

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

Title: Entergy Nuclear Operations, Inc.  
Palisades Nuclear Plant

Docket Number: 50-255-LA

ASLBP Number: 15-936-03-LA-BD01

Location: Rockville, Maryland

Date: Wednesday, March 25, 2015

Work Order No.: NRC-1469

Pages 1-134

**NEAL R. GROSS AND CO., INC.**  
**Court Reporters and Transcribers**  
**1323 Rhode Island Avenue, N.W.**  
**Washington, D.C. 20005**  
**(202) 234-4433**

1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25

UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

+ + + + +

ATOMIC SAFETY AND LICENSING BOARD PANEL

+ + + + +

HEARING

-----x

In the Matter of: : Docket No.  
ENTERGY NUCLEAR : 50-255-LA  
OPERATIONS, INC. : ASLBP No.  
(Palisades Nuclear Plant) : 15-936-03-LA-BD01

-----x

Wednesday, March 25, 2015

Nuclear Regulatory Commission  
Hearing Room T-3 B45  
11545 Rockville Pike  
Rockville, Maryland

BEFORE:

RONALD M. SPRITZER, Chair  
GARY S. ARNOLD, Administrative Judge  
THOMAS J. HIRONS, Administrative Judge

1 APPEARANCES:

2 On Behalf of Entergy Nuclear Operation, Inc.:

3 RAPHAEL P. KUYLER, ESQ.

4 PAUL BESSETTE, ESQ.

5 of: Morgan, Lewis & Bockius LLP

6 1111 Pennsylvania Avenue, N.W.

7 Washington, DC 20004

8 202-739-5796

9 pbessette@morganlewis.com

10

11 JEANNE CHO, ESQ

12 Senior Counsel - Nuclear NE

13 DAVID DePUYDT

14 of: Entergy Services, Inc.

15 440 Hamilton Avenue

16 White Plains, New York 10601

17 914-610-1908

18 jchol@entergy.com

19

20

21

22

23

24

25

1           On Behalf of the Petitioners Beyond Nuclear,  
2           Don't Waste Michigan, Michigan Safe Energy Future -  
3           Shoreline Chapter, Nuclear Energy Information Service:

4                   TERRY LODGE, ESQ.

5           of:     316 N. Michigan St., Street, 520

6                   Toledo, OH 43604-5627

7                   419-255-7552

8                   tjlodge50@yahoo.com

9           and

10                   KEVIN KAMPS, Beyond Nuclear

11                   MICHAEL KEEGAN, Don't Waste Michigan

12  
13           On Behalf of the Nuclear Regulatory Commission:

14                   JOSEPH LINDELL, ESQ.

15                   DAVID ROTH, ESQ.

16                   SHERWIN TURK, ESQ.

17           of:     Office of the General Counsel

18                   Mail Stop - O-15 D21

19                   U.S. Nuclear Regulatory Commission

20                   Washington, D.C. 20555-0001

21                   301-415-1474

22                   joseph.lindell@nrc.gov

23           and

24                   MARK KIRK, RES

25

1	PARTIAL INDEX	
2	Petitioner's Opening Statement	12
3	Questions from Board Members	18
4	Entergy Opening Statement	68
5	Questions from Board Members	76
6	Adjourn	
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		
23		
24		
25		

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

10:01 a.m.

CHAIR SPRITZER: Good morning. We are here today to hear oral argument in the case of Entergy Nuclear Operations, Inc., Palisades Nuclear Plant. This is Docket No. 50-255-LA. It is also ASLBP No. 15 -- excuse me -- 15-936-03-LA-BD01.

And we are here to hear oral argument on standing and the admissibility of the, essentially, one contention in the petition.

Before we go any further, I will introduce myself and my fellow Judges. I am Ronald Spritzer. I am the Chairman of this Board. I am an attorney, and prior to coming here, I spent most of my legal career in the Environment Division of the Justice Department.

JUDGE ARNOLD: I am Gary Arnold, a Technical Judge. I have a PhD in Nuclear Engineering, and I spent my first career in the Naval Reactors Program.

JUDGE HIRONS: I am Tom Hirons. I have a PhD in Nuclear Engineering. I spent 34 years at Los Alamos National Lab and retired from there about eight years ago.

CHAIR SPRITZER: We also have with us two

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 law clerks on this case, Sachin Desai seated to my  
2 left and Nicole Pepperl, who is over seated to my  
3 right.

4 Why don't we have the parties'  
5 representatives introduce themselves, and anybody that  
6 may be seated at counsel table with you, starting on  
7 my left.

8 MR. LINDELL: My name is Joseph Lindell,  
9 representing the NRC Staff. I have with me on my left  
10 from OGC -- from the Office of the General Counsel,  
11 David Roth and Sherwin Turk, and on my right is our  
12 technical expert, Mark Kirk from the Office of  
13 Research.

14 MR. KUYLER: Good morning, Your Honor.  
15 Ray Kuyler from Morgan Lewis and Bockius. With me at  
16 counsel table is my colleague Paul Bessette; Jeanne  
17 Cho, Senior Counsel at Entergy; and we also have Dan  
18 DePuydt, Senior Lead Engineer at the Palisades Plant  
19 who is with us as well.

20 CHAIR SPRITZER: Thank you.

21 MR. LODGE: Good morning. I am Terry  
22 Lodge. I am the attorney for the Petitioners here,  
23 and to my right is Michael Keegan of Don't Waste  
24 Michigan, one of the intervening parties, and to my  
25 left is Kevin Kamps of Beyond Nuclear, another one of

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 the intervening parties.

2 CHAIR SPRITZER: Very well, thank you.

3 We've already covered the procedure we're  
4 going to follow in our order, but let me just go  
5 through it again.

6 We will allow introductory statements from  
7 each of the groups of -- each of the parties,  
8 including -- starting with the Petitioners. We gave  
9 you 15 minutes for -- for the Petitioners. You can  
10 reserve, if you choose, five minutes of that for a  
11 rebuttal. Do you want -- do you want to reserve the  
12 five minutes for a rebuttal?

13 MR. LODGE: Your Honor, I would like to  
14 reserve about two minutes for rebuttal.

15 CHAIR SPRITZER: Two minutes for rebuttal,  
16 okay, so you'll have 13 minutes for your opening  
17 statement.

18 What we will do then after you've finished  
19 -- we will try and refrain to the extent we can from  
20 interrupting your opening statement with questions.  
21 However, we will definitely have questions after  
22 you're finished, so you will stay -- you will stay --  
23 we will start that questioning once you've finished  
24 your opening statement, so you're not finished at that  
25 point, when you finish your opening. In other words,

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 we'll stay with you until we have -- until we have  
2 asked all the questions we think are necessary, which  
3 will quite likely go well beyond the initial 15  
4 minutes.

5 We will then move to the -- to Entergy,  
6 and you will have 10 minutes for your introductory  
7 statement. We'll follow the same procedure, that is,  
8 any questions we have for you, we will proceed  
9 immediately to those, and the same procedure for the  
10 Staff, 10 minutes for your more or less uninterrupted  
11 opening statement if you want to make one, and then  
12 any questions we might have for you.

13 You are not -- no one is required, of  
14 course, to make an opening statement, but we'll give  
15 you that time if you want to use it.

16 We will plan on taking at least one break,  
17 probably after about an hour or so, and we hope to  
18 finish before lunch. I think if we get out -- get  
19 done by in the 12:00 to 12:30 range, we will try and  
20 do that without -- that is, without stopping for  
21 lunch. If it looks like we're going to go  
22 significantly beyond 12:30, then we would plan on  
23 taking a break for lunch.

24 No one has accepted argumentation or  
25 notified us that they intended to use any visual aids,

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 so we are assuming there are no -- nothing is going to  
2 be displayed on the screens up here during -- during  
3 the argument.

4 We will -- for questioning purposes, you  
5 may have one of your colleagues answer the question,  
6 as we don't insist that the person who makes the  
7 opening presentation has to answer all the questions  
8 themselves, but when you do -- whoever speaks, please  
9 identify yourself. We want to make sure that we get  
10 a good record and know who is answering each question.

11 We are aware that a new petition has been  
12 filed on I believe it was March 9th, also related to  
13 Palisades and the issue of embrittlement, but we're  
14 not going to discuss that today when the answers  
15 haven't even been filed yet, so that -- that is not  
16 before us today, we don't want to have any discussion  
17 or argument of that new petition.

18 There is a telephone audience. You  
19 probably will not be able to hear them, at least, that  
20 is the way the technology is supposed to work, but  
21 there are somewhere in the order of I believe about 40  
22 individuals who indicated they would be listening. We  
23 don't have any way of knowing for sure precisely how  
24 many, but there are people listening on the phone.  
25 They do not have the ability, however, to speak. It

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 is strictly listen-only.

2 I think that is all I have, unless my  
3 colleagues have any issues to raise at this point.

4 Does anyone have any questions about the  
5 procedure we're going to follow here today before we  
6 get started?

7 (No audible response.)

8 CHAIR SPRITZER: Hearing no takers, why  
9 don't we proceed with the Intervenors, then?

10 MR. LODGE: Thank you --

11 CHAIR SPRITZER: Petitioners, excuse me.

12 MR. LODGE: Yes.

13 I am going to stand because these events  
14 become a long sitdown.

15 I am Terry Lodge, of course speaking on  
16 behalf of the Petitioners today, Counsel and parties  
17 for the Applicant and Counsel and accompanying parties  
18 for the Staff, and may it please the Board.

19 First, we have an objection as to the way  
20 this procedure is -- is being conducted this morning.  
21 We believe that the inquiry here is -- because it is  
22 not an evidentiary hearing, we are ordered at one and  
23 the same time by the pre-hearing order of the Board to  
24 not refer to -- not rehash evidence and not to attempt  
25 to introduce new evidence.

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 CHAIR SPRITZER: The first is incorrect.  
2 The second is correct. No new evidence. You may  
3 refer to things that have been --

4 MR. LODGE: Oh --

5 CHAIR SPRITZER: -- referred to in the --  
6 in the --

7 MR. LODGE: All right.

8 CHAIR SPRITZER: -- in the pleadings.

9 MR. LODGE: Okay. Well, very good. That  
10 helps clarify one of the problems I have, because it  
11 appears to the Petitioners that in effect, the Board  
12 may be trying to essentially conduct a trial within a  
13 trial here where you're weighing whether there's  
14 enough evidence to warrant having a hearing on the  
15 merits of the evidence, and we're very concerned that  
16 that might be an improper means of getting to the  
17 merits of the issue before this Board today, which is  
18 simply whether or not threshold requirements have been  
19 met by the Petitioners to allow a hearing, an  
20 evidentiary hearing on the merits.

21 CHAIR SPRITZER: Okay. Well, I -- we  
22 understand that this is not the place to weigh  
23 evidence. However, we do have to determine if  
24 material issues have been --

25 MR. LODGE: Correct.

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 CHAIR SPRITZER: -- raised, so I think it  
2 would help if you would focus your argument on  
3 explaining where a material issue has been raised in  
4 your petition.

5 MR. LODGE: Thank you, and that is what we  
6 will attempt to do, sir. Thank you.

7 After a 44-year operating history which  
8 saw the Palisades Nuclear Power Plant reactor pressure  
9 vessel display troubling signs and incrementally  
10 worsening signs of embrittlement, even by the early  
11 1980s, the verified proof in the period since the  
12 1980s has contributed to an even greater level of  
13 concern.

14 Palisades' owners have successfully pushed  
15 back the criteria for what is deemed to be a dangerous  
16 embrittled condition of the RPV no fewer than six  
17 times.

18 Now, armed with a new rule that allows  
19 Entergy to trade off scientifically verified  
20 surveillance for computer projections and computations  
21 of probabilistic risk assessments, which we take as  
22 code for what are the chances of anything serious  
23 happening at Palisades, 10 CFR 50.61(a) is now in  
24 place to allow Entergy to substitute these estimates  
25 of the status of the reactor pressure vessel for

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 actual data, actual investigation and analysis.

2 This comes, as I say, after at least half  
3 a dozen instances where by following 50.61, which does  
4 impose some degree of scientific and physical data  
5 rigor on the determination, that now that process  
6 seems to be -- there is some need for it to be  
7 abandoned, and the substitute being no more physical  
8 analysis of the metallurgical toughness parameters,  
9 but instead, simply estimating, and estimating in a  
10 way that somehow the remedial process, for instance,  
11 of annealing of the RPV can be avoided.

12 Now, Entergy and the Staff will tell the  
13 Board that all that has happened with Entergy's  
14 invocation of 10 CFR 50.61(a) is that Entergy is  
15 freely exercising a new option that is available, as  
16 though 50.61's scientific rigor and 50.61(a)'s  
17 mathematical conjecturings are somehow resting on an  
18 equal footing.

19 We anticipate they will maintain that the  
20 Intervenors simply can't argue to this Panel that the  
21 Licensing Board should bar Entergy from using the  
22 freely available option of the 50.61(a) route, and  
23 that the Licensing Board cannot order the utility to  
24 choose the route that the Licensing Board directs must  
25 be followed. That, in our preference, of course, was

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 in 10 CFR 50.61.

2 These arguments should be disregarded.  
3 Section 50.61's science is not on an equal footing  
4 with the speculative features of 50.61(a), but even  
5 50.61(a) starts with reference to physical and  
6 scientific data.

7 As to 50.61(a), our expert, a nuclear  
8 engineer Arnold Gundersen, has stated that Entergy has  
9 failed tests of mathematical and statistical adequacy,  
10 but Arnie Gundersen is not the only one saying that.  
11 The Westinghouse Materials Center of Excellence, which  
12 in its 2014, June 2014 WCAP Report, in its first  
13 paragraph of the executive summary, states: "The  
14 alternate rule provides a new metric and screening  
15 criteria for PTS. This metric, RT(max-x), and the  
16 corresponding screening criteria, are far less  
17 restrictive than the RTPTS metrics and screening  
18 criteria in the original PTS rule, that being 10 CFR  
19 50.61."

20 Westinghouse attempts to validate  
21 Entergy's invocation of 50.61(a) at Palisades by  
22 pointing out in paragraph 2 of that very same  
23 executive summary in the June 2014 WCAP that  
24 Palisades' surveillance data "passed all of the  
25 surveillance data statistical tests for each

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 material," that's a quote.

2 But this ignores that Consumers Energy,  
3 which was the owner at the time, categorically  
4 repudiated and ignored data in 1983 from destructive  
5 testing of capsule SA-60-1.

6 Entergy, at page -- at, pardon me,  
7 footnote 160 of its memorandum in this case, states  
8 that that capsule was "inadvertently over-irradiated"  
9 in the 1980s. We are not sure what that means.

10 Westinghouse, in its report, does not  
11 acknowledge further the fact that there has been no  
12 capsule destructive testing from the reactor pressure  
13 vessel at Palisades since 2003, and indeed, that in  
14 2007, a planned further test of a capsule or coupon  
15 was waived by the NRC.

16 Finally, Westinghouse asserts the  
17 superficially true statement that "The Palisades RV  
18 belt line and extended belt line weld flow density and  
19 size distribution are acceptable based on the latest  
20 Palisades vessel in-service inspection," that's also  
21 known as an ISI, "that results -- that resulted from  
22 an ASME Section 11 Appendix 8 qualified examination."

23 What Westinghouse does not mention in that  
24 paragraph number 3 of the executive summary is that  
25 the latest Palisades vessel in-service inspection was

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 in 1995, took place a generation ago, 20 years ago.

2 The RPV belt line welds have not been  
3 scrutinized in the form of a thorough in-service  
4 inspection for two decades. They are projected to be  
5 examined in December 2015.

6 These significant facts -- pardon me.  
7 These significant facts are quite consonant with the  
8 opinion of our expert, Mr. Gundersen, who stated at  
9 page 22 of his opinion that at Palisades, more than a  
10 decade has transpired since the last capsule coupon  
11 was removed and analyzed. So it is impossible to  
12 assure that the new analysis proposed by Palisades  
13 meets the one standard deviation requirement without  
14 removing at least one capsule coupon and performing  
15 the requisite destructive testing.

16 Mr. Gundersen further states on page 22,  
17 "Analysis is no replacement for testing the capsule  
18 coupon quite simply operating the Palisades reactor  
19 without the removal and analysis of the capsule sample  
20 for almost two decades," which is 2003 to the  
21 projected 2019, 16 year period, that "that seems to  
22 qualify the operations of Palisades as a test or  
23 experiment under 10 CFR 50.59."

24 He goes on to point out that essentially,  
25 Entergy wishes to be flying blind. We are troubled by

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 that fact. We are troubled by the fact that there is  
2 available scientifically verifiable evidence that is  
3 not going to be analyzed, yet at the same time,  
4 Palisades, Entergy, seeks effectively to insulate  
5 itself from any further publically demanded scrutiny  
6 of the status of embrittlement through the end of the  
7 20-year license extension in 2031.

8 In this morning's battle for the future of  
9 Palisades and for the continued health and safety of  
10 millions of people living in the Great Lakes Basin  
11 region, the Intervenors ask this: that this Panel  
12 accept the fact that we have provided an expert  
13 report; we have cited evidence and facts which if  
14 construed favorably to the Petitioner's point of view,  
15 certainly more than warrants a hearing; we have been  
16 met by procedural objections, by arguments that we  
17 have raised impermissible rulemaking challenges, but  
18 we haven't been met by expert opinions. That, of  
19 course, is something which would be reserved for an  
20 evidentiary trial type of proceeding.

21 But the point is that the Staff and  
22 Entergy have made their strategic choices not to  
23 oppose with competing expert opinions. Ours is  
24 effectively unanswered in many respects by the other  
25 parties.

