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**NUCLEAR REGULATORY COMMISSION**

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                                  Plant License Renewal Subcommittee

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NUCLEAR REGULATORY COMMISSION

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ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

(ACRS)

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PLANT LICENSE RENEWAL SUBCOMMITTEE

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WEDNESDAY

MARCH 2, 2016

+ + + + +

ROCKVILLE, MARYLAND

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The Subcommittee met at the Nuclear Regulatory Commission, Two White Flint North, Room T2B1, 11545 Rockville Pike, at 12:58 p.m., Gordon R. Skillman, Chairman, presiding.

COMMITTEE MEMBERS:

GORDON R. SKILLMAN, Chairman

PETER RICCARDELLA, Member-at-Large

RONALD G. BALLINGER, Member

CHARLES H. BROWN, JR., Member

DANA A. POWERS, Member

HAROLD B. RAY, Member

JOHN W. STETKAR, Member

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## ACRS CONSULTANT:

STEPHEN SCHULTZ

## DESIGNATED FEDERAL OFFICIAL:

KENT HOWARD

## ALSO PRESENT:

JEFF AULER, DTE

RANDY BREYMAIER, DTE

YOIRA DIAZ-SANABRIA, NRR

CLIFFORD DOUTT, NRR/DLR

LYNNE GOODMAN, DTE

ALLEN HISER, NRR/DLR

TIM HOFFMAN, DTE

WILLIAM HOLSTON, NRR/DLR

CHRISTOPHER HOVANEC, NRR/DLR

LOIS JAMES, NRR

VAROUJAN KALIKIAN, NRR/DLR

MICHAEL LAKE, DTE

DANEIRA MELENDEZ-COLON, NRR/DLR

CHRIS MILLER, NRR/DLR

SEUNG MIN, NRR/DLR

LARRY PETERSON, DTE

KEITH POLSON, DTE

MOHAMMAD SADOLLAH, NRR/DLR

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STUART SHELDON, Region III

JOHN TIBAI, DTE

KENT WOOD, NRR

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

12:58 p.m.

CHAIRMAN SKILLMAN: Good afternoon.

This meeting will now come to order.

My name is Dick Skillman. I am Chairman of the Plant License Renewal Subcommittee. The Subcommittee will review the license renewal application for the Fermi 2 Nuclear Power Plant this afternoon.

ACRS Members in attendance are Ron Ballinger, Pete Riccardella, Harold Ray, Dr. Powers, Charlie Brown, and our consultant, Dr. Stephen Schultz. The Designated Federal Official is Kent Howard, to my right.

This afternoon, we will hear presentations from the Division of Reactor License -- of License Renewal from Region III and from DTE Electric Company regarding this matter. The Subcommittee will gather information, analyze relevant issues and facts, and formulate proposed positions and actions as appropriate for deliberations by the Full Committee -- by the Subcommittee.

The rules for participation at today's meeting have been announced as part of the Notice

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1 of this meeting previously published in the Federal  
2 Register. We have not received written comments or  
3 requests for time to make oral statements from  
4 members of the public regarding today's meeting.  
5 The entire meeting will be open to public  
6 attendance.

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

11 A transcript of this meeting is being  
12 kept and will be made available as stated in the  
13 Federal Register Notice. Therefore, I request that  
14 participants in this meeting please use the  
15 microphones located throughout the meeting room  
16 when addressing the Subcommittee.

17 The participants are requested to  
18 please identify themselves and speak with  
19 sufficient clarity and volume so that they can be  
20 readily heard. I also request that you silence  
21 your personal electronic devices for the duration  
22 of the meeting.

23 I would like to make an opening  
24 statement here. I have reviewed in detail the AMP  
25 report from 2014, the AMP report and the 71002

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1 inspection report from 2015, and the LER, the SER,  
2 and the other associated documents, accumulating to  
3 approximately 3,000 pages. It is obvious that  
4 there has been a huge amount of work from the AMP  
5 report in 2015 to the 71002 inspection in '15 and  
6 finally to the production of the staff's SER in  
7 January of 2016.

8 So I want to thank you up front for  
9 what is obviously a huge amount of effort by the  
10 licensee and by the NRC total staff. Thank you.

11 And with that, we will proceed, and I  
12 will turn the meeting over to Chris Miller to begin  
13 the presentations.

14 MR. MILLER: Good afternoon, and thank  
15 you, Chairman Skillman and Members of the ACRS.

16 I am Chris Miller, Director of the  
17 Division of License Renewal. Part of the team  
18 sitting with me here at the table is Yoira Diaz.  
19 She is our Project Branch 1 Director, Branch Chief.  
20 We have in the audience Branch Chiefs Dennis Morey,  
21 Brian Wittick, Jim Danna, and Steve Bloom, and also  
22 a number of members from the DLR staff.

23 We also have from Region III Dr. Stuart  
24 Sheldon, Senior Resident -- Senior Reactor  
25 Inspector from Region III who conducted the 71002

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1 inspection.

2 We're looking at having a very  
3 productive meeting with you and thank you for your  
4 time and your comments. We look forward to this  
5 meeting.

6 We issued the SER With Open Items on  
7 January 28, 2016, with one open item. The open  
8 item is related to the effects of reactor water on  
9 fatigue life and is summarized in the SER With Open  
10 Items. At this time, the staff and the applicant  
11 have reached a satisfactory resolution of the open  
12 items, so we will be presenting those details to  
13 the Subcommittee this afternoon.

14 There is a proposed site-specific  
15 license condition that is summarized in the SER  
16 With Open Items. The proposed site-specific  
17 license condition is related to the Boraflex  
18 Monitoring Program. We will be presenting those  
19 details to the Subcommittee this afternoon as well.

20 The staff is prepared to discuss these  
21 or any other questions on the review during the  
22 presentation and during the Q&A session.

23 And at this time, I'd like to turn the  
24 presentation over to DTE Energy and Site Vice  
25 President Keith Polson to introduce his team and to

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1 commence their presentation. Keith?

2 CHAIRMAN SKILLMAN: Before you do,  
3 please let the record show that John Stetkar has  
4 joined as a Member of ACRS.

5 Keith, please proceed.

6 MR. POLSON: So -- so good afternoon.  
7 We really do -- on behalf of the whole Fermi team,  
8 we really appreciate the opportunity to be here to  
9 present an overview of our license renewal  
10 application to this Subcommittee.

11 We are very proud of the efforts that  
12 have gone forth the past several years, and we  
13 really look forward to answering any questions that  
14 you may have. But before I get into the actual  
15 presentation, I would like to do some  
16 introductions.

17 Myself, I am Keith Polson. I am the  
18 Site Vice President. To my left is Larry Peterson.  
19 He is the Director of Engineering. To his left is  
20 Randy Breymaier, and he is the Manager of  
21 Performance Engineering. And to Randy's left is  
22 Lynne Goodman, who is the License Renewal Project  
23 Manager.

24 We have brought a lot of subject matter  
25 experts that are sitting in the chairs behind us.

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1 It was not my intent to go through and introduce  
2 every one of them. I think you can see we have got  
3 a pretty diverse here of program owners and experts  
4 in other fields, so moving on to the next slide?

5 So part of the agenda we're going to,  
6 Larry is going to discuss the plant design, plant  
7 history, and current status. Then Lynne is going  
8 to talk about the license renewal application, the  
9 project, and the SER. And then we will turn over  
10 to Randy for aging management programs, and then at  
11 the end, I will give closing remarks.

12 So with that, I would like to turn it  
13 over to Larry.

14 CHAIRMAN SKILLMAN: Keith, before you  
15 turn the baton, let me ask you a question please.

16 As the Site Vice President, what is  
17 your vision of the importance of 10 CFR 50 Appendix  
18 B to the site in general and to this application in  
19 specific?

20 MR. POLSON: Well, it is -- I mean, it  
21 is very important to the site and to DTE in general  
22 for the future of -- of Fermi.

23 CHAIRMAN SKILLMAN: I'd say yes, that's  
24 a good answer. Would you -- would you like to  
25 expand at all?

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1 MS. GOODMAN: Would you like me to talk  
2 about the application --

3 MR. POLSON: Yes.

4 MS. GOODMAN: -- and the programs?

5 MR. POLSON: Yes.

6 MS. GOODMAN: Lynne Goodman. For the  
7 aging management programs, definitely they're all  
8 going to be under the auspices of 10 CFR 50  
9 Appendix B. That's the guiding light for how we  
10 operate our plants is through our QA program, and  
11 all of our aging management activities will be done  
12 under the auspices of our QA program.

13 CHAIRMAN SKILLMAN: Okay. Thank you.  
14 Larry?

15 MR. PETERSON: Thank you.

16 This slide shows the plant location.  
17 I've got several slides, and we'll look at the  
18 overall plant layout in -- in general, but I wanted  
19 to start by showing the plant location as being  
20 pretty much in the center of Detroit and Toledo,  
21 about 28 miles to the south of Detroit and 26 miles  
22 to the north of Toledo. Next slide, please.

23 This is an aerial view, and I've got a  
24 slide a couple of slides later that I'll highlight  
25 the specific structures of the plant, but I wanted

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1 to start with providing a simple aerial view of the  
2 plant on Lake Erie. Next slide, please.

3 Fermi 2 is a boiling water reactor  
4 rated a 486 megawatts thermal, producing  
5 approximately 1,170 megawatts electrical. We are a  
6 BWR 4 with a Mark I containment.

7 Some design fundamentals that I wanted  
8 to go over as it relates to our electrical design  
9 and our ultimate heat sink: our electrical design,  
10 as noted on this slide, we actually have separate  
11 switchyards, a 120 kV switchyard for our Division 1  
12 power, and our 345 kV switchyard for our Division 2  
13 power. We have a total of four emergency diesel  
14 generators, two per division for our safety-related  
15 divisions. And we do have a combustion turbine  
16 generator onsite, (CTG) 11-1, which is our station  
17 blackout power supply.

18 Cooling water is -- as you noted in the  
19 prior slide, we are on Lake Erie. Lake Erie  
20 provides a cooling water makeup via our general  
21 service water that cools reactor building closed  
22 cooling water as well as turbine building closed  
23 cooling water and ultimately discharges to our circ  
24 water reservoir.

25 We do have two natural draft cooling

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1 towers, and one unique element that is noted in the  
2 picture, shown in the picture, is we have an RHR  
3 complex that houses our ultimate heat sink. We  
4 have two reservoirs in that complex, one per  
5 division, for our ultimate heat sink, that's --  
6 that we rely on.

7 We also have mechanical draft cooling  
8 towers for each of those reservoirs. Additionally  
9 housed in the RHR complex are the emergency diesel  
10 generators that I referred to earlier.

11 CHAIRMAN SKILLMAN: Larry, before you  
12 change slides, would you give us a one-minute  
13 tutorial on your combustion turbine generator: how  
14 often you exercise it, in general how it's  
15 addressed in your -- in your license?

16 MR. PETERSON: Certainly. Our  
17 combustion turbine generator, being a station  
18 blackout power supply, is required to be able to  
19 function in our Technical Requirements Manual to  
20 meet SBO requirements. That requires routine  
21 surveillances as well as normal maintenance to be  
22 able to ensure that the (CTG) 11-1 will function to  
23 support station blackout.

24 It is also, being a station blackout  
25 power supply, all work associated with it is

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1 handled under our Augmented Quality Program to  
2 ensure that it is the -- the parts, the work,  
3 everything is -- is treated to -- to ensure we're  
4 meeting the station blackout requirements for  
5 liability of that machine.

6 CHAIRMAN SKILLMAN: Okay, Larry. What  
7 credit has that combustion turbine generator been  
8 given in the post-Fukushima environment?

9 MR. PETERSON: It has no specific  
10 credit in the post-Fukushima environment. I -- we  
11 do have an individual here that can go into greater  
12 details, but we're not explicitly crediting it --

13 CHAIRMAN SKILLMAN: Okay.

14 MR. PETERSON: -- as -- hopefully that  
15 answers your --

16 CHAIRMAN SKILLMAN: Yes --

17 MR. PETERSON: -- question.

18 CHAIRMAN SKILLMAN: -- it does. Thank  
19 you.

20 MR. PETERSON: The last element on this  
21 slide is recognizing that we do share site with  
22 Fermi 1. Fermi 1 is currently in safe storage.  
23 Next slide, please.

24 MEMBER POWERS: I can't resist. It is  
25 because of Fermi 1 that the ACRS is a statutory

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1 committee.

2 MR. PETERSON: This slide shows the  
3 principal structures on our site layout. And I'll  
4 start with pretty much the center of the slide.  
5 You see our reactor building, auxiliary building,  
6 rad waste and turbine building all in the center of  
7 the slide.

8 CHAIRMAN SKILLMAN: Just before you  
9 proceed --

10 MR. PETERSON: Yes.

11 CHAIRMAN SKILLMAN: -- it appears as  
12 though there is space for a second reactor  
13 building. Was this intended to be a dual-unit site  
14 and just the one unit was -- was built?

15 MR. PETERSON: I don't know the answer  
16 to that question. Lynne, can you help out with  
17 that?

18 MS. GOODMAN: Yes. Originally, there  
19 was going to be a Fermi 2 and a Fermi 3, and it was  
20 decided not to build Fermi 3 at that time.

21 CHAIRMAN SKILLMAN: Okay, very good.  
22 Thank you, thank you.

23 MR. PETERSON: If you look at the  
24 bottom of the slide, to the south of the -- of the  
25 turbine building is our 120 kV switchyard. That's

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1 our Division 1 power supply, as I mentioned  
2 earlier. And just north of that is our general  
3 service water intake that I described previously in  
4 terms of the intake from Lake Erie.

5 To the west of the -- of the buildings,  
6 you see the RHR complex, which we noted in the  
7 prior slide, that houses our ultimate heat sink as  
8 well as our emergency diesel generators. And  
9 immediately to the west of that is our Division 2  
10 power supply, the 345 kV switchyard.

11 Slightly to the north of our RHR  
12 complex is our independent spent fuel storage pad.  
13 And then if you go to the east of that, which is  
14 directly north of the reactor building, you will  
15 see the first of our two flexible storage  
16 facilities, the FLEX storage facility number one,  
17 and then just to the northeast of that is FLEX  
18 storage facility number two, near our natural draft  
19 cooling towers.

20 CHAIRMAN SKILLMAN: Why two?

21 MR. PETERSON: We -- in order to ensure  
22 that we maintain our independence for our plus-one  
23 pumps, the pond right -- right up near the FLEX  
24 storage facility is our source of water that we  
25 would use in a beyond-design-basis event, and we

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1 basically have two pumps that are independent of  
2 one another in FLEX storage facility number two to  
3 take that initial suction on the circ water pond  
4 and the -- the booster pumps in FLEX storage  
5 facility number one, there's also redundant pumps  
6 in there.

7 In order to meet the redundancy  
8 requirements of the N and N+1 requirements with our  
9 strategy, we ended up having to build two  
10 buildings.

11 CHAIRMAN SKILLMAN: Thank you. Okay.

12 MR. PETERSON: Next slide, please.

13 Very brief on some significant points  
14 of our plant history. We did have a construction  
15 permit in September of 1972. Our initial operating  
16 license was provided in March of 1985. Commercial  
17 operation began in January of 1988.

18 Over time, we have had two power  
19 uprates. We had a stretch uprate in 1992 where we  
20 increased by 4.2 percent, and in 2014, we executed  
21 a measurement uncertainty recapture power uprate of  
22 1.64 percent.

23 The last item of note is the -- and it  
24 -- the pictures shown on this slide relate to our  
25 independent spent fuel storage installation. Our

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1 first campaign was executed in 2014. Next slide,  
2 please.

3 A couple of things. We did come out of  
4 a refueling outage in the fall. RF17 was our fall  
5 2015 refueling outage. Couple of key items to note  
6 was that that was the outage where we completed our  
7 FLEX modifications as well as the spent fuel pool  
8 modifications for reliable spent fuel pool  
9 instrumentation to be fully compliant with the NRC  
10 orders for FLEX and spent fuel pool  
11 instrumentation.

12 Additionally, we did some underground  
13 circ water piping inspections and repairs as part  
14 of our normal inspection repair program and did  
15 routine refueling, testing, inspections, preventive  
16 and corrective maintenance activities during that  
17 outage. Next slide, please.

18 MR. SCHULTZ: So Larry, with regard to  
19 the FLEX -- you've got it on this slide, the FLEX  
20 and the hardened vent, that's what I wanted to  
21 understand, where that project is? Has that been  
22 completed, then?

