommend option three, and as John  
14 mentioned, we would appreciate the insights of the  
15 Committee on both the options and the recommendation.

16           MEMBER BLEY:     Just as a matter of  
17 discussion, a short one, I don't remember in the  
18 environmental analysis that supports a license  
19 application, they have at least an abbreviated form of  
20 PRA. Do they do a land contamination calculation  
21 there? Since nobody else knows either --

22           MR. RECKLEY:    We would --

23                            (Simultaneous speaking.)

24           MEMBER BLEY:    -- we won't need to pursue  
25 that one.

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1 MR. RECKLEY: Okay, I don't know. I'll  
2 look at Marty. Is it included in the SAMA/SAMDA  
3 evaluations? It's not? Okay, so, no.

4 MEMBER BLEY: Thank you, and that was your  
5 last slide.

6 MR. RECKLEY: Yes.

7 MEMBER BLEY: Anything from members of the  
8 Committee? Mr. Chairman, back to you on time.

9 CHAIRMAN RICCARDELLA: Thank you, very  
10 good. We have a very busy agenda this week, and so  
11 I'm happy that people are staying on schedule. I  
12 think we should continue with the second item, which  
13 is the Turkey Point subsequent license renewal, and I  
14 will turn the floor over to our Vice Chairman Matt  
15 Sunseri.

16 VICE CHAIRMAN SUNSERI: Thank you, Pete.  
17 Maybe we'll just give it a second for the tables to  
18 rearrange here.

19 CHAIRMAN RICCARDELLA: That's fine.

20 VICE CHAIRMAN SUNSERI: Okay. While you  
21 all are getting your presentation up out, I'll go  
22 ahead with some of the administrative stuff here.

23 All right. Thank you Mr. Chairman. This  
24 is the -- the purpose of this part of the meeting  
25 today is for Florida Power & Light Corporation, and

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1 the NRC to brief the full Committee on subsequent  
2 license renewal activities for the Turkey Point  
3 Nuclear Generating Stations Three and Four.

4 A panel license review subcommittee  
5 previously met on June 21, 2019 to discuss this  
6 application. The subcommittee's objective was to  
7 focus on the safety aspects of this application and to  
8 formulate a proposed position and action for  
9 deliberation by the full Committee, which we will do  
10 following the presentations today.

11 Due to separate and independent external  
12 relationships with structural integrity associates,  
13 Peter Riccardella and I are recusing ourselves from  
14 the deliberations on the topic of metal fatigue, class  
15 one components, environmentally assisted fatigue, and  
16 the leak before break analysis for Class One auxiliary  
17 piping as these topics relate to the Turkey Point  
18 subsequent license renewal application.

19 At this point I'd ask Meena Khanna of the  
20 Division of Materials and License Renewal if you have  
21 any remarks before we start?

22 MS. KHANNA: Okay, thank you. Thank you  
23 Chairman Riccardella, Mr. Sunseri and members of the  
24 ACRS. I am Meena Khanna, Acting Deputy Director of  
25 the Division of Materials License Renewal.

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1           We sincerely appreciate the opportunity to  
2 today to present to the ACRS full committee, the  
3 results of the staff's safety review of the first  
4 application for subsequent license renewal, also known  
5 as Operation Beyond Sixty Years.

6           This application was submitted by Florida  
7 Power & Light Company for the Turkey Point Nuclear  
8 Generating Station, Units Three and Four, located near  
9 Homestead, Florida.

10          I'd like to note that we did have the  
11 opportunity to present the results of the staff's  
12 safety review of the Turkey Point SLRA to the ACRS  
13 subcommittee back on June 21.

14          Before I proceed any further, we would  
15 like to acknowledge the very challenging circumstances  
16 that the employees of Florida Power & Light and their  
17 families, as well as the residents of Florida and the  
18 Bahamas are experiencing as a result of Hurricane  
19 Dorian.

20          We understand that FPL is implementing its  
21 hurricane preparedness procedures to ensure the safety  
22 of their nuclear power plants, their personnel, and  
23 the public. As a result, some of the FPL members of  
24 the Turkey Point team are unable to attend this  
25 meeting in person today, but will be with us by phone.

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1           We really appreciate those that have  
2 actually joined us under these circumstances. Our  
3 thoughts and prayers are with those that have been  
4 impacted by the storm.

5           By way of background, Turkey Point's Three  
6 and Four received approval for their initial renewed  
7 licenses from the NRC on June 6, 2002. The NRC review  
8 at that time was performed using guidance developed  
9 prior to the issuance of the Generic Aging Lessons  
10 Learned Report, or the GALL Report.

11           The NRC guidance for license renewal over  
12 the years has evolved through enhancements and  
13 improvements based on lessons learned from NRC license  
14 renewal reviews and from both domestic and  
15 international industry operating experience.

16           The GALL Report went through two revisions  
17 and additional interim staff guidance was issued  
18 following revision two. The guidance for subsequent  
19 license renewals contained in the GALL SLR Report  
20 built upon the previous guidance, and included  
21 additional focus and enhancements where necessary on  
22 aging management and time limited aging analysis for  
23 operation in the 60 to 80 year period.

24           In the staff's presentation today, you  
25 will hear about some of these specific SLR issues as

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1 applied to the Turkey Point review.

2 The NRC Project Manager for Turkey Point  
3 subsequent license renewal application safety review  
4 is Ms. Lois James, here behind me. Mr. Billy Rogers,  
5 also a Senior PM on the Turkey Point project, will  
6 present an overview of the staff's safety review  
7 today.

8 Part of the management team that are here  
9 with me today include Mr. Eric Oesterle, Chief of the  
10 License Renewal Project Branch seated next to me. And  
11 in the audience are other DMLR and NRR technical  
12 branch chiefs as well as our staff.

13 In addition, we have several staff on the  
14 phone in case there are specific questions about the  
15 technical review. We also have on the phone Paula  
16 Cooper from Region II, who oversaw the facility  
17 inspections associated with the effectiveness of the  
18 Aging Management Programs implemented for initial  
19 license renewal, as well as other NRR staff who  
20 supported the review.

21 We look forward to a productive discussion  
22 today with the ACRS. And as always, look forward to  
23 addressing any questions that you may have.

24 At this time, I'd like to turn the  
25 presentation over to Mr. Bill Maher, FPL Senior

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1 Licensing Director to introduce his team and commence  
2 their presentation. Thank you.

3 MR. MAHER: My name is Bill Maher, I'm  
4 Senior Licensing Director for Subsequent License  
5 Renewal. Again, I'd like to echo the remarks of the  
6 NRC as far as being able to accommodate us, and the  
7 flexibility of the Committee to actually have people  
8 on the phone who are not able to make it as a result  
9 of Hurricane Dorian.

10 It was an interesting flight up this  
11 morning. There were some bumps, but we got along.  
12 And we actually made it. So, go to slide two.

13 So, what I'd like to do is to briefly  
14 introduce, I already introduced myself. To my right  
15 is Brian Stamp. He's the Site Director for Turkey  
16 Point Three and Four.

17 And to my left I have Steve Hale from  
18 ENERCON who is our technical lead on one of the  
19 contractors that we have working on the project,  
20 ENERCON. And Steve Franzone is on my staff, who is a  
21 Licensing Manager associated with subsequent license  
22 renewal.

23 I did want to at least preface this  
24 particular presentation to show how we have satisfied  
25 the NRC requirements for subsequent license renewal.

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1 How the aging affects associated for subsequent  
2 license renewal are being effectively managed such  
3 that the intended functions are being maintained.

4 And like Brian will point out, how our  
5 gains are being -- how we're being able to maintain  
6 those as we go through a period of subsequent, period  
7 of observation. And I'll turn it over to Brian.

8 MR. STAMP: Hi, good afternoon. Like Bill  
9 stated, my name is Brian Stamp. I am the site -- like  
10 Bill said, I am Brian Stamp, Site Director at Turkey  
11 Point. That means that I own the performance at  
12 Turkey Point specifically, as well as a shared  
13 oversight of the entire nuclear fleet.

14 Today on the slide we're looking at, I  
15 want to talk briefly about our performance philosophy,  
16 and specifically how it entails the sustainability.

17 The model that you're seeing is a model  
18 that our C&O put together to really describe what that  
19 sustainability looks like. And before this, all of  
20 this comes from the philosophy that is governed by our  
21 nuclear excellence model.

22 That nuclear excellence model has been  
23 with us since 2008. And it has stayed the same for  
24 all these years.

25 It has a list of core values as well as

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1 core principals. The primary core value is around  
2 deep respect for nuclear safety.

3 It also has a value of self improving  
4 culture, learning organization, as well as a PDC. In  
5 the PDC model, prevention, detection, and correction  
6 which really describes how we want to spend 80 percent  
7 of our time in that prevention and detection, and only  
8 20 percent of our time in the actual correction.

9 That goes on down to a core principal that  
10 really goes back to the sustainability and the  
11 subsequent license renewal, which really is around the  
12 effective long range planning of all the site  
13 activities.

14 Now interestingly, the INPO organization  
15 recently took our model with our C&O at the time, Mano  
16 Nazar, and created their own document called the INPO  
17 19-3. And it's staying on the COB.

18 While the words are a little different,  
19 the output really is the same. It's really all about,  
20 how do we make sure that we retain the gains that  
21 we've already got at the performance level we're at,  
22 plus rigorously and aggressively build additional  
23 margin?

24 You know, one of the big criteria that we  
25 use to make sure that we are doing both retaining and

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1 building a margin, it comes out at 10 CFR 50, Appendix  
2 B, the quality assurance program.

3 You know, in that program there's two or  
4 three key activities. One being the design control.  
5 You know, that design control really ensures that we  
6 make sure that the regulatory requirements as well as  
7 our design basis requirements are rigorously reviewed.  
8 They are tested and monitored.

9 And then all the reviews and the testing  
10 then get in turn put into our control documents.  
11 Whether that's a procedure or a document, that's used  
12 in the field, like a drawing or a work order.

13 That's how that ensures that that design  
14 basis is maintained. The regulatory basis is  
15 maintained.

16 The other big part of that is the  
17 corrective action program. That corrective action  
18 program, the implementation of that ensures that any  
19 adverse conditions in quality are quickly identified,  
20 plus evaluated quickly, and/or the corrective actions  
21 to prevent recurrence, put back into those same  
22 documents, again, the procedures that we use or the  
23 design documents that we use to improve those.

24 The last part of that really is the  
25 configuration control that comes out of the procedure

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1 process. That configuration control is what we use to  
2 make sure that the site is always in the same  
3 configuration as again, the design basis document as  
4 well as the regulatory requirements say they should.

5 Now, all this goes back to, you know, this  
6 retaining the gains, the aggressively building the  
7 margin. That is really built into our core business  
8 so that all of the, all of my direct reports have this  
9 built into their daily work life, as well as all the  
10 people below them.

11 And then taking this back to the  
12 subsequent license renewal, it really goes back to the  
13 way that we are implementing the aging management  
14 process and program to ensure that again, we have that  
15 sustainability long term.

16 With that, I'd like to turn it over to  
17 Steve Franzone.

18

19 MR. FRANZONE: Thank you Brian. Good  
20 afternoon. My name is Steve Franzone. I am the  
21 Licensing Manager for the subsequent license renewal  
22 project for Turkey Points Three and Four.

23 Slide four gives you an overview of the  
24 location of Turkey Point Units Three and Four, which  
25 is at the location -- which is at the very southern

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1 tip of the Florida mainland.