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1           We believe that a hearing is warranted.  
2           We believe that what has effectively occurred here is  
3           that the NRC has fashioned a form-fitting regulation  
4           that fits only Palisades, and then the parties proceed  
5           to object to Petitioners that they are impermissibly  
6           attacking that form-fitting regulation.

7           We hope the Board will see through that  
8           and grant the Petitioners a trial on the merits.  
9           Thank you.

10           CHAIR SPRITZER: Well let me ask this  
11           before I turn the floor over to Judge Arnold: maybe  
12           you can explain to us what you think the scope of our  
13           authority is here. You're suggesting that we have the  
14           ability or have the authority to direct that they  
15           follow 10 CFR -- what is it -- 50.61 rather than  
16           50.61(a) --

17           MR. LODGE: Correct.

18           CHAIR SPRITZER: -- am I understanding --

19           MR. LODGE: Yes --

20           CHAIR SPRITZER: -- correctly on that?

21           MR. LODGE: That is correct.

22           CHAIR SPRITZER: Do you have a fallback  
23           argument other than that?

24           I hope so, because I don't see that we  
25           have the authority to do that, so my other Judges,

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 fellow colleagues, can state their own opinion on  
2 that, but --

3 MR. LODGE: Well --

4 CHAIR SPRITZER: -- my understanding was  
5 you were relying -- Mr. Gundersen has some other  
6 arguments that seem to allege that even if 50.61(a)  
7 applies, he doesn't think they really applied it  
8 correctly in this case. Is that also part of your  
9 argument?

10 MR. LODGE: Yes, and I'm sorry that that  
11 did not come out more in my opening --

12 CHAIR SPRITZER: All right.

13 MR. LODGE: -- comments.

14 CHAIR SPRITZER: Okay.

15 MR. LODGE: Of course it is, yes.

16 CHAIR SPRITZER: All right.

17 JUDGE ARNOLD: Okay. Essentially, all of  
18 my questions are derived from the petition itself, so  
19 the great majority of my questions will be for  
20 Petitioner, but I do have some for Staff and Applicant  
21 when I need clarification.

22 My first question is on page 4 of the  
23 petition, third paragraph starts out "Petitioners  
24 oppose the implementation of the alternative  
25 calculation method under 10 CFR 50.61 because there

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 are grave deficiencies in its mathematical and  
2 conceptual underpinning."

3 Now, that to me sounds like you're saying  
4 that 50.61(a) is just wrong in some way, and it looks  
5 to me like a challenge of the rule. Is that what you  
6 meant to express by that sentence?

7 MR. LODGE: What we meant to express was  
8 -- the sentence is that there are grave deficiencies  
9 in the underpinnings that Entergy has provided by way  
10 of calculations and projections.

11 JUDGE ARNOLD: Okay. And -- okay. And  
12 then the next sentence is "There has been a  
13 dangerously long passage of time since the actual  
14 physical testing of the degree of embrittlement," and  
15 that is what you were just referring to?

16 MR. LODGE: Yes.

17 JUDGE ARNOLD: Okay.

18 On page 5, let's see, second paragraph,  
19 halfway through, "Use of the 50.61(a) calculation  
20 approach could, and according to Petitioner's evidence  
21 may, cause failure of a critical safety component."

22 That, to me, also sounds as though you are  
23 challenging the rule, but you actually want to say  
24 there that it is Entergy's misuse of that rule?

25 MR. LODGE: Yes. Mr. Gundersen's report

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 we think clearly says that Entergy's use of 50.61(a)  
2 is -- is wrong, that it has been incorrectly  
3 undertaken.

4 JUDGE ARNOLD: Okay. Can you point to  
5 anything in 61(a) that is down there as part of the  
6 rule that they did incorrectly?

7 MR. LODGE: The sister plants comparison  
8 is one example.

9 JUDGE ARNOLD: Okay. You say that's --  
10 that's wrong, and I do have questions on that coming  
11 up.

12 My next question is on page 8. Now you  
13 say "The switch to the use" -- in the first paragraph,  
14 about halfway down, you say quote "The switch to the  
15 use of 10 CFR 50.61(a) will change how fracture  
16 toughness of the reactor vessel is determined, moving  
17 from an analytical to a probable risk assessment  
18 model," and I actually want to ask the Staff, is that  
19 a correct characterization of the two methods?

20 MR. LINDELL: Judge Arnold, both rules use  
21 a combination of several different things we look at.  
22 You're looking at measure data, that's from the  
23 surveillance we've drawn from the reactor. There are  
24 also projections and calculations based on equations  
25 -- equations in the rule.

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1           So -- and in a brief manner, the answer is  
2 no, that there is no difference in the rules in that  
3 particular regard.

4           JUDGE ARNOLD: There is a certain amount  
5 of empiricism in both rules, meaning that it compares  
6 it to data, you're looking at data?

7           MR. LINDELL: Yes.

8           JUDGE ARNOLD: Yes. Now the Petitioners  
9 have referred to the new method as a probable risk  
10 assessment method. Is there any PRA in that method?

11          MR. LINDELL: Let me just consult with my  
12 technical expert for one second.

13          JUDGE ARNOLD: Right.

14          (Pause.)

15          MR. LINDELL: Judge Arnold, both rules  
16 have a component that does rely on a PRA.

17          JUDGE ARNOLD: Now, when I hear PRA, I am  
18 thinking a very specific, you do deterministic  
19 calculations with branching points and put a  
20 probability at each branching point to come up with a  
21 number of different outcomes, each having a  
22 probability. Is that what you mean? You have a bit  
23 of that in each method?

24          MR. LINDELL: Yes, Your Honor, that is  
25 what we mean.

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 JUDGE ARNOLD: Okay. Which method would  
2 you consider to be more rigorous, more accurate?

3 MR. LINDELL: Your Honor, each -- each  
4 method is similar and different, and I would -- I  
5 would say that 50.61(a) is based on simply more years  
6 of data and more -- and more advanced computer  
7 modeling, that the -- when the PTS limits were  
8 established in 50.60 and in 50.61 back in 1985, we did  
9 not have as much information about the effect of  
10 neutron embrittlement on the reactor pressure vessel.  
11 Not as many capsules had been withdrawn and things of  
12 that matter.

13 When the rule was published in 2010, and  
14 that's 50.61(a), there was a lot more measured data  
15 from a whole host of pressurized water reactors.  
16 There has also been more -- there have been more  
17 computer simulations performed that exactly  
18 demonstrate the scope of neutron embrittlement, you  
19 know, toward the end of the life of the vessel, so in  
20 that sense, 50.61(a) is -- provides more accurate  
21 projections about -- about the phenomenon.

22 JUDGE ARNOLD: Would you say it embodies  
23 more knowledge of the embrittlement process in the --  
24 in the 61(a)?

25 MR. LINDELL: Yes, Your Honor, I would say

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 that.

2 JUDGE ARNOLD: Petitioners, anything you  
3 want to say about that?

4 MR. LODGE: Yes. Our position is that  
5 Entergy cannot use the 50.61(a) method because rather  
6 than use available data, they are extrapolating.  
7 50.61(a) is a tool if real data is available. Entergy  
8 is scrupulously avoiding the use of real data.

9 JUDGE ARNOLD: Okay.

10 My next question, also on page 8, at the  
11 bottom, you have a lengthy quote there -- well, it is  
12 two paragraphs, the second paragraph saying  
13 "Therefore, the proposed change does not involve a  
14 significant increase in the probability or consequence  
15 of an accident previously evaluated."

16 Now, I look at the paragraph you wrote  
17 introducing that, and you say it is Entergy's proposed  
18 no significance hazards, but the quote itself is from  
19 the Federal Register notice, and it's -- it's an NRC  
20 document.

21 So how -- how is it Entergy's proposed  
22 determination? I think it is the Staff's  
23 determination, isn't it?

24 MR. LODGE: It is ultimately the Staff's  
25 determination, but we believe it is based on Entergy's

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 conclusion, yes.

2 JUDGE ARNOLD: Okay.

3 Well, let me ask you this: would you  
4 characterize those paragraphs as the first paragraph  
5 gives reasons for the conclusion in the second  
6 paragraph? I mean, that is what it appears like to  
7 me.

8 MR. LODGE: Yes.

9 JUDGE ARNOLD: Okay.

10 Now the statement of considerations for  
11 the 61(a) rule found at 75 Federal Register 22 states,  
12 "The final rule would not significantly increase the  
13 probability or consequences of accidents."

14 That seems to me to state the same thing  
15 as the last paragraph of this quotation. So it seems  
16 to be 100 percent consistent with the statement of  
17 considerations for the 61(a) rule. Would you like to  
18 comment on that?

19 MR. LODGE: We would only offer, this,  
20 Your Honor, that in 1983, when a significant coupon  
21 test that appears to have suggested that there were  
22 serious additional embrittlement problems was rejected  
23 from the pool of -- of physical data, therefore, the  
24 actual data is perhaps skewed a little bit favorably  
25 toward the allowance of the reactor to continue

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 operating.

2 We believe that advanced computer modeling  
3 is not a replacement for our data, which in this  
4 instance is available, it's simply not being measured.

5 The --

6 CHAIR SPRITZER: Just so I understand,  
7 what specific hard data -- is it that you want them to  
8 test the sample that they right now are not scheduled  
9 to test again until 2019, is that --

10 MR. LODGE: That is correct, sir, yes.

11 CHAIR SPRITZER: Anything else besides  
12 that?

13 MR. LODGE: Well, they also skipped a  
14 sampling that was slated for 2007.

15 CHAIR SPRITZER: Is that the same sample  
16 or a different one?

17 MR. LODGE: I think it was a separate  
18 coupon.

19 CHAIR SPRITZER: Okay, so -- all right.  
20 I think I understand your position now.

21 JUDGE ARNOLD: I am going to be having  
22 questions later on about the coupon, so we will be  
23 getting back to this.

24 Staff, do you have any comment about the  
25 apparent similarity between your no significant

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 hazards and the statement of the considerations in the  
2 rule? They look identical to me.

3 MR. LINDELL: Judge Arnold, the Staff  
4 makes the no -- the proposed no significant hazards  
5 consideration determination after evaluating what the  
6 licensee submitted in making an independent judgment  
7 on that, but what it is saying is that procedurally,  
8 it doesn't -- it didn't -- it doesn't appear that  
9 there is going to be, you know, a significant impact  
10 on -- on public health and safety, and that -- and the  
11 rule also did, you know, the Federal Register notice  
12 did come to that conclusion, so in that regard, they  
13 are -- they are similar.

14 But what -- but, you know, it's stated in  
15 our regulations and in the case law that Petitioners  
16 can't challenge that determination in an adjudicatory  
17 proceeding. This is -- that is a procedural  
18 determination that's outside the scope of what the  
19 Board can rule on.

20 I am not -- I hope I answered your  
21 question, I am not 100 percent sure that it did.

22 JUDGE ARNOLD: Well, I am just --  
23 actually, I am -- I think I am done with that point.  
24 I think you have answered my question.

25 The last sentence on -- the last -- the

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 last sentence on page 8 says "Entergy concludes that  
2 the proposed change does not create the possibility of  
3 a new or different type of accident from any accident  
4 previously evaluated."

5 Now, when you -- are you challenging that  
6 there will be a type of accident different than an  
7 accident previously evaluated?

8 That question is for Petitioner.

9 MR. LODGE: One moment, sir, I am sorry.

10 (Pause.)

11 MR. LODGE: We are -- we are not saying  
12 that it would be a different accident, only that the  
13 possibilities of -- of a rupture of the RPV are  
14 increased and enhanced.

15 Also, I think this sort of lapses a bit  
16 into the equivalent margins analysis petition, but  
17 that is certainly not a -- if the Board wants to  
18 discuss it, let's discuss it.

19 JUDGE ARNOLD: Okay.

20 On page 9, the last paragraph starts out  
21 "Petitioners detail below their position that the  
22 analysis provided to the NRC by Entergy is inadequate  
23 and relies upon unsupported assumptions."

24 Now, are you saying that it's inadequate  
25 because it relies on unsupported assumptions, or are

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 there two claims there: it is inadequate and it is  
2 based upon unreliable assumptions?

3 MR. LODGE: The former.

4 JUDGE ARNOLD: Okay, it's a cause and  
5 effect, great.

6 On page 10, second paragraph, the last two  
7 sentences, basically, 10 CFR 50.61(a) allows Entergy  
8 to substitute various estimates of the status of the  
9 RPV for actual data investigation and analysis.

10 Does it explicitly -- can you tell me  
11 where in 50.61(a) it explicitly says that they don't  
12 have to have actual data, but can instead substitute  
13 analysis, or is it more subtle than that?

14 MR. LODGE: I believe it's more subtle  
15 than that.

16 50.61(a) is set up on three data points  
17 that -- that involve, at least as to I think two of  
18 them, projection, whereas 50.61 relies on -- on  
19 scientific validation metal testing.

20 I might also point out that, in light of  
21 the Belgian study that we cited in our reply, that the  
22 -- there is the additional problem here that the  
23 coupons themselves actually are rather a conservative  
24 measure, albeit they are physically -- they would  
25 provide physical data from destructive testing.

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1                   Yes, they are effectively an underestimate  
2 because the reactor pressure vessel itself is under  
3 pressure as well as of course heat and the other  
4 features of plant operation. The coupons are simply  
5 passive objects within the RPV.

6                   JUDGE ARNOLD: Now the very next sentence,  
7 "The 50.61(a) projections are attained, among other  
8 means, by averaging data on reactor vessels from other  
9 nuclear power plants to arrive at a projection of the  
10 current status of the Palisades RPV."

11                   Now, when you take -- say that, are you  
12 referring to the comparison -- let's see -- in  
13 50.61(a), (f)(6)(1), where, let's see, "The licensee  
14 shall evaluate the results from a plant-specific or  
15 integrated surveillance program," and if they satisfy  
16 these criteria, you basically compare them against the  
17 predicted trend. Is that basically what you're  
18 talking about here?

19                   (Pause.)

20                   MR. LODGE: I am not sure if this answers  
21 your question, but the reactor vessel comparison is,  
22 we think, extremely weak. The reactors to which  
23 Palisades is being compared are not even of the same  
24 type. There are certainly metallurgical differences,  
25 and I would say that there are probably pressure and

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 heat and process kinds of differences of that sort.

2 We think that there -- as Mr. Gundersen  
3 pointed out in his report, there is also a problem in  
4 trying to match the standard deviation bands among the  
5 four comparison reactors, including of course  
6 Palisades.

7 JUDGE ARNOLD: I am just trying to  
8 determine, this comparison that you're talking about,  
9 it's the one from (f) (6) (i)?

10 MR. LODGE: I don't have the regulation  
11 open. I believe that is the sister plants --

12 JUDGE ARNOLD: Why don't we pass -- here  
13 is 51(a), or 61(a). Pass that down to him, if you  
14 wish. Can you?

15 MR. LODGE: Thank you.

16 JUDGE ARNOLD: If you look at the seventh  
17 page of that, and that is freshly printed off from the  
18 NRC's webpage --

19 MR. LODGE: Yes.

20 JUDGE ARNOLD: Seventh page, second  
21 paragraph, where it says (i), that is (f) (6) (i).

22 MR. LODGE: Right.

23 JUDGE ARNOLD: And that is the only place  
24 I could find in the rule where there was a comparison  
25 that could be using other plants.

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 MR. LODGE: I am sorry, in -- so your  
2 question again sir --

3 JUDGE ARNOLD: I -- you keep saying that  
4 there is a comparison using data from other plants.  
5 Now, if it's in the application, then it's probably  
6 required somewhere by 50.61(a), and I am trying to  
7 find out if that's the paragraph that requires that  
8 comparison.

9 MR. LODGE: Your Honor, I would be -- I  
10 don't recognize that as being the reference to the  
11 requirement of sister plant data. I might be able to  
12 find it if we -- during a break.

13 JUDGE ARNOLD: Let me ask Staff, are you  
14 familiar enough with the rule to know if there is any  
15 comparison in -- in 61(a) other than this (f)(6)?

16 MR. LINDELL: (f)(6)(i) is indeed where we  
17 require the applicant to use that provision to -- to  
18 provide data from other plants if certain criteria are  
19 met, and it lays out the criteria there.

20 I can -- I was planning on explaining at  
21 greater length --

22 JUDGE ARNOLD: Okay.

23 MR. LINDELL: -- works. I don't know when  
24 you would like me to do that.

25 JUDGE ARNOLD: Later.

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 MR. LINDELL: Okay.

2 JUDGE ARNOLD: Okay.

3 Okay, I am going to surmise from my own  
4 reading of 61(a) and the Staff's opinion there that  
5 that is the comparison that your petition is referring  
6 to.

7 Going on, on page 10, the last full  
8 paragraph, "Petitioner's position is that Palisades  
9 has an acknowledged problem of worsening reactor  
10 vessel embrittlement, commencing from the start of  
11 operation in the early 1970s."

12 Let me just ask Entergy if -- if it is  
13 true that you have had worsening embrittlement since  
14 the beginning of plant operation.

15 MR. KUYLER: We don't agree with that  
16 statement, Your Honor.

17 JUDGE ARNOLD: You don't? Hmmm. I -- I  
18 personally have to say, as a nuclear engineer, I am  
19 surprised with that because I think that's a statement  
20 that probably applies to every reactor vessel that has  
21 ever had a neutron hit it.

22 Let me ask the Staff, do you -- you agree  
23 every plant undergoes embrittlement?

24 MR. LINDELL: Yes, Your Honor, every plant  
25 does undergo embrittlement over time, and, you know,

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 one of the things that 50.61 and 50.61(a) are there  
2 for is to address the issues with embrittlement over  
3 time.