23 MR. PETERSON: No. The FLEX has been  
24 completed. We are fully compliant with the FLEX  
25 order coming out of RF17. Our hardened vent

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1 commitment is to complete the remainder of the  
2 hardened vent modifications for compliance with  
3 that order by the end of RF18, which is spring of  
4 next year.

5 MR. SCHULTZ: Thank you.

6 MR. PETERSON: Certainly.

7 This last slide talks a little bit  
8 about the investment DTE Energy is making in  
9 anticipation of extended plant operation. We have  
10 -- we have looked at all elements that are  
11 necessary to implement our license renewal to 2045,  
12 and some of the key highlights include replacing  
13 our generator, replacing various pumps and molders,  
14 some -- process computer upgrades, as noted before,  
15 FLEX and hardened vent compliance where hardened  
16 vent will be completed next spring, spent fuel  
17 racks, and aging management programs, and getting  
18 into the inspection activities to start supporting  
19 the plant period of extended operations.

20 MR. SCHULTZ: But then some of these  
21 would have been done to support operation to 2025?

22 MR. PETERSON: Yes.

23 MR. SCHULTZ: Thank you.

24 MR. PETERSON: So with that, I turn it  
25 over to Lynne Goodman, our License Renewal Project

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1 Manager. Lynne?

2 MS. GOODMAN: Good afternoon.

3 We submitted an application in 2014.  
4 It was developed using the GALL report, Rev 2 and  
5 NEI 95 plan as guidance. We incorporated both  
6 Fermi 2 and industry operating experience in our  
7 application, and our subject matter experts and our  
8 management were involved with the application  
9 development, the review, the oversight, and we used  
10 Entergy and Enercon as our experienced contractors  
11 since this is our first license renewal. Next.

12 MS. GOODMAN: We addressed two interim  
13 step guidance documents that were issued either  
14 while we were finishing the development of our  
15 application or following our application. The  
16 first was ISG-2012-02, which dealt with aging  
17 management of internal surfaces, firewater system,  
18 and other items, and then 2013, which dealt with  
19 internal coatings, so we did deal with those as far  
20 as being documents that we looked at our adherence  
21 to how we conformed to them and took any exceptions  
22 if we did not conform to those. And I think we're  
23 the first plant to come to you that dealt with it  
24 that way.

25 CHAIRMAN SKILLMAN: Okay Lynne. At the

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1 end of the last slide, you mentioned the work that  
2 you are doing for your first license renewal. Are  
3 you suggesting something beyond that that we should  
4 be aware of?

5 MS. GOODMAN: Well, I kind of realized  
6 my emphasis was wrong, but it's our -- we have one  
7 plant, so it's our license renewal, of course we're  
8 going to monitor what's going on with the industry,  
9 and who knows what is going to happen? It is  
10 always an option --

11 CHAIRMAN SKILLMAN: So --

12 MS. GOODMAN: -- for the future.

13 CHAIRMAN SKILLMAN: -- do you have life  
14 beyond 60 banners in your engineering halls, or  
15 anything like that?

16 MS. GOODMAN: Right now we're focusing  
17 on life to 60, and then we will look forward.

18 CHAIRMAN SKILLMAN: Thank you. Okay.

19 MS. GOODMAN: Okay. We did an annual  
20 update last June, and we're working on our annual  
21 update for 2016.

22 Our SER contains one open item, as  
23 Chris talked about earlier, and I am going to talk  
24 about that, on environmentally assisted fatigue.  
25 And we also have a license condition that Chris

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1 mentioned on the Boraflex rack replacement, and  
2 I'll talk about that.

3 CHAIRMAN SKILLMAN: Okay.

4 MS. GOODMAN: So just for some  
5 background, just for some background,  
6 environmentally assisted fatigue needs to be  
7 evaluated for license renewal, and our application  
8 addressed environmentally assisted fatigue and made  
9 some commitments in that area and provided  
10 screening results.

11 The NRC staff requested more  
12 information on how we did the screening, and the  
13 open item in the RAI that is associated with the  
14 open items specifically requested information  
15 regarding how we calculated the average  
16 temperatures we used, and then did we make any  
17 calculation revisions as a result of the RAI, and  
18 did that revision affect our analysis conclusion?  
19 Next.

20 We did use average transient  
21 temperatures in six locations, and we used multiple  
22 methods in determining the average temperature. As  
23 a result of the RAI, we relooked at our  
24 calculations and we did redo our calculations in  
25 December last year, in January this year, to

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1 address this operating -- this open item.

2 And in four locations, we revised them,  
3 the calculation, to use conservatively the maximum  
4 design temperature. Some of those calculations  
5 were already being redone as part of our EAF  
6 activities, our calculation activities, and we had  
7 decided to use the conservative maximum design  
8 temperature.

9 And in two areas, we did decide to use  
10 average temperature. That was the SLC piping, the  
11 Standby Liquid Control piping inside the  
12 containment, our control rod drive assembly main  
13 flange. Next please.

14 CHAIRMAN SKILLMAN: Now please before  
15 you change --

16 MS. GOODMAN: Yes.

17 CHAIRMAN SKILLMAN: -- the slide, why  
18 did you stay with average for those two locations?

19 MS. GOODMAN: We stayed with average  
20 for those locations because NUREG-6909 allows us to  
21 use the average, and to be able to obtain -- and  
22 their -- their temperatures that they are exposed  
23 to are definitely less than the normal design  
24 temperature of the reactor and coolant system, and  
25 it -- basically, we obtained usage factors less

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1 than 1 with using average temperature.

2 What we did do is we did, for average  
3 temperature, we used both the maximum temperature  
4 and the threshold temperature instead of the  
5 minimum temperature. NUREG-6909, it talks about  
6 using average temperatures, and it talks about  
7 averaging the maximum and the minimum, but then the  
8 example gives shows averaging the maximum and the  
9 threshold, and in some cases, we had done the  
10 maximum and the minimum, and so that was part of  
11 what we changed.

12 CHAIRMAN SKILLMAN: Thank you. Okay.

13 MS. GOODMAN: Okay. Next, please.

14 And for the two that we did continue to  
15 use the average temperature, those do have the  
16 simple transients which NUREG-6909 addresses, that  
17 are -- that -- where average temperature can be  
18 used, constant strain rate, the linear temperature  
19 response, so in our response, we did provide  
20 updated environmentally assisted fatigue usage  
21 factors for these locations, all of them determined  
22 in a manner conservative and consistent with NUREG-  
23 6909. And as a result, there were no changes in  
24 what our sentinel locations were.

25 MR. SCHULTZ: Okay. So Lynne, just to

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1 look at this one more time through because --

2 MS. GOODMAN: Yes.

3 MR. SCHULTZ: -- clearly, there was  
4 some distinction, there was a lot of discussion,  
5 and perhaps it appeared there might have been some  
6 confusion as to what ought to be used with regard  
7 to the NUREG/CR-6909, and the way it's described in  
8 this bullet is that the -- the example that was in  
9 the document includes the threshold temperature  
10 associated, the threshold and the maximum  
11 temperature --

12 MS. GOODMAN: Right.

13 MR. SCHULTZ: -- that that was  
14 provided, and was part of the problem that it was  
15 not -- that was not identified as a requirement at  
16 first, and then later on, you went with the example  
17 that was in the document? Was that what the staff  
18 was looking for?

19 MS. GOODMAN: Yes. Originally, we  
20 looked at the terminology in the section of 6909  
21 that talks about being able to use the average  
22 temperature, and there, it talks about averaging  
23 minimum and maximum, and so that's the route we  
24 went.

25 I understand the draft revision to

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1 NUREG-6909 makes this very clear, that you should  
2 be using threshold and maximum for averaging.

3 MR. SCHULTZ: For the average --

4 MS. GOODMAN: But --

5 MR. SCHULTZ: -- okay.

6 MS. GOODMAN: -- that's a draft  
7 revision, and basically, we are using the version  
8 of 6909 that's in the GALL, and to us, that was --  
9 we felt that we were meeting that.

10 MR. SCHULTZ: I understand that you  
11 felt you were doing the right thing --

12 MS. GOODMAN: And --

13 MR. SCHULTZ: -- in the first place,  
14 but then in the --

15 MS. GOODMAN: Based on discussions --

16 MR. SCHULTZ: -- subsequent --

17 MS. GOODMAN: -- with the staff --

18 MR. SCHULTZ: -- subsequent  
19 discussions, you've come up with this approach, and  
20 the staff will concur with that later on, I  
21 presume, based on the earlier comment.

22 And what -- and your -- your bottom-  
23 line finding, which was recent here, is that no  
24 changes in the sentinel locations were -- were  
25 obtained with the revised evaluation?

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1 MS. GOODMAN: Correct.

2 MR. SCHULTZ: Okay. Thank you.

3 MS. GOODMAN: Okay. Okay. And next, I  
4 will talk about the license condition. It deals  
5 with the Boraflex monitoring program and our spent  
6 fuel racks. We currently have both Boral spent  
7 fuel racks and Boraflex spent fuel racks in our  
8 fuel pool.

9 Application originally included the  
10 Boraflex monitoring aging management program as  
11 well as a neutron-absorbing material aging  
12 management program. In 2013, we did BADGER testing  
13 for the first time, and BADGER testing is a way of  
14 measuring the aerial density of boron-10, the  
15 absorber in the fuel racks. We did identify that  
16 some panels did not meet our acceptance criteria  
17 and took corrective actions through our corrective  
18 action program.

19 The NRC staff, in reviewing our  
20 application, questioned whether or not the Boraflex  
21 monitoring aging management program would be  
22 effective during the program of extended operation  
23 based on its degradation. Next, please.

24 So what we did in response, we were  
25 already looking at long-term corrective action for

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1 the Boraflex degradation that we had identified,  
2 and we decided we would make the commitment in the  
3 license renewal application to change out the Boral  
4 -- Boraflex racks with Boral racks, and Boral racks  
5 are already in our licensing basis.

6 We submitted a letter committing to  
7 implement this previously approved license  
8 amendment to use the Boral racks, and we committed  
9 to do that replacement prior to the period of  
10 extended operation.

11 So with that, we will not credit  
12 Boraflex for neutron absorption during our period  
13 of extended operation, and we will not use that  
14 aging management program, and so I deleted it, and  
15 this will be a license condition.

16 CHAIRMAN SKILLMAN: Lynne, I need to  
17 ask if this was a hard-fought battle, and the  
18 reason I ask the question that way is in the AMP  
19 report from 2014, the AMPs are indicating that you  
20 will remain vigilant of the status of the Boraflex.  
21 And those words show up again in 2015.

22 And then we get into 2016 with the SER,  
23 and all of a sudden, there is an admission that we  
24 will no longer take credit for the Boraflex. So it  
25 appeared as though there was a -- a change in

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1 course of approximately 180 degrees in the period  
2 of about 18 months.

3 MS. GOODMAN: Okay. And we had  
4 discussions with the staff last summer, with --  
5 they questioned the use of the Boraflex during the  
6 period of extended operation, and we were  
7 internally discussing what we wanted to do for  
8 long-term corrective action. And originally, we  
9 did not want to make it a commitment as part of the  
10 license renewal application. We wanted that to be  
11 just part of our corrective action program, an  
12 important piece and an important decision. It's a  
13 very major project to replace spent fuel racks.

14 After discussion with the staff, we  
15 decided to make a commitment, and we made the  
16 commitment in a letter approximately September last  
17 year.

18 CHAIRMAN SKILLMAN: Okay.

19 MR. SCHULTZ: Lynne, when you did --

20 CHAIRMAN SKILLMAN: Thank you.

21 MR. SCHULTZ: -- when you did the  
22 BADGER testing, you found that there was some  
23 degradation in some of the racks. Was that a  
24 surprise? Was the finding that was provided by the  
25 BADGER testing a result that you didn't expect?

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1 MS. GOODMAN: We did expect to find  
2 some degradation based on operating experience --

3 MR. SCHULTZ: But in --

4 MS. GOODMAN: -- in the industry --

5 MR. SCHULTZ: -- but in terms of what  
6 you saw, was that a surprise? And my second  
7 question is did you find -- did you have confidence  
8 in the BADGER test results?

9 MS. GOODMAN: What I'd like to do is  
10 ask Michael Lake to answer that question as far as  
11 were we surprised at all with the -- with the  
12 BADGER test results, and did I get the question  
13 correct?

14 MR. SCHULTZ: Yes, and the second part  
15 was did -- did you have confidence in the results  
16 of the BADGER testing?

17 MR. LAKE: Good afternoon. My name is  
18 Michael Lake. I am the Supervisor of Reactor  
19 Engineering.

20 In response to your questions, we were  
21 not surprised by the results. We were in alignment  
22 with what the rest of the industry had been seeing  
23 for those type of racks. As part of the BADGER  
24 tests that we did, they had just recalibrated their  
25 testing equipment, so we were confident in what the

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1 results that we were receiving.

2 MR. SCHULTZ: Okay. And you had  
3 anticipated originally that you would do BADGER  
4 testing every five years?

5 MR. LAKE: That is correct.

6 MR. SCHULTZ: And based on where you  
7 were, you felt confident that that would be an  
8 appropriate monitoring program going forward before  
9 you got into the -- before you've been, again,  
10 going into the other direction of replacing the  
11 racks?

12 MR. LAKE: That is correct.

13 MR. SCHULTZ: Okay. Thank you.

14 MS. GOODMAN: Okay. Next.

15 With that, I would like to turn it over  
16 to Randy Breymaier, who is our Manager of  
17 Performance Engineering.

18 MR. BREYMAIER: Good afternoon. I am  
19 Randy Breymaier, Manager of Performance  
20 Engineering. I will be giving you a brief overview  
21 of the aging management programs and their  
22 implementation.

23 Performance engineering owns the  
24 license renewal and its implementation at Fermi 2.  
25 We have established a license renewal program with

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1 an owner. This experienced program owner has been  
2 an integral part of the core team.

3 The license renewal program owner has  
4 been qualified in visual inspections and has had  
5 training in many areas of NDE. He has had EPRI  
6 training in the area of aging management  
7 identification and has been actively involved in  
8 the scoping process and long-term planning of the  
9 license renewal and has a good working knowledge of  
10 its implementation plan.

11 All the existing and new programs have  
12 owners. These program owners were involved in the  
13 establishment of the aging management scope within  
14 their programs, and they are involved in the long-  
15 range planning effort of their AMPs. They are  
16 responsible for tracking program enhancements and  
17 inspection schedules, and during the license  
18 renewal process, commitments were made against both  
19 existing and new AMPs, and these are contained  
20 within our new FSAR.

21 MR. SCHULTZ: One question. Were the  
22 responsible program owners involved in developing  
23 the augmentation, the amplification portion of the  
24 --

25 MR. BREYMAIER: For the enhancements?

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1 MR. SCHULTZ: For the enhancements, I  
2 am --

3 MR. BREYMAIER: Yes, they --

4 MR. SCHULTZ: -- sorry --

5 MR. BREYMAIER: -- were.

6 MR. SCHULTZ: -- I misspoke. Thank  
7 you.

8 MR. BREYMAIER: Yes.

9 MR. SCHULTZ: And so they -- they've  
10 been involved in the process to make those  
11 recommendations, and then they'll be following them  
12 --

13 MR. BREYMAIER: Reviewing the  
14 recommendations, following them, they are  
15 responsible. They have program notebooks which  
16 have all the enhancements and schedules which --  
17 which they will meet.

18 MR. SCHULTZ: I am sure. Thank you.

19 CHAIRMAN SKILLMAN: Randy, let me ask  
20 this question, and it really begins with scoping  
21 for this license renewal application. Your page 53  
22 of your license renewal application writes this: "D  
23 Procedure does not explicitly define design-basis  
24 events. However, the safety-related criteria are  
25 not related to accidents and transients described

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1 in Chapter 15 of the USFAR. Consistent with the  
2 definition of design-basis events as described in  
3 10 CFR 50.49(b)(1), the design-basis document  
4 describing design-basis events combinations  
5 includes accidents and plant transient events  
6 presented in 15+ other events, such as internal  
7 missiles, tornado, external missiles and wind,  
8 external floodways, and storm and seismic events."

9 And coupled onto the end of that  
10 paragraph is the statement regarding use of the  
11 alternate source term. So when I read this, I had  
12 a check in my spirit, and I challenged myself, what  
13 is the licensee communicating here? Is there  
14 something in this that is beyond what is normally  
15 done for a license renewal?