2 The star in the center of the circle marks  
3 the location of the site. It is located approximately  
4 25 miles south of Miami.

5 The black dash circle represents the 50-  
6 mile radius of the plant. The closest cities are  
7 Homestead and Florida City, which are approximately  
8 nine miles west of the site.

9 The site is sandwiched between the  
10 Everglades National Park and the Biscayne National  
11 Park. The site has approximately 680 full time  
12 employees. Go to slide five.

13 This slide provides a view of the entire  
14 site looking north. Biscayne Bay is on the right-hand  
15 side of the photo.

16 A little history about the site, site  
17 construction started in 1965 by the Bechtel Power  
18 Corporation with two 400 megawatt coil plants, which  
19 are Units One and Two.

20 The construction permit for Turkey Point  
21 was granted in 1967 for Units Three and Four. The  
22 Nuclear Unit started commercial operation in 1972 and  
23 1973 respectively.

24 The cooling canal serves as our closed  
25 circulating water system as it is -- and as the

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1 plant's ultimate heat sink. The intake is on the  
2 right and the discharge is on the left. And you'll  
3 see a better view in a few slides.

4 The licensed thermal power is 2,644  
5 megawatts thermal. At the top of the photo is Unit  
6 Five, which is an 1150 megawatt electric combined  
7 cycle gas fired plant which went into commercial  
8 operation in 2007.

9 Unit One and Two have since -- have been  
10 retired since this photo was taken. And the stacks of  
11 the units have been dismantled.

12 This slide presents the major events that  
13 have occurred at the Turkey Point site. You can see  
14 the dates for the initial operating license.

15 In 1983 and 1984, the original steam  
16 generators for both units were replaced. In fact, it  
17 was only the U-tube section which was actually  
18 replaced.

19 In 1991, the onsite electrical systems for  
20 both units were upgraded. And this included going  
21 from two emergency diesel generators to four emergency  
22 diesel generators, adding a spare battery, new digital  
23 sequencers, redistribution and separation of loads.  
24 And upgrading the RCS RCDs.

25 Other notable events in the plant history

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1 include surviving Hurricane Andrew in 1992, and the 5  
2 percent uprate in 1995. We were not only a pre-GALL  
3 plant, but we're also the first Westinghouse units to  
4 receive a renewed license in 2002.

5 We replaced the reactor vessels in 2004  
6 and '05. Finally, we received approval for an  
7 extended power uprate, which included a 1.7 percent  
8 measurement on certain recapture in 2012, and entered  
9 into the period of extended operation for Unit Three,  
10 and of course Unit Four was 2013. At that point, the  
11 fuel enrichment was increased to 5 percent.

12 CHAIRMAN RICCARDELLA: Excuse me, just a  
13 correction for the record. They replaced the reactor  
14 vessel heads, not the reactor vessels.

15 MR. FRANZONE: Yes. Sorry. Good catch.

16 MEMBER BLEY: Not that it's -- well, it  
17 might be relevant to this.

18 MR. FRANZONE: It would be real hard.

19 MEMBER BLEY: How did you do during  
20 Andrew? Was there flooding there?

21 MR. FRANZONE: Do you want to take that  
22 one?

23 MR. STAMP: No, actually there was no  
24 flooding. I was actually onsite during Hurricane  
25 Andrews. There was actually no flooding.

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1           Andrew didn't have a lot of heavy rains  
2           like the storm that just went through, Dorian.

3           MEMBER BLEY: Um-hum.

4           MR. STAMP: The -- I was in the control  
5           room, and it was actually just like a simulator  
6           scenario. The plant actually operated exactly like it  
7           was designed.

8           Probably the best ever.

9           MEMBER BLEY: Interesting. And it didn't  
10          -- I mean, it looks like it would have pumped water  
11          into your intake area and flooded that.

12          But it didn't?

13          MR. STAMP: No. No, Andrew --

14          MR. FRANZONE: I think it was closed.

15          MR. STAMP: I was just going to say,  
16          Andrew was moving at a pretty good clip. If I  
17          remember right, it was 10 or 12 miles an hour. So,  
18          and it was a very small, condensed storm.

19          So, it actually passed over the site in  
20          roughly three to four hours, the main part of that  
21          storm.

22          MEMBER DIMITRIJEVIC: And did you lose  
23          power?

24          MR. STAMP: Yeah. We lost all offsite  
25          power. But again --

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1 MEMBER DIMITRIJEVIC: For how long?

2 MR. STAMP: Well, you're now you're --

3 MR. HALE: About a week.

4 MR. STAMP: You're testing me.

5 MR. HALE: Yeah. We lost all the -- oh,  
6 I'm sorry. Steve Hale, ENERCON. We lost all the  
7 transmission lines going into the site.

8 They were restored within about a week.

9 MEMBER DIMITRIJEVIC: So, did you operate  
10 on the diesel generator for a week?

11 MR. HALE: Yes. Yes, we did.

12 MEMBER DIMITRIJEVIC: That's what I know.

13 MR. HALE: It also highlighted some  
14 challenges with regard to communications. Because a  
15 lot of the communications were relying on cell towers  
16 and things of this sort.

17 So, actually working with the NRC in the  
18 region, we addressed some of the issues that fell out  
19 of Hurricane Andrew with regards to communications.  
20 You know, satellite phones, things like that, to  
21 improve that response in case something like that  
22 happened again.

23 MEMBER DIMITRIJEVIC: Well, interesting  
24 that you just added to do the generator the year  
25 before that happened.

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1 MR. HALE: Yes. Very convenient. Yes.

2 (Laughter)

3 MR. FRANZONE: Yes. And the flood level  
4 for the site is 20 foot minimum protection. And it  
5 goes higher. And the surges were not that high.

6 And in fact they were very much in line  
7 with what they had predicted back in the '70s, so.  
8 All right. Are we ready to go on? Okay.

9 MEMBER KIRCHNER: Do you --

10 MR. FRANZONE: Yes, sir?

11 MEMBER KIRCHNER: What's the current  
12 operating status of the plant today?

13 MR. FRANZONE: Both units are at 100  
14 percent power.

15 MEMBER KIRCHNER: They're still at 100  
16 percent, okay.

17 MR. FRANZONE: Yes. We did not shut down  
18 for this storm.

19 MEMBER KIRCHNER: Okay. Thank you.

20 MR. FRANZONE: As you can see, the main  
21 features here are the closed loop cooling canals.  
22 This feature is unique to Turkey Point, and is  
23 approximately 168 miles of cooling canal.

24 It is basically a giant radiator that you  
25 can actually see from space. It not only provides the

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1 normal cooling flow, so acts as the ultimate heat  
2 sink.

3 The red solid line is the site boundary.  
4 Where the bright yellow solid line is, the exclusion  
5 area boundary.

6 To maintain the efficiency of this giant  
7 radiator, the measures that we take include selective  
8 dredging and clearing of the vegetation from the  
9 berms.

10 This insert, the insert provides location  
11 of the major structures. And we'll discuss it on the  
12 next slide in more detail.

13 As you can see here, it's an expanded view  
14 of the insert from slide eight. To orient you, north  
15 is at the top of the slide. And just out of view is  
16 the Unit Five, the combined site for natural gas unit.

17 We'll start from the left and go to the  
18 right and just point out the major structures. Then  
19 if you have more questions.

20 So first you'll see the switch yard. Next  
21 will be the discharge structure. And then the turbine  
22 building.

23 And then we have the containments, which  
24 are post-tension containments. Sandwiched in between  
25 the containments is the control building. It's the

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1 comm and control building for both Units.

2 And then next again, is the OX building.  
3 Again, it's common for both Units. Then next we'll  
4 have the intake structure.

5 And finally, on the very right-hand side  
6 of the photo, you can see the independent spent fuel  
7 storage facility. Any questions? I'll just go on.  
8 Okay. Slide nine.

9 FPL's made -- has made and continues to  
10 make significant investments in the plant. This slide  
11 provides a listing of recent major modifications and  
12 upgrades for the plant.

13 The timing of the submittal is important,  
14 because when you take into account the ten-year window  
15 for the pre-SPEO inspections, we are in the five-year  
16 planning window for major projects.

17 Also, the submittal is important in  
18 achieving our goals of retaining gain and building  
19 margin for Turkey Point, as we discussed on slide  
20 three.

21 Turkey Point has been an integral part of  
22 the south Florida community for over 45 years.  
23 Operation at Turkey Point, there are estimated to  
24 generate nearly 1.7 billion dollars of total economic  
25 output annually.

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1           The plant staff has a long history of safe  
2 operation, and are valued members of the community,  
3 having volunteered over six thousand hours in support  
4 of charitable organizations.

5           The continued operation of Turkey Point  
6 into a subsequent period of extended operation will  
7 allow the plant workers and FPL to continue supporting  
8 the local community.

9           MEMBER BLEY: Before you go.

10          MR. FRANZONE: Yes?

11          MEMBER BLEY: Can you tell me about two of  
12 those items? The obsolescence projects and what  
13 happened to your containment spray piping? How come  
14 you had to replace that?

15          MR. FRANZONE: You want to start with the  
16 containment spray piping?

17          MR. STAMP: Yeah. The containment spray  
18 piping, we actually have --

19          MR. FRANZONE: There we go, Brian.

20          MR. STAMP: So, the containment spray  
21 piping, we've actually started to replace some of that  
22 piping. We started the last outage on one Unit where  
23 we replaced the piping on the penetration into the  
24 area that was susceptible to the corrosion.

25          We're preparing for the upcoming outage in

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1 the spring, and to do the similar on the second Unit.  
2 And then the following fall, we're going to come back  
3 and replace all the piping on the first Unit that we  
4 did.

5 MEMBER BLEY: You did have extensive  
6 corrosion then?

7 MR. STAMP: No. We did -- we did evaluate  
8 the internals of the piping. The corrosion, I  
9 wouldn't say it was extensive, but it was corrosion  
10 there.

11 But, you know, preemptively we did replace  
12 the piping. There was a, you know, it did have the  
13 corrosion on it. And we're going to do it.

14 We're assuming that the same condition  
15 belongs on the other Unit. So we're going to replace  
16 the same piping on that.

17 MEMBER BLEY: Okay.

18 MR. HALE: We just need to explain the  
19 piping is carbon steel. Okay.

20 MEMBER BLEY: Yes. Okay.

21 MR. HALE: And by design, I don't think it  
22 was originally thought that it would be exposed to the  
23 boric acid on a regular basis. But, so the corrosion  
24 was really had to do with carbon steel and boric acid  
25 really.

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1 MR. FRANZONE: Okay. And that second,  
2 your first question you had was on the obsolescence  
3 project?

4 MEMBER BLEY: Um-hum.

5 MR. FRANZONE: Right. So, as you know,  
6 Turkey Point, and a lot of nuclear plants get older,  
7 and so some of the components that we originally had  
8 become obsolete.

9 So, what we've done is, is there's  
10 basically a structured program. And we went through  
11 a whole laundry list of items that we ended up  
12 replacing.

13 I'll give you an example, would be the OX  
14 transformers were replaced as part of that. Control  
15 Board, enunciation system was replaced. We replaced  
16 the instrument air system.

17 We've replaced the vital MCC buckets.  
18 Because they needed that. ERDADS was replaced. Let  
19 me see, some of the other ones. A significant portion  
20 of the fire protection system.