4 JUDGE ARNOLD: So -- so the Petitioner's  
5 statement is true for every reactor vessel?

6 MR. LINDELL: Yes. I would just say that  
7 worsening embrittlement doesn't necessarily mean  
8 unsafe operation.

9 JUDGE ARNOLD: Thank you.

10 On page 11, top paragraph, first full  
11 sentence, "They," referring to Petitioners, "further  
12 raised the question of whether Entergy should be  
13 allowed to resort to 50.61(a) at all."

14 Now, it seems to me that 50.61(a),  
15 paragraph (b) on applicability, states -- basically  
16 says the requirements for using 61(a). Are you saying  
17 that the Palisades do not fulfill that paragraph on  
18 applicability, or are you saying there is something --  
19 well, answer that question, does the Palisades Plant  
20 fulfill the applicability requirements of 51(a)?

21 MR. LODGE: Of 50.61(a)?

22 JUDGE ARNOLD: Yes, 61(a).

23 MR. LODGE: It -- the problem to us is  
24 that there -- there isn't a threshold, there isn't a  
25 limbo stick over which Entergy must leap to qualify to

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 use 50.61(a).

2 The only reactor with a -- with a 50.61(a)  
3 application pending is that of Palisades.

4 This is -- this returns to the point we  
5 made in our opening statement about there's a form-  
6 fitting rule, and -- and Palisades is it. Palisades  
7 is applying, it is an option that's available. We  
8 believe that this Board has the discretion to find  
9 that there has not been compliance with either 50.61  
10 or 50.61(a).

11 JUDGE ARNOLD: Let me just ask the  
12 Applicant here, does the Palisades vessel meet the  
13 applicability requirements for 50.61(a)?

14 MR. KUYLER: Yes it does, Your Honor.  
15 That is what our license amendment request shows.

16 JUDGE ARNOLD: Okay.

17 Further on in that same paragraph, the  
18 petition says "Entergy plans to substitute the  
19 estimate procedure of 10 CFR 50.61(a) for a scientific  
20 rigor implicated by 10 CFR 50.61 despite the  
21 availability of scientifically measurable coupons."

22 Let me ask Petitioner, would application  
23 of the analysis in 50.61 require that a coupon be  
24 removed right now?

25 MR. LODGE: We believe that it would, that

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 they would -- that the utility would have to provide  
2 a scientific or data-based reason for pushing back the  
3 goalposts.

4 JUDGE ARNOLD: Let me ask Staff, would  
5 50.61 require a coupon removal right now?

6 MR. LINDELL: Your Honor, are we talking  
7 about 50.61 or 50.61(a)?

8 JUDGE ARNOLD: 61.

9 MR. LINDELL: No, Your Honor, the 50.61  
10 does not require that.

11 The schedule for the withdrawal of reactor  
12 coupons is in actually 10 CFR Part 50 Appendix H, and  
13 that sets out the requirements for when and how those  
14 coupons are withdrawn.

15 JUDGE ARNOLD: Thank you.

16 Let's see. Still on page 11, the first  
17 paragraph under section IV.A., "Petitioners claim that  
18 the Palisades" -- "The NRC" -- let's see, "The  
19 licensing framework that the NRC is applying to allow  
20 Palisades to continue to operate until August 2017  
21 includes both non-conservative analytical changes and  
22 mathematically dubious comparisons to allegedly  
23 similar sister reactor vessels."

24 Now question for Petitioners, can you  
25 point to any rule that says that when there is

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 excessive conservatism, it can't be removed from an  
2 analysis?

3 MR. LODGE: We believe that the Atomic  
4 Energy Act requirement of adequate assurance of  
5 reasonably -- of reasonable safety is the standard  
6 that the NRC is required to enforce.

7 JUDGE ARNOLD: Thank you.

8 MR. LODGE: Incidentally, Your Honor, we  
9 also disagree that there is excessive conservatism.  
10 I think that's almost oxymoronic here. There must --

11 JUDGE ARNOLD: Well, let me quote from the  
12 statement of considerations for the rule. It states  
13 that the rule, that's 61, "The existing requirements  
14 are based on unnecessarily conservative probabilistic  
15 fracture mechanics analysis," that's right from the  
16 statement of considerations, so you're basically, in  
17 that statement, you're kind of -- to me, it sounds  
18 like you're contradicting what the Commission  
19 published, so do you have any justification for saying  
20 that the Commission is wrong?

21 MR. LODGE: First of all, Your Honor, I am  
22 not sure that that is -- what you're referring to is  
23 a formal finding by the Commission itself as opposed  
24 to the Staff.

25 Secondly, as -- as a member of the

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 potentially affected public, I guess I am a little bit  
2 troubled by the creeping in of this excessive  
3 conservatism kind of talk because we believe that  
4 conservatism is -- is prudent and is a requirement  
5 under the Atomic Energy Act.

6 JUDGE ARNOLD: Now, talking about the  
7 mathematical dubious comparisons to allegedly similar  
8 sister reactor vessels, let me just ask Entergy, how  
9 do you choose these comparison sister reactor vessels?

10 MR. KUYLER: The -- the rules, Your Honor,  
11 required Entergy to identify those plants that had  
12 similar materials, and those are the materials that  
13 Entergy tested.

14 JUDGE ARNOLD: Okay. And your -- these  
15 comparisons meet all the requirements specified in the  
16 rule?

17 MR. KUYLER: That is correct, Your Honor.  
18 The -- that data met the statistical comparison tests  
19 in 50.61(a).

20 JUDGE ARNOLD: Okay.

21 In -- in the -- in the comparison of -- in  
22 61(a), (f) (6) (i), that you're doing, does it permit you  
23 to -- to narrow down the base of comparison -- what,  
24 vessels, for any -- on any other basis? Can you pick  
25 and choose?

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 MR. KUYLER: No, it does not, Your Honor.  
2 The text of the regulation is very clear. If the data  
3 is available, we must use it.

4 JUDGE ARNOLD: Thank you.

5 And on page 11, the petition for the first  
6 time brings up the equivalent margins evaluation.

7 Let me just ask, do you want to pursue  
8 that in this petition, or do you just want to let it  
9 go into the new petition that's been filed?

10 MR. LODGE: We believe it -- we believe it  
11 goes into the new petition.

12 JUDGE ARNOLD: Okay. That will -- that  
13 will reduce my questioning.

14 (Pause.)

15 JUDGE ARNOLD: Let -- I have a bunch of  
16 questions on coupons, and I think rather than ask them  
17 right now, since they are more questions towards  
18 Entergy, I will wait until later.

19 In the middle of page 12, let's see, third  
20 paragraph, about halfway down, "Gundersen notes that  
21 50.61 is analytical in nature, while 50.61(a)  
22 authorizes probable risk assessment."

23 Let me just -- Staff, we -- from what  
24 you've said earlier, you would not exactly agree with  
25 that?

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 MR. LINDELL: Correct, Your Honor, we  
2 would not agree with that.

3 JUDGE ARNOLD: Okay. Let me ask then  
4 Petitioners, do you believe that that characterization  
5 is correct, that 50.61 is analytical and 50.61(a) uses  
6 probabilistic risk assessment? Do you stand by that?

7 MR. LODGE: We stand by it, and while even  
8 conceding that there is some PRA implication in 50.61,  
9 we believe that 61(a) allows forays considerably  
10 further into that thicket.

11 JUDGE ARNOLD: Okay.

12 On page 13, the first paragraph, towards  
13 the end of that, you're talking about the -- having to  
14 do with -- let's see, the weakening of the pressurized  
15 thermal shock criteria, you state that "More than four  
16 decades of regulatory retreat is seriously endangering  
17 the public," and do you have -- do you have support  
18 that these have not just been reducing excessive  
19 conservatism, but have actually increased the chances  
20 of some sort of accident?

21 MR. LODGE: The -- the end of life dates  
22 that keep retreating, vanishing into the future, are  
23 what is of concern to me. I mean, that is what we  
24 consider to be regulatory retreat because each of  
25 those means that -- that there is more damage that has

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 occurred, that there is more deterioration.

2 And again, the -- the Belgian RPV study  
3 that -- that Greenpeace has publicized certainly  
4 suggests that with new technology, which the NRC  
5 readily credits with allowing the -- with the name-  
6 calling of excessive conservatism, we also believe  
7 that new technological means of assessing the reactor  
8 metal suggest that there is micro-cracking that was  
9 not before this time recognized as a problem, and it  
10 is possibly a big problem when serious nuclear  
11 engineers are recommending examination of every  
12 reactor on the planet.

13 JUDGE ARNOLD: Okay, but my question is do  
14 you have specific analysis or something definitive to  
15 go on, or is this looking at well we know  
16 embrittlement causes the vessel to get more  
17 embrittled, we know they're extending the life, so it  
18 makes sense that they're coming closer to an accident?

19 MR. LODGE: Yes, it's -- correct, yes,  
20 that's -- .

21 JUDGE ARNOLD: Page -- same page, 13,  
22 third paragraph.

23 Oh, I -- I -- quote, "The nuclear chain  
24 reaction inside the reactor that is created to  
25 generate electricity from high-energy electrons also

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 creates neutrons that impinge upon the inner side of  
2 the steel reactor vessel," and I had hoped that Mr.  
3 Gundersen would be here so that he could explain the  
4 role of high-energy electrons in a fission process.

5 I hope that this is a -- that he made a  
6 mistake in -- in drafting this --

7 MR. LODGE: Actually, that's -- that's the  
8 product of a political science major lawyer, Your  
9 Honor.

10 JUDGE ARNOLD: Okay.

11 And the last paragraph, on page 13, now  
12 you start off talking about the reference temperature-  
13 nil ductility transition temperature was 40 degrees at  
14 the beginning of life, and further on into the  
15 sentence, you talk about the screening criteria  
16 weakening to 200 degree Fahrenheit, and I want to --  
17 want to make sure I understand this: you're talking  
18 about the actual referenced transition temperature,  
19 and you're talking about a screening criteria, and  
20 those are two different things, right?

21 MR. LODGE: Yes.

22 JUDGE ARNOLD: Okay.

23 And on page 14, the first sentence, you  
24 refer to "Notably, 200 degrees Fahrenheit was merely  
25 an earlier stage of the retreat from regulation."

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1           The 200 degrees came about as a change in  
2           the regulation, wasn't it, or -- I am trying to  
3           understand what a retreat from regulations means.

4           MR. LODGE: We're dealing with what has  
5           generally been acknowledged to be the first or second  
6           most embrittled reactor in North America, and we see  
7           no shutdown, we see a -- what appeared to be a promise  
8           that annealment would be the considered remedial  
9           option years ago abandoned, and we see the standards  
10          vanishing into the future that would require a  
11          shutdown and serious consideration of what to do about  
12          the embrittlement.

13          This is a very dangerous reactor  
14          situation. It's a very problematic reactor, and the  
15          science is starting to catch up even more.

16          JUDGE ARNOLD: Okay, so when you use the  
17          phrase retreat from regulation, you don't mean a  
18          violation of regulation --

19          MR. LODGE: No.

20          JUDGE ARNOLD: -- and you're not talking  
21          about getting further from the regulatory limit.

22          MR. LODGE: Well, the regulatory limit is  
23          moving away from the facts --

24          JUDGE ARNOLD: Well --

25          MR. LODGE: -- on the ground.

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 JUDGE ARNOLD: Okay, it's a retreat of the  
2 regulation.

3 MR. LODGE: Yes.

4 MR. LINDELL: Your Honor?

5 JUDGE ARNOLD: Yes.

6 MR. LINDELL: May I just say something  
7 with regard to the 200 degrees, or --

8 JUDGE ARNOLD: Yes.

9 MR. LINDELL: There -- the screening  
10 criteria in 50.61, since the rule was promulgated in  
11 1985, have always been the same: 270 degrees  
12 Fahrenheit for some materials and 300 degrees  
13 Fahrenheit for others.

14 The -- the reference to 200 degrees  
15 Fahrenheit is something from a separate document that  
16 is unrelated to pressurized thermal shock.

17 JUDGE ARNOLD: My next question is for  
18 you, since this is what the Petitioner said:  
19 "Palisades has gained notoriety at the NRC for being  
20 one of the nation's most embrittled reactors."

21 Do you keep a list of notorious plants?

22 I am -- is this a valid statement in some  
23 way?

24 MR. LINDELL: We have -- I mean, we have  
25 a reactor oversight process where we look at, you

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 know, which plants require further inspection scrutiny  
2 and which require less, but I don't believe there is  
3 anything -- any list of notorious plants particularly  
4 relating to embrittlement.

5 And there -- you know, different plants  
6 have different embrittlement levels. Palisades has a  
7 certain level of embrittlement, and other plants have  
8 similar levels of embrittlement.

9 JUDGE ARNOLD: Okay. Let me ask  
10 Petitioner, what exactly do you mean by this phrase  
11 then?

12 MR. LODGE: Your Honor, if the NRC isn't  
13 keeping a list of most embrittled, it ought to be.

14 The NRC expert, Mr. Kirk, himself has  
15 referred to Palisades as a special reactor.

16 A 2013 NRC webinar slide suggests that --  
17 is it Point Beach? Unit 2 of Point Beach, almost  
18 directly across Lake Michigan, and Palisades are vying  
19 for worst embrittled reactor.

20 The -- if they aren't keeping a list, they  
21 certainly need to start.

22 JUDGE ARNOLD: Okay. Would it -- would it  
23 be fair to say -- well, I understand that the 61(a)  
24 rule was developed partially on the basis of the  
25 Palisades reactor vessel, so would you say Palisades

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 is of special interest to the NRC where embrittlement  
2 is concerned?

3 MR. LODGE: Yes, and has been for a  
4 considerable period of time.

5 Your Honor, we are -- we would concede the  
6 possibility that destructive testing might show that  
7 there has been some sort of plateau, some sort of  
8 halt, some slowdown to the embrittlement problem at  
9 Palisades, but the problem is we're talking about data  
10 which is readily available if there were the will to  
11 do the testing. There is not the will to do the  
12 testing. That should raise all kinds of red flags  
13 because we're talking about not testing for well over  
14 a decade.

15 And incidentally, I might point out, in  
16 2007, when the coupon test was waived by the NRC, we  
17 wonder if that wasn't in fact because the embryonic  
18 rule 50.61(a) was being drafted or circulated and was  
19 finalized in 2010, I believe.

20 So we wonder if the idea wasn't to avoid  
21 doing a coupon test and ductile testing in order to  
22 not have that data available, in order to allow  
23 Palisades as the only reactor so doing to avail itself  
24 of the new rule once it became a new rule.

25 JUDGE ARNOLD: Okay.

1           On page 16, the first full paragraph on  
2 the page, starting midway through the sentence  
3 "Gundersen also finds that the failure of the licensee  
4 to install a thermal shield before the reactor become  
5 operational would have avoided the problem  
6 altogether."

7           Now, do you know if he has done some sort  
8 of calculation to back that up, or is that just based  
9 upon his general knowledge?

10           MR. LODGE: I believe it is based on his  
11 general knowledge, not on calculations, but certainly,  
12 a scientific -- a mention of a potential contributing  
13 factor to the unusually embrittled nature of this RPV.

14           JUDGE ARNOLD: And middle of that page,  
15 just under the heading "2. The Comparable Plants,"  
16 "Gundersen objects to the identified comparable  
17 nuclear reactor vessels."

18           Do you have some other alternative way of  
19 selecting comparable, or are you just saying  
20 comparable shouldn't be permitted?

21           MR. LODGE: We believe comparables should  
22 be comparable, they should be the same type of  
23 reactor, the same generation, as much as possible, a  
24 matchup of the metals, that sort of thing.

25           JUDGE ARNOLD: In -- in the rule itself,

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 61(a) rule where it says to do this comparison, do you  
2 know of any selection criteria based upon the vessel  
3 designer, the vendor, the manufacturer?

4 MR. LODGE: No.

5 JUDGE ARNOLD: Okay. So it was an  
6 oversight of the rule, or the rule just wasn't  
7 specific enough?

8 MR. LODGE: The rule wasn't -- certainly  
9 isn't specific enough.

10 CHAIR SPRITZER: All right, why don't we  
11 take a 10-minute break at this point, and we'll  
12 resume, be back here at about 11:16.

13 (Whereupon, the hearing went off the  
14 record at 11:06 a.m. and resumed at 11:20 a.m.)

15 JUDGE ARNOLD: Okay. On Page 17 of the  
16 Petition, Gundersen says, such false comparisons  
17 significantly dilute Palisades' embrittlement  
18 calculations.

19 And I'm just wondering what's that  
20 supposed to mean, diluting a calculation.

21 MR. LODGE: I'm sorry, sir. I don't see  
22 that.

23 JUDGE ARNOLD: Very top line on Page 17.

24 MR. LODGE: Oh, all right. Just a moment,  
25 please.

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 (Pause.)

2 MR. LODGE: The sister plant's comparisons  
3 actually help Palisades. The relatively unremarkable  
4 data from the sister plants when averaged with the  
5 very remarkable data from Palisades, assists - puts a  
6 good face on the situation at Palisades. That's what  
7 we mean.

8 DR. ARNOLD: Now, this is where the  
9 petitioner starts going into a claim that further  
10 operation would basically be a test.

11 And looking over 10 CFR 50.59(a)(6)  
12 defines what a test is. Tests or experiments not  
13 described in the Final Safety Analysis Report means  
14 any activity where any structure system or component  
15 is utilized or controlled in a manner which is either;  
16 one, outside the reference bounds of the design basis  
17 as described in the Final Safety Analysis Report, or;  
18 two, inconsistent with the analysis or description in  
19 the Final Safety Analysis Report.

20 Using that definition, how does continued  
21 operation constitute a test?

22 MR. LODGE: Our perspective is that this  
23 is in its own way a grand experiment where Palisades  
24 is going to be operated either to an end that doesn't  
25 become a disaster, or an end which does.