16 So I hear you speak of scoping. I hear  
17 you say it's not limited to these events, we have  
18 these other events. I know by the way we use  
19 alternate source term. Can you give us a tutorial  
20 on what you're really communicating here please?

21 MR. BREYMAIER: Lynne is better  
22 prepared to answer that question.

23 CHAIRMAN SKILLMAN: Okay.

24 MS. GOODMAN: Okay. What we were  
25 trying to communicate is that it's not just the one

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1 chapter of the FSAR, that it's the other events  
2 that are part of the definition for what is within  
3 the scope of license renewal. And one difference  
4 between our internal procedures is that the  
5 alternate source term components are not defined as  
6 safety-related in our definition space.

7           However, in the A1 space, as far as  
8 what's within the scope of safety-related -- sorry,  
9 what's within the scope of safety-related or needed  
10 to mitigate the consequences of an accident,  
11 alternate source term does fit within that scope.  
12 So for license renewal purposes, we did include the  
13 alternate source term components, multiple  
14 components we used for the alternate source term,  
15 you know, for our license amendment that adopted  
16 alternate source term.

17           CHAIRMAN SKILLMAN:           Thank you.  
18 Understand. Thank you.

19           MR. BREYMAIER:           In reviewing aging  
20 management programs themselves, there were 45 AMPs,  
21 one of which, Boraflex monitoring, was deleted, as  
22 previously discussed, leaving 44 AMPs, 12 of which  
23 are to be developed, such as the above-ground metal  
24 tanks, as well as the buried and underground piping  
25 programs.

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1           The remaining 32 AMPs are existing, of  
2           which 22 will have enhancements made to them. And  
3           an example in this area would be the containment  
4           inspection program, with enhancements to monitor  
5           the sand cushion drains for blockage and  
6           inspections to assess whether corrosion is  
7           occurring.

8           Of the remaining 44 AMPs, 33 are  
9           consistent with the GALL, and 10 have exceptions to  
10          the GALL. An example in this area would be the  
11          firewater system, where the GALL requires yearly  
12          inspections of the sprinkler headers. It is  
13          feasible only to inspect many of them during refuel  
14          outages due to dose concerns. As a result,  
15          inspections will be performed every 18 months  
16          instead of 12 months.

17          And there is one AMP that is plant-  
18          specific and will be implemented by periodic  
19          surveillances and preventative maintenance  
20          activities. This includes approximately 20  
21          inspections using visual or other NDE techniques at  
22          selected locations to periodically monitor for  
23          material loss. This AMP manages effects not  
24          covered by other AMPs.

25          In respect to the implementation of

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1 license renewal, planning is in progress to  
2 implement the required enhancements and the new  
3 implementing procedures. This plan includes  
4 lessons learned from the License Renewal Owners  
5 Group as well as benchmarking units that have  
6 successfully implemented license renewal. It  
7 includes a long-range plan with resources and an  
8 established budget which has been endorsed to  
9 assure enhancements and new procedures meet their  
10 milestones.

11 All program owners have attended  
12 required job familiarization training, and they  
13 will receive this year vendor training on aging  
14 management identification. AMP owners are required  
15 to quarterly track their enhancements and  
16 inspection progress and report it to the license  
17 renewal program owner.

18 Also, the OE process is being updated  
19 to assure AMP owners review relevant OE. Program  
20 owners were involved in the implementation of their  
21 inspection scheduling. This includes approximately  
22 80 specific inspections to be performed in the next  
23 refuel outage in the spring of 2017. The remaining  
24 inspections have been levelized and will be  
25 completed during the following fall refuel outages,

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1 leaving one additional outage to complete any  
2 outstanding inspections.

3 Program updates will be in place before  
4 the deadline of 2024. Long-term plans for the  
5 station include license renewal implementation  
6 activities plus projects that support safe  
7 operation at the plant for an additional 20 years.

8 MR. SCHULTZ: Randy, I have a general  
9 question, and it relates to these elements  
10 associated with the inspections that are going to  
11 be coming forward.

12 As I went through the application, and  
13 you're developing your overall program approach,  
14 there were many instances of inspections that has  
15 been performed in order to identify elements and  
16 demonstrate that the site was well-versed at  
17 identifying things that might be required for  
18 inspections, and as I went through many of those  
19 lists, I found that things were identified, and  
20 they were either fixed immediately or they were  
21 entered into the corrective action program.

22 And all of that is well and good. The  
23 one thing I kept looking for and I did not see as  
24 things were entered into the corrective action  
25 program was a component that would say extent of

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1 condition was reviewed, and the following other  
2 things were found and identified and fixed.

3 So I am wondering why that wasn't  
4 apparent as you went through the process of  
5 developing those elements that you should focus on  
6 for long-term operation, longer-term operation. Or  
7 is it just something that happened not to appear in  
8 your discussions?

9 MR. BREYMAIER: I think -- I believe  
10 your question is extent of condition on items that  
11 were identified in the corrective action --

12 MR. SCHULTZ: That is right, that --

13 MR. BREYMAIER: Okay.

14 MR. SCHULTZ: -- is right. I mean, one  
15 could presume that of course that's there, and  
16 therefore it wasn't amplified, but in my  
17 experience, you -- you obviously would not stop at  
18 -- at find and fix.

19 MR. BREYMAIER: Right. I mean, our  
20 corrective action drives you to extent of  
21 condition. It's -- you know, that's the processes  
22 we have in place, that extent of condition would --  
23 is and would be addressed.

24 MR. SCHULTZ: Good. That -- I fully  
25 expected that. I just did not see it in the write-

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1 up for some reason. It did not flow out --

2 MR. BREYMAIER: Okay.

3 MR. SCHULTZ: -- of the information  
4 provided. Thank you.

5 MR. BREYMAIER: Any other questions?

6 MR. SCHULTZ: I do. In your LAR, page  
7 988, you write "If" -- this is ASR, alkali-silica  
8 reaction -- "If potentially reactive aggregates  
9 were encountered, then use of low-alkali portland  
10 cement containing less than 0.6 percent alkali  
11 calculated as sodium oxide equivalent was used to  
12 prevent harmful expansion. Additionally, water  
13 cement ratios within the acceptable range defined  
14 in ACI-318. Nevertheless, based on ongoing  
15 operating experience, the structures monitoring  
16 program," so on and so forth about managing  
17 cracking.

18 How could your program have been  
19 clairvoyant? How could you know -- your bubble,  
20 you aren't on a batch plant. You're making  
21 hundreds of cubic yards of concrete at a time. How  
22 could you pick off and say that mix is not what we  
23 want? I expect not you, but someone in your group  
24 --

25 MR. BREYMAIER: Okay --

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1 MR. SCHULTZ: -- to --

2 MR. BREYMAIER: -- I would --

3 MR. SCHULTZ: -- to answer that.

4 MR. BREYMAIER: I would like to call  
5 Tim Hoffman and ask him to --

6 MR. SCHULTZ: This is extent of  
7 condition of alkali-silica reaction. If you read  
8 your application, your application basically says  
9 we don't have any of that stuff. That's  
10 effectively what it says. And I'm skeptical.

11 MR. HOFFMAN: My name is Tim Hoffman,  
12 and I am the structures monitoring program owner.

13 The mix designs for underground  
14 concrete elements did call for types 2 and 5  
15 cements that are, you know, resistant to this type  
16 of degradation, and we also used a waterproof  
17 membrane for these underground elements down to a  
18 certain elevation.

19 CHAIRMAN SKILLMAN: And with that, you  
20 are confident that by and large, you are free from  
21 -- from the degradation that is beginning to show  
22 itself around the industry?

23 MR. HOFFMAN: In inspections that we  
24 have done in the past, we have not seen any of the  
25 --

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1 CHAIRMAN SKILLMAN: Symptoms?

2 MR. HOFFMAN: -- indications of ASR.

3 We will continue to monitor that on a -- what's the  
4 term?

5 PARTICIPANT: Periodic?

6 MR. HOFFMAN: Periodic, yes.

7 CHAIRMAN SKILLMAN: Thank you.

8 MS. GOODMAN: And of course, we all,  
9 you know, are watching the industry OE to learn  
10 from that on this topic.

11 MR. SCHULTZ: One more general  
12 question. I don't know if it's for you, Lynne, or  
13 for Andy.

14 You mentioned the program owners being  
15 in place, responsible moving forward for the  
16 inspection plans and programs, and responsible also  
17 for following industry OE as it relates to all of  
18 this. What -- what is the coordination among them?  
19 What is the -- what is the plan going forward?  
20 You've got another several years before you move  
21 into the next 20 years, so what -- what's going to  
22 hold that together? Do you have corporate programs  
23 that are going to show how this is going to move  
24 forward, how they're all going to move forward as a  
25 unit? You've got a very impressive list of experts

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1 that are going to be following these elements.

2 MR. BREYMAIER: Right. We are in the  
3 process of putting into place the OE review to  
4 assure that the program owners get this -- get the  
5 information they need, and this will be -- we have  
6 an OE review committee, and this will be  
7 proceduralized. We will have members, or the  
8 license renewal program owner will be a member of  
9 this review committee, and he will be responsible  
10 for reviewing and assigning OE relevant to program  
11 owners.

12 MR. SCHULTZ: Okay.

13 MS. GOODMAN: I can maybe add that  
14 additionally, we have in place turnover checklists  
15 if we do have a program owner, basically for  
16 knowledge transfer, if we have a program owner  
17 leave and a new program owner coming, so we have  
18 already set those activities in progress to be  
19 planning because there will be turnover over the  
20 next nine years.

21 And so we need to be ready for that.  
22 And we will have a very detailed project to lay out  
23 which programs get revised which year, and that's -  
24 - we're in progress of starting that effort, and as  
25 Randy talked about, we also have a quarterly

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1 reporting by each of the program owners on the  
2 status of their implementation efforts, and we're  
3 coordinating very closely between his group and my  
4 group on making sure that we have both the project  
5 and the actual program owners working together to  
6 make sure we can accomplish implementing all our  
7 commitments.

8 MR. SCHULTZ: Is this program owner  
9 assignment, in addition to all your other duties,  
10 you're now a program owner of this element for a  
11 long-term --

12 MR. PETERSON: Let me discuss this.  
13 One of the reasons, as Randy pointed out in his  
14 presentation, we assigned, well over a year ago, a  
15 dedicated license renewal program owner. He has  
16 been part of the -- the core project team  
17 throughout, and I would say he provides that level  
18 of oversight and consistency for all of the other  
19 program owners.

20 MR. SCHULTZ: Okay, so then --

21 MR. PETERSON: But --

22 MR. SCHULTZ: -- he is the lead.

23 MR. PETERSON: He is the lead.

24 MR. SCHULTZ: Okay.

25 MR. PETERSON: And in most cases --

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1 actually, in virtually all of the cases, the  
2 license renewal element of the -- of the expansion  
3 and the added programs were natural extensions of  
4 existing programs.

5 The other piece that provides that  
6 consistency in that oversight is that Randy, as the  
7 Performance Engineering Manager, is responsible for  
8 all the program owners. Some of our program owners  
9 such as Mr. Hoffman, he works in our design  
10 organization. Our structures monitoring folks are  
11 in the design organization, but they still funnel  
12 their program ownership through Randy, so between  
13 our license renewal program owner and Randy as the  
14 Manager of Performance Engineering, that's what I  
15 would view as the tie and the consistency to drive  
16 this going forward.

17 MR. SCHULTZ: Okay. Thank you.

18 MEMBER POWERS: What I didn't get out  
19 of that is the -- the question of okay, you got  
20 Randy here. He was full-time but busy before this.  
21 Now he's full-time busy plus some other stuff. I  
22 mean, doesn't that -- don't you run into a conflict  
23 here, or -- ? You've got 12 new programs, same  
24 number of people?

25 MR. BREYMAIER: Our program does

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1 address this. For the new programs or programs  
2 that require major revisions, we will have  
3 contractor assistance to generate these. During  
4 the generation of the new programs, the program  
5 owner will be involved. He will have final  
6 approval of the program along with myself.

7 And, yes, and there will be some  
8 additional work. I can't -- I can't -- that's part  
9 of the ball game we're in.

10 CHAIRMAN SKILLMAN: John, please?

11 MEMBER STETKAR: Yeah, I was going to  
12 hold off because I'm going to hit them with  
13 something specific.

14 Tell me about your non-environmentally-  
15 qualified inaccessible power cables program. I --  
16 I know you've committed to follow GALL Rev 2, so I  
17 understand that. But this is now characterized as  
18 a new program, and there's a brief discussion in  
19 your license renewal application that says well,  
20 although it's a new program, we've kind of been  
21 doing stuff already in response to industry  
22 initiatives, and -- and generic letter 2007-01.

23 So I go read the inspection reports,  
24 and the inspection reports say yeah, you've had a  
25 bunch of problems with water in manholes, and that

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1 you're -- one of them I read said you're monitoring  
2 them weekly, but the commitments under this aging  
3 management program just says we're going to monitor  
4 them at least once a year, and episodically after  
5 rain.

6 You did have one cable failure that was  
7 apparently in scope, you could report it under  
8 generic letter 2007-01. You had two DC power  
9 cables that are apparently not in scope, but they  
10 also were reported under that generic letter.

11 So -- so tell me what's going on now.  
12 It's obviously a pretty low-lying area, and it  
13 seems like it's pretty easy to get water  
14 underground there. What are you doing today?  
15 Because you are not going to invoke this new  
16 program for another ten years or so.

17 MR. BREYMAIER: Let me answer this  
18 question generally. Then I would like to have our  
19 system -- or our expert in the cable area address  
20 it.

21 We, to address the low-lying cable  
22 issue, we have, for the EDG cables, we have  
23 installed new cables, routed them above the water  
24 table. We do have pumps now with audible alarms in  
25 all the safety-related cable vaults.

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1                   MEMBER STETKAR: All of them? Because  
2 the LRA -- the reason I felt a bit uncomfortable  
3 about this is it uses terms like well, it's  
4 included repair of some underground cable vaults,  
5 installation of some sump pumps. You know, it  
6 sounds rather spotty.

7                   MR. BREYMAIER: Jeff, could you address  
8 those questions?

9                   MR. AULER: Good afternoon. My name is  
10 Jeff Auler. I own the cable condition monitoring  
11 program.

12                   As far as what we're doing right now,  
13 back in 2007, when the generic letter came out, we  
14 formed a -- a core team, and we -- we went ahead  
15 and we did some repairs on -- on the vaults, the  
16 grade and, you know, that sort of thing. We  
17 replaced a lot of the supports.

18                   And another thing we did is we went  
19 ahead and we -- we started doing pump-downs on --  
20 on the vaults. And what that did is that allowed  
21 us to go ahead and study the inflow rates.

22                   MEMBER STETKAR: Are you --

23                   MR. AULER: Once we had that, we  
24 installed sump pumps, and we -- on 35 of  
25 approximately 77. And the reason we focused on

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1 those 35 is because those had the greatest inflow  
2 rate, and those happened to be the route of the  
3 medium voltage cables, and that also included the  
4 safety -- the six -- now the six safety related  
5 vaults that we have, okay?

6 And we also build a cable condition  
7 monitoring program to go along with it. We did  
8 some benchmarking and went down to TVA, and -- when  
9 Mr. Kent Brown was there --

10 MEMBER STETKAR: I know --

11 MR. AULER: -- and --

12 MEMBER STETKAR: -- Kent very well.

13 MR. AULER: Yes. And -- and we build  
14 procedures, and we test the shielded medium voltage  
15 cables using the latest techniques: IEEE- and --  
16 and EPRI-recommended techniques. I attend the  
17 cable users group. I am actually a steering  
18 member.

19 And for the low voltage cables, we --  
20 we do a -- I do a sample. This is also recommended  
21 by EPRI. And I sample the various insulation types  
22 of low-voltage cables, and we do insulation  
23 resistance on, you know, those various insulation  
24 types, make sure nothing is happening, you know,  
25 negative to the -- to the insulation types.

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1           MEMBER STETKAR: And this -- this is a  
2           -- a formal program that's got documentation and  
3           trending that's in place now?

4           MR. AULER: Yes sir. There is -- there  
5           is a structure to it. We have -- it's not a point-  
6           of-contact program, it is a fully-implemented  
7           program. We have what we call conduct manuals, or  
8           high-level guidance, you know. And I also have  
9           testing procedures, program notebooks, health  
10          reports. We visit the -- you know, we make  
11          presentations to the Plant Health Committee on  
12          occasion as well.