21 We replaced ICW, which are intake cooling  
22 water and component cooling water, which is our  
23 service water strainers. And we recoded simple,  
24 recoded some of the internals of the tanks.

25 And then the rod position indication

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1 system was also upgraded. And so, it's just an  
2 ongoing effort that we have to make because these  
3 plants are just getting older, and the parts are not  
4 available.

5 MEMBER REMPE: So, on this slide, I don't  
6 see anything about the steam generator replacements.  
7 And they were done thoroughly --

8 MR. FRANZONE: In 1983 and 1984. So, this  
9 slide mainly is after the renewed license was issued  
10 in 2002.

11 MEMBER REMPE: Okay.

12 MR. FRANZONE: Just trying to capture the  
13 major ones.

14 MEMBER REMPE: How are the tubes behaving  
15 with the replacement steam generators?

16 MR. FRANZONE: Very good. Unit Three is  
17 only 2 percent plugged. And Unit Four is three-  
18 quarters of a percent plugged.

19 So they're doing really good. We've taken  
20 the lessons we had in the early '70s to heart. And  
21 after that when we did replace the generators, we had  
22 very tight chemistry controls, so.

23 MR. HALE: In fact, for extended power  
24 uprate, the Committee here asked some questions about  
25 the steam generators and performance after the

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1 extended power uprate.

2 And they performed very well. We haven't  
3 seen any degradation associated specifically for the  
4 increase in power level.

5 MEMBER REMPE: Okay. Thank you.

6 CHAIRMAN RICCARDELLA: What about your  
7 instrument and control system? Did you do any  
8 upgrades with that?

9 MR. FRANZONE: Instrument air?

10 CHAIRMAN RICCARDELLA: No. I&C? Just  
11 have you gone with a digital system more recently?

12 MR. STAMP: Yeah. For a lot of things.  
13 For example, on all the feedwater controls, they have  
14 all been transferred over to digital.

15 All of the modules that were originally in  
16 place for all of the control systems, you know, that  
17 inputted into the direct protection system, safeguard  
18 system, have all been upgraded to newer models.

19 In fact, we're getting ready to go to a  
20 third round of that, and to further upgrade those  
21 again.

22 MR. HALE: And for the extended power  
23 uprate for the turbine controls, we actually moved the  
24 DEH system and digital controls on the turbine.

25 CHAIRMAN RICCARDELLA: Thank you.

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1 MR. FRANZONE: Okay. If we go to slide  
2 ten. And as I've mentioned before, both Units are at  
3 100 percent power. Average station capacity factor  
4 for the last two years was 91.9 percent.

5 And unless there's no other questions,  
6 we'll go to the next slide. Okay. The project team  
7 -- we're on slide 11.

8 The project team has many years of both  
9 Turkey Point experience and license renewal  
10 experience. The multi-disciplined team consists of  
11 ENERCON as the lead preparer for the schedule, as well  
12 as Westinghouse, Framatone, and Structural Integrity  
13 Associates in supporting roles.

14 Also, the project team was supported by  
15 the next era FPL fleet and site program owners as well  
16 as various subject matter experts such as Chuck  
17 Ramdeen, who is civil, and he's here today. And Scott  
18 Boggs who is on the phone with us. And Maribel  
19 Valdez, who is also here today.

20 Every aging management program for SLR was  
21 actually assigned a program owner to support a portion  
22 of the application preparation and the NRC review.  
23 The project team generated over 130 reports, which  
24 supported the application in its review.

25 These reports will provide a way to ensure

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1 that knowledge will be passed onto the personnel who  
2 need it in the future.

3 The technical leads for our project  
4 partner, ENERCON are both former FPL employees with  
5 almost 80 years of combined experience with FPL. Both  
6 developed the original license renewal application for  
7 Turkey Point.

8 We have established an SLR/LR liaison  
9 position now in order that we will be successful in  
10 the transition to the subsequent period of extended  
11 operation.

12 Mr. Bob Tomonto, who could not be here  
13 with us today, but he has almost 30 years of licensing  
14 and engineering experience at Turkey Point.  
15 Specifically, his last two jobs have been as the  
16 Turkey Point licensing manager, and as one of the  
17 onsite design engineering managers.

18 I will now turn the presentation over to  
19 Steve Hale who is one of the ENERCON technical leads  
20 I just talked about. Again, thanks for giving us the  
21 opportunity to present today.

22 MR. HALE: Thanks Steve. Good afternoon.  
23 Sorry about that. Thanks Steve. Good afternoon, my  
24 name is Steve Hale. And I work for ENERCON as one of  
25 the technical leads for the Turkey Point subsequent

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1 license renewal project.

2 Previous to that, I worked for Florida  
3 Power & Light for over 46 years. And held many  
4 positions, including the engineering director at the  
5 site.

6 I was directly involved with original  
7 license development for Turkey Point and St. Lucie, as  
8 well as the extended power uprates for Point Beach,  
9 St. Lucie, and Turkey Point. In fact, I actually made  
10 all the ACRS presentations for all those major  
11 licensing actions.

12 Just as a point of interest for original  
13 licenses for Turkey Point, the ACRS subcommittee was  
14 actually conducted at the site of Turkey Point. And  
15 we walked the committee, primarily because it was the  
16 first Westinghouse unit to go through license renewal.

17 For the subsequent license renewal  
18 application, we followed the guidance of NEI 17-01,  
19 which was developed specifically for subsequent  
20 license renewal. To ensure a quality application, we  
21 also reviewed REIs, REI responses for the last eight  
22 applications that went through, and incorporated those  
23 lessons learned.

24 We also conducted peer reviews with other  
25 SLRA participants, and as well NEI, and other industry

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1 folks. One of the other activities we implemented was  
2 to have pre-meetings with the NRC on -- discussing  
3 various technical topics.

4 And we also had a punchlist from the staff  
5 on specific technical issues we needed to address in  
6 the application. Which we did.

7 Our approach going in was to comply with  
8 NUREGS 2191 and 2192 to the greatest extent practical.  
9 And I think we've been able to accomplish that.

10 We alone with the NRC have worked  
11 diligently to hold to the 18-month review schedule.  
12 And with issue of the SER, with no open items or  
13 confirmatory items in July, we were able to beat the  
14 target schedule of 18 months.

15 MEMBER BLEY: Steve?

16 MR. HALE: Yes?

17 MEMBER BLEY: I'm not sure if I've heard  
18 other people say they've reviewed other REIs from  
19 other applications. Did that help you very much?

20 MR. HALE: Yes, very much so. Especially  
21 the later ones. You know, some of the older ones, but  
22 since River Bend and Waterford were fresh, --

23 MEMBER BLEY: Um-hum.

24 MR. HALE: To say the least. And actually  
25 River Bend, they were trying to test the overall

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1 process for subsequent licensing, --

2 MEMBER BLEY: Yeah.

3 MR. HALE: As well as part of the River  
4 Bend review. We thought it was important to look at  
5 those.

6 MEMBER BLEY: So you think you avoided  
7 some --

8 MR. HALE: Yes. We did.

9 MEMBER BLEY: Okay.

10 MR. HALE: Next slide, Steve. Having been  
11 involved with both original license renewal and  
12 subsequent license renewal, I have an excellent  
13 perspective as to what was involved in the integrated  
14 plan assessment for both efforts.

15 And since the ACRS has reviewed every  
16 license renewal application that has proceeded us, and  
17 Turkey Point is the first application for subsequent  
18 license renewal, we thought the best way to present  
19 the methodology was talk about the differences between  
20 what we saw for license renewal and subsequent license  
21 renewal.

22 For scoping and screening, there were  
23 minimal changes, because the criteria really hasn't  
24 changed. You have to address modes that have been  
25 implemented or current licensing basis changes which

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1 may have occurred.

2 And we did have to update our evaluation  
3 for (a) (2), which is the scoping criteria of non-  
4 safety, which can affect safety. And that's primarily  
5 due to the fact that guidance documents have been  
6 developed since we submitted originally. And we had  
7 to address that specific guidance.

8 As we moved into aging management reviews  
9 and aging management programs, you start to see the  
10 differences between subsequent license renewal and  
11 original license renewal.

12 Turkey Point, as has been mentioned  
13 previously, was a pre-GALL plant. And as a result our  
14 aging management reviews were based on available  
15 industry tools at the time.

16 With the issue of GALL Rev. 00, Rev. 01,  
17 Rev. 02, and the interim staff guidance documents as  
18 well as GALL SLR, the number of aging affects we had  
19 to address has expanded somewhat.

20 The most significant differences we saw in  
21 going to subsequent license renewal, was in the number  
22 of aging management programs.

23 Turkey Point currently has 28 aging  
24 management programs for original license renewal. And  
25 moving into SLR, we're going to have 50 aging

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1 management programs.

2 I'd like to give you some specifics on  
3 those AMPs. So of the 50 AMPs, 14 are new, and 36 are  
4 existing. And when I say existing, that's just lining  
5 up what we do at the site with the GALL requirements.

6 For the 14 new AMPs, it's not as if we're  
7 not doing things under those aging management  
8 programs, they're just not under the umbrella of  
9 license renewal or specifically identifying that this  
10 is credited for our renewed license.

11 As noted, there were 11 aging management  
12 programs with exceptions to GALL. All of which had  
13 been reviewed by the NRC and accepted. Most have to  
14 do with specific design features or characteristics at  
15 Turkey Point that require taking the exception.

16 For plant specific AMPs, the new AMP has  
17 to do with the polymer high voltage insulators  
18 associated with the recovery path for the switch yard  
19 to station blackout.

20 It's plant specific because there  
21 currently is no GALL program for polymer insulators,  
22 high voltage insulators.

23 The other plant specific AMP is an  
24 existing AMP, which has been approved by the NRC,  
25 having to do with management of fatigue of the

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1 pressurizer surge lines. Next slide.

2 With regard to commitments, there are 57  
3 mostly on an AMP by AMP basis. And include the  
4 required pre-SPEO inspections.

5 These will be maintained separately for  
6 clarity and to avoid confusion with commitments for  
7 current license renewal.

8 There are three license conditions as  
9 noted here. One of which is replace the carbon steel  
10 piping inside containment, which we've already talked  
11 about.

12 There will be a new chapter of the USFAR  
13 specifically dedicated to subsequent license renewal.  
14 This chapter will include a complete list of the  
15 subsequent license renewal commitments.

16 Both Next Era, FPL, and ENERCON have  
17 extensive experience with license renewal commitment  
18 management and implementation. And this will ensure  
19 all actions will be completed per the schedule.

20 Additionally as Steve mentioned, a new  
21 SLRA liaison position has been created at Turkey  
22 Point, which will be filled by a senior level, highly  
23 qualified and experienced person.

24 Finally, moving onto time limited aging  
25 analysis. The effort for SLR involved the same

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1 detailed search of current licensing basis documents.

2 When compared to original license renewal,  
3 some of the dispositions have changed from disposition  
4 I and double II to triple III. And that's because  
5 there are now GALL AMPs for certain TLAs like fatigue  
6 that didn't exist previously.

7 We also updated the environmentally  
8 assisted fatigue calculations because of some changes  
9 to the guidance documents like NUREG 6909.

10 We did identify two new TLAs for  
11 subsequent license renewal. One is for adopting leak  
12 before break for non-primary loop RCS piping. And the  
13 other involved the update of the reactor coolant pump  
14 integrity analysis supporting Code Case N-481.