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1           And this is an unprecedented situation  
2 where you have multiple rule changes to favor one  
3 particular reactor and those rule changes consistently  
4 reflect a worsening metallurgical problem that goes  
5 unremediated even though there are means of verifying  
6 the precise status, as well as fixing that problem.  
7 And neither of those things are happening here.

8           We think that that certainly suggests that  
9 the Great Lakes Basin population is being subjected or  
10 witnessing an ongoing experiment, and a very dangerous  
11 one.

12           JUDGE ARNOLD: Okay. If this were deemed  
13 to be a test, then 50.59 would require there be a  
14 license amendment requesting permission to do that  
15 test.

16           Well, there's already a licensing  
17 amendment request in. So, would this just amount to  
18 changing that to -- from being a license request for  
19 61a to a licensing request for 61a and a test? I mean  
20 -

21           MR. LODGE: I'm not sure, Your Honor, that  
22 the - we aren't necessarily calling for some sort of  
23 designation by license amendment.

24           We're pointing out that there is a  
25 remarkable absurdity here. And that is that this

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1       circumstance seems to fit the criteria or the  
2       definition for a test or experiment, and yet it is not  
3       being recognized as that by official NRC activity.

4                   JUDGE ARNOLD:   Okay.

5                   MR. LODGE:  I understand that there's some  
6       fine distinctions between 50.59 and this situation.  
7       And we also recognize that the Board is taking a very  
8       legalistic view of the circumstances here.

9                   We understand that well, but this is a  
10      remarkable and a truly unique, exceptional reactor  
11      with problems that are not being properly recognized  
12      within the regulatory arena.

13                  JUDGE ARNOLD:  Let me just say because  
14      you've put this argument in here, it's something that  
15      we have to address.

16                  MR. LODGE:  Sure.

17                  JUDGE ARNOLD:  And we have to consider  
18      whether this is a claim that there has to be a license  
19      amendment for a test, but from what I'm hearing now  
20      you're not specifically saying that there has to be  
21      another additional license amendment saying it's okay  
22      to do this test.

23                  MR. LODGE:  Well, we think that the role  
24      - one of the roles that the Board could fulfill here  
25      is to call this what it is.

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1           We have a situation where it's 20 years  
2 since the last ISI. It's 12 years and will be 16 if  
3 you go through 2019 before there's a coupon pulled and  
4 tested.

5           This is a truly egregious situation and it  
6 is - we're talking about circumstance where there is  
7 data that could be culled and it is not being - and it  
8 is not being examined, it is not being used in any  
9 scientific analysis.

10           JUDGE ARNOLD: Okay.

11           CHAIR SPRITZER: Can I ask one question?

12           JUDGE ARNOLD: Sure.

13           CHAIR SPRITZER: Let me clarify. Is it  
14 possible in your understanding of law, of the  
15 regulations, if Palisades meets the 50.61(a) criteria  
16 as Entergy claims in its license amendment and the  
17 staff appears to agree, if it meets those  
18 requirements, could it possibly be a test?

19           I understand you dispute whether it meets  
20 those requirements, but let's say if we were to assume  
21 that it does meet 50.61a, is there really an issue  
22 about it being a test reactor?

23           MR. LODGE: Mr. Gundersen opined, and I  
24 agree, that it still amounts to a test or experiment  
25 even if it meets the - and incidentally, Your Honor,

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 that is a fact issue that we would be more than happy  
2 to explore at a trial.

3 I'm not trying to be evasive, but this is  
4 exactly why we believe that you can see that there is  
5 - there's some very troubling evidence here. And  
6 there is certainly a strong suggestion by our expert  
7 that there are problems with the calculations, there  
8 are problems with the mix of calculations used to  
9 achieve 61a compliance, which we don't believe is a  
10 valid conclusion.

11 CHAIR SPRITZER: I was only asking about  
12 a legal question.

13 MR. LODGE: Sorry.

14 CHAIR SPRITZER: That is, could there  
15 legally be a situation where a reactor is operating as  
16 a test if it - with respect to embrittlement if it  
17 meets the 50.61a criteria? But I think I understand  
18 your answer.

19 JUDGE ARNOLD: The second half of Page 18  
20 starts getting into the topic that involves one  
21 standard deviation and 20 percent between all the  
22 data. And it's not clear to me what the one sigma and  
23 20 percent are used for.

24 Could you explain that where these numbers  
25 come from and what they're used for?

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 MR. LODGE: Your Honor, we believe that  
2 Mr. Gundersen did explain those. And in a way,  
3 there's perhaps a problem taking the word of an  
4 attorney who is marshaling things for argument using  
5 the expert's opinion as opposed to simply trying to  
6 make a determination as to what the expert himself is  
7 saying.

8 I don't mean to be evasive, but I believe  
9 that Mr. Gundersen laid out the problem with the  
10 standard deviation. This gets into the difficulty of  
11 comparing the cross-comparisons of sister plants.

12 The sigma deviation, however, is a  
13 Westinghouse standard. It's in the - I think the 2010  
14 wCAP report.

15 JUDGE ARNOLD: Does it occur in any NRC  
16 regulation, the one sigma or the 20 percent?

17 MR. LODGE: The 2010 WCAP or the 2010-2014  
18 WCAPs, 2014 is the basis for the application under  
19 61a.

20 JUDGE ARNOLD: Okay. Because I'm still  
21 confused about this let me just ask staff, do you know  
22 if there is anywhere in the rules that refers to this  
23 one sigma or 20 percent?

24 MR. LINDELL: Your Honor, let me try to  
25 explain this. The number, the 20 percent number, the

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 one sigma comes from Regulatory Guide 1.190.

2 And what it's being used for over there is  
3 - it has to do with comparing the projected fluence  
4 levels in the steel based on calculations with the  
5 data that's - the collected data from the surveillance  
6 capsules.

7 So, when we're looking at one particular  
8 location on the reactor belt line and we're looking at  
9 the - comparing the fluence levels between the  
10 calculated and measured data, there shouldn't be more  
11 than a 20 percent difference.

12 It doesn't have anything to do with  
13 comparisons between sister plants and different data  
14 points there.

15 Doesn't even have - it's not even related  
16 to comparing different locations on the reactor belt  
17 line because, you know, depending on how close a  
18 particular point is to the fuel there's going to be  
19 more fluence or less fluences further away. So, the  
20 20 percent standard deviation really wouldn't make  
21 sense there.

22 CHAIR SPRITZER: Just to follow up on your  
23 answer, Mr. Lindell, you said it's for comparing the  
24 calculated, that is the modeled numbers for Palisades,  
25 versus actual data, I presume, from capsules at

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 Palisades.

2 Am I understanding you correctly?

3 MR. LINDELL: Yes, Your Honor. That's -

4 CHAIR SPRITZER: But it doesn't apply to  
5 comparisons between either modeled or actual data at  
6 Palisades on the one hand, and data from other plants  
7 on the other hand.

8 MR. LINDELL: Yes, Your Honor.

9 CHAIR SPRITZER: Okay. That's also - I  
10 interpreted that to be Entergy's position based on  
11 their filing.

12 Is there anything you can point me to in  
13 the Regulatory Guide itself or 50.61a to give us a  
14 reference point?

15 It seems essentially an interpretation of  
16 the regulations, but what would you rely on to support  
17 that?

18 MR. LINDELL: I don't have the particular  
19 citation to that point in the Regulatory Guide in  
20 front of me right now. As we progress, I can obtain  
21 that and we can discuss it.

22 CHAIR SPRITZER: Well, we're obviously  
23 asking you questions before you've had a chance to  
24 make your -

25 MR. LINDELL: But I will, you know, get

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 with my expert and we'll look for -

2 CHAIR SPRITZER: Okay.

3 MR. LINDELL: We'll get that information.

4 CHAIR SPRITZER: Great. Thank you.

5 MR. LODGE: If it may please the Board, I  
6 just would like to point out that again we're talking  
7 about an expert argument here which is best resolved  
8 at trial, I hope.

9 CHAIR SPRITZER: Well, not my questions at  
10 least. I'm trying to focus on the regulations, what  
11 they require and what they don't require.

12 Mr. Gundersen while you're right, he may  
13 -- he submitted a declaration. Some of his  
14 declaration seems to be based on requirements that he  
15 believes exist, and I'm trying to find out whether  
16 he's right or not.

17 Entergy and staff say, no, this -- what is  
18 it -- 20 percent at one standard deviation requirement  
19 really doesn't apply when you're doing the  
20 surveillance data or so-called sister plant in  
21 comparison.

22 That's really at least, in part, sounds to  
23 me like a legal question or a question of interpreting  
24 the regulations, and that's something we have to  
25 resolve now.

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 I agree that if there's a factual dispute  
2 of whether that test - if we assume that test applied  
3 and he's saying it isn't met, and staff and Entergy  
4 are saying, yes, it is, that would be a dispute  
5 between experts.

6 What I'm having - what I'm trying to  
7 understand, though, is was he correct in assuming that  
8 there is such a requirement. Go ahead.

9 JUDGE ARNOLD: Okay. The last paragraph  
10 on Page 18, Mr. Gundersen starts discussing the  
11 neutron flux in the various sister plants and the  
12 variation in the new - in the flux, but I notice that  
13 nowhere did he claim that the neutron flux makes a  
14 difference to embrittlement. And to my knowledge, it  
15 doesn't.

16 So, what is the relevance in the  
17 variability of the flux?

18 (Discussion off record.)

19 MR. LODGE: We think it's fundamentally a  
20 truism that the more neutron flux that falls upon a  
21 certain area, that the -- greater the changes of  
22 embrittlement or the actual embrittlement that will  
23 result.

24 I don't know if that answers your  
25 question, but -

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 JUDGE ARNOLD: Well, the flux is just the  
2 rate at which the fluence is changing. So, and the  
3 fluence, they have to have three different fluence  
4 points. And the comparison is a plot versus fluence.

5 So, since the rate doesn't seem to make a  
6 difference, I'm wondering why he has that comparison.

7 MR. LODGE: Flux is a key ingredient in  
8 embrittlement. And we think that the fluency, that  
9 flux essentially drives fluency.

10 JUDGE ARNOLD: Okay. On Page 19 you start  
11 - you have the discussion of the capsule that wasn't  
12 - the results were not used.

13 And you say, from this evidence, Gundersen  
14 deduced that this particular sample was discarded  
15 precisely because it gave an answer that would have  
16 required Palisades to shut down.

17 Now, that seems to be at odds with the  
18 quoted paragraph which says, basically the capsule  
19 results were disregarded because the fluence was far  
20 greater than will ever be experienced in the vessel.

21 So, do you have some way to really make  
22 those two statements possible to coexist?

23 MR. LODGE: We think that the intervening  
24 32 years suggests that data like that should not have  
25 been so readily dismissed and repudiated especially

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 since the owner of the plant is now in a period where  
2 it doesn't believe that any more data should be  
3 gathered.

4 And of course there is, as we've mentioned  
5 before, the Belgian RPV study which suggests that  
6 there's a microcracking phenomenon because of an  
7 interaction with hydrogen atoms. So, there's new  
8 scientific information.

9 (Discussion off record.)

10 CHAIR SPRITZER: This Belgian study that  
11 you just referred to, Mr. Lodge, is that referred to  
12 in the Petition?

13 MR. LODGE: It's in our January 20th,  
14 reply filing, sir.

15 CHAIR SPRITZER: Okay. All right. Thank  
16 you.

17 JUDGE ARNOLD: Now, is that of the same  
18 heat material, or is that of a different material  
19 altogether?

20 (Discussion off record.)

21 MR. LODGE: The Belgian experts suggest  
22 that all reactors be examined, because they have  
23 identified a problem with hydrogen atoms embedding in  
24 cracks as a process - as a result either of the  
25 formulation process, or the operation of the reactors.

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 JUDGE ARNOLD: Okay.

2 MR. LODGE: Thank you.

3 CHAIR SPRITZER: Mr. Lodge, on the  
4 question of what we call sister plant data or  
5 surveillance data that's used under 50.61a(f)(6), if  
6 there is no surveillance data for a particular heat or  
7 metal type, then a consistency check with the  
8 embrittlement model isn't required.

9 Are you saying that there is no  
10 surveillance data that can appropriately be used for  
11 this consistency check because of the issue that Mr.  
12 Gundersen refers to in his declaration?

13 MR. LODGE: I would say that there's no  
14 surveillance data -

15 JUDGE ARNOLD: Microphone, please.

16 MR. LODGE: I'm sorry. Please ask that  
17 again, just the last part of your question.

18 CHAIR SPRITZER: I'll try to simplify.  
19 Are you saying that there's no surveillance data that  
20 could appropriately be used for the comparison -- that  
21 could be used as surveillance data under 50.61a(f)(6)?

22 MR. LODGE: Well, Palisades' own capsules  
23 are not being used for comparison with its - with its  
24 present perceived state, its projected condition.

25 CHAIR SPRITZER: No, I understand that.

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 But as to the sister plant data, I'm trying to  
2 understand what you think, how you're claiming the  
3 analysis should be done.

4 Should they just throw out the  
5 surveillance plant data for the reasons stated by Mr.  
6 Gundersen?

7 MR. LODGE: Yes - well, what we're saying  
8 is, is that Palisades is so unique and so special that  
9 there effectively are no very valid sister plants to  
10 which it compares. Perhaps Point Beach Unit 2, but  
11 obviously that wasn't part of the comparison.

12 That's my answer.

13 CHAIR SPRITZER: And the problem that that  
14 seems to create is, if I'm understanding the  
15 regulations correctly and the staff and Entergy can  
16 correct me if I'm mistaken, but the regulations say if  
17 you don't have surveillance data, you just use the  
18 model without the surveillance data.

19 It seems a little odd that the default for  
20 lack of useful empirical data is to use the model  
21 anyway without the ability to compare it to  
22 surveillance data, but that seems to be what the  
23 regulations say.

24 So, doesn't that create something of a  
25 problem for your argument? They would just use the

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 model anyway if the surveillance data is no good, if  
2 I'm reading the regulations correctly.

3 MR. LODGE: It certainly suggests that the  
4 sister plant comparison is rather bogus, yes. We're  
5 looking at a situation where in the weld material that  
6 is at Palisades, perhaps a two percent copper and one  
7 percent nickel content. And that's a serious variance  
8 so far as we know from the comparables that were used.

9 CHAIR SPRITZER: Uh-huh.

10 MR. LODGE: The welds are in many respects  
11 perhaps the most dangerous or problematic area of the  
12 RPV at Palisades. And so, sure, throw out the sister  
13 plants.

14 It seems to me that scientific rigor and  
15 prudence then suggests that you go with available  
16 scientific data that's ready at hand.

17 It's a broken record, but this is a - this  
18 is a ridiculous situation where the petitioners are in  
19 the position of saying, do what's reasonable here,  
20 what reasonably assures protection of public health  
21 and safety. And we believe that that requires some  
22 fairly tight compliance with 50.61.

23 61a is the Palisades rule.

24 CHAIR SPRITZER: Can you give me an  
25 explanation - so, you're saying you want the Board to

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 order them to do some additional testing at Palisades.

2 I think you told me earlier that would  
3 include the 2019 - the capsule currently scheduled for  
4 testing in 2019. And there was one other that you say  
5 they -

6 MR. LODGE: '07.

7 CHAIR SPRITZER: Okay. Can you explain to  
8 me what legal authority you believe the Board - the  
9 basis of your argument that the Board has the legal  
10 authority to require that?

11 MR. LODGE: Well, we think the Board has  
12 legal authority to disapprove the 61a application and  
13 perhaps force some reconsideration, therefore.

14 CHAIR SPRITZER: Because they didn't do  
15 this - these tests, these two additional capsules that  
16 you're referring to?

17 MR. LODGE: And the other considerations.  
18 The essentially invalid nature of the sister plants  
19 comparison.

20 CHAIR SPRITZER: Could they use a sister  
21 plant comparison under your argument as long as the  
22 spatial or other forms of neutron variability that Mr.  
23 Gundersen referred to is accounted for in the  
24 analysis?

25 MR. LODGE: They can always do a sister

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 plant comparison. They can do a better one than was  
2 done. And that better one might - we are rather  
3 confident would reveal that Palisades is an outlier,  
4 but essentially the problem does evolve to why is  
5 there no coupon testing being done as a top priority,  
6 why is that not the basis for the decision to either  
7 stick with 50.61 or move to 61a and that there's no  
8 answer here being given by the utility.

9 They're simply saying, we don't have to do  
10 it. It's a choice.

11 CHAIR SPRITZER: This Capsule A-60 that's  
12 referred to - let's see. This is on Page 19 of the  
13 petition.

14 MR. LODGE: Yes.

15 CHAIR SPRITZER: The quoted language in  
16 the middle.

17 Do you know at any point in the history of  
18 Palisades, was any testing done on that capsule, or  
19 was it just left in the reactor?

20 MR. LODGE: You're talking about the 1982-  
21 83 - Capsule A-60 is the -

22 CHAIR SPRITZER: Yes, I know. As of  
23 October 31, 1982, the licensee indicates that capsule  
24 A-60 -

25 MR. LODGE: Right.

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 CHAIR SPRITZER: -- had accumulated a  
2 certain amount of neutron fluence. That's the  
3 statement that's in the middle of Page 19 that's  
4 quoted.

5 I'm trying to figure out what happened to  
6 that capsule. Do you know?

7 MR. LODGE: No. All we know is what we  
8 have seen in these -- in the documents cited in our  
9 pleadings.

10 CHAIR SPRITZER: Okay. All right. So, if  
11 I understand what you're telling me now, it's that  
12 you're not necessarily objecting or saying that  
13 there's no surveillance data anywhere that could be  
14 used.