13          MEMBER STETKAR: And -- and are -- is -  
14          - I mean, you said you installed a bunch of -- a  
15          lot of sump pumps. Are they reasonably effective,  
16          I mean, based on your episodic or -- or --

17          MR. AULER: Yes --

18          MEMBER STETKAR: -- periodic --

19          MR. AULER: -- we --

20          MEMBER STETKAR: -- inspections --

21          MR. AULER: -- we've got --

22          MEMBER STETKAR: -- of the hole --

23          MR. AULER: -- we've --

24          MEMBER STETKAR: -- manholes?

25          MR. AULER: They do -- they do fairly

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1 well. And if there is a case where the pump isn't  
2 working, we, in the -- while we're waiting for a  
3 repair, we go ahead and we do a manual pump-down  
4 weekly on them.

5 MEMBER STETKAR: But it is -- I mean,  
6 they fill up enough that you do have to do weekly  
7 pump-downs?

8 MR. AULER: Yes, yes. Those that were  
9 planned to have a sump pump, you know. Like I  
10 mentioned --

11 MEMBER STETKAR: Yes.

12 MR. AULER: -- earlier, if, aside from  
13 having -- that the routes of the medium-voltage  
14 cables there, the inflow rates were large enough to  
15 have quite a bit of water accumulation, so --

16 MEMBER STETKAR: Have -- just out of  
17 curiosity, and I recognize the guidance, but  
18 looking forward to the future, we just had a recent  
19 Subcommittee meeting on the -- I'll call it for  
20 GALL for subsequent license renewal because I've  
21 forgotten the -- the NUREG number, and for  
22 subsequent license renewal, in this particular  
23 area, at least from what we've seen, the staff is  
24 proposing extending the scope to -- to basically  
25 include all in-scope cables, regardless of the

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1 voltage.

2 So we're talking about now 120 volt AC  
3 or DC cables, things like that. Do you know -- are  
4 you susceptible to wetting of those types of  
5 cables? Because, you know, they in principle can  
6 cause problems also if they're -- instrument  
7 control power, for example, is what I'm thinking  
8 about.

9 MR. AULER: Well, the -- all of the  
10 vaults carry a mixture -- most of the vaults carry  
11 a mixture of low-voltage cables and the power  
12 cables --

13 MEMBER STETKAR: Yes.

14 MR. AULER: -- that are typically at  
15 the top of the vault.

16 MEMBER STETKAR: Yes, yes.

17 MR. AULER: But we -- I have studied  
18 the inflow rates as best I can, and I've set -- you  
19 know, we have quite a bit of data now, and I've  
20 set, for those that don't a sump, I've went ahead  
21 and set up four different preventative maintenance  
22 routines. We have a weekly, we have a quarterly,  
23 six-month, and a yearly.

24 And I -- I am confident that it works  
25 pretty good to -- to prevent longstanding water

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1 issues on cables.

2 MEMBER STETKAR: Okay. Thank you.

3 Oh, let me -- while I've got you here,  
4 I might as well, because the staff would only refer  
5 to you anyway. In the staff -- when I was reading  
6 the -- I don't remember whether it's in the SER or  
7 some of the inspection reports, they referred to  
8 cables that are qualified for submergence. Do you  
9 actually have cables that are qualified for  
10 submergence? That is a special kind of cable, so  
11 be careful.

12 MR. AULER: No.

13 MEMBER STETKAR: Okay, thanks.

14 MR. AULER: No, we don't.

15 MEMBER STETKAR: Thanks. I'll ask the  
16 staff then how they made that determination.

17 CHAIRMAN SKILLMAN: Any more, John?

18 (No audible response.)

19 CHAIRMAN SKILLMAN: Before we ask the  
20 staff to come to the front of the room, do you have  
21 any further questions for the Detroit Edison team?

22 (No audible response.)

23 CHAIRMAN SKILLMAN: Hearing none --

24 MR. PETERSON: If not, I'd like to turn  
25 it over to Keith for closing remarks.

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1 MR. POLSON: Okay. I'd like to thank  
2 the Subcommittee for the time, and -- and for the  
3 questions. Part of our process, we'll get back  
4 together as a team, we'll do a critique on this  
5 meeting, and if there are any open items that we  
6 need to get back to you, we'll do that.

7 One of the questions, I think it got  
8 asked a couple different times, about workload and  
9 resources, we do have a process in place, so if the  
10 workload would become too burdensome, we have a  
11 process in place where we can add head count, and  
12 we do review that, but at least on a yearly basis  
13 as far as our org chart.

14 And I will tell you that DTE is fully  
15 committed to providing the resources that we need  
16 to run Fermi 2 safely, so with that, again, thank  
17 you for the time and the questions.

18 MEMBER POWERS: How did you come to  
19 this ownership-type approach to the aging  
20 management?

21 MR. POLSON: I'm not sure what the  
22 question is.

23 MEMBER POWERS: You've got a structure  
24 here where you have owners in these individual  
25 aging management programs reporting up to someone.

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1 How did you -- what led you to that kind of an  
2 approach?

3 MR. BREYMAIER: Let me try to answer  
4 that question. We -- we've already had programs in  
5 place, many of these aging management programs tie  
6 directly to these programs, and the ones that  
7 didn't -- did not, either new programs' owners were  
8 identified, or they were related, they were tied  
9 into the existing program owners.

10 MS. GOODMAN: And what I'd like to say  
11 is that we really thought that to be effectively  
12 managing for the long term, it needed to be the  
13 plant program owners heavily involved with  
14 implementing our new commitments. Now, as a  
15 project team, we're going to help that, provide  
16 resources to develop new programs and changes. But  
17 the long term, it's the plant people, the program  
18 owners, that are going to be running the plant and  
19 managing the aging as we go through the next 30  
20 years.

21 MEMBER POWERS: Well I get the  
22 impression that if I showed up at the front gate,  
23 and I said yeah, I want to know about aging program  
24 number 25, that you would say oh, you go talk to  
25 Fred, because Fred owns that, and he knows more

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1 about it than I would know if I stayed up at night  
2 studying.

3 Is that the kind of structure that  
4 you've gotten to here? Is my perception correct on  
5 this?

6 MR. PETERSON: It certainly is. And I  
7 will tell you that as the license renewal project  
8 got started, if you will -- I've got a little over  
9 30 years' experience at multiple plants, and I have  
10 learned that when you've got a big project and you  
11 hire expertise from somewhere else, that certainly  
12 helps with that initial workload, but you don't  
13 sustain the basic knowledge in the ownership if you  
14 don't ingrain your permanent plant staff early on.

15 And -- and the license renewal project,  
16 Lynne has been excellent in working with Randy to --  
17 -- to set that up, and it -- it's really a matter of  
18 -- of having that right mindset, that right talent  
19 and perspective to be able to sustain it, because  
20 the project team will go away, but the people that  
21 are sitting out there in the audience, those are  
22 the guys that will live and breathe this for the  
23 next, you know, almost 30 years, until 2045.

24 So that -- that has been very well  
25 supported organizationally in terms of realizing

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1 that that was an important way to get us to a good,  
2 sustained ownership.

3 MEMBER POWERS: I make no secret. I  
4 think it's wonderful. I think it's the best idea  
5 I've heard in a long time. A lot of people can't  
6 answer that question of what do you do about the  
7 additional workload very well.

8 And -- but I'm trying to understand how  
9 you came about it. I think you told me a hell of a  
10 lot of experience has told me this is how to manage  
11 things, and that's good. It worked for you. I am  
12 trying to figure out how it works for other people  
13 who don't have that experience. But to my mind, to  
14 have -- to have somebody identifiable that owns it,  
15 and is responsible not only for it, but turning it  
16 over should he get promoted or find greener  
17 pastures or go off and write the great American  
18 novel, whatever it is, I think that's just  
19 outstanding.

20 I just think it's the greatest idea on  
21 handling these new, important programs, you know,  
22 and an effective way to have somebody that I can go  
23 call on the phone, and I know that he will know the  
24 answer to my question.

25 CHAIRMAN SKILLMAN: I was anticipating

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1 that, in response to Dr. Powers, you were going to  
2 say we had pre-existing house reports and pre-  
3 existing program reports, and when we moved into  
4 license renewal, many of the program owners owned  
5 the -- those same disciplines, and we had to add  
6 some, so what we presently have are the system  
7 health owners, system health owners, and the  
8 program owners who now have additional  
9 responsibilities, or we added program owners for  
10 license renewal.

11 I think that that is what you are  
12 communicating. Is that what you are communicating?

13 MR. PETERSON: That is --

14 MS. GOODMAN: Yes.

15 MR. PETERSON: -- that is correct.

16 CHAIRMAN SKILLMAN: So the men and  
17 women that Dana is referring to would be those  
18 program owners?

19 MR. PETERSON: Yes.

20 MR. SCHULTZ: I'll just add to that,  
21 because when I went through the documentation of  
22 the submittal, it was very clear that the  
23 descriptions of the program enhancements that were  
24 provided for GALL report items were -- were very  
25 well thought out and developed, and they're going

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1 to be -- they're going to be challenging to  
2 implement --

3 MS. GOODMAN: Yes.

4 MR. SCHULTZ: -- I mean, you've  
5 committed to some real program enhancements that  
6 you need to carry out and carry forward over the  
7 next several years and into -- obviously, into the  
8 renewal process, but they're very well done, very  
9 well done.

10 CHAIRMAN SKILLMAN: Yes. I was musing  
11 on that, because as I was going through the AMPs  
12 and the enhancements, I found one that had 18  
13 enhancements, and then I found one that had 26  
14 enhancements, and I said wow, these people have  
15 really been -- have been very busy.

16 MEMBER POWERS: I think you want to  
17 track this and seriously consider, you know, if  
18 you've gone through this, and had the chance to try  
19 it and whatnot, documenting that publically,  
20 because it is -- you know, this is something that  
21 could show up in Harvard Business Review as a  
22 management strategy for these kinds of things that  
23 deserves to be shared broadly, because it's  
24 applicable not just for nuclear plants. I mean, I  
25 can see it for any kind of program.

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1 I mean, I would seriously think about  
2 that as a contribution to the body of knowledge on  
3 how we manage things.

4 MS. GOODMAN: Thank you.

5 PARTICIPANT: Thank you.

6 CHAIRMAN SKILLMAN: Keith, DTE team,  
7 thank you very much. You can stand down, and we're  
8 going to bring the NRC team up. Thank you very  
9 much.

10 We're not taking a break. Let's keep  
11 on going.

12 (Whereupon, the above-entitled matter  
13 went off the record at 2:06 p.m. and resumed at  
14 2:10 p.m.)

15 MS. MELENDEZ-COLON: I think we're  
16 ready now.

17 MEMBER SKILLMAN: You're ready? Then,  
18 let's please proceed. Welcome to you.

19 MS. MELENDEZ-COLON: Good afternoon,  
20 Chairman Skillman and members of the License  
21 Renewal Subcommittee. My name is Daneira Melendez-  
22 Colon and I am the License Renewal Project Manager  
23 for the Fermi 2 License Renewal Safety Review.

24 We are here today to discuss the review  
25 of the Fermi 2 License Renewal Application as

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1 documented in the Safety Evaluation Report with  
2 Open Items which was issued on January 28, 2016.

3           Joining me here at the table today is  
4 Dr. Allen Hiser, the LRA Senior Level Advisor, Dr.  
5 Stuart Sheldon, Senior Reactor Inspector for Region  
6 III and who led the 71 002 to inspection and Ms.  
7 Lois James, the LRA Senior Safety Project Manager  
8 running the slides.

9           Sitting in the audience are members of  
10 the technical staff who participated in the review  
11 of the License Renewal Application and conducted  
12 the onsite audits.

13           Next slide?

14           I will begin the presentation with a  
15 general overview of the staff review.

16           Next, Dr. Sheldon will present the  
17 inspection activities observed during the License  
18 Renewal Inspection at Fermi 2.

19           I will then present the main sections  
20 of the Safety Evaluation Report and any associated  
21 open items.

22           Next slide?

23           DTE submitted a single site application  
24 for Fermi 2 which consists of one boiling water  
25 reactor. The staff conducted two onsite audits and

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1 one inspection at the site.

2 During the scoping and screening  
3 methodology audit, the audit team reviewed the  
4 applicant's administrative controls governing the  
5 scoping and screening methodology and the technical  
6 basis for selective scoping and screening results.

7 The staff also reviewed selected  
8 examples of component material and environment  
9 combinations, reviewed information contained in the  
10 applicant's Corrective Action Program to identify  
11 operating experience relevant to plant-specific age  
12 related degradation and reviewed quality practices  
13 applied during development of the LRA and the  
14 training of personnel who participated in the  
15 development of the LRA.

16 The results of the audit were  
17 documented in a report dated October 21, 2014.

18 During the aging management program  
19 audit, the audit team examined the applicant's  
20 aging management programs, or AMPs, and related  
21 documentation to verify the applicant's claims of  
22 consistency with the corresponding AMPs in the GALL  
23 report.

24 This staff reviewed the initial 44 AMPs  
25 and documented the results in a report dated

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1 February 11, 2015.

2 Region III will further discuss the  
3 activities of the 71 002 to inspection in a few  
4 minutes.

5 Next slide?

6 In addition to the audits and  
7 inspection already mentioned, the staff conducted  
8 in depth technical reviews and issued requests for  
9 additional information.

10 The staff performed its review of the  
11 Fermi 23 License Renewal Application with the  
12 exception of one open item and issued the Safety  
13 Evaluation Report with Open Items on January 28,  
14 2016.

15 The final SER will be issued in July  
16 2016 and the resolution of the open item regarding  
17 the effects of reactor water environment on fatigue  
18 life.

19 I will now direct the presentation to  
20 Dr. Sheldon to discuss the inspection activities  
21 and results associated with this License Renewal  
22 review.

23 Next slide?

24 MR. SHELDON: Good afternoon. I am  
25 Stuart Sheldon, I led the inspection team from

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1 Region III that reviewed the Fermi 2 License  
2 Renewal Application.

3 The purpose of the 71 002 License  
4 Renewal Inspection is to verify that the applicant  
5 has adequate programs planned or in place to  
6 implement aging management for the system  
7 structures and components that require an aging  
8 management review such that the SSEs will be  
9 adequately maintained consistent with 10 CFR 54  
10 existing safety evaluations the applicant's license  
11 renewal program.

12 It's also intended to verify that the  
13 applicant's license renewal documentation is  
14 retrievable, auditable and consistent with the rule  
15 and applicant approved programs and procedures.

16 Prior to the License Renewal  
17 Inspection, the applicant added an aging management  
18 program in response to Interim Staff Guidance  
19 201301 on containment coatings integrity.

20 So, at the time of the inspection,  
21 there were 45 aging management programs, 33  
22 existing programs and 12 new programs. My staff  
23 reviewed all of those aging management programs.  
24 We reviewed the five regulated events, not as a  
25 separate activity per se, but as part of our

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1 scoping walk downs and our scoping reviews.

2 And, we selected six non-safety systems  
3 or structures or components to review for  
4 components that the applicant had scoped out of  
5 their application to review that that scoping was  
6 appropriate.

7 During our two week onsite inspection,  
8 the team reviewed site documents related to the  
9 regulated events and non-safety related structures  
10 and components whose failure could prevent safety  
11 related SSEs from accomplishing their safety  
12 function, to confirm the applicant had applied the  
13 required scoping and screening methodology.

14 We also completed walk downs on 23  
15 systems, structures or components to assess the  
16 adequacy of the applicant's license renewal  
17 boundaries, material condition and conformance with  
18 their application in the GALL report.

19 This activity enabled us to assess and  
20 evaluate if the existing AMPs would be successful  
21 at managing the aging effects for SSEs within the  
22 scope of license renewal.

23 Next slide, please?

24 Our overall inspection results, we  
25 concluded that the overall material condition of

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1 the structure systems and components in the plant  
2 were good. However, during inspection we  
3 identified several concerns with respect to current  
4 and planned programs which resulted in application  
5 changes to five of the aging management programs  
6 and one basis document change.

7 Next slide, please?

8 In summary, our team concluded that the  
9 applicant performed the scoping and screening in  
10 accordance with the rule. They also found that the  
11 information was easily retrievable. We verified  
12 that the existing programs were generally effective  
13 in managing aging effects. And, we also verified  
14 that the applicant has the tool to track the  
15 completion of enhancements and the development of  
16 the new programs.