15 And that's really all I had to say. Any  
16 questions?

17 MEMBER BLEY: Yeah, the new Chapter 17 SAR  
18 is -- is that required? Or you just decided it was a  
19 good idea?

20 MR. HALE: You're required to have an FS  
21 -- UFSAR updated as part of the regulations with your  
22 submittal.

23 MEMBER BLEY: Right. But the idea of  
24 having a separate chapter on this was --

25 MR. HALE: We thought it would be best.

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1 You know, certainly when you think about the future  
2 and the overall transition between the two, you know,  
3 you can -- we're already making those plans.

4 But initially we felt it best to maintain  
5 a separate UFSAR chapter.

6 MEMBER BLEY: You have any hints of others  
7 in the industry that are likely to do that?

8 MR. HALE: We did have some dialog with  
9 Exelon and Dominion. And I think they're pretty much  
10 following a similar path.

11 MEMBER BLEY: Similar to you. Okay.

12 CHAIRMAN RICCARDELLA: And what's the  
13 status of your reactor vessel with regard to radiation  
14 embrittlement? Anything interesting?

15 MR. HALE: The reactor vessel, we redid  
16 all of the calculations for subsequent license  
17 renewal. TTS is at about 264. Something like that.

18 We did have some components that fell  
19 below the 50 foot pounds for upper shelf energy. That  
20 actually occurred for Turkey Point in the '90s.

21 And so we had to have a specific EMA  
22 analysis --

23 CHAIRMAN RICCARDELLA: Okay.

24 MR. HALE: Addressing upper shelf energy.  
25 But we updated that evaluation for original license

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1 renewal. We updated it for extended power uprate.

2 And now we've updated it again for, when  
3 I say we, it was Framatome actually did the analysis  
4 for the -- the EMA analysis.

5 CHAIRMAN RICCARDELLA: And what is your  
6 total end of life fluence at the end of the -- of  
7 renewal fee? The section renewal fee again?

8 MR. HALE: I will have to pull that value  
9 up. I can get it to you.

10 CHAIRMAN RICCARDELLA: Okay. I'd like  
11 that.

12 MR. HALE: We -- it's in the application  
13 in Chapter 4.2. But, we can give you that.

14 MR. BOGGS: This is Scott Boggs. I'd be  
15 happy to answer that for you.

16 CHAIRMAN RICCARDELLA: Okay. Yeah.

17 MR. BOGGS: The end of life fluence on the  
18 vessel is 1.08 D to the 20th. And on the limiting  
19 weld it's 9.86 D to the 19th.

20 CHAIRMAN RICCARDELLA: Thank you.

21 MR. BOGGS: And that includes significant  
22 margins that we've included for fuel loading.

23 CHAIRMAN RICCARDELLA: Okay. Thank you.

24 MR. HALE: And that was also based on 72  
25 EFPY.

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1 CHAIRMAN RICCARDELLA: Um-hum.

2 MR. HALE: Which basically assumes the  
3 plant runs at like 100 percent capacity factor from  
4 here until the end of the plant life.

5 CHAIRMAN RICCARDELLA: Okay.

6 MR. HALE: So, there's margins inherently  
7 built into the EFPY that was assumed for the fluence  
8 calculations.

9 CHAIRMAN RICCARDELLA: Thank you.

10 VICE CHAIRMAN SUNSERI: So any other --  
11 this isn't the end of your presentation is it?

12 MR. MAHER: No. It's not. So, we're on  
13 slide 17. So, again, I would like to thank the  
14 Committee.

15 Even though Turkey Point is a predone  
16 plant for the first round of license renewal, we've  
17 adopted the SLR goal with minimal exceptions as Steve  
18 was talking about.

19 In keeping with the sustainability that  
20 Brian talked about earlier, the goal now is to focus  
21 on building and maintaining margin to be able to get  
22 to 80 years worth of operation.

23 We have a dedicated individual with  
24 engineering and license experience that has a direct  
25 report to Brian. And he'll oversee the remediation

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1 that's taking place now, and the transition through  
2 the subsequent period of operation.

3           Again, I'd like to thank the ACRS  
4 Committee for the opportunity to present to you. And  
5 we'd like to thank the NRC staff associated with our  
6 work in getting -- working through the areas that  
7 needed to be reviewed so that we could be in this  
8 position right now.

9           And I'll turn it over to Brian for any  
10 closing remarks.

11           MR. STAMP: Yes. So on behalf of Florida  
12 Power & Light and Turkey Point, I would like to thank  
13 the NRC for the thorough review our subsequent license  
14 renewal application.

15           The many hours spent in this review will  
16 give the public confidence in the continued operation  
17 at Turkey Point.

18           The process was very thoughtful. It was  
19 predictable. Which gave us, as well as the rest of  
20 the industry, a clear path forward.

21           And again, we appreciate and recognize the  
22 importance of this first of a kind licensing effort,  
23 both for the industry as well as for ourselves, as it  
24 establishes, you know, lessons learned and processes  
25 going forward.

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1 Thank you very much.

2 VICE CHAIRMAN SUNSERI: Thank you.

3 MEMBER KIRCHNER: May I ask a question?

4 VICE CHAIRMAN SUNSERI: Sure. I was just  
5 going to ask if there were any other questions.

6 MEMBER KIRCHNER: So, often margin is used  
7 for increasing power. Is there a plan to do another  
8 EPU for this plant? For Three or Four?

9 MR. MAHER: No. Not currently there is  
10 not.

11 MEMBER KIRCHNER: Okay. Thank you.

12 VICE CHAIRMAN SUNSERI: Members, any other  
13 questions? And Jose, are you still out there? Do you  
14 have a question for the group?

15 MEMBER MARCH-LEUBA: I'm here. The  
16 weather is improving a lot. But I don't have any  
17 questions.

18 (Laughter)

19 VICE CHAIRMAN SUNSERI: Okay. Well,  
20 that's good to hear. Thank you.

21 All right. Well, I'll just close this  
22 part and say I think this team did a fair  
23 representation of what we heard during the  
24 subcommittee week.

25 There was a little slightly different

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1 group of people I would characterize as closer to the  
2 day to day operations, which really inspired us that  
3 the programs are being implemented in the way that Mr.  
4 Stamp indicated here.

5 So, we appreciate your -- enduring the  
6 hardship to be here during the week. And I know it's  
7 a big commitment to be here when your plant is, you  
8 know, just being missed by a hurricane. So, we thank  
9 you for that.

10 We will now transition to the staff for  
11 the staff presentation. So, Meena, if you could get  
12 your team ready.

13 (Off mic comments)

14 VICE CHAIRMAN SUNSERI: Whenever you're  
15 ready, yes.

16 MR. ROGERS: Good morning Chairman  
17 Riccardella, Mr. Sunseri and Members of the ACRS. My  
18 name is

19 VICE CHAIRMAN SUNSERI: Hold on. Can you  
20 -- is your mic on?

21 MR. ROBERTS: Thank you. I'll start  
22 again. Good morning Chairman Riccardella, Mr. Sunseri  
23 and Members of the ACRS.

24 My name is Bill Rogers. I'm one of the  
25 Project Managers for the safety review of the Turkey

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1 Point Nuclear Generating Units Numbers Three and Four,  
2 or Turkey Point subsequent license renewal application  
3 or SLR for short, or SLRA.

4 As previously stated, we are here today to  
5 discuss the NRC staff's safety review of the Turkey  
6 Point SLRA that is documented in the safety evaluation  
7 report or SER, which was issued on July 19, 2019.

8 And joining me here at the table today is  
9 Angela Wu, a Safety Project Manager in the Division of  
10 Materials and License Renewal, or DMLR, who will be  
11 assisting with the slides.

12 And the Turkey Point Lead Safety Project  
13 Manager, Lois James. And she's a Senior Project  
14 Manager also in DMLR.

15 We have some in the audience, and joining  
16 by phone are additional members of the technical staff  
17 who participated in the review of the SLRA and  
18 conducted the audits. Next slide please.

19 We will begin the presentation with a  
20 general overview of the time line of the staff's  
21 review.

22 The presentation will provide information  
23 on the closure of the open items related to the buried  
24 and underground piping and tanks program, which was  
25 previously discussed in the meeting with the plant

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1 license renewal subcommittee.

2 We will also discuss the disposition of  
3 the aging management programs, AMPs, relative to the  
4 guidance contained in the generic aging lessons  
5 learned subsequent license renewal report, the GALL  
6 SLR report.

7 And the staff's review of the SLRA and  
8 audit activities. We will also highlight several of  
9 the technical areas reviewed, which were unique to the  
10 subsequent license renewal review relative to the  
11 initial license renewal reviews.

12 And discuss the site specific license  
13 condition. And then I will close with the staff's  
14 safety conclusion. Okay. Next slide.

15 Turkey Point Units Three and Four were  
16 granted the original licenses in 1972 and 1973, which  
17 were set to expire in 2012 and 2013 respectively.  
18 Prior to the license expirations, the licensee,  
19 Florida Power & Light Company, or FPL, submitted the  
20 initial license renewal application for 40 to 60 years  
21 on September 11, 2000.

22 The staff met with the ACRS subcommittee  
23 on plant license renewal and full committee on both  
24 the safety evaluation report or SER with open items,  
25 and the safety evaluation report and issued the Units

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1 Three and Four initial renewed licenses in 2002 with  
2 expiration dates of 2032 and 2033 respectively.

3 In January 2018, FPL submitted an SLRA for  
4 Turkey Point Units Three and Four. The staff  
5 performed its review of the SLRA, issued the SER of  
6 open items, and presented the results of our review to  
7 the ACRS subcommittee on plant license renewal on June  
8 21, 2019.

9 Subsequently, the staff closed the open  
10 item associated with the buried piping and issued the  
11 SER on July 19, 2019. Next slide, please.

12 As I mentioned, the staff previously  
13 identified one open item in the SER of open items  
14 associated with the buried and underground piping and  
15 tanks, an aging management program.

16 Specifically, the staff determined the  
17 need for additional information regarding why  
18 additional inspections beyond those recommended in the  
19 GALL SLR report were not included in for buried steel  
20 piping during the ten-year period prior to the  
21 subsequent period of extended operation.

22 FPL provided additional information to  
23 address the staff's concerns. Including one, FPL  
24 committed to install cathodic protection at least nine  
25 years prior to the subsequent period of extended

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1 operation consistent with the GALL SLR report.

2 FPL clarified that there was only one pipe  
3 break. And it was due to excavation activities and  
4 not age related degradation.

5 And third, FPL committed to perform the  
6 additional inspections beyond those recommended in the  
7 GALL SLR report during the ten years period prior to  
8 the subsequent period of extended operation.

9 So prior to the ARCS subcommittee meeting  
10 on plant life renewal, the meeting was on July 21, FPL  
11 provided additional information to address the staff's  
12 concerns. And that was documented in the SER of open  
13 items.

14 On the basis of this information, the  
15 staff determined that its concerns related to the open  
16 items were resolved. And as a result, the staff was  
17 able to present the open items as a resolved issued  
18 during the ACRS subcommittee meeting. Okay. Next  
19 slide, please.

20 The SLR described a total of 49 AMPs. The  
21 SLRA described a total of 49 AMPs. Twelve new and 37  
22 existing.

23 This slide identifies the Applicant's  
24 original SLRA disposition. You have the AMPs in the  
25 left column. And the final disposition documented in

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1 the SER in the right column.