15 You just don't think the data they've used  
16 is adequate for the purpose that it was used.

17 MR. LODGE: Correct.

18 CHAIR SPRITZER: Okay.

19 MR. LODGE: And we do believe the  
20 Licensing Board has the power to look at what is being  
21 - what information is filling in the blanks and decide  
22 if that represents a bonafide, valid approach or  
23 provision of data especially taking into account the  
24 overall circumstances and the mission which we believe  
25 is to enforce conservatism with such a delicate

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 situation.

2 CHAIR SPRITZER: Okay. All right. We've  
3 talked about the surveillance data.

4 Can you tell me is there any other  
5 respect, any other specific respect in which you are  
6 claiming that Entergy failed to comply with 50.61a?

7 MR. LODGE: Other than the things that are  
8 cited in Gundersen's report, no.

9 CHAIR SPRITZER: Okay. All right. That,  
10 as I understand Mr. Gundersen's report, he has a  
11 dispute with what we've talked about whether the  
12 surveillance data is - was appropriately used and  
13 whether it's - whether it's appropriate to use.

14 He also takes issue with the sister plant  
15 comparison. That seems to essentially be the same  
16 argument.

17 That's basically what I've gotten out of  
18 his declaration. He just doesn't think they used the  
19 correct surveillance data.

20 Is there anything I'm missing?

21 MR. LODGE: No. I think what you see is  
22 his position and ours.

23 CHAIR SPRITZER: Okay. All right. If you  
24 look at Paragraph 35 of Mr. Gundersen's declaration,  
25 it references chart 2.2-4 which is about flux.

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 Do you know whether - and if you don't  
2 know, just tell me you don't know, but did Mr.  
3 Gundersen mean to reference chart 2.2-5 which is  
4 actually about fluence?

5 He says fluence decreases over time. So,  
6 I assume he's talking about fluence, and not flux.  
7 Maybe you can explain to me how he got from that  
8 chart, 2.2-4, to his conclusions about fluence.

9 MR. LODGE: One moment, sir.

10 (Pause.)

11 MR. LODGE: At this point, I don't know.

12 CHAIR SPRITZER: All right. I think  
13 that's all I have.

14 JUDGE HIRONS: I'll wait until the  
15 applicant -

16 CHAIR SPRITZER: Okay. All right. As we  
17 said, we'll give you - well, you didn't really use all  
18 your 13 minutes. So, we'll give you five minutes for  
19 rebuttal, but that will be at the end of when everyone  
20 else is finished.

21 So, why don't we move on and hear from  
22 Entergy. Entergy, you have, if you choose to use it,  
23 a 10-minute opening statement. And then we'll follow  
24 up with any questions.

25 MR. KUYLER: Thank you, Your Honor. Ray

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1       Kuyler for the applicant.     Good morning, Judges  
2       Spritzer, Arnold and Hirons, and may it please the  
3       Board.

4                 On behalf of Entergy, I appreciate the  
5       opportunity to appear before you this morning.    And  
6       for the reasons thoroughly discussed in Entergy's and  
7       the NRC staff's briefs and as we'll discuss further  
8       today, the Board should deny the Petition in its  
9       entirety.

10                When counsel for the petitioners paints  
11       the issues as an issue of rigor versus conjecture and  
12       science versus speculation, what we have is simply an  
13       impermissible collateral attack on the 2010 alternate  
14       pressurized thermal shock rule, Section 50.61a.

15                Without rehashing the briefings, I'd like  
16       to emphasize just a few points.   First, through NRC-  
17       approved license amendments and safety analyses,  
18       Entergy has previously demonstrated that the Palisades  
19       reactor pressure vessel is safe today with adequate  
20       margins of safety and that fact is not subject to  
21       challenge in this proceedings.

22                Second,   Entergy's   pending   license  
23       amendment request shows that the reactor pressure  
24       vessel will continue to be safe from pressurized  
25       thermal shock events for the remainder of the plant's

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 license life.

2 And Entergy makes that showing through a  
3 Westinghouse analysis that uses the methods set forth  
4 in the regulation, Section 50.61a.

5 The validity or technical soundness of the  
6 rule is not subject to challenge in this proceeding.  
7 And I believe most of our conversations so far this  
8 morning has been on the validity of the rule.

9 Third, the Petition focuses on these  
10 matters, these very matters which are outside the  
11 scope of this proceeding.

12 In fact, neither the Petition nor the  
13 Gundersen declaration makes a single reference to the  
14 actual Westinghouse report that was submitted with the  
15 license application to show compliance with Section  
16 50.61a.

17 Instead, petitioners allege the use of  
18 Section 50.61a at all is a deviation and they  
19 challenge the Appendix H reactor vessel surveillance  
20 capsule schedule which the NRC approved in 2007.

21 And although they seem to have taken this  
22 off the table, they also challenge the equivalent  
23 margins analysis license amendment, which is the  
24 subject of a separate request for hearing.

25 The Petition and the Gundersen declaration

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 also appear to misunderstand and mischaracterize the  
2 requirements of Section 50.61a and the technical  
3 analysis that Entergy presented in its license  
4 amendment application. So, their critique is  
5 unsupported and also fails to raise a genuine dispute.

6 Fifth, and finally, petitioner's reply is  
7 largely non-responsive to the objections that Entergy  
8 and the NRC staff have made. Their reply simply  
9 misses the mark and we believe that the oral argument  
10 that petitioners have presented this morning also  
11 misses that mark in terms of the real issues. For  
12 these basic reasons, the petitioners have failed to  
13 proffer an admissible contention.

14 Turning very briefly to the question of  
15 standing, the petitioners have also failed to carry  
16 their burden on this issue.

17 Their initial amended petition asserted  
18 standing was essentially automatic based on the  
19 proximity presumption. But the proximity presumption  
20 while it may apply to construction permit, operating  
21 license, license renewal proceedings and to license  
22 amendments that involve major alterations to the  
23 facility, it does not apply in this proceeding.

24 Petitioner's reply does not address this  
25 problem and, therefore, petitioners have failed to

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 carry their burden on standing.

2 Turning back to the contention, as I  
3 mentioned, it's fundamentally a collateral attack on  
4 the 2010 rule and on the current licensing basis for  
5 the Palisades plant.

6 When a Commission regulation such as  
7 50.61a specifies the use of a particular analysis or  
8 technique, a contention that challenges the use of  
9 that technique is inadmissible.

10 Petitioners claim that the Section 50.61a  
11 rule is discretionary and subject to differences of  
12 opinion, but the heart of their case is the alleged  
13 sheer anomaly of using the Section 50.61a rule at all.  
14 And that's just not a matter for this proceeding.

15 The 2010 rule took over a decade to  
16 develop, included consideration of public comments,  
17 was reviewed by the Advisory Committee on Reactor  
18 Safeguards, an additional expert review panel, and by  
19 the Commission.

20 And in the final rule, as I believe was  
21 discussed this morning, the NRC concluded that the  
22 risk of throughwall cracking due to a pressurized  
23 thermal shock event is much lower than previously  
24 estimated.

25 The screening criteria in the old rule,

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 the previous rule, are unnecessarily conservative and  
2 may pose an unnecessary burden for licensees.

3 The Commission promulgated Section 50.61a  
4 so that licensees could use it. If petitioners  
5 disagree, then they should have participated in the  
6 rulemaking process, or they could seek to have the  
7 rule revised or revoked at this point, but they cannot  
8 do so through this proceeding.

9 As I previously mentioned, the various  
10 other licensing actions that petitioners criticize are  
11 also not subject to challenge in this proceeding.

12 They cannot challenge the surveillance  
13 capsule schedule that the NRC approved in 2007. They  
14 cannot challenge decisions made in the 1980s regarding  
15 the disposition of surveillance capsules. The only  
16 question in this proceeding is whether the  
17 requirements of Section 50.61a are met.

18 To the extent they do focus on issues  
19 related to Entergy's license amendment, they either  
20 misconstrue or misunderstand the data inputs and the  
21 analysis methods.

22 50.61a requires that calculated  
23 embrittlement predictions be verified against  
24 surveillance data for similar materials.

25 The petitioners argue that these data

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 allegedly come from dissimilar plants, but this is a  
2 collateral attack on the rule. The rule requires  
3 Entergy to use all available data for Palisades, and  
4 from other similar plant - similar materials.

5 And in any event, on Paragraph 27 of Mr.  
6 Gundersen's declaration, he admits that it is true  
7 that the materials are similar.

8 And while counsel for the petitioners this  
9 morning has talked about metallurgical differences and  
10 copper and nickel content of the materials, we did not  
11 see any of that in their contention. Those issues are  
12 just not part of the contention.

13 Second, Section 50.61a provides specific  
14 statistical verification tests to ensure that  
15 calculated embrittlement predictions match the  
16 surveillance data.

17 Petitioners do not allege any deficiency  
18 in Entergy's use of the three statistical tests  
19 specified in the rule.

20 When they attempt to impose a different  
21 statistical test which comes out of NRC guidance on  
22 assessing the uncertainty in fluence measurements as  
23 an input into the fluence model, a test that does not  
24 address variations in fluence and does not address the  
25 validity of embrittlement outputs, they're, again,

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 collaterally attacking the 2010 rule. So, there is no  
2 battle of the experts.

3 Rather than presenting a reason basis or  
4 explanation for their position, petitioners have not  
5 raised any dispute with the application and its  
6 compliance with the rule. Their claims are outside  
7 the scope of this proceeding, immaterial, unsupported  
8 and fail to raise a genuine dispute on the material  
9 issue of law or fact.

10 And I would like to briefly address a  
11 couple of other points that have come up this morning.  
12 The ASME code in-service inspections that was  
13 discussed, counsel for the petitioner suggested that  
14 the last in-service inspections were in 1995. In  
15 fact, the application shows that those last set of  
16 tests were in - or inspections were in 2014.

17 And it is those 2014 inspections that were  
18 used in the license amendment request as the basis for  
19 the assessment required in the regulations.

20 There is also nothing in the petition that  
21 raises the issue of the ASME code inspections, the in-  
22 service inspection requirements. That's not part of  
23 the contention either.

24 So, to the extent they're seeking to amend  
25 their contention today, that's impermissible under the

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 rules as well.

2 The Belgian reactor pressure vessel issues  
3 that have been repeatedly referred to this morning, I  
4 have not had a chance to exhaustively search their  
5 reply, but I don't see any reference to the Belgian  
6 reactor pressure vessels in any materials that are in  
7 the record of this proceeding.

8 And finally, I would also like to clarify  
9 the question that Judge Arnold asked earlier this  
10 morning about the acknowledged problem of worsening  
11 embrittlement.

12 I would just disagree with that statement  
13 to the extent that there is an acknowledged problem.  
14 Certainly any reactor pressure vessel over time will  
15 experience damage due to neutron irradiation  
16 embrittlement. That's the nature of how this works,  
17 but there is no acknowledged problem.

18 So, for all these reasons the Board should  
19 deny the Petition. Thank you, Your Honors.

20 JUDGE ARNOLD: I'll start this off and  
21 that was my very first question to you. So, thank you  
22 for your anticipating it.

23 I guess a lot of this has to do with the  
24 coupons that are in the reactor vessel. Now, is there  
25 right now in your reactor vessel a coupon which if

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 withdrawn and tested now, would give you information  
2 about the current condition of embrittlement in the  
3 reactor vessel?

4 MR. KUYLER: There are coupons left in the  
5 reactor pressure vessel. I could not speak to exactly  
6 what information those would provide or what level of  
7 embrittlement any of those are at this moment, Your  
8 Honor.

9 JUDGE ARNOLD: Are the coupons located to  
10 try to give - to represent the average fluence, or are  
11 they located in regions of higher fluence so that they  
12 predict future embrittlement?

13 MR. KUYLER: My understanding is, in  
14 general, the coupons are located closer to the core  
15 where they experience a higher fluence than the  
16 reactor pressure vessel walls so that they do give a  
17 prediction when you do take the sample of future  
18 embrittlement, Your Honor.

19 JUDGE ARNOLD: Would you happen to know if  
20 any of the coupons that have been removed and studied  
21 provide information on the current or future  
22 embrittlement of the reactor vessel?

23 MR. KUYLER: Yes, Your Honor. My  
24 understanding is the highest fluence coupon that has  
25 been withdrawn and tested experienced a fluence that

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 is greater than the end-of-life fluence at the end of  
2 the current license life through 60 years of time of  
3 operation.

4 JUDGE ARNOLD: So, you don't have to  
5 extrapolate to get that end-of-life embrittlement.  
6 You have the data.

7 MR. KUYLER: That's correct, Your Honor.

8 JUDGE ARNOLD: Now, my understanding is  
9 that the schedule for removing coupons has to meet  
10 some criteria of Appendix H of 10 CFR 50; is that  
11 correct?

12 MR. KUYLER: That is correct, Your Honor.

13 JUDGE ARNOLD: And does the current coupon  
14 removal schedule meet those requirements?

15 MR. KUYLER: That is my understanding,  
16 Your Honor.

17 JUDGE ARNOLD: And has that schedule been  
18 approved by the NRC?

19 MR. KUYLER: Yes, it was in 2007.

20 JUDGE ARNOLD: Do you have the authority  
21 to remove a coupon whenever you choose, or is it  
22 required that you first get NRC approval?

23 MR. KUYLER: My understanding is that  
24 changes to the coupon removal schedule do require NRC  
25 approval, but I would need to look again at the

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 Appendix H requirements to verify that.

2 JUDGE HIRONS: Are there four capsules  
3 left in the reactor at this point?

4 MR. KUYLER: Yes, Your Honor, there are  
5 four surveillance capsules that could be used to -

6 JUDGE HIRONS: Including the one that will  
7 be removed in 2018 or '19?

8 MR. KUYLER: I believe that's correct,  
9 Your Honor.

10 JUDGE HIRONS: Okay.

11 JUDGE ARNOLD: Do you know if you wanted  
12 to modify that schedule, does that require a license  
13 amendment, or is that just done between you and the  
14 NRC?

15 MR. KUYLER: I do not believe that it  
16 requires a license amendment in every -- every time.

17 JUDGE ARNOLD: If we were to agree with  
18 petitioners that a coupon had to be removed now, would  
19 our decision be basically directing to staff to  
20 approve a change in that schedule?

21 MR. KUYLER: The schedule itself is part  
22 of the current licensing basis of the plant. So, the  
23 notice of hearing is limited to the validity of the  
24 application.

25 So, any question about whether the

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 schedule itself is adequate at this moment or in a few  
2 years' time or during - for the plant is an ongoing  
3 regulatory matter.

4 JUDGE ARNOLD: I'm just trying to figure  
5 out if the Board has the authority to require a coupon  
6 removal at this time.

7 And staff might want to take note and  
8 answer that when it's their chance.

9 MR. KUYLER: I do believe the answer to  
10 that question is no. That would be directing the  
11 staff in the performance of its regulatory duties and  
12 it would also be outside the scope of the noticed  
13 license amendment proceeding.

14 CHAIR SPRITZER: Can I ask one thing on  
15 that?

16 JUDGE ARNOLD: Yes.

17 CHAIR SPRITZER: To follow up on that  
18 point rather than ordering staff or Entergy, I guess,  
19 to test additional capsules, is there any basis, in  
20 your view, under which the Board could find the  
21 existing analysis that was done to be inadequate for  
22 failure to test capsules that could have been tested,  
23 but weren't?

24 MR. KUYLER: Well, the question of the  
25 adequacy of the application is, is it adequate under

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 50.61a?

2 And the regulation does not require  
3 additional capsules to be tested as a prerequisite to  
4 implementation.

5 Petitioners appear to desire that  
6 requirement to be imposed, but they have not  
7 identified anywhere in the regulation that says that.

8 CHAIR SPRITZER: So, in your view, 50.61a  
9 is essentially exhaustive of what is required, the  
10 regulation itself. And we can't look to additional  
11 requirements based on what we think might be  
12 reasonable or desirable.

13 Is that a fair summary of your position?

14 MR. KUYLER: I would agree with that, Your  
15 Honor.

16 CHAIR SPRITZER: Okay.

17 JUDGE ARNOLD: Having to do with the  
18 comparison of the sister plant data, that's the  
19 comparison required by 61a(f)(6)(i). And in there it  
20 makes mention of a plant-specific or an integrated  
21 surveillance program.

22 Now, I understand you use an integrated  
23 surveillance program?

24 MR. KUYLER: May I confer with my  
25 colleague for a moment, Your Honor?

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 JUDGE ARNOLD: Yes.

2 MR. KUYLER: My understanding is that the  
3 surveillance program at Palisades is plant-specific,  
4 but they do use data from other plants as part of that  
5 program.

6 JUDGE ARNOLD: Now, I'm confused because  
7 I would think that plant-specific would mean that you  
8 use coupons only from the actual plant.

9 Can you direct me to anyplace in the rules  
10 where it says a plant-specific comparison can use  
11 outside plant data?

12 MR. KUYLER: The - if you look at the text  
13 of the regulation, and I agree this is an issue that  
14 we haven't briefed, but just looking at the text in  
15 the regulation and assuming that Palisades has a  
16 plant-specific program, it says, the licensee shall  
17 evaluate the results from a plant-specific  
18 surveillance program if the surveillance data satisfy  
19 the criteria described in the paragraphs below.

20 And those talk about similar materials, if  
21 similar materials is available. And, I believe, also  
22 the definition of "surveillance data" encompasses data  
23 form other plants, Your Honor.

24 JUDGE ARNOLD: I'm looking at 10 CFR 50,  
25 Appendix H, reactor vessel material surveillance

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 program requirements.

2 And I read, in an integrated - this is  
3 (c)(1). In an integrated surveillance program, the  
4 represented materials chosen for surveillance for a  
5 reactor are irradiated in one or more reactors that  
6 have similar design and operating features.