17 So, lastly, based on the results of  
18 this inspection, the inspectors gained reasonable  
19 assurance that the programs in place and planned  
20 will managing aging effects and ensure the intended  
21 safety function of SSEs within the rule will be  
22 maintained if they are implemented as describe in  
23 the application with the proposed enhancements and  
24 as supplemented through the responses to requests  
25 for additional information and inspection

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1 observations.

2 MEMBER SKILLMAN: Stuart, let me ask  
3 this question, to your second bullet, if the  
4 information was retrievable, auditable and  
5 consistent with 10 CFR 54, my inclination is to  
6 think that the reason that the reason that you can  
7 make that statement is because the site was  
8 behaving in a way to track all of that well before  
9 they began their license renewal activities. Now  
10 is that --

11 MR. SHELDON: Well, predominantly, the  
12 information that goes towards license renewals,  
13 part of the License Renewal Application, and the  
14 background information for that.

15 So, they, in general, they do have a  
16 very well structured system for maintaining  
17 official records that are required by 10 CFR Part  
18 50 and such as work orders and things like that.

19 But, also, they have all of the  
20 application information well in hand and documented  
21 and controlled and readily available.

22 MEMBER SKILLMAN: Fair enough, thanks.

23 Stuart, let me ask you, let me follow  
24 up on the -- my favorite topic of underground  
25 cables.

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1           In the SER, there's quite -- there's a  
2 couple of pretty long paragraphs discussing  
3 inspection results and walk downs. We heard a  
4 little bit from the applicant on what they're doing  
5 today.

6           I know what they've committed to in  
7 their program, but again, the program is associated  
8 a period of extended operation which is somewhere  
9 around ten years in the future.

10           Let me ask you first about the  
11 statement says the inspectors also reviewed the  
12 licensee -- wrong statement.

13           In those areas without the water  
14 devices, the inspectors verified that drainage of  
15 the area was available or that the cables were  
16 qualified for submergence conditions. That, to me,  
17 implies that where drainage is not available, the  
18 cables were qualified for submergence conditions.

19           The applicant said they don't have any  
20 of those qualified cables. So, I'm curious about  
21 that statement. Did your inspectors actually say,  
22 yes, they can't keep water out of the manholes but  
23 the cables are qualified to be submerged?

24           MR. SHELDON: I believe that statement  
25 is from the SER.

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1 MEMBER STETKAR: Yes.

2 MR. SHELDON: That's not something that  
3 we documented in our inspection.

4 MEMBER STETKAR: Well, it paraphrases -  
5 - it says as described in Fermi 2 Power Plant Unit  
6 2 Integrated Inspection Report and that there are  
7 long numbers, and it says it twice.

8 MR. SHELDON: Integrated Inspection  
9 Report.

10 MEMBER STETKAR: In two -- yes.

11 MR. SHELDON: Okay, that wasn't my  
12 report.

13 MEMBER STETKAR: That's not your --

14 MR. SHELDON: That's the resident  
15 report. So, I --

16 MEMBER STETKAR: That's the resident  
17 report?

18 MR. SHELDON: Right. I can't speak to  
19 that.

20 MEMBER STETKAR: The resident works in  
21 Region III?

22 MR. SHELDON: Yes.

23 MEMBER STETKAR: Okay.

24 MR. SHELDON: Yes.

25 MEMBER STETKAR: You're here from

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1 Region III?

2 MR. SHELDON: I am.

3 MEMBER STETKAR: Okay.

4 MR. SHELDON: We work for different  
5 groups in Region III.

6 MEMBER STETKAR: Okay.

7 MR. SHELDON: So, I can't speak  
8 specifically to that. I can follow up for you.

9 MEMBER STETKAR: Okay, I was curious  
10 because we've had in the past, it's become much  
11 less frequent currently, but we have had people  
12 come in and say, well, our cables are qualified for  
13 being submerged so there's no big deal that we  
14 can't keep water out of these manholes.

15 And, when we've challenged them, they  
16 say, well, no, they're really not qualified for  
17 being submerged and we're doing something else.

18 And, I thought we'd kind of gotten past  
19 that. So, I'm curious about that because if any of  
20 the inspectors conclusions regarding what's being  
21 done --

22 What I'm worried about is what's being  
23 done currently and what's going to be done for the  
24 next ten years before we invoke necessarily the  
25 requirements under this particular aging management

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1 program that they're describing as a new program  
2 and committing to under the license renewal period  
3 of extended operation?

4 So, I'm kind of curious about how the  
5 inspectors made their conclusions that, indeed,  
6 everything that's currently being done is being  
7 done okay to keep those cables in an acceptable  
8 operating condition?

9 MS. MELENDEZ-COLON: Yes, I will like  
10 to call Cliff Douth from the staff license renewal  
11 is here. He looked at these programs.

12 MR. SADOLLAH: Cliff Douth is  
13 momentarily out. He'll be back.

14 This is Mo Sadollah. I'm the  
15 electrical -- the other electrical tech reviewer.

16 I know that when we were doing the  
17 audits, Cliff was looking at the -- some of these  
18 underground cables under the E3 program, one of the  
19 E3 programs.

20 I don't specifically recall if he  
21 noticed anything that was -- the cable that was  
22 qualified for submergence, but we can get back to  
23 you whether he did specifically notice some or that  
24 was just the general statement that usually is on  
25 board.

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1                   MEMBER STETKAR:       Well, he probably  
2                   didn't notice any since the applicant has stated on  
3                   the public record that they don't have any. So, if  
4                   he noticed some, he might have been not noticing  
5                   things very carefully.

6                   That's what I'm trying to follow up on  
7                   is that there's quite a bit of emphasis in the SER  
8                   in the area of operating experience that makes  
9                   reference to sets of inspections. This isn't just  
10                  one, it's two paragraphs referring to a big long  
11                  lists of numbers here for inspection reports.

12                  And, both of them say the same things,  
13                  the walk downs were done. They're removing water.  
14                  In cases where they can't remove water, there are  
15                  cables that are qualified and so forth.

16                  So, I'm -- but that's what gave me  
17                  pause.

18                  MS. DIAZ-SANABRIA: This is Yoira Dias,  
19                  the plant chief for the safety project.

20                  So, the -- Cliff Douth who is the lead  
21                  technical reviewer is right now looking at that  
22                  question.

23                  MEMBER STETKAR: Okay.

24                  MS. DIAZ-SANABRIA: So, if you can give  
25                  us a couple of minutes, Cliff will come back and --

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1 MEMBER STETKAR: No problem at all.

2 MS. DIAZ-SANABRIA: Okay.

3 MEMBER STETKAR: We have time.

4 MR. SHELDON: Okay. Could you tell me  
5 what page that it's on?

6 MEMBER STETKAR: On the SER -- let me  
7 get back on the record here -- it's page 3-43 of  
8 the SER itself. It's under the section of  
9 Operating Experience for 3.0.3.1.14 is the section  
10 number and it's under Operating Experience and,  
11 specifically, it's on page 3-43.

12 As I said, it's mentioned twice in two  
13 consecutive paragraphs.

14 MS. MELENDEZ-COLON: Cliff Douth just  
15 entered the room.

16 MEMBER STETKAR: Hi, Cliff. Hope you  
17 know why you're here.

18 MR. DOUTH: Can you repeat the question  
19 since I --

20 MEMBER STETKAR: Yes. My concern is,  
21 in the SER, there are a couple of paragraphs in the  
22 area that discusses Operating Experience for  
23 Inaccessible Low Voltage and Medium Voltage Cables.  
24 So, it's that.

25 And, if I can orient you, if you're

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1 looking for page -- you have the SER?

2 MR. DOUTT: Yes.

3 MEMBER STETKAR: Look for page 3-43 if  
4 you have that.

5 MR. DOUTT: Okay.

6 MEMBER STETKAR: Got it? If you look  
7 toward the bottom of the -- middle to the bottom of  
8 the paragraph or page, there are a couple of long  
9 paragraphs that refer to integrated inspection  
10 reports.

11 MR. DOUTT: Right, right.

12 MEMBER STETKAR: Kind of in the middle  
13 of those discussions, there are statements that  
14 says, in those areas without the watering devices,  
15 the inspectors verified the drainage of the area  
16 was available or that cables were qualified for  
17 submergence conditions.

18 And, I stumbled over that qualified for  
19 submergence conditions because every time that  
20 we've questioned that phrase, we've been told,  
21 well, they're not really qualified for submergence  
22 but the applicant was doing things to keep the  
23 manholes dry.

24 MR. DOUTT: Right.

25 MEMBER STETKAR: I asked -- I don't

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1 know if you were in the room when I asked the  
2 applicant whether they had any cables qualified for  
3 submergence --

4 MR. DOUTT: The answer is no.

5 MEMBER STETKAR: -- the answer was no.

6 MR. DOUTT: Yes, that was a no.

7 MEMBER STETKAR: Yes. So, I'm curious  
8 why this got into the SER or whether the inspectors  
9 actually found conditions where they couldn't keep  
10 the manholes dry but concluded it was okay because  
11 the cables were qualified to be submerged.

12 That's a more of concern for me.

13 MR. DOUTT: Yes, that -- looking at the  
14 inspections reports, basically, we're looking for  
15 any past history that's obvious or whatever. There  
16 are no cables that I'm aware of that would qualify  
17 for submergence.

18 MEMBER STETKAR: Right.

19 MR. DOUTT: It's just a statement  
20 within here the inspection criteria is what we can  
21 look for if, in fact, there's water and  
22 submergence. I didn't see any instances of that.  
23 I'd have to go back and look.

24 MEMBER STETKAR: Oh, okay.

25 MR. DOUTT: But --

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1 MEMBER STETKAR: Okay.

2 MR. DOUTT: What we normally would do -  
3 - what I would normally do --

4 MEMBER STETKAR: Yes, I'd get it if  
5 it's interpreted as the inspector is told to either  
6 verify that it can be dewatered or that it -- the  
7 cables are qualified and this is just parroting  
8 back that requirement.

9 MR. DOUTT: That's, I think, the intent  
10 here.

11 MEMBER STETKAR: I read it as if the  
12 inspectors actually made that conclusion.

13 MR. DOUTT: Well, we normally -- well -  
14 -

15 MEMBER STETKAR: Okay.

16 MR. DOUTT: -- if it was submerged,  
17 we'd ask two questions. One, can it be qualified  
18 for submergence?

19 MEMBER STETKAR: Right.

20 MR. DOUTT: Qualified being kind of a  
21 little cube defining cube space here.

22 MEMBER STETKAR: Yes.

23 MR. DOUTT: So, it's designed for the  
24 environment, so it's designed to be -- can be  
25 submergence. That's fine.

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1           If not, then what corrective actions  
2           are we taking to amend? And wetting the cable,  
3           submerging the cable. So, that would the general -  
4           - that's how we'd handle that.

5           In this particular case, I don't know  
6           of any cable that had -- and it's very unusual.

7           MEMBER STETKAR: Oh, yes, as I said, it  
8           just -- it was curious. I stumbled over it  
9           because, you know, we've been -- this Subcommittee  
10          has been reviewing license renewals for as long as  
11          I've been on the ACRS for eight and a half years.

12          And, early on, when there were more  
13          issues that came up back in the 2000, 2007, 2008  
14          time frame, we heard several applicants say that,  
15          well, our cables are qualified and I'll use the  
16          small cube for submergence. And, when we pressed  
17          them on that, they said, well, no, they're really  
18          not qualified and have no evidence that they can  
19          survive under that.

20          And, in later submittals, we haven't  
21          seen that assertion.

22          MR. DOUTT: Generally, there's a couple  
23          of reviews where the cables were sometimes claimed  
24          to be submerged qualified, but that'd be an EQ  
25          situation.

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1 MEMBER STETKAR: Yes.

2 MR. DOUTT: Which isn't directly  
3 applicable to this.

4 MEMBER STETKAR: Right.

5 MR. DOUTT: The other one would be,  
6 yes, we have the purchase order and the cert, but  
7 we, no, we did not credit that.

8 MEMBER STETKAR: Yes, okay.

9 That helps if this is simply somebody  
10 parroting back what the inspectors should have been  
11 looking for rather than what they found.

12 MR. DOUTT: Yes, I think it's just a  
13 matter of either or.

14 MEMBER STETKAR: Okay, okay, thank you.

15 MEMBER SKILLMAN: Wait, before you  
16 leave, let me -- actually, John's into the section  
17 of the SER that I am also in and I'm on page 3-16.

18 MR. DOUTT: Which one?

19 MEMBER SKILLMAN: 3-16.

20 MR. DOUTT: That one I may not have,  
21 hang on.

22 MEMBER SKILLMAN: And, this is about  
23 cathodic protection.

24 MR. DOUTT: No, that would not be me.

25 MEMBER SKILLMAN: Okay, well then, let

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1 me ask Stuart.

2 In your review of this plan, how long  
3 has the cathodic protection program been  
4 successful? Here's what I'm really interested in,  
5 we've reviewed plans where there was a cathodic  
6 protection system for years and years, but many  
7 years ago, it ceased to function. And, when I was  
8 finally re-energized, the polarity was backwards.

9 And, when the staff finally discovered  
10 what was wrong, there had been some damage and they  
11 finally corrected the situation and the system has  
12 been operating as it should have been operating,  
13 but only for a short time period because the staff  
14 finally -- the plant staff finally figured what was  
15 going on.

16 So, my question is, to what extent did  
17 you review the long-term functionality of the  
18 cathodic protection system for this plant?

19 MR. SHELDON: I was not personally  
20 responsible for that area. I have the electrical  
21 inspector and I cannot answer that question based  
22 on what he documented.

23 MEMBER SKILLMAN: I'd sure like to get  
24 an answer to that question, sir.

25 MR. SHELDON: And, take that back and

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1 follow up. Unless the --

2 MS. MELENDEZ-COLON: Yes, I think Bill  
3 Holston will be able to answer your question.

4 MR. HOLSTON: My name's Bill Holston,  
5 I'm a technical reviewer in the Division of License  
6 Renewal and I do the evaluation of the varied  
7 piping program which includes cathodic protection  
8 system.

9 So, what we do is we do an extensive  
10 review of the operating experience to see if there  
11 are instances such of what you cited. We'll look  
12 at cathodic protection survey results.

13 Even though the plants may not have  
14 had, and I can't recall whether Fermi had it good  
15 since year zero, but we'll look at the latter day  
16 like the last two or three years' worth of cathodic  
17 protection survey results.

18 What we have in the aging management  
19 program for varied piping, recognizing that a lot  
20 of plants throughout the country let their cathodic  
21 protection systems degrade, is we have a cutoff  
22 point that you have to have had it up to speed  
23 within five years prior to the period of extended  
24 operation if you're going to credit it to go to the  
25 lower number of inspections during the period of

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1 renewed license.

2 And so, if you haven't, if say, for  
3 instance, you finally got religion in two years  
4 prior to the period of extended operation, you  
5 know, you did the upgrades to the rectifiers, maybe  
6 you had to renew some anode bids and you did your  
7 surveys and demonstrate you have the negative 850  
8 millivolts, then you have to at least for that ten  
9 year period to the larger number of inspections.

10 And, if you recall, we have four levels  
11 of inspections. Really, if you're -- if you've got  
12 an effective cathodic protection system, you had it  
13 installed in that period, you do one inspection.

14 If you believe you don't or, one per  
15 ten year period, if you believe that you don't need  
16 cathodic protection, then it's two per period, but  
17 you have to demonstrate why you don't. No plant's  
18 done that yet or I don't even think -- nobody's  
19 even tried that yet. Right?

20 The third level is where you have  
21 cathodic protection installed but it's not meeting  
22 availability criteria, it's not meeting  
23 effectiveness criteria. In the current state of  
24 recommendations, you do three inspections per ten  
25 year period.

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1           And then, the last one is the same  
2 condition for cathodic protection, however, so it's  
3 not meeting effectiveness, not meeting  
4 availability, however, you also have some bad OE.  
5 Right? You've seen some coatings damaged and all  
6 that, then you're doing six per each ten year  
7 period.

8           So, what Fermi committed to is to  
9 follow that, you know, because, you know, you could  
10 have a perfectly good system when we go out and  
11 look at it and you get into the period of extended  
12 operation, you've got a couple years where you're  
13 having a portion of the system not working well,  
14 and so, you know, they committed to follow those  
15 four level -- well, three, because they're not  
16 demonstrating they don't have cathodic protection.