2 All of the AMPs were evaluated by the  
3 staff for consistency of the GALL SLR report, and to  
4 ensure compliance with 10 CFR, Part 54.

5 As a result of the staff's review, the  
6 Applicant made several changes to the AMPs. One new  
7 plant specific AMP was addressed to -- was added to  
8 address polymer high voltage insulators.

9 As an example of another change the SME  
10 Section 11, Subsection IWL AMP was changed from  
11 existing with enhancements to existing with  
12 enhancements and exceptions. Next slide, please.

13 Okay. On this slide I'd just like to  
14 discuss a little of the staff's review and audit  
15 activities which occurred to support the staff's  
16 evaluation.

17 The Turkey Point review is the first  
18 safety review performed by the staff using the GALL  
19 SRP, or excuse me, GALL SLR, I mean, SRP/SLR guidance  
20 issued in 2017.

21 In developing the process for reviewing  
22 and SLRA, the staff identified several process  
23 efficiencies as compared to the safety review of  
24 initial license renewal applications.

25 For example, one efficiency dealt with the

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1 conduct of audits. Instead of one large and lengthy  
2 onsite audit, the staff conducts two standard audits,  
3 an operator experience audit, and an in-office audit.

4 This allows us to streamline the number of  
5 staff traveling to the site. The majority of the  
6 audit activities and breakout discussions were  
7 conducted in our office through the use of portals and  
8 telecommunications.

9 Also, onsite activities are performed on  
10 an as needed basis. The necessity for an onsite audit  
11 might be identified in the following manner:

12 During the performance of the operating  
13 experience audit and the in-office audit, when it's  
14 determined that onsite observations of material  
15 conditions related to aging or -- excuse me, related  
16 to aging, or component locations and configurations  
17 are required to complete the staff's review.

18 Or, when a complex technical issue is  
19 identified such that communications and information  
20 gathering would be more efficiently performed by an  
21 onsite audit.

22 For Turkey Point, during the two-week  
23 experiencing audit, the staff performed an independent  
24 review of plant specific operating experience to  
25 identify pertinent examples of age related

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1 degradation.

2 And it was documented in the Applicant's  
3 corrective action program database. And to provide  
4 insight into AMP effectiveness.

5 During the four-week in-office audit, the  
6 audit team focused on two areas, the scope and the  
7 screen review, and the review of AMPs, aging  
8 management review items or AMRs, and time limited  
9 aging analysis, or TLAAAs and those reviews.

10 Based on the operating experience audit  
11 and the in-office audit, the staff determined that it  
12 was necessary to perform an onsite audit and also a  
13 separate complex and technical issue audit.

14 The onsite audit reviewed documentation of  
15 aging management programs and directly observed  
16 material conditions of various structures and  
17 equipment.

18 The onsite complex technical issue audit  
19 reviewed appli -- the Applicant's proposed methods to  
20 manage the effects of aging of concrete and steel  
21 structural supports to irradiation, as well as the  
22 analysis results. The issue will -- this issue will  
23 be discussed further with the next slide.

24 Another efficiency that the staff  
25 implemented as part of its review of the SLRAs was to

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1 no longer require the performance of inspection  
2 procedure IP 71002, the license renewal inspection.  
3 This inspection primarily focused on the adequacy of  
4 pre-implementation activities for AMPs.

5           However, for subsequent license renewal,  
6 the majority of aging management programs have already  
7 been implemented and in effect since the beginning of  
8 the 40 to 60 year period of extended operation. And  
9 therefore, are no longer in a pre-implementation  
10 phase.

11           Additionally, the 71002 include a scoping  
12 and screening evaluation that focused on the  
13 Applicant's activities relative to initially  
14 identifying non-safety related SOCs with a potential  
15 to affect safety-related SOCs, for inclusion of these  
16 non-safety related SOCs within scope.

17           For SLR required observations of non-  
18 safety related components with a potential to affect  
19 safety-related components, are performed by the  
20 technical review staff as part of the SLRA review, or  
21 during an onsite audit.

22           For Turkey Point, the staff's review was  
23 also informed by the results of the Region II initial  
24 license renewal inspection, IP 71003, phase four,  
25 which coincided with the SLRA review time line.

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1           It should be noted that the phase four  
2 inspection is related to the issuance of the initial  
3 renewed license. And is independent of the SLRA  
4 review.

5           MEMBER BLEY: Bill, can I interrupt you a  
6 second?

7           MR. ROGERS: Yes, sure.

8           MEMBER BLEY: I was not at the  
9 Subcommittee meeting and haven't discussed with you.  
10 The -- on first license renewal, many of us always  
11 found those inspection reports extremely informative.

12           And, I haven't thought about this before  
13 right now. Your argument why you didn't need them  
14 now, you know, makes sense on the one hand. On the  
15 other hand, things would show up in those reports that  
16 you didn't really see any other way.

17           I assume there are continuing inspections  
18 and on the AMPs and you had access to those reports,  
19 is that right?

20           MR. ROGERS: Yes, that's correct. And, I  
21 was going to discuss this, I'll just go off the script  
22 here for a second and just explain what occurred  
23 during our review process.

24           So, as you mentioned, the next inspection  
25 procedures, IP71-003, that has one to four phases.

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1 And, the first two are post-licensing prior to PEO, to  
2 initial PEO. And, the fourth one would occur during  
3 the period of extended operation.

4 So, the Turkey Point IP71-003 Phase 4  
5 coincided with our review. It was during the time  
6 line.

7 MEMBER BLEY: Okay.

8 MR. ROGERS: So, the -- actually, the  
9 inspector that performed the -- led the inspection,  
10 Paula Cooper, Region II is on the telephone today.  
11 But what we found is there are ongoing sets of  
12 inspections that, for a period of time overlap the  
13 initial review and the subsequent renewal.

14 So, while we found while the Phase 4  
15 inspection is not -- does not have like a regulatory  
16 tie to this licensing action, the information's still  
17 very useful to us. And, we had discussions during  
18 both our audit of our onsite audit that we were  
19 reviewing plant conditions, which are open issues  
20 figurations. We discussed that with the Regional  
21 Inspector, Paula Cooper, during that time.

22 And, there has been some, you know,  
23 there's been back and forth on that.

24 I will say that when our auditors were  
25 onsite, well, actually, both. When they were

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1 reviewing operating experience from the plant  
2 database, and when they were onsite, we had similar  
3 observations.

4 Now, the actions taken by the two parties  
5 are somewhat different. Paula issued an inspection  
6 procedure that had some findings associated with it.

7 MEMBER BLEY: Okay.

8 MR. ROGERS: We're in a licensing action,  
9 and what we did is we used that information to  
10 determine whether the aging management programs need  
11 to be augmented or enhanced in some fashion.

12 So, we both reacted to the same set of  
13 information that was shared back and forth.

14 Relative to the first points you made about  
15 the 71-002 inspection --

16 MEMBER BLEY: Yes?

17 MR. ROGERS: -- in pre-implementation,  
18 that inspection is more of a paper review for when you  
19 review the AMPs. They're not implemented; there's not  
20 as much material to review.

21 So, for example, for this review, the new  
22 programs reviewed by Headquarters staff, and  
23 essentially, it's the same manner that the inspectors  
24 would have done it during the pre-implementation  
25 review.

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1           The one difference that I think is also  
2 notable, is when the inspectors were doing the (a) (2)  
3 review, that (a) (2) portion of that 71-002 inspection  
4 back in the first renewal, so there were three bodies  
5 that looked at that. The inspectors would do an  
6 inspection. We had one division in NRR that would do  
7 a review of that. And then, we had the License  
8 Renewal Division look at it. So, all three parties  
9 looked at it.

10           And, as the Applicant indicated, there's  
11 not been an extensive change in the results or  
12 approach to then identify items in scope for non-  
13 safety effective safety.

14           However, I will note that when we did our  
15 onsite audit, one of the things that was looked at  
16 during the onsite audit was (a) (2) related questions.  
17 And, they were done by the Headquarters staff at that  
18 time. So, we did take someone onsite to look at that.

19           MEMBER BLEY: Matt, did the Subcommittee  
20 have an opportunity to review with the Inspector any  
21 of the things? The only reason I'm bringing it up is,  
22 if not, we might want to go -- push on that for the  
23 next one.

24           VICE CHAIRMAN SUNSERI: Yes, no, Paula was  
25 here --

1 MEMBER BLEY: Oh, okay.

2 VICE CHAIRMAN SUNSERI: -- in person and

3 --

4 MEMBER BLEY: Very good.

5 VICE CHAIRMAN SUNSERI: -- made a  
6 presentation.

7 MEMBER BLEY: I don't want to get her to  
8 repeat what she said to the Subcommittee. I just  
9 wanted to make sure we were involved in that. That's  
10 great. Thank you.

11 And, thank you for that.

12 MR. ROGERS: Certainly.

13 MEMBER BLEY: Wonderful explanation.

14 MR. ROGERS: I will note, she's on the  
15 telephone right now if you'd like to follow up with  
16 any additional questions. She's on standby for that  
17 purpose.

18 MEMBER BLEY: I haven't been through that  
19 in the detail that would make that make sense to me  
20 right now, so thank you.

21 MR. ROGERS: Okay, fine.

22 MEMBER BLEY: And, thanks to Paula.

23 MR. OESTERLE: So, this is Eric Oesterle.

24 I was just going to add that one of the  
25 things that the staff committed to the ACRS was that

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1 for the Subcommittee meetings and the Full Committee  
2 meetings, that we would always bring a site  
3 representative or a Regional Inspector to the meeting  
4 to share their observations on the inspections they've  
5 done for license renewal including observations on  
6 material conditions of the plant.

7 And so, like Mr. Sunseri identified Paula  
8 who did the inspection down at Turkey Point, she was  
9 at the Subcommittee meeting and is available today.  
10 And so, we will continue to do that for future ACRS  
11 meetings on SLR.

12 MEMBER BLEY: Thanks, Eric. I think  
13 that's really important.

14 MR. ROGERS: Sure, and thank you. Next  
15 slide, please?

16 So, this slide just addresses two examples  
17 of plant specific issues unique to subsequent license  
18 renewal.

19 The staff performed a first of a kind  
20 review of irradiated structural concrete and steel  
21 located in containment. In this case, it was the  
22 reactor pressure vessel support system.

23 The issue of impacts of high fluence  
24 levels was identified as an area of interest and the  
25 Commission staff's requirement memo on the performance

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1 of subsequent license renewal reviews.

2 Currently, there is no generic resolution  
3 for addressing high fluence level impacts on  
4 structural systems and components.

5 The staff guidance developed for  
6 subsequent license renewal indicates all SLR  
7 applicants should perform a plant-specific review of  
8 fluence levels within containment, identify any  
9 potential impacts on structural components, and  
10 develop aging management program activities as  
11 necessary.

12 In this case, the Applicant's evaluation  
13 of the impact of high fluence levels on the concrete  
14 portion of the RPV structural support system conclude  
15 that the effects of radiation would not impact the  
16 ability of the support system to perform its intended  
17 function.

18 In addition, the concrete components would  
19 continue to be periodically inspected during the  
20 performance of the structure's monitoring program.

21 The Applicant's evaluation of the steel  
22 portions of the RPV structural support system  
23 determined that the enhancements to the ASME Section  
24 11 in service inspection of nuclear power plant  
25 components Subsection IWF AMP would be required.