7 So, what you are describing to me looks  
8 like an integrated surveillance plan. What's the  
9 difference?

10 MR. KUYLER: May I speak to that?

11 JUDGE ARNOLD: Yes, please do.

12 MR. KUYLER: I'm sorry, Your Honor. This,  
13 again, was an issue that the parties have not briefed  
14 or explored to any extent.

15 May I clarify, Your Honor?

16 JUDGE ARNOLD: Yes.

17 MR. KUYLER: As I understand it, the  
18 plant-specific program for the Palisades plant under  
19 Appendix H uses only data from the Palisades plant.  
20 So, it is a plant-specific program and that Appendix  
21 H program does not consider data from other plants.

22 On the other hand, for the specific tests  
23 or checks that need to be done under 50.61a, we were  
24 required and did use data from other plants.

25 JUDGE ARNOLD: So, would this be the first

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 time then that the NRC has received from you an  
2 evaluation from Palisades - for Palisades that uses  
3 data from other plants? Coupon data.

4 MR. KUYLER: I don't believe that's the  
5 case. I do understand that some of the WCAPs that  
6 have been submitted in the past, and the petitioners  
7 reference, included data from other plants because  
8 these were similar materials.

9 And one of the purposes of these documents  
10 was to collect in one place the surveillance data from  
11 all of the materials that are similar to those used in  
12 the Palisades plant.

13 JUDGE HIRONS: I wanted to ask the  
14 applicant about the coupon total schedule. Now, I  
15 believe there were eight coupons installed originally,  
16 and then two more added.

17 MR. KUYLER: Yes, Your Honor. There were  
18 eight fluence surveillance coupons that were in the  
19 original installation. And then two more were  
20 installed at one point or another.

21 JUDGE HIRONS: After the reactor had been  
22 operating?

23 MR. KUYLER: Yes, I believe that's the  
24 case for those other two.

25 JUDGE HIRONS: So, then up through 1993

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 there were - must have been about six capsules tested;  
2 is that right?

3 So, about every five years?

4 MR. KUYLER: I don't believe that is the  
5 case. I believe that in the - that -

6 JUDGE HIRONS: Because there hasn't been  
7 one tested since '93; isn't that right?

8 MR. KUYLER: I understand the -

9 JUDGE HIRONS: Or 2003, I mean. Excuse  
10 me.

11 MR. KUYLER: My understanding is that the  
12 last one was tested in 2003.

13 JUDGE HIRONS: Yeah. Okay. Well, I guess  
14 my question, and I'd like you to comment on, now we're  
15 talking about a 16-year period before we test the next  
16 one. And that time difference is really at odds with  
17 the first 30 plus years of the reactor.

18 Could you comment on how the schedule got  
19 to this point?

20 MR. KUYLER: I would first observe that  
21 the overall schedule itself is actually not at issue  
22 in this proceeding, but -

23 JUDGE HIRONS: I understand that. I'm  
24 just looking for sort of your feeling or information  
25 about why the difference, the large difference in the

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 time period here.

2 MR. KUYLER: My understanding on this is  
3 that earlier in the plant's life there was a need to  
4 collect data. And at this point in the plant's life,  
5 we have data that runs all the way out through the end  
6 of 60 years of operation.

7 And so, there is less of a need at this  
8 moment to collect more data.

9 JUDGE HIRONS: But the intent is to  
10 collect or take out those other capsules by the end of  
11 life, 60 years.

12 MR. KUYLER: There is one more that is  
13 intended to - scheduled right now to be taken out  
14 before the end of life. And there are two more that  
15 continue to be reserved.

16 JUDGE HIRONS: Okay. Thank you.

17 JUDGE ARNOLD: Let me just go back to why  
18 I was asking about the difference between the  
19 integrated plant and the plant-specific.

20 In the petitioner's reply on Page 5, they  
21 say Gundersen has attested to the lack of proof that  
22 the metals from the various reactor pressure vessels  
23 match.

24 So, it sounds like part of this is a  
25 challenge that they're actually of the same heat. And

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 I don't know - I didn't get that from the original  
2 petitions, but did you understand that that was part  
3 of their challenge.

4 MR. KUYLER: I did not understand that  
5 that was part of their challenge in the original  
6 petition. I do not believe that Dr. Gundersen has  
7 attested that the materials do not match.

8 I believe his declaration says that it is  
9 true that the materials are similar.

10 JUDGE ARNOLD: Okay. And in your  
11 application, is there a sufficient description of the  
12 materials for the staff to determine that they match?

13 MR. KUYLER: Yes, Your Honor. That is my  
14 understanding.

15 JUDGE ARNOLD: Thank you.

16 CHAIR SPRITZER: You were asked about the  
17 future capsule testing in - the one, specific one  
18 currently planned is 2019, as I understand it.

19 Let's assume the license amendment you are  
20 requesting is granted. Testing takes place in 2019  
21 and it shows significantly greater embrittlement than  
22 predicted now under the license application - or  
23 license amendment application that you have submitted.

24 What happens then, if anything?

25 MR. KUYLER: In Section 50.61a, there are

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 requirements for subsequent evaluation. So, if the  
2 capsule were to be tested and were to show  
3 significantly different embrittlement results than  
4 what existed to date, there are reporting requirements  
5 and actions that are required under the regulations.

6 CHAIR SPRITZER: Okay. And now, is that  
7 comparison between the embrittlement demonstrated in  
8 the testing in 2019 and what's present today, or  
9 what's predicted under the model for 2019?

10 I would assume it would be the latter, but  
11 I might be mistaken.

12 MR. KUYLER: The subsequent requirements  
13 are in Section 50.61a(d)(1).

14 CHAIR SPRITZER: Okay.

15 MR. KUYLER: And it refers to whenever  
16 there is a significant change in the projected values  
17 of RT(max-x).

18 CHAIR SPRITZER: Okay. So, there are  
19 things you would have to do. You're not completely  
20 off the hook, so to speak, at this point.

21 Simply because your license amendment is  
22 approved, you still have to look at what future  
23 testing shows in the way of embrittlement and fluence.

24 MR. KUYLER: Absolutely, Your Honor.

25 CHAIR SPRITZER: What if that test -

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 hypothetically, of course, what if that test were done  
2 now instead of in 2019 and it showed greater  
3 embrittlement than predicted?

4           Would that affect the decision on the  
5 license amendment?

6           MR. KUYLER: It theoretically could, Your  
7 Honor. The calculations in 50.61a are required to -  
8 well, let me take it a step back.

9           The surveillance - the calculations out of  
10 the model would still be largely the same because you  
11 use the equations that are in the regulations. The  
12 question would be whether or not the output still  
13 matches the statistical checks.

14           So, if it doesn't, I would have to look  
15 more closely at the regulations as to what would have  
16 to happen at that point.

17           CHAIR SPRITZER: Okay. We're probably  
18 going to be taking - despite our plans to finish by  
19 12:30, we don't appear likely to do that. Maybe you  
20 could take a look over the lunch break and see if you  
21 could -

22           MR. KUYLER: Certainly, Your Honor.

23           CHAIR SPRITZER: -- explain that to me.

24           I think we've been over this, but I just  
25 want to make sure I understand your argument.

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1           With respect to the data from other plants  
2 that was used pursuant to 50.61a(f)(6), I take it it's  
3 your position that beyond the statistical tests used  
4 that are referred to in that subsection, that there  
5 are no other tests either in the regulation itself or  
6 in the applicable staff guidance that applied here.

7           MR. KUYLER: The statistical checks of the  
8 embrittlement outputs are specified in the regulations  
9 and they are required.

10          CHAIR SPRITZER: Okay.

11          MR. KUYLER: There is - if we're talking  
12 about the one sigma 20 percent test, that is specified  
13 in Reg Guide 1.190. It's discussed on Page 3 of that  
14 reg guide, as I think we mentioned in our brief.

15          And that's used to assess uncertainty in  
16 fluence between the measured fluence data from the  
17 capsules, and the fluence model that the applicant  
18 licensee prepares.

19          CHAIR SPRITZER: Those are the capsules at  
20 Palisades, not capsules in other plants, if I'm  
21 understanding your argument.

22          MR. KUYLER: That's correct, Your Honor.

23          And it's a comparison of the fluence data  
24 at a particular location doesn't match what the model  
25 calculates, not - and the uncertainty of it, not the

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 variation across the core, not the variation in terms  
2 of time, whether there was one particular outage or  
3 another, and that's fluence data.

4 Later after you run through the 50.61a  
5 calculation, you get an embrittlement output, the  
6 RT(max-x), and the embrittlement curve. That gets  
7 compared to the embrittlement data from those capsules  
8 under the 50.61a test. And that includes both  
9 Palisades and other materials.

10 CHAIR SPRITZER: I mean, it sounds to me  
11 like the purpose of looking at the data from other  
12 plants is we're looking at samples of the same  
13 material, or very close, that have been exposed to an  
14 equivalent fluence. And we want to see the level of  
15 embrittlement of those samples and compare them to the  
16 level of embrittlement at Palisades and do they seem  
17 to be - or predicted for Palisades and do they seem to  
18 be matching up fairly, or not.

19 Is that - am I understanding that  
20 correctly?

21 MR. KUYLER: Yes, Your Honor.

22 CHAIR SPRITZER: Okay. Just a few more  
23 and then we're going to take a break.

24 On the question of our scope and review,  
25 your position seems to be limited to looking at -

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 solely at the issue of compliance with 50.61a as  
2 written, perhaps as supplemented by relevant staff  
3 guidance, but nothing beyond that.

4 I suppose another argument the  
5 petitioners, I think, have made or at least I make is  
6 that our authority is broader than that and extends to  
7 the question of whether the license amendment is  
8 consistent with the requirement of providing  
9 reasonable assurance of public health and safety.

10 Is there any merit to that position?

11 MR. KUYLER: The rule itself represents  
12 the Commission's determination of what is the  
13 reasonable assurance of public health and safety.

14 So, because of that, the scope of this  
15 license amendment review is whether or not it complies  
16 with the rule. And if it does, then there is  
17 reasonable assurance to public health and safety, Your  
18 Honor.

19 CHAIR SPRITZER: Okay. I think you said  
20 you were going to get back to us after the break on  
21 the question whether a license amendment is required  
22 to change the sampling schedule.

23 MR. KUYLER: Yes, Your Honor.

24 CHAIR SPRITZER: So, I won't pester you  
25 with that question right now.

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 I understand your position about capsule  
2 A-60 and it not really being relevant to this case,  
3 but I'd still like to know was it ever pulled from the  
4 reactor and tested for embrittlement at any point, or  
5 is it still in the reactor?

6 MR. KUYLER: It was pulled from the  
7 reactor. It is currently in the spent fuel pool, to  
8 my understanding.

9 What happened was there was an outage when  
10 it was scheduled to be removed and they had difficulty  
11 removing it. There were problems with that. So, they  
12 had to leave it in for another cycle.

13 And when eventually they did remove it, it  
14 had experienced more irradiation than it would have  
15 experienced even beyond 80 years of plant - than the  
16 reactor pressure vessel would have experienced even  
17 beyond 80 years of plant operation.

18 And so, by the time they finally got it  
19 out, as the NRC determined 30 years ago, it would  
20 provide no useful value at least at this point.

21 CHAIR SPRITZER: I mean, I guess my  
22 question then is, the extra radiation or excessive  
23 radiation is received, but that's still coming from  
24 within the reactor, isn't it?

25 MR. KUYLER: That's correct, Your Honor.

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 It's because of the position of where this capsule is.  
2 It's much closer to the core than the reactor pressure  
3 vessel itself.

4 And it was - if I'm not mistaken, it was  
5 a supplemental - it wasn't. I'm sorry, Your Honor.

6 CHAIR SPRITZER: I mean, it sort of sounds  
7 - the justification sort of sounds like, you know, it  
8 got so much radiation that it wasn't useful in  
9 analyzing embrittlement.

10 But my, you know, my understanding being  
11 that of a lawyer, not a scientist, is that's the whole  
12 purpose of the capsule is to measure the response of  
13 the material in the capsule to radiation.

14 I guess your argument is, if I understand  
15 it is, well, this was just not a realistic, you know,  
16 sample of the radiation you would expect the reactor  
17 to - the capsule to be exposed to over the history of  
18 the reactor even going out to 60 years.

19 Am I understanding that correctly?

20 MR. KUYLER: Yes, Your Honor.

21 I would preface this again by saying our  
22 primary objection to this issue is that this was a  
23 licensing decision that was made 30 years ago in the  
24 1984 safety evaluation. So, it's part of the current  
25 licensing basis of the plant and not subject to

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 challenge here.

2           However, the capsule itself was embrittled  
3 beyond the point at which the reactor pressure vessel  
4 at least at this point in its licensed life would be  
5 expected to experience. So, it wouldn't provide  
6 useful data for the fluence model that is being used  
7 at this point.

8           CHAIR SPRITZER: You said the material is  
9 embrittled. I think you probably meant irradiated.

10           MR. KUYLER: Irradiated, Your Honor.

11           CHAIR SPRITZER: Okay. Couldn't that  
12 data, though, still tell us something about  
13 embrittlement trends?

14           MR. KUYLER: I would need to confer with  
15 my expert to talk about that.

16           CHAIR SPRITZER: I can certainly  
17 sympathize with the position of a lawyer trying to  
18 understand this.

19           Let me make sure I understand. Was it  
20 ever tested for embrittlement as opposed to the level  
21 of irradiation? That's this Capsule A-60.

22           MR. KUYLER: My understanding is that it  
23 was not, Your Honor. That it was simply removed from  
24 the reactor pressure vessel and has been in storage in  
25 the spent fuel pool since then.

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 CHAIR SPRITZER: And the reason I'm  
2 asking, and maybe you can comment on this is, in the  
3 definition of "surveillance data," this is in  
4 50.61a(10), the Definitions section, surveillance data  
5 means any data that demonstrates the embrittlement  
6 trends for the belt line materials including, but not  
7 limited to, surveillance programs at other plants, et  
8 cetera.

9 Sounds to me like surveillance data could  
10 include testing done even if it was done outside the  
11 regular authorized surveillance program.

12 Do you have any comment on that?

13 MR. KUYLER: The capsule itself has not  
14 been tested. So, there is no data available. And  
15 under the Appendix H program, we're not required to  
16 test it and collect that data. So, there's no data  
17 that would meet the definition of the regulations.

18 CHAIR SPRITZER: Okay. I think I  
19 understand your position.

20 Did you have anything else?

21 JUDGE ARNOLD: No.

22 CHAIR SPRITZER: Let me just quickly  
23 review my notes and we'll take a break at that point.

24 (Pause.)

25 CHAIR SPRITZER: I don't think I have

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 anything further. As I said, we're now at 12:30 and  
2 we haven't gotten to the staff.

3 So, rather than prolong this and make  
4 people wait for perhaps another hour or so to finish,  
5 why don't we take a break now, come back at 1:30, an  
6 hour from now.

7 There is a cafeteria downstairs for those  
8 who may not be familiar with our building. It's open  
9 to everybody. So, let's try and be back here at 1:30  
10 and hopefully we can conclude within another hour.

11 Is that realistic? No more than another  
12 hour once we reconvene. Thank you.

13 (Whereupon, the proceedings went off the  
14 record at 12:28 p.m. for a lunch recess and went back  
15 on the record at 1:32 p.m.)

16

1 A F T E R N O O N S E S S I O N

2 1:32 p.m.

3 CHAIR SPRITZER: We're ready to go back on  
4 the record, Mr. Reporter. Thank you.

5 Before we - we'll go back and we have a  
6 few things to take up with Entergy. And then we'll  
7 move on to the staff.

8 Before we do that, over the lunch break we  
9 discussed this issue that's been raised. I guess it  
10 was raised by the petitioners in their reply on Page  
11 5 where they say that 50.61a(f)(6)(i) requires that  
12 the surveillance material must be a heat-specific  
13 match for one of the materials for which RT(max-x) is  
14 being calculated.

15 And then they say Gundersen has attested  
16 to the lack of proof that the metals from the various  
17 RPVs, reactor pressure vessels, match.

18 We would allow the staff and Entergy to  
19 file a brief since this was raised in the reply and  
20 you haven't had an opportunity to address it. I don't  
21 believe it was raised in the original petition.

22 If you would like, you're not required to,  
23 but if you would like to file a brief response to that  
24 specific issue, no other issues unless we mention them  
25 later today, I would think - would 10 days be adequate

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 to file anything further on that for staff and  
2 Entergy?

3 MR. TURK: Your Honor, I'm Sherwin Turk.

4 May we ask when the transcript will be  
5 available?

6 CHAIR SPRITZER: Well, that's a good  
7 question.

8 Normally it's available within a couple  
9 days after we finish here today. Usually about three  
10 days.

11 MR. TURK: May we time it to when that -

12 CHAIR SPRITZER: Yeah, that would be fine.  
13 Ten days from when the transcript becomes available.

14 Does that work for everybody?

15 MR. KUYLER: Yes, Your Honor.

16 CHAIR SPRITZER: Okay. Now, let's see.  
17 We had some matters that Entergy was going to get back  
18 to us on after discussing them over the break.

19 MR. KUYLER: Yes, Your Honor. And just to  
20 make sure we have the questions that you were looking  
21 at, the first one that we had was, is a license  
22 amendment required for changes to the surveillance  
23 capsule schedule under Appendix H.

24 The answer to that is in general, no.  
25 Under the requirements of Appendix H, that capsule

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 schedule needs to be reviewed and approved by the NRC  
2 staff, but that does not need to be in the form of a  
3 license amendment.

4 CHAIR SPRITZER: Okay.

5 MR. KUYLER: Second, would the capsule  
6 that was discarded from the program in the 1980s,  
7 would that provide useful data?