17           MEMBER SKILLMAN: Bill, thanks.

18           I asked the question because I know  
19 it's an active AMP, that's why I asked you. But,  
20 I'm comfortable with that.

21           MEMBER BALLINGER: While we've got you,  
22 well, while we don't got you, this is a site that's  
23 slow resistivity is greater than 10,000 OHMs?

24           MR. HOLSTON: I don't remember -- this  
25 is Bill Holston again, technical reviewer.

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1 I don't remember precisely if it's  
2 grading 10,000 OHMs. But, we don't singly look at  
3 the slow resistivity because you can have good slow  
4 resistivity but you can have bacteria, you have,  
5 you know, so we look at -- when we look at soil  
6 evaluation, we use -- well, we recommend and most  
7 plants have met this, that they use American Water  
8 Works Association Standard C105 which looks at like  
9 six different parameters and comes up with a rating  
10 for soil porosivity.

11 MEMBER BALLINGER: Okay, thanks.

12 MEMBER STETKAR: Thank you, Daneira.

13 MS. MELENDEZ-COLON: Did that answer  
14 your question?

15 MR. SCHULTZ: I wanted to make a  
16 comment on Stuart's presentation because it was  
17 short and to the point. But, in reviewing the  
18 documentation of the inspection, I wanted to say  
19 that I certainly found that this is a real  
20 milestone in this project.

21 That is to say that it's clear from the  
22 inspection report that there was very good  
23 preparation for this inspection and that during the  
24 inspection period, which was short, but as you  
25 said, with five-plus at least one -- six

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1 inspectors, a lot was accomplished both by the  
2 inspection team and with the licensee.

3 And, I called it a milestone because I  
4 think it really did set the stage for what then  
5 ensued in the last 12 months to bring us to today  
6 which is a very good point.

7 That is to say, I think you identified  
8 very clearly for the staff and for the licensee what  
9 needed to be done for the overall program to be  
10 successful.

11 So, I don't want to pile on, but I do  
12 think that the work that was done as well as the  
13 report that was prepared was just very well done.

14 Thank you.

15 MR. SHELDON: Thank you for that  
16 comment. We do try very hard to work with the  
17 headquarters offices and coordinate so that we  
18 follow up on any concerns they have along with the  
19 inspection procedure.

20 MR. SCHULTZ: I think the report showed  
21 that you hit the mark.

22 MS. MELENDEZ-COLON: Thank you.

23 Okay, in the next few slides, I'll be  
24 presenting the results as described in the SER with  
25 open items.

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1 SER Section 2 described the scoping and  
2 screening of structures and components subject to  
3 aging management review.

4 The staff reviewed the applicant's  
5 scoping and screening methodology procedures,  
6 quality controls applicable to the LRA development  
7 and training of its project personnel.

8 The staff also reviewed the various  
9 summaries of the safety related systems, structures  
10 and components, or SSEs, no safety SSEs affecting  
11 safety related components and SSEs relied upon to  
12 perform functions in compliance with the  
13 Commission's regulations for fire protection,  
14 environmental qualification, station blackout,  
15 pressurized thermal shock and anticipated  
16 transients without SCRAM.

17 Based on their review, the results from  
18 the scoping and screen audit and additional  
19 information provided by the applicant, the staff  
20 concludes that the applicant's scoping and  
21 screening methodology was consistent with the  
22 standard review plan and the requirements of 10 CFR  
23 Part 54.

24 Next slide?

25 SER Section 3.0 covers the staff review

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1 of the applicant's aging management programs. For  
2 a given aging management review, the staff reviewed  
3 the item to determine whether it is consistent with  
4 the GALL report.

5 Section 3.1 through Section 3.6 include  
6 the aging management review items in each of the  
7 general system areas within the scope of license  
8 renewal.

9 If an aging management review was not  
10 consistent with the GALL report, then the staff  
11 reviewed the applicant's evaluation to determine  
12 whether the applicant has demonstrated that the  
13 effect of aging will be adequately managed so that  
14 the intended functions will be maintained,  
15 consistent with the current licensing basis for the  
16 period of extended operation.

17 Next slide?

18 MEMBER SKILLMAN: Daneira, before you  
19 proceed --

20 MS. MELENDEZ-COLON: Yes?

21 MEMBER SKILLMAN: We are at a point  
22 that is probably a clean break.

23 MS. MELENDEZ-COLON: Okay.

24 MEMBER SKILLMAN: Because Section 3 is  
25 a fairly heavy duty section. Would it be a good

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1 time for you to take a break, your team to take a  
2 break for 15 minutes?

3 MS. MELENDEZ-COLON: Sounds good.

4 MEMBER SKILLMAN: Colleagues?

5 We are going to recess for 15 minutes.  
6 Please return at five minutes to three on that  
7 clock.

8 We're in recess.

9 (Whereupon, the above-entitled matter  
10 went off the record at 2:39 p.m. and resumed at  
11 2:54 p.m.)

12 MEMBER SKILLMAN: Ladies and gentlemen,  
13 we're back in session and we are on slide number  
14 nine and now ten on aging management programs.  
15 Good to go.

16 MS. MELENDEZ-COLON: Originally, the  
17 applicant submitted 44 aging management programs  
18 and amended the LRA adding a new program in  
19 response to License Renewal Interim Staff Guidance  
20 2013-01, Aging Management of Loss of Coating or  
21 Lining Integrity for Internal Coatings, Linings on  
22 In Scope Piping, Piping Components, Heat Exchangers  
23 and Tanks issued in November 2014.

24 The slide 25, the applicant disposition  
25 of the AMPs and the result in this position in the

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1 SER with Open Items as a result of the staff's  
2 review.

3 All were evaluated by the staff for  
4 consistency with the GALL report. Note that one  
5 existing program, the Boraflex Monitoring Program  
6 which was consistent with that enhancement, was  
7 deleted as a result of the staff's review.

8 Next slide?

9 Section 3.0.3.2.2 describes the  
10 Boraflex Monitoring Program. The staff reviewed  
11 operating experience information in the LRA and  
12 during the aging management program audit to  
13 determine whether the applicant had adequately  
14 evaluated and incorporated operating experience  
15 related to the Boraflex Monitoring Program.

16 During its review, the staff identified  
17 operating experience for which it determined the  
18 need for additional clarification which resulted in  
19 the issuance of requests for additional  
20 information.

21 The staff expressed concerns regarding  
22 the applicant's long-term strategy to provide  
23 reasonable assurance that it will be able to detect  
24 and manage degradation of the Boraflex material in  
25 the spent fuel pool and maintain the spent fuel

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1 pool's criticality requirements.

2 In a letter dated September 24, 2015,  
3 the applicant stated that the Boraflex material  
4 currently used in the spent fuel pool will not be  
5 credited to neutron absorption during the period of  
6 extended operation.

7 The applicant also indicated that the  
8 Boraflex Monitoring Program will not be relied on  
9 during the period of extended operation and that  
10 the neutron absorbing material monitoring program  
11 will be used to manage all the neutron absorbing  
12 material that will be credited during the period of  
13 extended operation.

14 The applicant stated that the Boraflex  
15 material is degrading and that the techniques used  
16 to determine the rate of degradation did not  
17 correlate well.

18 Hence, the reliability of the Boraflex  
19 material to perform its intended function during  
20 the period of extended operation cannot be  
21 accurately projected or managed.

22 Next slide?

23 The applicant revised the LRA to no  
24 longer credit the Boraflex material or the Boraflex  
25 Monitoring Program during the period of extended

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1 operation.

2 Section 1 contains a proposed plant  
3 specific license condition. The proposed license  
4 condition states that the applicant shall fully  
5 implement the Boraflex rack replacement approved in  
6 Amendment Number 141 to the Fermi 2 operating  
7 license.

8 Amendment Number 141 issued on January  
9 25, 2001 states in part that the existing Boraflex  
10 racks in the spent fuel pool will be replaced with  
11 new high density racks.

12 The new spent fuel storage racks will  
13 contain Boral as the active fixed neutron absorbing  
14 poison for primary reactivity control. No Boraflex  
15 is used in the new design.

16 In addition, the applicant shall submit  
17 a letter to the NRC confirming the removal of the  
18 Boraflex material and discontinued reliance on its  
19 neutron absorption function.

20 Next slide?

21 SER Section 4 identifies time limited  
22 aging analyses for TLAAs. Section 4.1 documents  
23 the staff's evaluation of the applicant's  
24 identification of applicable TLAAs.

25 The staff evaluated the applicant's

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1 bases for identifying those plant specific or  
2 generic analyses that need to be identified as  
3 TLAAs and determined that the applicant has  
4 provided an accurate list of TLAAs as required by  
5 10 CFR 54.21(c)(1).

6 Section 4.2 through Section 4.7  
7 documents the staff's review of the applicable  
8 Fermi 2 TLAAs as shown.

9 Based on its review and the information  
10 provided by the applicant, the staff concludes,  
11 with one exception, that the TLAAs will either  
12 remain valid for the period of extended operation,  
13 the TLAAs have been projected to the end of the  
14 period of extended operation or the effects of  
15 aging on those intended functions will be  
16 adequately managed for the period of extended  
17 operation as required by 10 CFR 52.21(c)(i)(ii) or  
18 (iii) respectively.

19 Next slide?

20 Section 4 contains one open item. Open  
21 Item 4.3.3-1 is related to the applicant's  
22 methodology used to determine the average transient  
23 temperatures used to calculate the environmentally  
24 assisted fatigue correction factors.

25 On December 15, 2015, the staff held a

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1 conference call with the applicant to obtain  
2 clarification on how the average transient  
3 temperatures were calculated and confirmed that the  
4 methodology used by the applicant was consistent  
5 with NUREG-6909, effect of light water reactor  
6 cooling environment on the fatigue life of reactor  
7 materials as stated in the response to RAI 4.3.3-3.

8 Based on the applicant's description,  
9 the staff determined that the applicant's  
10 methodology used to calculate the average transient  
11 temperatures was not consistent with the guidance  
12 in NUREG-6909.

13 The staff had concerns that this may  
14 result in the underestimation of both the  
15 environmentally assisted fatigue correcting factors  
16 and the resulting environmentally assisted fatigue  
17 cumulative usage factor values for some locations.

18 By a letter dated January 14, 2016, the  
19 staff issued request for additional information  
20 4.3.3-3(a) requesting that the applicant assess the  
21 impact of revising the evaluations to use the  
22 correct method to determine the average transient  
23 temperatures in a manner consistent with NUREG-6909  
24 and that it submit a description of the impact of  
25 this revision to the staff for review.

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1           By a letter dated January 22, 2016, the  
2 applicant provided a response to RAI 4.3.3-3(a).  
3 The staff and the applicant held two teleconference  
4 calls on February 10th and February 25th, 2016 to  
5 discuss and clarify the applicant's response.

6           At this point, the staff and the  
7 applicant have reached a satisfactory resolution to  
8 the open item. However, the applicant has not yet  
9 formally submitted the supplemental information  
10 that the staff needs to close the open item.

11           The staff's conclusion will be  
12 documented in the final SER and discussed during  
13 the full Committee meeting.

14           MR. SCHULTZ: Excuse me, does the  
15 presentation by the applicant today describe what's  
16 been discussed in the last two phone calls in terms  
17 of their approach? The bulleted listing of the  
18 approach that has been made and the conclusions  
19 that have been drawn?

20           MS. MELENDEZ-COLON: I think so, but I  
21 would like to probably, Dr. Hovanec, who is the  
22 primary reviewer for the open item to confirm that.

23           MR. HOVANEC: Chris Hovanec, Divisional  
24 License Renewal.

25           Yes, the applicant's description of the

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1 status is correct. The additional information is  
2 with respect to one specific location and how it's  
3 being managed.

4 MEMBER SKILLMAN: That's fine. Thank  
5 you.

6 MR. HOVANEC: Thank you.

7 MS. MELENDEZ-COLON: That staff's  
8 conclusion will be provided in the final SER. Yes.

9 Pending the satisfactory resolution of  
10 the open item, the staff will determine whether the  
11 requirements of 10 CFR 54.29(a) have been met for  
12 the license renewal for Fermi 2.

13 This concludes our staff presentation  
14 and now we'll be available for any further  
15 questions from the Subcommittee.

16 MEMBER SKILLMAN: I've got several  
17 questions, if I may please?

18 MS. MELENDEZ-COLON: Sure.

19 MEMBER SKILLMAN: On your SER on page  
20 4-22, it has to do with a future EPU. And, this is  
21 what is written here, the staff finds the applicant  
22 has demonstrated pursuant to 10 CFR 50.21(c)(1)(ii)  
23 that the analysis for reactor vessel fluence has  
24 been projected to the end of the period of extended  
25 operation.

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1           And then, hiding in paragraph are words  
2 that communicate that EPU is not intended for this  
3 20 year period.

4           And, I just want to make sure I  
5 understand this accurately.

6           Here are the words, the applicant  
7 further clarified that the operating power level  
8 used to determine the 52-EFPY fluences are 3430 up  
9 to cycle 16 and 3486 thereafter in cycle 17 and  
10 continuing through the period of extended operation  
11 consistent with the staff approval for the capture  
12 of the MMR and the TPO.

13           MR. HISER: Can you read the rest of  
14 that because it would -- the analysis should have  
15 considered the EPU through the PEO. I mean, the  
16 fluences should include that.

17           MEMBER SKILLMAN: Well, it includes the  
18 power level to 3486 through cycle 17 and continuing  
19 through the PEO. But, I think what this paragraph  
20 is also communicating is there is not imbedded in  
21 this the notion of a further extended power  
22 operation.

23           MR. HISER: What that should reflect is  
24 the condition of the plant as it exists and as we -  
25 - as they project going forward. So, there should

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1 not be any implication of a plan for an EPO or that  
2 they're precluded from EPO -- from a further EPO.

3 MEMBER SKILLMAN: Correct. I hear you  
4 say this is based on their current power level and  
5 if they were to ask for an extended power operate,  
6 that would be an independent activity.

7 MR. HISER: That's correct.

8 MS. MELENDEZ-COLON: I have Dr. Min  
9 that can address your question.

10 MR. MIN: This is Seung Min from  
11 Division of License Renewal.

12 At this point, the primary reviewer  
13 from DSS, Matt Hardgrove, is not available. So, I  
14 will convey -- I'll share my understanding at this  
15 point.

16 But, the sentence describing the  
17 potential EPU, the clarification for the potential  
18 EPU was intended to point that on -- you have, sir,  
19 describing on unimplemented EPU condition. But,  
20 that condition, the power levels was not considered  
21 in the 52-EFPY fluence projection.

22 However, MUR thermal optimization  
23 process power level upgrade was considered as  
24 implemented. That is my understanding.

25 MEMBER SKILLMAN: Yes, and I see that,

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1 too. I just wanted to be clear in my own mind as I  
2 read the wording. I think others who might read  
3 this might say, well gee, that's somewhat confusing  
4 the way that paragraph is constructed.

5 What I understand it to say is up until  
6 the end of cycle 16, you were at 3430, thereafter,  
7 you're at 3486 and if you intend to go beyond that,  
8 that's a whole different deal. And, your 52-EFPY  
9 is based on the aggregate of everything up to 3430  
10 plus the cycle or the next several cycles of 3486.

11 MR. HISER: We'll take a look at that  
12 and the final SER, if we need to clarify, we will  
13 certainly do that.

14 MEMBER SKILLMAN: That would be good.

15 Okay, I've got one other question I  
16 would like to ask.

17 And this is something I honestly didn't  
18 -- perhaps I don't appreciate how important this  
19 is, hence, my question.

20 I'm on your SER page 4-93 and this has  
21 to do with the main steam bypass lines cumulative  
22 operating times.

23 And, the LRA states that the cumulative  
24 value of 100 days of operation shall not be  
25 exceeded without prior notification to the NRC.

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1                   Is there someone here who can explain  
2                   that to us? What does that mean?

3                   MS. MELENDEZ-COLON: Yes, we have Roger  
4                   Kalikian.

5                   MR. KALIKIAN: Yes, hi, this is Roger  
6                   Kalikian from the staff.

7                   They had redesigned the line, there was  
8                   an event early in the plant life and when they did  
9                   their evaluations, those some vibrations that  
10                  happens when these valves are in a certain  
11                  position.

12                  So, that 100 days is for the amount of  
13                  time those valves are in those positions where they  
14                  create those vibrations.