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1           The Applicant enhanced the Section 11 IWF  
2 AMP to require the inspection of all of the accessible  
3 surfaces of all six reactor vessel supports of each  
4 unit on a frequency of once every five years.

5           The Applicant had determined that these  
6 inspections would demonstrate to the effects of aging  
7 and the steel supports will be adequately managed so  
8 that the intended functions will be maintained during  
9 the subsequent period of extended operation.

10           The staff audited the Applicant's analyses  
11 and evaluations over a period of several weeks both at  
12 Turkey Point site and the additional facilities. The  
13 staff's review was a multi disciplined effort that  
14 included a team with expertise in fluence, materials,  
15 and structures.

16           The staff concluded with reasonable  
17 assurance that the Applicant had identified the  
18 potential aging effects and developed aging management  
19 programs that monitor the components conditions to  
20 identify the effects of aging prior to the loss of  
21 intended function.

22           Next, I'll discuss the staff's review of  
23 the newly identified material component combination,  
24 the polymer high voltage insulators, and as previously  
25 mentioned, this was not addressed in the GAL SLR

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1 report and the material component combination had been  
2 first identified during the River Bend initial license  
3 renewal application reviewed in 2018.

4 MEMBER BLEY: Are you planning that this  
5 will make it into the GAL report in the next revision  
6 or how do we track this?

7 MR. ROGERS: So, what we're -- yes, what  
8 we're doing at the moment in the part of our process  
9 is we gather this type of information in the package  
10 and internally to the division in addition with  
11 lessons learned. And, then, there is an ongoing  
12 discussion of whether or not revisions are necessary.  
13 And, they either will take the form of Interim Staff  
14 Guidance or revisions to the document.

15 MEMBER BLEY: Okay. I didn't ask the  
16 Applicant the same question but I'll just ask you.  
17 How did you and the Applicant, together, come up with  
18 what the right process is for inspecting these or  
19 foreseeing them in the future?

20 MR. ROGERS: Sure. The -- well, the  
21 Applicant determined what the process was. They took  
22 their operating experience, they did an analysis and  
23 evaluated these polymers. And, let me go back to my  
24 notes for one moment.

25 They performed evaluation of the polymer

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1 high voltage insulators and the evaluation considered  
2 a loss of material, reduced insulation resistance to  
3 the many mechanisms including wear, surface buildup of  
4 contamination, and polymer degradation. Those were  
5 the three primary things.

6 They put that into an aging management  
7 program, had an evaluation of how they would address  
8 these aging mechanisms. At that point, the staff  
9 evaluates that and concluded that it met the  
10 requirements of managing the effects of aging.

11 MEMBER BLEY: Okay, thanks. And, is there  
12 Interim Staff Guidance now on this for the next time  
13 it comes up?

14 MR. ROGERS: Not at this point. I might  
15 ask Eric to address that thought.

16 MR. OESTERLE: Thanks, Bill. This is Eric  
17 Oesterle.

18 So, back in March we did have a -- we  
19 conducted a public meeting on SLR lessons learned  
20 based on where we were with the NRC staff's review of  
21 the three SLR application at that time.

22 And, one of the major focuses of that  
23 meeting was looking at technical issues that were  
24 identified as a result of these reviews that maybe  
25 ripe for development of new guidance.

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1           And so, those both remain on the table.  
2           We committed to periodic engagements with industry on  
3           these technical issues and others that come up. But  
4           we haven't determined yet what's the right format, if  
5           it's going to be an ISG on one or more issues combined  
6           or are we going to do a revision to the GAL SLR report  
7           and the SRP SLR documents wholesale.

8           But there is a commitment to have these  
9           ongoing discussions on lessons learned and technical  
10          issues that would rise to that level.

11          MEMBER BLEY: I'm not personally familiar  
12          with these insulators. Is there enough experience  
13          with them so far that we really have a good idea of  
14          what kind of problems they might incur with aging?  
15          And, that the proposed AMP, well, the accepted AMP is  
16          the right thing to do?

17          MR. HALE: Hi, this is Steve Hale.

18          In development of the aging management  
19          program of the polymers, we did have some historical  
20          information regarding how these have performed.  
21          Although they're relatively new.

22          We spent quite a bit of time with our  
23          information and distribution department which is the  
24          ones that are primarily involved with this.

25          The true benefit of the polymer insulators

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1 is they're very resistant to, you know, collecting  
2 salt spray and things like that.

3 MEMBER BLEY: That was a good thing.

4 MR. HALE: Yes, yes, exactly. So, you  
5 know, in our discussions with D&B, you know, they were  
6 able to give us the feedback on the types of aging  
7 management we needed to perform on those insulators.  
8 But they do find that they perform much better from  
9 the, you know, collection of debris and things of that  
10 sort.

11 MEMBER BLEY: thank you.

12 MR. HALE: Yes.

13 MR. ROGERS: There is one site specific  
14 safety license condition that addresses FPL's one time  
15 inspection AMP. The staff determined that the one  
16 time inspection AMP did not address carbon steel  
17 containment spray system piping as would be expected.

18 The Applicant indicated it plans to  
19 replace the carbon steel piping in the containment  
20 spray system inside containment with stainless steel  
21 piping.

22 In addition, the Applicant had already  
23 included this pipe replacement in site approved plant  
24 improvement plan and has begun replacement.

25 MEMBER BLEY: And, again, I didn't ask

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1       them, but how did they get boric acid in there? Did  
2       they actually start the spray accidentally some time or  
3       --

4                   MR. OESTERLE: Leaky valves.

5                   MEMBER BLEY: They -- okay.

6                   MR. ROGERS: So, rather than requiring the  
7       Applicant to address the material environment and  
8       aging effect, it wouldn't remain in the subsequent  
9       period of extended operations.

10                   The staff developed this license condition  
11       to ensure that the pipe would be replaced prior to  
12       SPEL.

13                   In conclusion, the staff finds that the  
14       requirements of 10 CFR 54.29(a) have been met for the  
15       subsequent license renewal of Turkey Point Units 3 and  
16       4, that there is reasonable assurance of safe  
17       operation of Turkey Point Units 3 and 4 during the  
18       subsequent period of extended operation.

19                   That ends our presentation and we're  
20       available for additional questions.

21                   VICE CHAIRMAN SUNSERI: Well, once, again,  
22       I think I would add that you did a good job of  
23       representing what went on the Subcommittee meeting.  
24       I know it's hard to replicate, you know, a five hour  
25       meeting in a short period of time like this. But we

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1 do appreciate the high level review.

2 I do want to offer the opportunity for  
3 your Region II representative to provide any remarks  
4 if she cares to. I think she was very impressive  
5 during the Subcommittee meetings, so I'd just offer  
6 that comment if Paula's out there.

7 MS. JAMES: Paula? Paula? Paula Cooper?

8 MEMBER REMPE: Is the line open so she can  
9 --

10 MS. JAMES: We have a separate line.

11 MEMBER BLEY: It still might not be open.  
12 He's checking on it now.

13 MS. JAMES: This is Lois James. I'm -- I  
14 will go give her a quick call.

15 VICE CHAIRMAN SUNSERI: Well, that's okay.  
16 It was just a courtesy.

17 MS. JAMES: I'll see which line she's on.

18 VICE CHAIRMAN SUNSERI: Yes, if there was  
19 something, it's not -- I think we have all our  
20 questions answered.

21 MS. JAMES: Okay.

22 VICE CHAIRMAN SUNSERI: All right. So, at  
23 that point, we are done. Are there any other  
24 questions from the members?

25 MEMBER BROWN: I have one. I had

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1 forgotten something on the buried piping. I'll look  
2 back at the old slides from the Subcommittee meeting.

3 In this one, your slide four identified  
4 the second item was there had been breaks in the  
5 piping that was a result, there was only, and that was  
6 due to an evacuation construction excavation activity.

7 But then, you noted several leaks, leaks  
8 I take are not breaks, I presume there's a difference.  
9 I mean, I think there's a difference. Okay.

10 MS. JAMES: Yes, sir. This is Lois James.

11 MEMBER BROWN: And then, in the  
12 Subcommittee meeting, you indicated that there was a  
13 set of inspections, of the methodic protection systems  
14 be installed within nine years prior to the additional  
15 twenty-year extended operation.

16 And, but then, you were going to monitor  
17 the -- with inspections during that ten-year period  
18 prior to the end period also.

19 But then, you had two caveats in there.  
20 If the CP system looks like it's effective you do one  
21 thing, if it's not, you do something else. That -- I  
22 don't -- that was in the Subcommittee you. You didn't  
23 bring that out so there's really a kind of a two sets  
24 of operations that you're going to be doing inspection  
25 wise, that's the way I read the Subcommittee.

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1 I presume that's still in place? That  
2 didn't disappear between the Subcommittee and Full  
3 Committee meeting?

4 MS. JAMES: This is Lois James.

5 No, sir, that did not disappear. We were  
6 trying to give a high level overview of it, not get  
7 into that level of detail. But we do have Brian Allik  
8 on the phone.

9 MEMBER BROWN: I just wanted to make sure  
10 there --

11 MS. JAMES: Yes.

12 MEMBER BROWN: -- no -- that we didn't  
13 lose some --

14 MS. JAMES: That has not changed.

15 MEMBER BROWN: -- consistency. That's all  
16 I was --

17 MS. JAMES: That has not changed.

18 MEMBER BROWN: -- trying to make sure  
19 something hadn't changed.

20 MS. JAMES: No, sir.

21 MEMBER BROWN: Okay, that's all I had.  
22 Thank you.

23 VICE CHAIRMAN SUNSERI: Was there a  
24 question over here?

25 MEMBER BROWN: No, nothing.

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1 VICE CHAIRMAN SUNSERI: Anybody else?

2 Jose, you have any comments you want to  
3 add or questions you want to ask?

4 MEMBER MARCH-LEUBA: Nothing here.

5 VICE CHAIRMAN SUNSERI: All right. So,  
6 now we will open the phone line for any public  
7 comments. And, while we're getting the phone lines  
8 open, we'll turn to the audience here. Is there  
9 anybody in the audience who would like to make a  
10 public comment, come to the microphone, state your  
11 name, and provide your comment.

12 (NO RESPONSE)

13 VICE CHAIRMAN SUNSERI: Okay. So, there  
14 is no comments from the room. I'll turn to the phone  
15 line. If there's any members of the public listening  
16 in that would like to make a comment, now is the  
17 opportunity. State your name and provide your  
18 comment, please.

19 MS. COOPER: This is Paula Cooper at  
20 Region II. Can anybody hear me?

21 VICE CHAIRMAN SUNSERI: Yes, Paula, we can  
22 hear you now.

23 MS. COOPER: Awesome, because the staff  
24 line was busy and I couldn't get on, so I'm on the  
25 public line.

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1 VICE CHAIRMAN SUNSERI: Oh, okay, all  
2 right.

3 MS. COOPER: However, I don't have any  
4 comments to add other than if you have any questions  
5 for me, I am here. But I will say that Turkey Point  
6 staff, and I don't want to make it seem like I am pro-  
7 licensee, but they were very receptive to every  
8 comment and observation that we gave them on the  
9 inspection. And, I'm pretty confident that they're  
10 going to implement them appropriately.