8 And the answer is it could provide  
9 embrittlement data for the Palisades reactor pressure  
10 vessel materials.

11 It was unable to be removed in the early  
12 1980s. But as I understand, it was eventually removed  
13 in the mid-1990s.

14 And by that point, it had experienced  
15 fluence far beyond what would have - what the reactor  
16 pressure vessel would have experienced at the end of  
17 80 years of operation so that any data, embrittlement  
18 data that could have come out of that capsule would  
19 just not be useful. It would be beyond the curves  
20 that consider the plant's licensed life.

21 It could provide theoretically research  
22 data. That is possible, but it wouldn't be relevant  
23 to the licensing basis for the Palisades plant.

24 CHAIR SPRITZER: I think one of our  
25 questions earlier was to the effect that couldn't it

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 provide data on embrittlement trends even if those  
2 trends extend out beyond the 60-year period of  
3 operation?

4 I mean, if you have a data point further  
5 out, that still could provide some information on  
6 trends, I would think, but let me ask you the  
7 question.

8 MR. KUYLER: Let me confer one more moment  
9 with my expert.

10 (Pause.)

11 MR. KUYLER: It could provide  
12 embrittlement data that could possibly speak to  
13 trends, but it depends on the model. And we would  
14 need to look more closely at the fluence model that  
15 Westinghouse has prepared in order to answer that  
16 question, Your Honor.

17 JUDGE HIRONS: I just wanted to clarify  
18 that there was no testing of this capsule then?

19 MR. KUYLER: That's correct, Your Honor.

20 CHAIR SPRITZER: For embrittlement, for  
21 fluence, or both?

22 MR. KUYLER: If I may for a moment, Your  
23 Honor?

24 CHAIR SPRITZER: Absolutely.

25 MR. KUYLER: It's never been tested for

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 any purposes, Your Honor.

2 CHAIR SPRITZER: Okay. The number - I  
3 seem to remember somewhere there was a figure for  
4 fluence for the capsule given.

5 Was that then based on a calculation and  
6 not based on actual analysis of the contents of the  
7 capsule?

8 MR. KUYLER: I would have to look back at  
9 the documents to answer that question, Your Honor.

10 CHAIR SPRITZER: Okay. Can we do that?  
11 I can try and help you, I think.

12 On Page 19 of the Petition, there may be  
13 other references, but this is the one I had in mind,  
14 that single-spaced quote in the middle beginning "As  
15 of October 31, 1982, the licensee indicates that  
16 Capsule A-60 had accumulated approximately 8.7 x 10 to  
17 the 18th neutron fluence."

18 MR. KUYLER: My understanding of that,  
19 Your Honor, is that is simply an estimate. That did  
20 not come from the testing of the fluence of that  
21 specific capsule.

22 CHAIR SPRITZER: All right.

23 MR. KUYLER: There was a third question  
24 that I believe Your Honors asked us to look into. I  
25 think the question was, what would happen if there was

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 new data available and it led to a situation where one  
2 or more of the statistical checks in 50.61a was not  
3 met.

4 CHAIR SPRITZER: Uh-huh.

5 MR. KUYLER: In that case, 50.61a(f)(6)  
6 specifically addresses further actions that need to be  
7 taken if those statistical checks are not met.

8 And there's basically additional analysis  
9 that needs to be done in order to demonstrate the  
10 validity of the model.

11 CHAIR SPRITZER: Okay.

12 MR. KUYLER: But that's not the situation  
13 we're in, because we did pass the checks.

14 CHAIR SPRITZER: Right. Just returning  
15 one last point on the capsule, is there any impediment  
16 now to -- if Entergy were to decide let's go check  
17 this capsule now, not saying you're required to do it,  
18 but let's just say somebody decided they wanted to do  
19 that.

20 Is there some kind of physical impediment  
21 to doing that given that it's in the spent fuel pool,  
22 or can it be removed and tested if you thought that  
23 was - would be helpful?

24 MR. KUYLER: My understanding is that it  
25 would be physically possible to test that capsule.

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 Yes, Your Honor.

2 CHAIR SPRITZER: Okay. Let me check over  
3 my notes.

4 Do either of my colleagues have any  
5 further questions for Entergy before we move on to the  
6 staff?

7 JUDGE HIRONS: Is there a certain time  
8 period after the capsule is removed - I mean,  
9 obviously it's radioactive - before it can be tested  
10 if you choose to do so?

11 MR. KUYLER: To clarify, Your Honor,  
12 you're talking about a time period after it is removed  
13 -

14 JUDGE HIRONS: Yes.

15 MR. KUYLER: - until the time it is  
16 actually tested?

17 JUDGE HIRONS: Right.

18 MR. KUYLER: May I confer again?

19 JUDGE HIRONS: Please.

20 (Pause.)

21 MR. KUYLER: I am not aware of any  
22 technical reason why you would need to delay any  
23 particular period of time.

24 I do know that once - if a capsule is  
25 removed as part of the program, then there is a one-

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 year deadline from the time you remove it until it has  
2 to be -

3 JUDGE HIRONS: Okay. Thank you.

4 MR. KUYLER: -- reported to the NRC.

5 CHAIR SPRITZER: Now, with respect to the  
6 capsules at the - the so-called surveillance data, the  
7 capsules from other plants that I take it were  
8 removed, tested and that data was then used for the  
9 surveillance data for Entergy's license amendment, is  
10 there an error - I would think there is some degree of  
11 error in the data you obtained from those capsules, or  
12 any capsule when it's tested.

13 Am I correct about that? Some degree of  
14 uncertainty, in other words. No measurement is  
15 perfect.

16 MR. KUYLER: I would agree that no  
17 measurement is perfect. That's correct, Your Honor.

18 CHAIR SPRITZER: Do you know how the issue  
19 of uncertainty in the surveillance data assuming there  
20 is some, do you know how that's factored into the  
21 analysis under 50.61a(f)(6)?

22 MR. KUYLER: I do not, but I would also  
23 just bring us back to the idea that when you're  
24 looking at uncertainty under that one sigma test  
25 that's in the Reg Guide, that's uncertainty in

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 fluence.

2 CHAIR SPRITZER: No, I understand that.  
3 I understand that, but we're not talking about -  
4 that's not - I understand your position, but that's no  
5 applicable here. I'm not suggesting it is.

6 All I'm asking is, I would think as a non-  
7 expert, of course, that there is some uncertainty in  
8 measurement data, both the dosimeter and the material  
9 that's in the capsule that you test for how it's  
10 responded to neutron fluence and there would be some  
11 uncertainty in those measurements as well.

12 I'm just curious as to how - if that  
13 exists. And if it does, how is it factored into the  
14 analysis?

15 But if you're not sure of the answer,  
16 maybe the staff can help us with that.

17 MR. KUYLER: May I confer with my expert?

18 CHAIR SPRITZER: Certainly.

19 (Pause.)

20 MR. KUYLER: Our understanding is that  
21 there is some uncertainty, but that is taken into  
22 account in the statistical checks.

23 But also just to keep in mind, at the  
24 front end we're talking about fluence which is one of  
25 the two types of data that comes out of these

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 capsules.

2 CHAIR SPRITZER: Right.

3 MR. KUYLER: At the end in the statistical  
4 checks under 50.61a, we're talking about embrittlement  
5 which is the other set of data.

6 But as I understand it, any uncertainty in  
7 that embrittlement data is accounted for in the  
8 statistical checks.

9 CHAIR SPRITZER: Okay. All right. Why  
10 don't we move on and hear from the staff? We will  
11 give you ten minutes for an opening statement if you  
12 want to make one, and then we'll ask you some  
13 questions.

14 MR. LINDELL: I will begin with an opening  
15 statement. May it please the Board, I'm Joseph  
16 Lindell representing the NRC staff.

17 The NRC regulations are designed to  
18 prevent a pressurized thermal shock event from  
19 occurring. There are two provisions in our rules that  
20 are concerned with pressurized thermal shock and  
21 that's 10 CFR 50.61 and 10 CFR 50.61a.

22 A licensee can comply with either one.  
23 And what Entergy has done here is applied to use  
24 50.61a in lieu of 50.61.

25 Both rules rely on reference temperatures.

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 So, they'll calculate how the reference temperature of  
2 the steel relates to how much the steel will bend  
3 before failing.

4 So, the reference temperature of the steel  
5 has to remain within certain limits to comply with the  
6 rules. It can't get too high.

7 If it were to get too high, that's the  
8 concern with pressurized thermal shock. There's a  
9 potential of colder water floods the reactor, and the  
10 reactor vessel could fail in a more brittle rather  
11 than a ductile fashion.

12 In this case, Entergy applied to use  
13 50.61a and its reference temperature limits instead of  
14 the reference temperature limits in 50.61.

15 50.61a lays out how an applicant goes  
16 about, you know, using those, the reference  
17 temperature limits that it provides.

18 And though we've been over this sort of in  
19 different ways, I just want to - hopefully it will be  
20 helpful to the Board just to lay out clearly what  
21 Entergy is required to submit under the regulations in  
22 its license amendment request.

23 So, the first thing they do is they submit  
24 to the NRC projected reference temperatures for the  
25 reactor vessel belt line materials. And they do this

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 using the equations that are laid out in the rule.

2 The second thing is that they verify the  
3 calculations, match the embrittlement model in the  
4 rule by considering data from available surveillance  
5 capsules already withdrawn from the Palisades reactor  
6 and capsules withdrawn made out of similar materials  
7 from other reactors. And that's what the rule  
8 requires.

9 And then 50.61a then provides statistical  
10 tests that the applicant must perform using the data  
11 from these capsules.

12 The next thing the applicant must do is  
13 must conduct an inspection of the reactor vessel belt  
14 line for flaws to see if the population of flaws in  
15 the vessel represents well the number and size of the  
16 flaws on which the reference temperature limits of  
17 50.61a were based.

18 And then, finally, the applicant must  
19 compare its projected reference temperatures to those  
20 in Table 1 of 50.61a to see if it meets those limits.

21 Then, you know, if those limits are not  
22 met, there are other provisions in 50.61a for how an  
23 applicant will deal with that.

24 So, after outlining what Entergy was  
25 required to submit in its application, a hearing on

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 the request for the amendment is limited to those  
2 matters.

3 The notice in the Federal Register  
4 explicitly limits the scope of any hearing to the  
5 amendment at issue.

6 A petitioner must challenge what the  
7 licensee wants to change. For example, one could, in  
8 theory, have a contention about whether Entergy  
9 submitted the required information, or whether  
10 Entergy's analysis of the data in the application is  
11 correct.

12 However, the Board cannot hold a hearing  
13 on whether the rule should have required something  
14 else, or whether Entergy should make different  
15 demonstrations before using 50.61a than the  
16 demonstrations that the rule requires.

17 The Commission has already determined that  
18 if a licensee demonstrates that it meets the  
19 requirements of 50.61a and the staff, of course,  
20 reviews that amendment and approves it, which in this  
21 case the staff is under review, it's not a done deal  
22 yet, the staff still has to approve, but once they  
23 meet those requirements they can use 50.61a. And  
24 absent a waiver of the rule, the petitioner can't  
25 challenge the actual provisions of the rule.

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1           None of the petitioner's arguments  
2 challenge Entergy's application. Rather, petitioners  
3 challenge the requirements of 10 CFR 50.61a, they  
4 challenge matters related to other licensing actions  
5 and prior licensee and staff actions.

6           They don't challenge Entergy's compliance  
7 with 50.61a or actually dispute any element of  
8 Entergy's submission.

9           The petitioners have not submitted an  
10 admissible contention, and the Board should deny the  
11 petition to intervene and request for a hearing.

12           I'd like to in the remaining time that I  
13 have, I'd like to just address some of the matters  
14 that have been raised here by the petitioners and  
15 Entergy. And of course I'm open to further questions  
16 from the Board on these matters as well.

17           Petitioners talk about how this is a form-  
18 fitting regulation that's sort of just designed for  
19 Palisades to somehow escape certain regulatory limits  
20 that the Commission has set and this is not the case.

21           This is a regulation that is - can be used  
22 in lieu of 50.61. And any licensee that meets the  
23 criteria can apply. And if their application meets  
24 the further criteria, you know, it will be approved by  
25 the staff. But just to reiterate, that approval is

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 not guaranteed. It's something that the staff reviews  
2 and looks into.

3 With regard to the in-service inspection,  
4 the petitioners didn't raise anything concerning the  
5 in-service inspection in their petition.

6 At argument here, they mentioned that  
7 there was none that was done since the '90s or the  
8 early 2000s, and this is not the case.

9 I believe counsel for Entergy already  
10 explained this, but there was an inspection in 2014 to  
11 see if they comply with that provision, you know, to  
12 comply with that provision, it requires them to do  
13 this inspection to look for the flaws.

14 And I believe what the application says is  
15 the criteria for how to conduct that inspection is  
16 based on certain documents issued in the early 2000s,  
17 but the inspection was done to comply with the rule.

18 Now, with regard to sister plant data, and  
19 this is something that we've dwelt on considerably  
20 here, but with the Board's permission I'd like to just  
21 go through the rule and just try to clarify what  
22 exactly is required and what is not required.

23 If we look to the Definition section in  
24 50.61a, and that's 50.61a -- Subsection A(10), it  
25 defines surveillance data. And the definition of

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 surveillance data includes surveillance programs at  
2 other plants. So, that meaning of surveillance data  
3 does encompass data from other plants.

4 And if we look at the provision of the  
5 regulations where it talks about the licensee doing  
6 the consistency checks, and that's 50.61a(f)(6)(i),  
7 there it says that the licensee shall evaluate the  
8 results from a plant-specific or integrated  
9 surveillance program if the surveillance data satisfy  
10 the criteria described in the further paragraph.

11 So, there's that word "surveillance data."  
12 And what it's saying is this surveillance data, as we  
13 saw before, can include data from Palisades, but it  
14 can also include data from sister plants. Any plant-  
15 specific or integrated surveillance program, meaning  
16 it could be a plant-specific program at Palisades, it  
17 could be a plant-specific program elsewhere.

18 But either way if there's surveillance  
19 data that matches the further criteria, that  
20 surveillance data has to be considered and you run the  
21 surveillance checks.

22 And the two requirements that are then set  
23 out for when that surveillance data either from  
24 Palisades or other plants is considered, is it has to  
25 be a heat-specific match which means that the metal

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 has to be made of the same materials for which the  
2 reference temperature is being calculated. So, that's  
3 number one.

4 And then number two, there has to be three  
5 or more surveillance data points measured at three  
6 different neutron fluences.

7 So, once those two requirements are met,  
8 then whether that surveillance data is from Palisades  
9 or from a sister plant, that licensee would be  
10 required to submit that as part of the application and  
11 run the - not just submit it, but run the statistical  
12 checks on that material.

13 And it doesn't matter whether a difference  
14 is in the operational characteristics of the plant as  
15 in regard to the cores and the designs and the  
16 manufacturers, but rather they still have to run the  
17 statistical checks if the materials match.

18 And, in fact, Dr. Gundersen as we've been  
19 through, has attested to this. He said that while the  
20 material is, you know, the materials between the  
21 reactors are similar, but the operational  
22 characteristics are different, but our understanding  
23 is the rule would still require them - require them to  
24 submit that data.

25 There was also something -

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 CHAIR SPRITZER: If I could just briefly  
2 interrupt?

3 MR. LINDELL: Yes. Sure.

4 CHAIR SPRITZER: So, it's your position  
5 that the operational characteristics of the sister  
6 plants is really a red herring, it's an irrelevant  
7 issue?

8 MR. LINDELL: For the purpose of doing the  
9 surveillance checks, yes, because that data including,  
10 you know, the different fluences that might be  
11 experienced at different plants is something that's  
12 accounted for in the checks themselves.

13 CHAIR SPRITZER: Okay.

14 MR. LINDELL: In the equations for the  
15 checks themselves.

16 I may be - I don't know if I'm going over  
17 my time or not. So, feel free to interrupt with  
18 questions, but there are just a couple more points I  
19 wanted to raise with regard to sister plant data.

20 I think something was brought up with  
21 regard to the prior use of sister plant data whether  
22 this has indeed been used before.

23 And the answer to that is, yes, that in  
24 prior submittals related to when Palisades was  
25 projected to exceed the screening criteria for

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 reference temperatures in 50.61, they did also submit  
2 sister plant data from those similar material matches  
3 at other reactors in looking at that. So, this is not  
4 the first time that that data has been submitted and  
5 utilized by the NRC in making determinations.

6 And one other matter is when we talk about  
7 the statistical checks and comparing the - and  
8 comparing the data between the different plants, we're  
9 not comparing the fluence of the surveillance capsules  
10 from the other reactors to the fluence from - the data  
11 from, you know, to the embrittlement trend at  
12 Palisades. Rather, we're comparing the embrittlement  
13 trends between the two plants.

14 If you have the same material, then what  
15 you want to see is does the reference temperature  
16 increase at the same rate with embrittlement. Because  
17 the fluence between that, between those two plants,  
18 then they have a different expected end-of-life  
19 fluence, capsules may be, you know, at different  
20 fluence levels, what you're really looking at is do we  
21 see if you plot those points on a curve, do we see the  
22 reference temperatures increasing at the same rate  
23 with the embrittlement.

24 And with that, I can turn it over for  
25 further questions.

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 CHAIR SPRITZER: Just on the issue of  
2 surveillance data, does the staff interpret that as  
3 limited to data collected pursuant to the plant's  
4 surveillance program?

5 If it's coming from the plant that is  
6 applying for the license amendment, in this case,  
7 Palisades, does that include only data collected  
8 pursuant to the surveillance program, or would it  
9 include other data on embrittlement trends that the  
10 plant may have collected even if it wasn't pursuant to  
11 the surveillance program?