15                  MEMBER SKILLMAN: So, this is a cyclic  
16                  fatigue consideration for some mode of operation?

17                  MR. KALIKIAN: Yes, and it doesn't  
18                  happen all the time, it's just when those valves  
19                  are at certain positions.

20                  MEMBER SKILLMAN: Thank you. Okay.

21                  Those were the questions I had on the  
22                  SER. I would ask my colleagues if any of my  
23                  colleagues have questions on the SER?

24                  MR. SCHULTZ: I have one for the staff.  
25                  It's really not now, it's now directly applicable

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1 to the SER but it goes to the question that you've  
2 addressed in the presentation related to the  
3 evaluation of the Boraflex racks.

4 And, as you stated, there was, I think  
5 first, in the mind of the staff that there was a  
6 concern related to the capability for monitoring  
7 the condition of the Boraflex if they were to  
8 determine to go forward with that rack and need to  
9 monitor it. There was a concern as to whether that  
10 could be adequately done.

11 And then, that became the applicant's -  
12 - the licensee's concern and they determined that  
13 they would pull that.

14 But, is there, in that back and forth  
15 associated with the monitoring capability, is there  
16 some generic lesson learned associated with the  
17 capability to monitor degradation of Boraflex that  
18 ought to be transmitted to the rest of the  
19 industry? Some of -- some licensees still have  
20 Boraflex in their pools.

21 MS. MELENDEZ-COLON: Right. We have  
22 Kent.

23 MR. WOOD: This is Kent Wood, technical  
24 reviewer from the Division of Safety Systems.

25 And, we're getting ready to issue a

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1 generic letter on spent fuel pool neutron absorbing  
2 materials of which Boraflex is one of them. So,  
3 we'll gather that type of information from anybody  
4 that's still crediting Boraflex and we expect that  
5 to go out hopefully relatively soon.

6 We briefed the ACRS on this generic  
7 letter in September of '14. But, we are looking at  
8 it generically for the industry.

9 MR. SCHULTZ: Yes, I was kind of  
10 looking for that status report or an update to  
11 where that program was because this just seemed  
12 like another example. And, I understand how it  
13 went back and forth and how the --

14 MR. WOOD: Yes, it's went back and  
15 forth and, you know, the monitoring and the  
16 crediting of Boraflex is problematic and that's  
17 what we're looking to address and that's why we got  
18 the license condition to solve the problem long-  
19 term.

20 MEMBER BALLINGER: It was a wise move.

21 MEMBER SKILLMAN: Steve, was that  
22 sufficient?

23 MR. SCHULTZ: Well, the other is a  
24 comment really associated with the discussion that  
25 was held by the licensee and then by the staff

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1 related to the open item.

2 And, I'll make my comment and then you  
3 can respond if you feel appropriate.

4 But, that particular issue went, again,  
5 went back and forth and there was a lot of focus on  
6 assuring that the evaluation approach was done in  
7 appropriate technical fashion in accordance to the  
8 regulatory guidance.

9 One could take that to mean that, gee,  
10 that we're focusing so hard on this particular item  
11 that we might be missing some other things.

12 I took that differently when I reviewed  
13 all the material. It really seemed to me to be a  
14 good example of the technical depth that was being  
15 applied by the staff in performing a very thorough  
16 review.

17 It was just one particular example that  
18 seemed to extend out but there were plenty of other  
19 examples of accordance between the licensee and the  
20 staff that, in many, many other areas, the work had  
21 been performed appropriately, the review had been  
22 done and the items had been closed.

23 And this was just one example, I think,  
24 that in a sense demonstrate the stick-to-itiveness  
25 of the staff to continue to focus on the item until

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1 it was appropriately resolved.

2 Just a comment.

3 MS. MELENDEZ-COLON: Thank you.

4 MEMBER SKILLMAN: Thank you, Steve.

5 Our colleagues, do you have -- do any  
6 of you have comments or questions for the NRC staff  
7 here?

8 Hearing none, Daneira, thank you, NRC  
9 team, thank you. And, we'll then open the phone  
10 line, please.

11 While we're doing that, is there  
12 anybody in the room who would care to make a  
13 comment or raise a question for the record?

14 Hearing none, on the phone line, good  
15 afternoon. This is the ACRS, the phone line is  
16 open. If someone is there, would you please just  
17 announce your presence by indicating your name?

18 MR. GURILLO: Jim Gurillo.

19 MEMBER SKILLMAN: Thank you, sir.  
20 Anybody else?

21 Okay, those that are on the line, does  
22 anybody care to make a comment or raise a question,  
23 please?

24 Hearing none, we're going to close the  
25 phone line.

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1           And, we'll go around the table for  
2 final comments from ACRS members.

3           Ron, may I begin with you, please?

4           MEMBER BALLINGER: I sat side by side  
5 the original --

6           MEMBER SKILLMAN: Microphone, please?

7           MEMBER BALLINGER: I sat side by side  
8 the original AMP inspection and then the SER. And,  
9 the original AMP inspection is replete with  
10 statements like the staff noted the aspects of the  
11 decision detection aging effects program element  
12 not associated with the exception or not consistent  
13 with the corresponding program in GALL report.

14           And, that's complete. Every one --  
15 almost every one of these AMPs that were inspected  
16 had something like that.

17           And then, in the SER, everything's been  
18 fixed. So, it's as if, you know, you were 25  
19 points behind in the fourth quarter then all of a  
20 sudden LeBron James came in and caught up.

21           So, I thought it was an excellent -- it  
22 goes to the staff's stick-to-itiveness in getting  
23 this thing done because I think a lot of these  
24 AMPs, at least on paper, were in pretty rough  
25 shape.

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1 Thank you.

2 MEMBER SKILLMAN: Thank you, Ron.

3 Pete?

4 MEMBER RICCARDELLA: I have no  
5 comments.

6 MEMBER SKILLMAN: Thank you, Pete.

7 Harold?

8 MEMBER RAY: No.

9 MEMBER SKILLMAN: Thank you.

10 UNIDENTIFIED MEMBER: I have no  
11 comments.

12 MEMBER SKILLMAN: Dana?

13 MEMBER POWERS: No.

14 MEMBER SKILLMAN: Charlie Brown?

15 MEMBER BROWN: No comments.

16 MEMBER SKILLMAN: John Stetkar?

17 MEMBER STETKAR: Nothing more, thanks.

18 Good review, good presentation by DTE. I'm happy.

19 MEMBER SKILLMAN: Thank you, John.

20 Our consultant, Dr. Schultz?

21 MR. SCHULTZ: Just the same, thank you  
22 very much for the presentations.

23 MEMBER SKILLMAN: Kent, any comment you  
24 might make?

25 MR. HOWARD: None.

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1                   MEMBER SKILLMAN: Let me just make one  
2 or two final comments.

3                   I began where Ron was. I read the 2014  
4 AMP report and that was the first thing I read and  
5 I said, oh my goodness, this is going to be a  
6 ragged day.

7                   And then I read the 71 002 inspection.  
8 Stuart, compliments to you, that was a good, solid  
9 report and I could begin to see the healing from  
10 the 2014 AMP report to the 2015 progress.

11                  Then it took about a year from that  
12 2015 report to the final SER. And, if you go back  
13 and check the original AMP write-ups from 2014 to  
14 the final SER, there has been a remarkable work  
15 completed to get a nice clean SER.

16                  And, I would say it's clean. It's an  
17 easy read. It's a nice piece of work. So, I  
18 commend you for that.

19                  I have no further comments and I thank  
20 the DTE staff, Keith, for you team, for each one of  
21 you that came, safe travels back. Appreciate what  
22 all of you have done. Thank you.

23                  And, Chris, to your team, Daneira, your  
24 team, to all, thank you very much.

25                  And, with that, we are adjourned.

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1  
2  
3  
4

(Whereupon, the above-entitled matter  
went off the record at 3:19 p.m.)

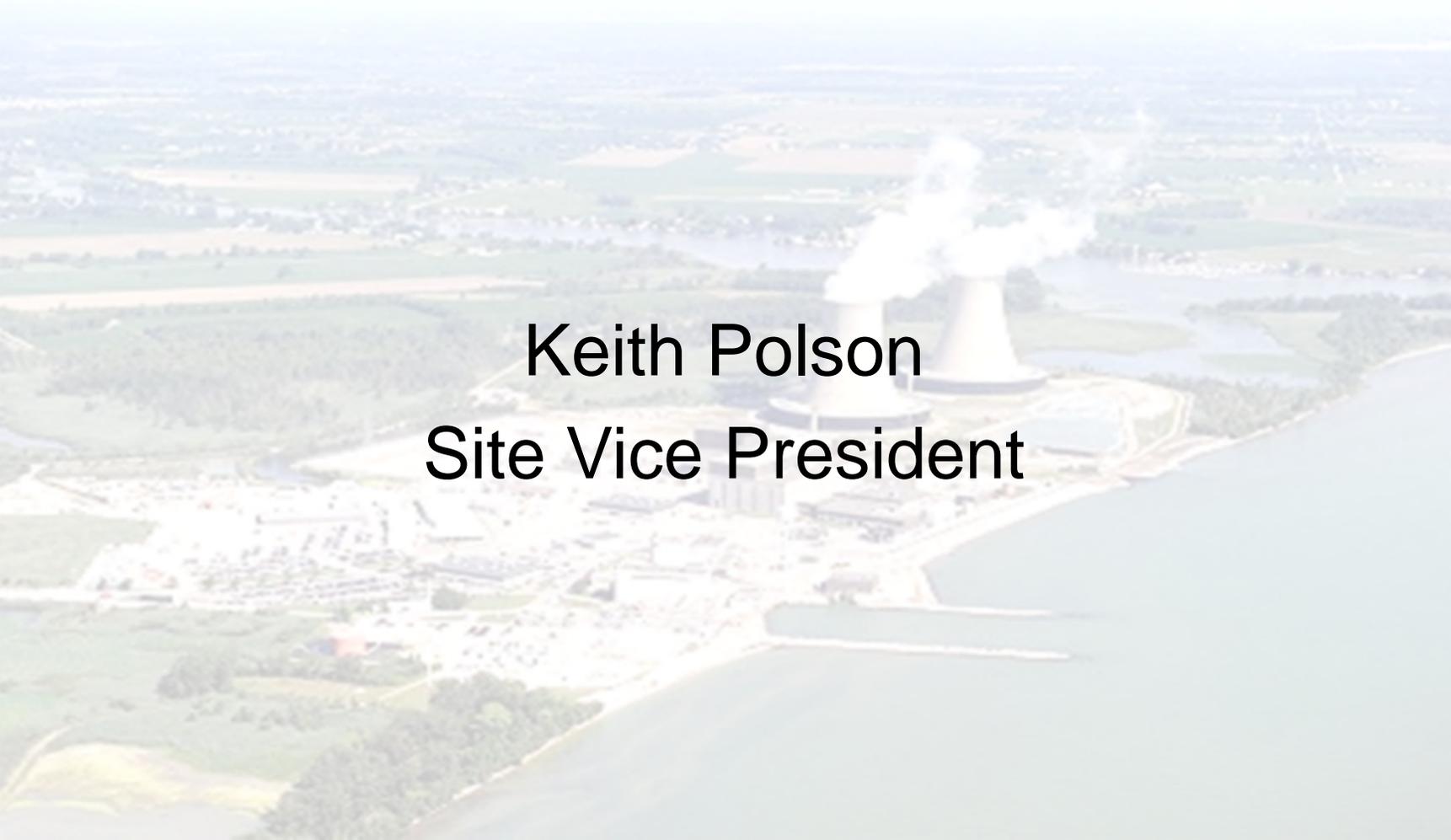


**DTE Energy<sup>®</sup>**

**Fermi 2 – License Renewal**

**ACRS Subcommittee Meeting  
March 2, 2016**





**Keith Polson**  
**Site Vice President**

## Representing Fermi 2 Nuclear Power Plant:

- Keith Polson, Site Vice President
- Larry Peterson, Director Engineering
- Randy Breymaier, Manager Performance Engineering
- Lynne Goodman, License Renewal Project Manager

*“Our number one asset at DTE is our people”*

# Personnel In Attendance



ISI Programs & Service Water Marc "Al" Brooks	Chemistry Programs Bruce Cummings	Reactor Vessel Programs Erica Mullen
Fire Protection / Fire Water Chris Redmond	Civil / Structural Tim Hoffman Andrew Kulikowski	Fatigue Management Mike Williams Whitney Hemingway
Containment Glenda Velasquez	Fuel Storage Mike Lake	Flow-Accelerated Corrosion Vladimir Tamahkyarov
New Programs & Implementation Brett Gallatin	Inaccessible Cables Jeff Auler	Operations Greg Strobel
License Renewal Project John Tibai Kevin Lynn	Plant Support Engineering Kyle Dittman Bill Mayes	FLEX Response Kevin Burke
Structural Integrity Associates Terry Herrmann	Counsel Jon Christinidis Dave Repka	Project Contractor - Entergy Alan Cox
	General Electric Hitachi Brian Frew	

# Agenda



- Introductions Keith Polson
- Plant Design, Plant History, and Current Status Larry Peterson
- License Renewal Application Project and SER Discussion Lynne Goodman
- Aging Management Programs Randy Breymaier
- Closing Remarks Keith Polson



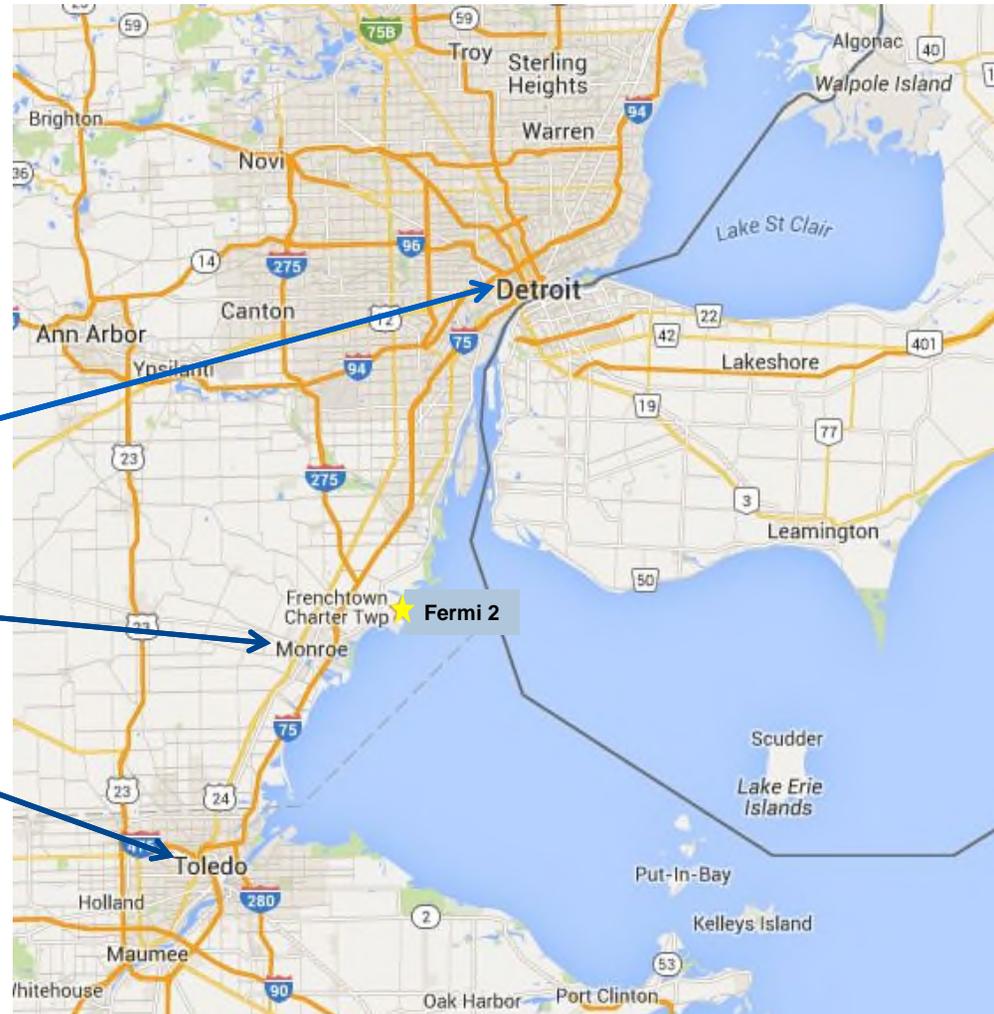
**Larry Peterson**  
**Director, Engineering**

# Plant Location

The Fermi 2 power plant is located on the western shore of Lake Erie at Lagoona Beach, Frenchtown Township, in Monroe County, Michigan.