11 VICE CHAIRMAN SUNSERI: All right, well,  
12 thank you for that comment.

13 Are there any other members of the public  
14 that would like to make a comment?

15 (NO RESPONSE)

16 VICE CHAIRMAN SUNSERI: All right. So, we  
17 know the line is open because Paula used it. So, if  
18 there's no other comments, we'll close the public  
19 line. And, Mr. Chairman, we turn the floor back to  
20 you.

21 CHAIRMAN RICCARDELLA: Okay.

22 VICE CHAIRMAN SUNSERI: Well, let me --  
23 I'm sorry, just one other point.

24 We do have a draft letter report prepared  
25 with our recommendations from the Subcommittee that we

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1 will review in deliberation at your choice. Thank  
2 you. CHAIRMAN RICCARDELLA: Yes, I think we'll  
3 -- we have a lot to cover. And so, we'll take about  
4 a 15 minute break, reconvene at 3:30 by that clock.  
5 And, we have, by my count, five letters. There's one  
6 I'd like to cover fairly rapidly. It's a revision to  
7 a letter that we approved last meeting on a NuScale  
8 report, on a NuScale topical report that I had some --  
9 we had some comments while we were at NuScale and we  
10 concluded that those were substantive, not editorial.  
11 And so, we're going to reconsider that.

12 And then, we have the two letters that  
13 were from the topics that were today. And, I'd like  
14 to at least go through -- at least have a read through  
15 of both of those before we conclude today.

16 So, with that, we will adjourn and I guess  
17 for the day or -- recess.

18 (Whereupon, the above-entitled matter went  
19 off the record at 3:17 p.m.)  
20  
21  
22  
23  
24  
25



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# Turkey Point Units 3 and 4 Subsequent License Renewal

ACRS Full Committee Meeting  
September 04, 2019



# Agenda

- Introductions (Bill Maher – FPL Senior Licensing Director)
- Performance Philosophy and Sustainability – (Brian Stamp – FPL Turkey Point Site Director)
- Turkey Point Site Information (Steve Franzone – FPL Licensing Manager)
- Subsequent License Renewal (SLR) Project (Steve Hale – ENERCON Technical Lead)
- Closing Remarks – (Bill Maher – FPL Senior Licensing Director)

# Performance Philosophy and Sustainability

## KEY ELEMENTS:

**Retaining Gains  
(Sustaining Excellent  
Performance)**

**Aggressively  
Building Margin**

## ATTRIBUTES:

**Active Leadership\***

**Highest Standards**

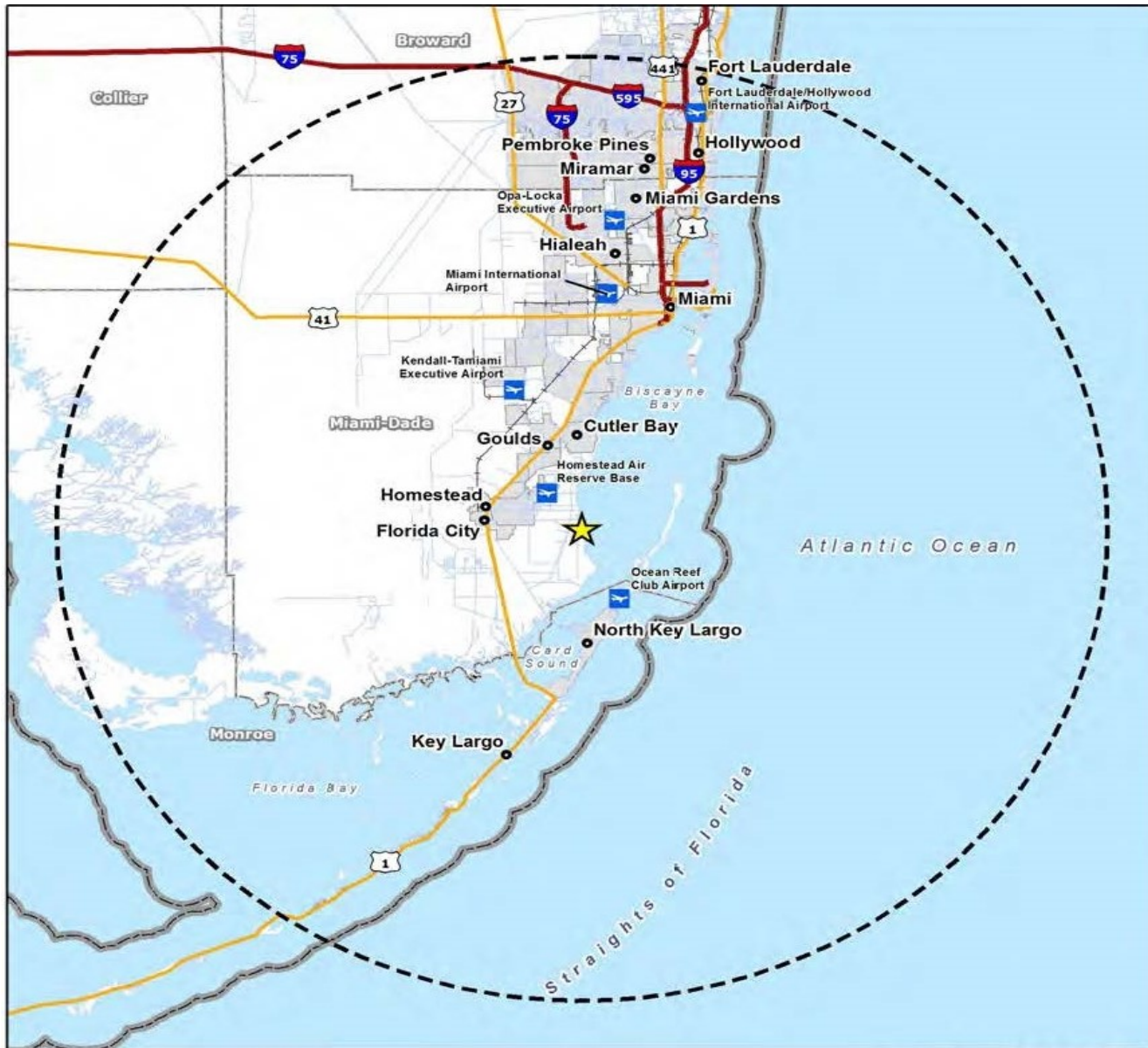
**Self-Improving Culture  
(Self-Aware/Self-Correcting)**

**Learning Organization**

\*

1. Model, teach, encourage proactive behaviors to perform at excellence level and desire to continuously improve
2. Protecting core business and managing off-normal situations
3. Exhibit excellent technical fundamentals
4. Understand and manage cost drivers