12 MR. LINDELL: I'm not sure exactly what  
13 other data you're referring to.

14 CHAIR SPRITZER: Well, as a specific  
15 hypothetical suppose -

16 MR. LINDELL: Okay.

17 CHAIR SPRITZER: I know this is - Entergy  
18 tells us this is not the case, but suppose Capsule A-  
19 60 while it had been excluded from the surveillance  
20 program, had at some later date been tested and data  
21 on embrittlement trends had been obtained from that  
22 capsule.

23 Would that be surveillance data?

24 MR. LINDELL: Well, it is - it's not  
25 surveillance data - well, if it had been tested, then,

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1       yeah, that would indeed be surveillance data.

2                   CHAIR SPRITZER:     Even though it was  
3       outside their planned surveillance program at the time  
4       they actually did -

5                   MR. LINDELL:     Yes, that would still be  
6       surveillance data then under what the rule provides  
7       for if it was tested, but Capsule A-60 was not tested.  
8       So, we don't have that data.

9                   CHAIR SPRITZER:     Okay.

10                  JUDGE HIRONS:     Could you comment on the  
11       impurities in some of the steel, what effect that has  
12       on the embrittlement?

13                  Because I believe there can be - there are  
14       different compositions of steel particularly if you're  
15       comparing with other plants.

16                  MR. LINDELL:     Let me consult with my  
17       expert for a moment about that.

18                  JUDGE HIRONS:     Sure.

19                  (Pause.)

20                  MR. LINDELL:     The differences between the  
21       impurities in the different metals is part of what's  
22       accounted for in the equations in the rule,  
23       essentially. That the embrittlement trends that are  
24       predicted by the equations in the rule do account for  
25       those differences between the different materials and

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 their makeup.

2 JUDGE HIRONS: Okay. Thank you.

3 (Pause.)

4 CHAIR SPRITZER: Let me ask some - to some  
5 extent these overlap with questions I asked of  
6 Entergy, but I want to make sure I'm getting the  
7 staff's position as well.

8 With respect to future capsule testing,  
9 how does the staff understand - what does the staff  
10 understand the effect of future capsule testing to be  
11 assuming the license amendment is granted?

12 In particular, suppose the testing that  
13 takes place in 2019 of the surveillance capsule shows  
14 significantly greater embrittlement or greater  
15 embrittlement trend than predicted now.

16 What happens then, if anything?

17 MR. LINDELL: If there are - are you  
18 asking if the capsule data demonstrates that Palisades  
19 will exceed the screening criteria that are listed in  
20 50.61a?

21 CHAIR SPRITZER: If it demonstrates a  
22 different embrittlement trend that would lead, yes, to  
23 exceeding the screening criteria at some point.

24 MR. LINDELL: So, then we go into  
25 50.61a(d) which provides for further testing and

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 actions to deal with that. And some of those things  
2 are some of the same things that were required under  
3 the old rule under 50.61 such as flux reduction  
4 programs, possibly even annealing the vessel and  
5 things of that sort, or, in general, making sure that  
6 they get approval from the director of NRR for  
7 further actions that they would take.

8 CHAIR SPRITZER: What criteria does the  
9 staff have, or does it have any, for determining  
10 whether what we call surveillance data, the data from  
11 other plants, can appropriately be used under  
12 50.61a(f)(6)? That is, is there anything beyond the  
13 statistical tests, or is that the total universe of  
14 criteria we need to be concerned with?

15 MR. LINDELL: That's what 50.61a lays out  
16 for the uses of the surveillance data that perform the  
17 statistical tests to see if the embrittlement trend  
18 matches the embrittlement trend that's predicted  
19 through the use of the equations in the rule.

20 CHAIR SPRITZER: I was asking Entergy  
21 about whether there were any way of accounting for the  
22 uncertainty in the - whatever uncertainty may exist in  
23 the capsule data. And they said that's basically  
24 taken into account in the statistical tests in the  
25 regulation.

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 Does the staff agree with that?

2 MR. LINDELL: The staff would agree with  
3 that, yes.

4 CHAIR SPRITZER: Okay. I wanted to ask  
5 about in your response to the petition, you talk about  
6 starting with 50.61 and that data over a period of  
7 time were gathered from a number of reactors or that  
8 showed that the 50.61 was overly conservative; is that  
9 correct?

10 MR. LINDELL: The term "overly  
11 conservative" is indeed used in the - in the Statement  
12 of Considerations for the new rule.

13 Just to expand upon that a little bit,  
14 what we really mean by that is that we've done a lot  
15 more testing since the initial rule was promulgated in  
16 1985.

17 So, we have more actual physical data from  
18 a range of plants. And we also have better computer  
19 modeling. We've been able to simulate a pressurized  
20 thermal shock event more accurately using the computer  
21 that wasn't available when the original rule came out.

22 So, based on that, what we found is that  
23 different reference temperatures could be used to  
24 provide the same level of safety.

25 JUDGE HIRONS: So, this was looking at

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 data from over some period of time for all the plant  
2 data that you had available?

3 MR. LINDELL: Yeah, this is looking at  
4 plant data for a period of 28 years, approximately.

5 JUDGE HIRONS: Okay. Thank you.

6 CHAIR SPRITZER: You had mentioned that  
7 staff has not finished its work yet on the license  
8 amendment.

9 Can you tell us what work remains to be  
10 done? And to the extent you can, what the schedule  
11 is?

12 MR. LINDELL: Well, what I know is that  
13 the staff has - is going through its normal process  
14 for approving this - or approving or disapproving this  
15 application. So, they've put out a request for  
16 additional information, which the licensee has  
17 responded to.

18 And then there were additional requests  
19 for - there was another round of requests for  
20 additional information sent, and I believe that's  
21 where we are in the review process right now.

22 CHAIR SPRITZER: So, was there any target  
23 date for the SER? There is a - you will prepare a  
24 Safety Evaluation Report? Am I correct on that?

25 MR. LINDELL: Yes. As per our process for

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 a license amendment, we will prepare a safety  
2 evaluation.

3 I don't believe there's any particular  
4 target date for that right now.

5 CHAIR SPRITZER: Are we talking 2015?  
6 2016?

7 MR. LINDELL: I'd have to consult to make  
8 sure I'm getting our -

9 CHAIR SPRITZER: Okay.

10 MR. LINDELL: -- you know, our process  
11 exactly right.

12 CHAIR SPRITZER: Do you have - is your  
13 expert here today able to give you that, or do you  
14 have to check with others?

15 If you do, you can just -

16 MR. LINDELL: We do have people back there  
17 who will be able to give us that information.

18 CHAIR SPRITZER: Okay. While he's  
19 checking, why don't we - I don't know if there are any  
20 other questions.

21 I mean, if we were to grant an evidentiary  
22 hearing on this case, I assume it would be the staff's  
23 position that it should wait until the SER is actually  
24 issued, which seems to be our normal practice, but I  
25 haven't had this come up in a license amendment case.

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 MR. LINDELL: Your Honor, there's no  
2 requirement that a safety evaluation is waited for to  
3 hold that evidentiary hearing, but that is what we  
4 prefer. We would prefer to wait until the safety  
5 evaluation was issued.

6 CHAIR SPRITZER: I seem to remember, and  
7 maybe I'm misremembering, that Entergy wanted an  
8 answer or wanted to have the license amendment issue  
9 resolved by June or July of this year.

10 Am I off base on that, or is that correct?

11 MR. KUYLER: I do believe, Your Honor,  
12 that we said in the license amendment request that it  
13 be - we asked that it be approved within a year.

14 CHAIR SPRITZER: Okay. What's Entergy's,  
15 I mean, again, if hypothetically we granted the  
16 request for a hearing, what would Entergy's view be as  
17 to whether we should wait for the SER?

18 MR. KUYLER: As I understand the model  
19 milestones in Part 2, typically the hearing would be  
20 held after the staff's position is finalized in the  
21 safety evaluation.

22 CHAIR SPRITZER: Certainly would seem to  
23 make more sense to do it that way. It's kind of hard  
24 to know the staff's position if we haven't formulated  
25 it yet.

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 MR. KUYLER: That's correct, Your Honor.

2 CHAIR SPRITZER: Okay. Did you have some  
3 more information for us on the schedule?

4 MR. ROTH: Thank you, Your Honor. This is  
5 David Roth for the staff. Concerning the schedule,  
6 the staff are aware of the request for a one-year  
7 turnaround time for it. That year has not yet expired  
8 and the staff have not issued a final decision on that  
9 yet.

10 I will add with respect to a previous  
11 question you had regarding measurement uncertainties,  
12 the tests that are being done also include, as you  
13 correctly stated, measurement uncertainties.

14 The standards for doing the tests for  
15 actually sampling little v notch bars are present in  
16 ASTM E-23. And that's American Society of Testing and  
17 Material standard. And that's one that's used by the  
18 plant pursuant to its program.

19 So, the brief answer is that measurement  
20 uncertainties are taken into account and there's a  
21 standard that addresses those.

22 CHAIR SPRITZER: Okay. All right. We  
23 will give you five additional minutes, plus time for  
24 any additional questions we might have. That is for  
25 the petitioners.

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 MR. LODGE: Thank you. There are several

2 -

3 JUDGE ARNOLD: Microphone, please.

4 MR. LODGE: Very good. There are some  
5 housekeeping matters that I would like to address,  
6 please.

7 One of them is that, I apologize, my  
8 references to the Belgian report. The petitioners  
9 brought it up in the EMA petition on March 9th. It  
10 was not mentioned in the reply of January 20th or the  
11 December 1st filing. That's because the information  
12 only became available in February of this year.

13 And I would - to the extent it may be  
14 necessary for the Board to decide the issues before  
15 today, I would request that the Board take official or  
16 administrative notice of our filing of March 9th.

17 I understand there is no answer yet. I'm  
18 sure that by the time this board is deliberating that,  
19 that there probably will be, because the 25-day limit  
20 is coming up soon. Probably next week.

21 CHAIR SPRITZER: I'm not sure I  
22 understand. What is it you want us to take -

23 MR. LODGE: Well, there's mention - we  
24 attached to the March 9th filing the report that I had  
25 made reference to this morning.

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 CHAIR SPRITZER: Uh-huh.

2 MR. LODGE: And had made several  
3 references to it. Just -

4 CHAIR SPRITZER: And you want us to take  
5 notice of that report in this case as well?

6 MR. LODGE: Yes.

7 CHAIR SPRITZER: Is that what you're  
8 asking for?

9 MR. LODGE: Correct.

10 CHAIR SPRITZER: All right.

11 MR. LODGE: To the extent that we were  
12 relying on it as part of our arguments.

13 Secondly, Mr. Spritzer, you had asked  
14 about whether Arnie Gundersen was referring to Table  
15 2.2-5 or -4. It was the fluency table, which is 2.2-  
16 5. I spoke with him over the lunch break. So, to  
17 answer your question, you picked up that typographical  
18 mistake.

19 The 2014 ISI, we don't have much  
20 information about it. Just learned about it the first  
21 time today.

22 Thus, neither we nor the Board understands  
23 whether it was a full or partial or superficial type  
24 of investigation into the status of the welds of the  
25 RPV.

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1           And I would point out that I believe there  
2           is a pending request from Entergy to the NRC for  
3           approval to conduct an ISI in December 2015.

4           I don't know the precise status of that as  
5           of today, but as of the time we filed in December that  
6           was pending.

7           There is some seriously conflicting  
8           information about the status of the SA-60-1 capsule.  
9           You've heard from Entergy's representations  
10          essentially of its expert today that the capsule  
11          became irradiated, could not - I think I understood  
12          could not be removed physically from the RPV in 1982-  
13          83. It was basically left in until some point in the  
14          1990s and is very, very, very irradiated.

15          However, we found at footnote 123 of the  
16          Nuclear Regulatory Commission staff's memorandum filed  
17          January 12th, it says, as noted in the staff's SER for  
18          amendment 79 at Page 1-2 - or pages, I guess, one and  
19          two - at the time of issuance, the Palisades reactor  
20          vessel material surveillance program contained two  
21          capsules located outside the core; Capsule A-60 and  
22          Capsule A-240, six capsules that are located in the  
23          mid-plane of the core, and two capsules that are  
24          located in the low flux region above the core. The  
25          SER noted that Capsule A-60 and Capsule A-240 were

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 located in positions within the reactor vessel that  
2 are diametrically opposite each other and had similar  
3 neutron fluences and temperatures. The SER concluded  
4 that because Capsule A-240 had been withdrawn and  
5 tested, it could be used to predict the end-of-life  
6 material properties of the Palisades reactor vessel  
7 making withdrawal and testing of Capsule A-60  
8 unnecessary.

9 So, we believe that conflicts in some  
10 material ways with what Entergy says is the fate of  
11 that particular capsule.

12 And we believe that, again, the point that  
13 we are trying to make not is that we should have to  
14 attack a licensing amendment or other kind of decision  
15 rendered 30 years ago, but that that - this is  
16 significant scientific information relevant to the  
17 entire chronology of testing, not testing, rejecting  
18 or accepting the capsule destructive testing results.

19 CHAIR SPRITZER: Have you given us - is  
20 there any evidence you can point to that's been cited  
21 anywhere in your petition, the reply or anywhere else  
22 in the materials before us that would contradict what  
23 they have told us, which is that there was no actual  
24 testing done of that capsule?

25 MR. LODGE: I have been straining to

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 recall, but somewhere in the last 48 hours I think I  
2 have seen some additional narration, but I honestly  
3 cannot tell you what it said at this point.

4 If I can find it, I will bring it to the  
5 notice of the Board in a formal fashion and we can  
6 deal with it at that point, please.

7 CHAIR SPRITZER: All right.

8 MR. LODGE: And, finally, as to the matter  
9 of why what is proposed should be considered to be a  
10 test, I would just point out that it was an FSAR  
11 requirement to see in-service inspections be  
12 undertaken once every ten years.

13 So, the 2005 ISI is waived. The ISIs were  
14 also, according to a fair reading of FSAR, is they  
15 were to be - that data was to be assessed, analyzed  
16 alongside any capsule information that was being  
17 developed from withdrawing the capsules and doing the  
18 testing.

19 Matters have slipped, as we've pointed  
20 out, to a 20-year stretch. And a 20-year stretch  
21 where in the last 12 of it there's no capsule testing.

22 And, in fact, even after the - let's call  
23 it the 2015 ISI is conducted, there won't be any  
24 capsule pulled and tested for another four years after  
25 that.

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1           So, we believe that that certainly is the  
2 legitimate source for the observation that matters  
3 have degraded to the operation of Palisades being  
4 considered to be an ongoing experiment.

5           It's a very unfortunate situation that we  
6 are even here today arguing about why there should be  
7 some science and prudence injected into this very  
8 vital decision.

9           I would also point out that the Board has  
10 signaled that you have questions as to what power you  
11 really have in this circumstance.

12           In listening to the NRC staff respond to  
13 you about 20 minutes ago talking, as they should,  
14 about having the discretion to accept or reject the  
15 50.61a application being submitted to them by Entergy,  
16 I'm curious to know what different standards or  
17 different authority or power that the staff would  
18 really have.

19           It would seem to us that to be consistent  
20 if the blanks on the pieces of paper, you know, if the  
21 application requirements are simply filled out rotely  
22 with sister plant data, with whatever other  
23 information is essentially obliged to be provided by  
24 50.61a, then the staff has no discretion either. You  
25 check off the boxes, all the information is there,

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 it's an automatic.

2 Yet, I think from the tone of what the  
3 staff has at least shown here today, that they believe  
4 that they do have some regulatory authority here, some  
5 power to say no.

6 We believe that the Board similarly - and  
7 I understand the difference that the Board can't order  
8 the staff to do this or that, but the Board similarly  
9 has the authority to find that an application is not  
10 complete. It is not complete for scientific reasons  
11 that the petitioners are articulating to you.

12 For those reasons, we believe that the  
13 public is entitled to a trial on the merits on this  
14 matter and we request that a hearing be ordered.  
15 Thank you.

16 CHAIR SPRITZER: I don't believe I have  
17 any other questions for you, but I'll just quickly  
18 review my notes.

19 (Pause.)

20 CHAIR SPRITZER: I think this may be a  
21 question for the staff: If the ISI is part of the  
22 FSAR, is changing the ISI schedule a license  
23 amendment?

24 MR. ROTH: All right. David Roth for the  
25 staff. My understanding if they wish to change the

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 ISI schedule, I believe that would be -- take an  
2 action by us.

3           However, the significance for this  
4 application is within the application itself back to  
5 Section 7, in-service inspection data, the applicant  
6 included its discussion of its in-service inspection,  
7 referenced its February 14 report on its in-service  
8 inspection.

9           So, there's not an ISI inspection change  
10 that's before the staff or the Board at the moment.  
11 Instead, it's an application to use 50.61a. And the  
12 application describes the in-service inspection data  
13 and has been available to be challenged, but it's not  
14 been challenged.

15           CHAIR SPRITZER: Okay. If there are no  
16 further questions, I think we can adjourn. Thank you  
17 for everyone's participation. It's certainly been  
18 very enlightening for me, and I suspect at least to  
19 some extent for my more educated colleagues.

20           Thank you for your participation. And as  
21 far as our decision, as you know, there's a 45-day  
22 limit. We will do our best to get the decision out  
23 within that period.

24           My one concern is that we do have this  
25 other case and we'll have to look at what's filed. Of

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 course we don't have the answers yet. When we do,  
2 we'll look at those and see how we want to handle the  
3 relationship between the two cases.

4 But in any event, we'll get a decision out  
5 on this case as soon as we're able. Thank you.

6 (Whereupon, at 2:20 o'clock p.m. the  
7 hearing in the above-entitled matter was concluded.)  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25