The plant is approximately:

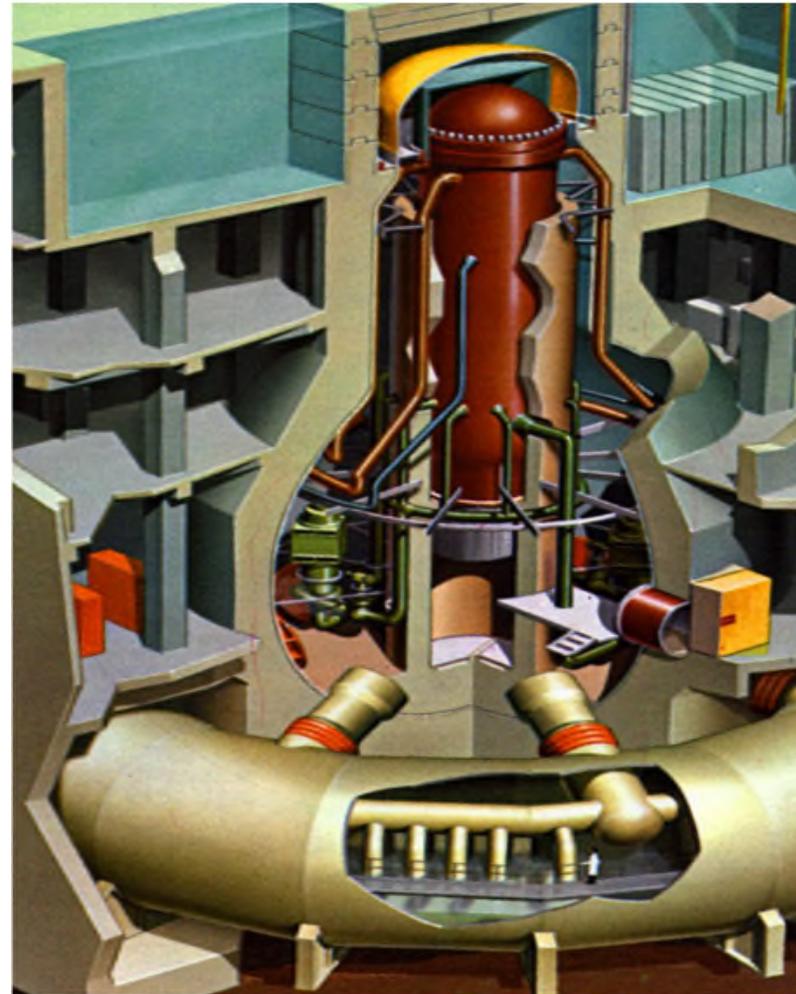
- 28 miles southwest of downtown Detroit, Michigan
- 8 miles northeast of Monroe, Michigan
- 26 miles northeast of downtown Toledo, Ohio



# Fermi 2 Generating Station



- Fermi 2 is a 3486 MWt Boiling Water Reactor
- Producing approximately 1170 Mwe
- GE BWR 4 with a Mark I Containment



BWR Mark I Containment perspective - NRC Reactor Concepts Manual

- Electrical Design
  - 120 kV switchyard for Division 1 power
  - 345 kV switchyard for Division 2 power
  - 4 Emergency Diesel Generators (EDGs) – 2 per division
  - Combustion Turbine Generator (CTG) 11-1 station blackout power supply – Division 1
- Cooling Water
  - Lake Erie provides makeup water to General Service Water, which discharges into a Circulating Water Reservoir
  - Two natural draft cooling towers
  - RHR Complex is Ultimate Heat Sink
    - Two reservoirs (one per division) with induced draft cooling towers over each reservoir
- Fermi 2 shares site with Fermi 1, a LMFBR in passive SAFSTOR



# Site Layout



The principle structures:

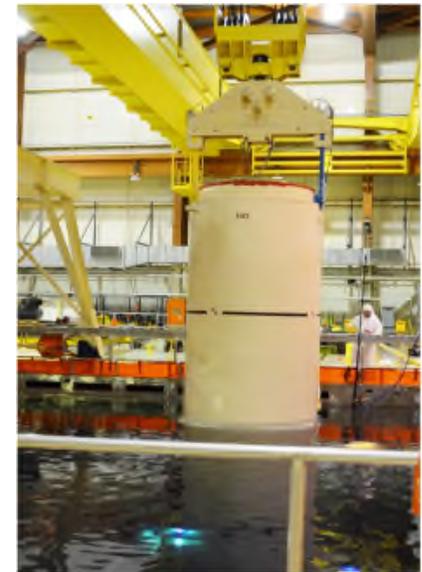
- Reactor Building
- Turbine Building
- Auxiliary Building
- Radwaste Building
- Residual Heat Removal (RHR) Complex
- Two natural-draft hyperbolic circulating water cooling towers
- Independent Spent Fuel Storage (ISFSI) Pad
- FLEX Storage Facilities (FSF)



# Plant History



- Construction Permit – September 1972
- Operating License – March 1985
- Commercial Operation – January 1988
- 4.2% Thermal Power Increase – September 1992
- 1.64% Measurement Uncertainty Recapture (MUR) Uprate (56 MWt) – February 2014
- Independent Spent Fuel Storage Installation (ISFSI) – 2014



## Current Plant Status – March 2, 2016

RF17 Fall 2015 – major activities completed:

- Fukushima modifications fully compliant with FLEX and fuel pool per NRC orders
- Underground circulating water piping inspection and repair
- Refueling, testing, inspections, preventive and corrective maintenance



Fukushima FLEX 2 Storage Facility

In anticipation of extended operation, DTE Energy is making a large investment in Fermi 2:

- Generator replacement
- Pumps and motors
- Process computers
- FLEX and hardened vent
- Spent fuel racks
- Aging management programs
- Plant modifications for safe, extended operations



Lynne Goodman  
License Renewal Project Manager

# License Renewal Application Project



- Submitted application April 24, 2014
- Developed using NUREG-1801 (GALL) Rev. 2
- Followed guidance of NEI 95-10 *“Industry Guideline for Implementing the Requirements of 10 CFR 50.54 - The License Renewal Rule”* Rev. 6, June 2005
- Identified the Aging Management Programs (AMPs) to manage aging effects during Period of Extended Operation (PEO)
- Incorporated Fermi 2 and industry operating experience
- Fermi 2 subject matter experts and management were involved with the application development, review and oversight
- Used Enercon/Entergy as experienced LRA contractor

- Addressed two License Renewal ISG documents issued during or following LRA development
  - LR-ISG-2012-02 Aging Management of Internal Surfaces, Fire Water Systems, Atmospheric Storage Tanks, and Corrosion Under Insulation
  - LR-ISG-2013-01 Aging Management of Loss of Coating or Lining Integrity for Internal Coatings/Linings on In-scope Piping, Piping Components, Heat Exchangers, and Tanks
- Reviewing new LR-ISG-2015-01 “Changes to Buried and Underground Piping and Tank Recommendations” as operating experience
- Yearly update
  - Annual LRA update submitted June 2015

- Fermi 2 SER contains one Open Item (OI):
  - OI 4.3.3-1 (RAI 4.3.3-3a) – Environmentally assisted fatigue (EAF)
- Fermi 2 SER contains a license condition that is plant-specific:
  - License Condition No. 3 – Boraflex rack replacement

## OI 4.3.3-1 / RAI 4.3.3-3a – Environmentally Assisted Fatigue



### Background:

- Environmentally assisted fatigue (EAF) should be evaluated for license renewal
- Fermi 2 LRA addressed EAF and provided EAF screening results (i.e.  $CUF_{en}$ )

### NRC Request:

- NRC staff requested more information on how EAF screening was performed
- RAI / Open Item specifically requested information regarding:
  - How were average temperatures calculated
  - Were any calculation revisions made as a result of the RAIs
  - Did revisions affect analysis conclusions

## OI 4.3.3-1 / RAI 4.3.3-3a – Environmentally Assisted Fatigue



### DTE Response:

- Average transient temperatures were used in six locations:
  - SLC piping inside containment
  - Feedwater nozzles
  - Core  $\Delta P$  nozzle
  - CRD nozzles
  - CRD assembly main flange
  - RR pump cooler
- Multiple methods were used to determine average temperature for the different locations above
- EAF calculations were revised in January 2016 to address this OI
- Four locations were revised to use conservative maximum design temperature instead of average temperature
- Two locations now use average temperature for a transient:
  - SLC piping inside containment
  - CRD assembly main flange

## OI 4.3.3-1 / RAI 4.3.3-3a – Environmentally Assisted Fatigue



### DTE Response (cont.):

- Temperature is determined by average of maximum and threshold temperature
  - NUREG/CR-6909 threshold temperature (150°C / 302°F) is used since minimum is less than threshold temperature
- Average can be used since the specific transients are simple:
  - Constant strain rate
  - Linear temperature response
- Updated  $CUF_{en}$  values were provided for these locations
- All  $CUF_{en}$  values are determined in manner consistent with NUREG/CR-6909
- No changes in sentinel locations for fatigue monitoring

## RAIs B.1.3-1 and B.1.3-1a – Boraflex Monitoring

### **Background:**

- Fermi 2 currently has Boral and Boraflex spent fuel storage racks
- LRA originally included Boraflex Monitoring AMP, including enhancement for periodic BADGER testing during PEO
- Previous BADGER test results (2013) identified some Boraflex panels did not meet the acceptance criteria for B-10 areal density

### **NRC Request:**

- NRC staff requested to review the 2013 BADGER test report
- After reviewing the test report, the NRC staff questioned whether Boraflex Monitoring AMP would be effective during PEO due to current degradation

## RAIs B.1.3-1 and B.1.3-1a – Boraflex Monitoring

### **DTE Response:**

- DTE's current licensing basis includes NRC-approved license amendment allowing DTE to replace Boraflex racks with Boral racks
- Two phases of replacement were completed, but final phase was not
- DTE submitted a letter committing to implementation of the previously approved license amendment to replace Boraflex with Boral prior to PEO
- Boraflex will not be credited for neutron absorption function during PEO
- Boraflex Monitoring AMP will not be used during PEO
- This DTE commitment is License Condition No. 3 in SER



Randy Breymaier  
Manager, Performance Engineering

- The Performance Engineering organization owns license renewal implementation at Fermi 2.
  - License Renewal has a Program Owner and the owner is part of the License Renewal Core Team
- All existing and new programs have owners
- During the License Renewal Process, commitments were made against both the existing and new AMPs. These commitments are in the UFSAR Supplement (Appendix A of the LRA).

## Aging Management Programs (AMPs)

- 45 total AMPs
  - 12 new AMPs to be developed
  - 32 existing AMPs, enhancements will be made to 22 AMPs
  - 1 existing AMP was deleted (Boraflex Monitoring)
  
- Of the 44 remaining AMPs
  - 33 AMPs consistent with GALL, Rev. 2
  - 10 AMPs with exception to GALL, Rev. 2
  - 1 AMP plant-specific (Periodic Surveillance and Preventive Maintenance)

- Planning in progress to implement enhancements and new programs
- Program owners involved in implementation plan scoping
- Schedule has been developed to spread inspections over six refuel outages
  - This includes ~80 specific inspections to be performed in the next refueling outage in spring 2017 (RF18)
- Program updates will be in place before required deadline in 2024
- Long term plan for station includes license renewal implementation activities plus projects to support safe operation of the plant for 20 more years

## Closing Remarks



*“Fermi 2 has been providing safe, reliable, environmentally clean, cost-effective power to our customers for over 25 years.”*



# **Advisory Committee on Reactor Safeguards License Renewal Subcommittee**

**Fermi 2**

**Safety Evaluation Report (SER) with Open Items**

**March 2, 2016**

Daneira Meléndez-Colón, Project Manager

Office of Nuclear Reactor Regulation

# Presentation Outline

- **Overview of Fermi 2 license renewal review**
- **Region III 71002 Inspection, License Renewal Inspection**
- **SER Section 2, Scoping and Screening Review**
- **SER Section 3, Aging Management Review**
- **SER Section 4, Time-Limited Aging Analyses**
- **Conclusion**

# **License Renewal Review (Audits and Inspections)**

- **Scoping and Screening Methodology Audit**
  - August 4 - 7, 2014
- **Aging Management Program (AMP) Audit**
  - September 15 - 19, 2014, and September 29 - October 3, 2014
- **Region III 71002 Inspection (Scoping and Screening & AMPs)**
  - April 13 - May 1, 2015

# SER Overview

- **SER with Open Items (OIs) was issued January 28, 2016**
- **Fermi 2 SER contains one OI:**
  - OI 4.3.3-1 Effects of Reactor Water Environment on Fatigue Life
- **The final SER is scheduled for publication July 2016**

# 71002 Inspection

- **Scope**
  - Aging Management Programs
  - Regulated Events
  - Non-Safety Systems affecting Safety Systems
- **Inspection**
  - April 13 - May 1, 2015: Team Inspection (5 inspectors) on-site for 2 weeks

# 71002 Inspection

## Overall Inspection Results

- Material Condition of SSCs – Good
- Application Changes to 5 AMPs
- One Basis Document Change

# 71002 Inspection

- **Conclusions:**

- Scoping and screening performed in accordance with 10 CFR 54
- Information used to prepare the license renewal application was retrievable, auditable, and consistent with 10 CFR 54
- Existing programs were generally effective in managing aging effects
- Actions to address enhancements and new programs are being tracked for completion
- Reasonable assurance that aging effects will be managed and intended functions maintained, subject to resolution of issues requiring further review

# SER Section 2

- **Structures and Components Subject to Aging Management Review**
  - Section 2.1, Scoping and Screening Methodology
  - Section 2.2, Plant-Level Scoping Results
  - Sections 2.3, 2.4, 2.5 Scoping and Screening Results

# SER Section 3

- **Aging Management Review Results**
  - Section 3.0, Aging Management Programs
  - Section 3.1, Reactor Vessel, Internals, and Reactor Coolant System
  - Section 3.2, Engineered Safety Features Systems
  - Section 3.3, Auxiliary Systems
  - Section 3.4, Steam and Power Conversion Systems
  - Section 3.5, Structures and Component Supports
  - Section 3.6, Electrical and Instrumentation and Controls System

# SER Section 3

## 3.0.3 - Aging Management Programs

### Applicant's Disposition of AMPs

- 11 new programs
  - 11 consistent
- 33 existing programs
  - 9 consistent
  - 18 consistent with enhancements
  - 5 consistent with enhancements and exceptions
  - 1 plant specific with enhancements
- 1 new program added
  - 1 consistent with exceptions

### Final Disposition of AMPs in SER with OIs

- 12 new programs
  - 11 consistent
  - 1 consistent with exceptions
- 32 existing programs
  - 6 consistent
  - 16 consistent with enhancements
  - 3 consistent with exceptions
  - 6 consistent with enhancements and exceptions
  - 1 plant specific
- 1 existing program deleted

# SER Section 3

## 3.0.3.2.2 - Boraflex Monitoring Program

- **Issue**: The reliability of the Boraflex material to perform its intended function during the period of extended operation cannot be accurately projected or managed.
- **Concern**: AMP may be inadequate
- **Resolution**: Proposed License Condition, deletion of Boraflex Monitoring Program, and Neutron Absorbing Material Monitoring Program used to manage all neutron-absorbing material

## **SER Section 3**

### **3.0.3.2.2 - Boraflex Monitoring Program**

- Proposed License Condition: The applicant shall implement the Boraflex rack replacement previously approved before the period of extended operation. The applicant shall submit a letter to the NRC confirming the removal of the Boraflex material and discontinued reliance on its neutron absorption function.

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

# SER Section 4 Open Item

## OI 4.3.3-1 Effects of Reactor Water on Fatigue Life:

- **Issue**: The methods used to determine the average transient temperatures to calculate  $F_{en}$  factors were not consistent with the guidance in NUREG/CR-6909
- **Open Item**: Applicant to assess the impact of revising the evaluations to use the correct determination of average transient temperature in a manner consistent with NUREG/CR-6909

# Conclusion

Pending satisfactory resolution of the open item, the staff will determine whether the requirements of 10 CFR 54.29(a) have been met for the license renewal of Fermi 2.