# Turkey Point Site Information



# Turkey Point Site Information



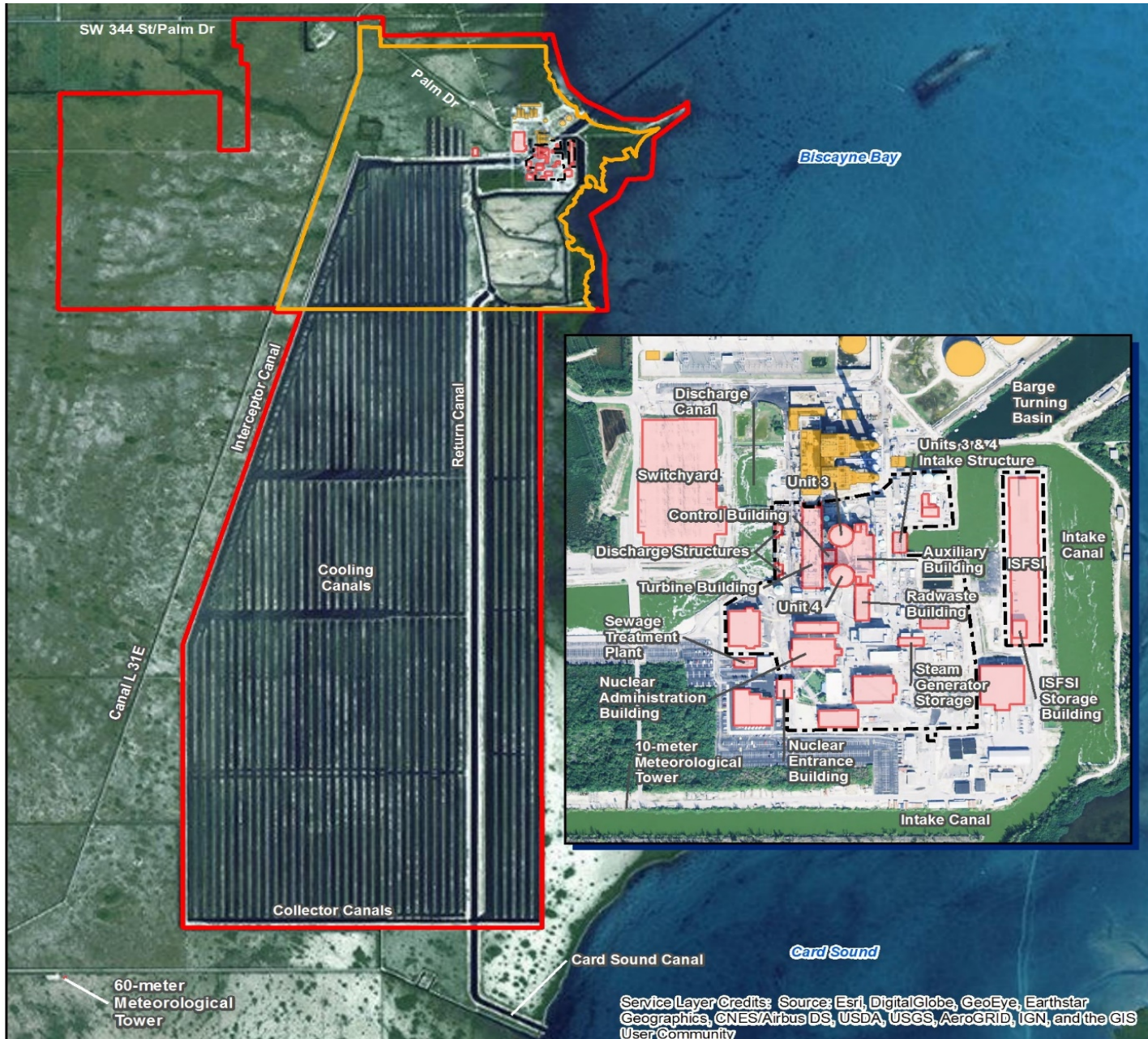
# Turkey Point Site Information

## Plant History

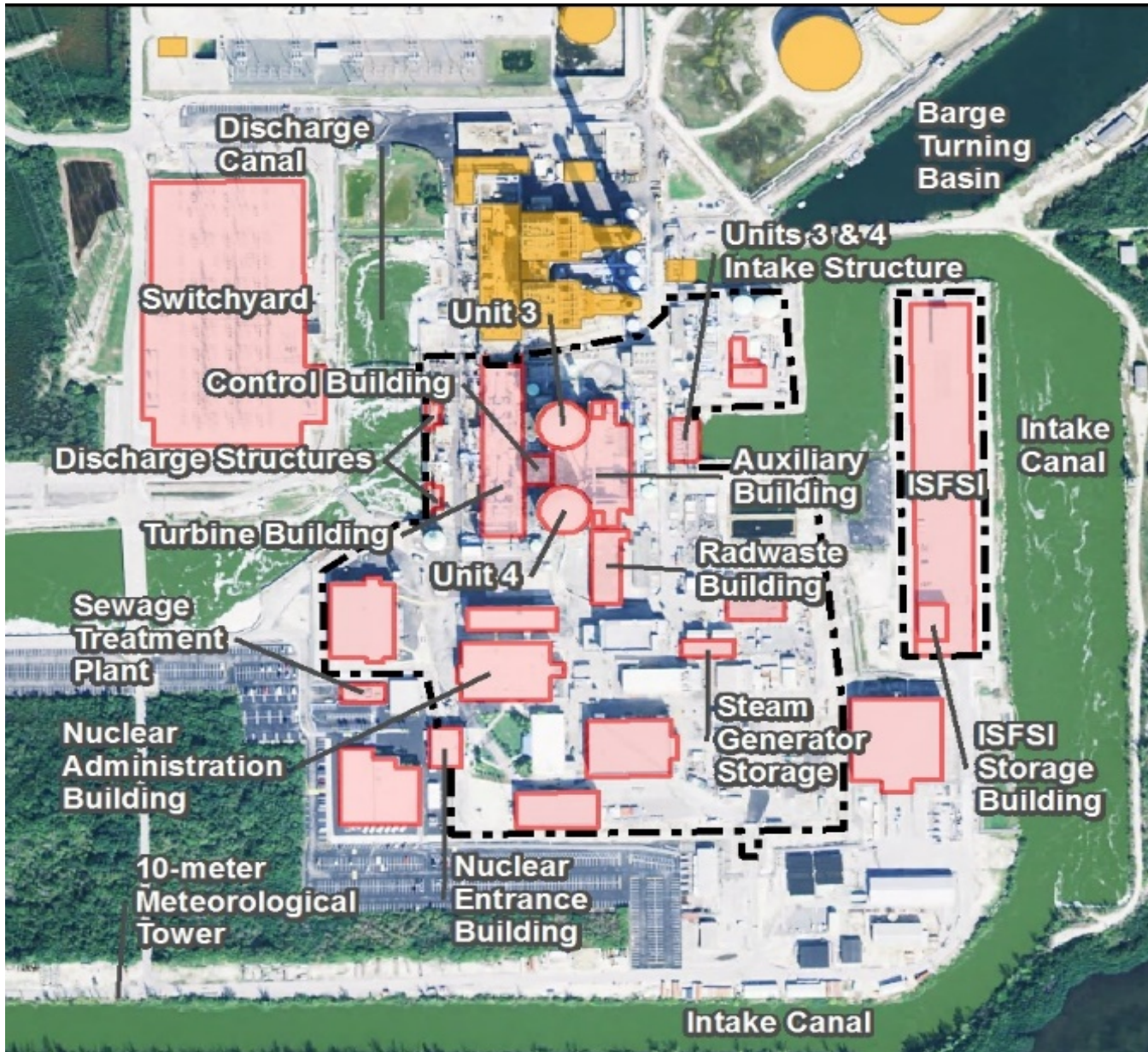
- Initial operating licenses issued
  - Unit 3 – July 19, 1972
  - Unit 4 – April 10, 1973
- 1983-1984, replaced original steam generators
- 1991, upgraded on-site electrical system going from two emergency diesel generators (EDGs) to four EDGs
- 1992, Hurricane Andrew
- 1995, 5% power uprate, 2200 MWt to 2300 MWt
- June 6, 2002, received renewed operating licenses (first Westinghouse units)
- 2004-2005, replaced reactor vessel heads
- 2010, implemented alternate source term (AST) methodology
- 2012, 2013 implemented ~ 15% extended power uprate (EPU + MUR) 2300 MWt to 2644 MWt
- 2012, 2013, Unit 3 and 4 entered the period of extended operation (PEO)



# Turkey Point Site Information



# Turkey Point Site Information



# Turkey Point Site Information

## Significant Plant Modifications Since Initial License Renewal

- Replaced reactor vessel heads
- Replaced main and auxiliary transformers
- Cooling canals rehabilitation
- Replaced cask crane structure and crane
- Obsolescence Projects
- Extended Power Uprate (EPU) related modifications
- In progress
  - Low pressure turbine rotor replacements
  - U3 & U4 Containment Spray piping replacement
  - Modifications and improvements to structures

# Turkey Point Site Information

## Current Plant Status

- Plant Status
- 18 month fuel cycle
- Reactor oversight process (ROP) action matrix Column 1
- Last refueling outage
  - Unit 3, Fall 2018
  - Unit 4, Spring 2019
- Next refueling outage
  - Unit 3, Spring 2020
  - Unit 4, Fall 2020

# SLR Project

## Multi-year effort starting in 2015

- Completed Feasibility study in early 2016
- Application submitted and accepted in early 2018

## FPL/ENERCON Team

- Multi-discipline team with significant nuclear experience, both on site and corporate
- Extensive license renewal experience, both licensing and implementation, including original License Renewal (LR) effort for Turkey Point (PTN)
- Extensive PTN specific engineering and licensing experience
- SLRA Liaison position staffed at site by senior, experienced person

# SLR Project

## Regulatory and Industry Guidance

- Used NEI 17-01 guidance
- Incorporated lessons learned from previous LRAs
- Conducted industry peer reviews
- Followed NUREG-2191 (GALL-SLR) and NUREG-2192 (SRP-SLR) to the greatest extent possible
- 18 month NRC review schedule (from April 2018)

## Current Status

- Final SER issued July 22<sup>nd</sup>, 2019, no open or confirmatory items

# SLR Project

Integrated Plant Assessment – Overall approach similar to that of original LR

- Differences between LR and SLR
  - Scoping and screening
    - Minimal differences
    - Some updates required to address 10 CFR 54.4(a)(2)
  - Aging management reviews
    - PTN initial LR pre-GALL, additional aging effects required disposition based on NUREG-2191 (GALL-SLR)
  - Aging management programs (AMPs)
    - Significant differences
    - PTN initial LR pre-GALL, 28 AMPs
    - PTN SLR, 50 AMPs

# SLR Project

## 50 AMPs

- 14 new AMPs
  - 12 consistent without exception
  - 1 consistent with enhancement
  - 1 plant-specific
- 36 existing AMPs (35 based on GALL)
  - 1 consistent with exception
  - 24 consistent with enhancements
  - 10 consistent with exceptions and enhancements
  - 1 plant-specific



# SLR Project

## Commitments

- 57 total
- Will be maintained separate from commitments for current LR
- 3 license conditions in SER:
  - Incorporate supplement into the UFSAR
  - Implement programs and complete activities described in the supplement prior to the subsequent period of extended operation (SPEO)
  - Replace containment spray piping inside containment

## UFSAR

- New Chapter 17, maintained separate from current LR
- SLR commitments included in table in Chapter 17

Project Team has extensive experience with LR commitment management and implementation

# SLR Project

## Time-Limited Aging Analyses (TLAAs)

- Based on GALL AMPs for TLAAs, some TLAA dispositions shifted from (i) or (ii) to (iii)
- Updates required to environmentally assisted fatigue calculations due to changes in guidance documents
- Two new TLAAs for SLR
  - Leak-Before-Break analysis for non-primary loop reactor coolant piping
    - Pressurizer surge, residual heat removal and accumulator lines
  - Reactor coolant pump integrity analysis used to address Code Case N-481

# Closing Remarks

- Manage aging effects to ensure intended functions are maintained
- Evaluated TLAAAs with acceptable results
- Satisfied requirements for subsequent license renewal
- Retain gains and build margin for the future



# **Advisory Committee on Reactor Safeguards Full Committee Meeting**

**Turkey Point Nuclear Generating Unit Nos. 3 & 4  
Subsequent License Renewal  
Safety Evaluation Report (SER)**

September 4, 2019

Bill Rogers, Senior Reactor Engineer  
Office of Nuclear Reactor Regulation

# Presentation Outline

- **Overview of Safety Review of Turkey Point SLRA**
- **Closure of Open Item 3.0.3.1.7-1, Buried and Underground Piping and Tanks Program**
- **Aging Management Programs (AMPs)**
- **Staff Review and Audit Activities**
- **Examples of Plant-Specific Issues Unique to Subsequent License Renewal**
- **Site-Specific Safety License Condition**
- **Conclusion**

## Overview of Safety Review of Turkey Point SLRA

Unit	Initial License	Initial License Renewal Application	Renewed License	Expiration Date	Subsequent License Renewal Application
3	07/19/1972	09/11/2000	06/06/2002	07/19/2032	01/31/2018
4	04/10/1973	09/11/2000	06/06/2002	04/10/2033	01/31/2018

- Application Submitted – January 31, 2018
- Acceptance Determination – April 26, 2018
- Safety Evaluation Report with Open Items – May 21, 2019
- ACRS Subcommittee Meeting – June 21, 2019
- Safety Evaluation Report – July 19, 2019

## Open Item 3.0.3.1.7-1, Buried and Underground Piping and Tanks Program

- Issue: Basis for why additional inspections, beyond those recommended in GALL-SLR AMP XI.M41, are appropriate for buried steel piping during the 10-year period prior to the subsequent period of extended operation (SPEO).

	<b>Issue</b>	<b>Resolution</b>
1	Cathodic protection (CP) not operational during the 10-year period prior to the SPEO. AMP XI.M41: CP is installed at least 5 years prior to the SPEO.	CP will be installed at least 9 years prior to the SPEO.
2	FPL stated in the SLRA that there have been breaks in buried piping at Turkey Point.	Only one pipe break - due to construction excavation activities; not age-related.
3	Staff noted that several leaks have occurred in buried steel piping.	FPL will conduct additional inspections in the 10-year period prior to the SPEO.

# Aging Management Programs (AMPs)

## Applicant's Original Disposition of AMPs

- 12 new programs
  - 12 consistent
- 37 existing programs
  - 3 consistent
  - 27 consistent with enhancements
  - 6 consistent with enhancements and exceptions
  - 1 plant specific

## Final Disposition of AMPs in SER

- 14 new programs
  - 12 consistent
  - 1 consistent with enhancement
  - 1 plant specific
- 36 existing programs
  - 24 consistent with enhancements
  - 1 consistent with exceptions
  - 10 consistent with enhancements and exceptions
  - 1 plant specific



# Staff Review and Audit Activities

Audit / Inspection	Dates	Location
Operating Experience Audit	May 7 – 18, 2018 <a href="#">ML18183A445</a>	Rockville, MD
In-office Audit	June 18 – July 23, 2018 <a href="#">ML18230B482</a>	Rockville, MD
On-site Audits		
•Complex Technical	July 17 – October 17, 2018 <a href="#">ML19032A536</a>	Homestead, FL / Rockville, MD
•On-Site	August 27 – 31, 2018 <a href="#">ML18341A024</a>	Homestead, FL

## **Examples of Plant Specific Issues Unique to Subsequent License Renewal**

- Staff performed a first-of-a-kind review of irradiated structural concrete and steel located in containment
- Staff performed a review of polymers used in high voltage insulators not discussed in GALL-SLR Report

## **SER Section 3.0.3.1.4, One-Time Inspection**

- **Site-Specific Safety License Condition**
  - Replace the portions of the carbon steel containment spray system piping inside containment that are exposed to treated borated water with stainless steel piping, which is not susceptible to loss of material in a treated borated water environment

# Conclusion

- On the basis of its review of the SLRA, the staff finds that the requirements of 10 CFR 54.29(a) have been met for the subsequent license renewal of Turkey Point Nuclear Generating Unit Nos. 3 and 4.