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ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

July 11, 2006

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This transcript has not been reviewed, corrected and edited and it may contain inaccuracies.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

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ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

(ACRS)

SUBCOMMITTEE ON PLANT LICENSE RENEWAL

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TUESDAY,

JULY 11, 2006

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ROCKVILLE, MARYLAND

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The Subcommittee met at the Nuclear Regulatory
Commission, Two White Flint North, Room T2B3, 11545
Rockville Pike, at 1:30 p.m., Dr. John D. Sieber,
Chairman, presiding.

COMMITTEE MEMBERS:

JOHN D. SIEBER, Chair

J. SAM ARMIJO, Member

MARIO V. BONACA, Member

OTTO L. MAYNARD, Member

GRAHAM B. WALLIS, Member

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1 ACRS STAFF PRESENT:

2 MICHAEL JUNGE

3 FRANK GILLESPI

4 JUAN AYALA

5 DAVID JENG

6 MATTHEW MITCHELL

7 REPRESENTATIVES OF PALISADES NUCLEAR PLANT PRESENT:

8 DARREL TURNER

9 JOHN BROSHAK

10 BOB VINCENT

11 PAUL HARDEN

12 MARK CIMOCK

13 LARRY SEAMANS

14 BILL ROBERTS

15 JOHN KNEELAND

16 BRIAN BROGAN

17 ALSO PRESENT:

18 MARK HARTZMAN

19 CORINNE CAREY

20 ALICE HIRT

21 KAY CUMBOW

22 GARY KARCH

23 KEVIN KAMPS

24 MICHAEL KEEGEN

25 KATHRYN BARNES

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A-G-E-N-D-A

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

1:34 P.M.

CHAIRMAN SIEBER: The meeting will now come to order. This is a meeting of the Plant License Renewal Subcommittee. I am Jack Sieber, Chairman of the Plant License Renewal Subcommittee for the Palisades plant. ACRS members in attendance are Dr. Graham Wallis, Dr. William Shack, Dr. Mario Bonaca, Dr. Sam Armijo, and Otto Maynard. Michael Junge, to my right, of the ACRS staff is the designated federal official for this meeting.

The purpose of the meeting is to discuss the license renewal application for the Palisades Nuclear Plant. We will hear presentations from representatives in the Office of Nuclear Reactor and Regulation, the Region III office in Lisle, Illinois, and the Nuclear Management Company. The Subcommittee will gather information, analyze relevant issues and facts, and formulate proposed positions and actions as appropriate for deliberation by the full Committee.

The rules for participation in today's meeting were announced as part of the notice of this meeting previously published in the Federal Register on June 21, 2006. We have received no written comments or request for time to make an oral statement from

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1 members of the public regarding today's meeting.

2 A transcript of the meeting is being kept
3 and will be made available as stated in the Federal
4 Register notice. Therefore, we request that
5 participants in this meeting use the microphones
6 located throughout the meeting room when addressing
7 the Subcommittee. Participants should first identify
8 themselves and speak with sufficient clarity and
9 volume so that they can be readily heard.

10 Matters to be discussed this afternoon is
11 the license renewal application and its related safety
12 evaluation report and the inspection and audit report
13 prepared by our Region III office in Lisle, Illinois,
14 the licensee and also the Office of Nuclear Reactor
15 Regulation.

16 The requirements for license renewal are
17 set forth in Title 10 of the Code of Federal
18 Regulations, Part 54, and involve aging management of
19 long-live passive components that are included within
20 the scope of the rule. We will restrict ourselves to
21 discussions of the licensee's treatment of and NRR's
22 review of the aging management and time-limited aging
23 analysis related to those components in scope.

24 We will now proceed with the meeting and
25 I call on Ms. Louise Lund of the Office of Nuclear

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1 Reactor Regulation to begin.

2 MS. LUND: Thank you. Good afternoon. My
3 name is Louise Lund. I am the Branch Chief in License
4 Renewal Branch A in the Division of License Renewal.
5 We are here to discuss, as previously stated, the
6 license renewal review for Palisades that form the
7 basis for our safety evaluation. Beside me also is
8 Frank Gillespi, our Director for the Division of
9 License Renewal. Staff has conducted a very detailed
10 and thorough review of the Palisades Nuclear Plant
11 license renewal application which was submitted in
12 March of 2005.

13 Mr. Juan Ayala, here to my right, at the
14 end of the table, is the project manager for this
15 review. He will lead the staff's presentation this
16 afternoon on the draft safety evaluation report. In
17 addition, we have Ms. Patricia Loughheed who is our
18 team leader for the Region III inspections that were
19 conducted at Palisades Nuclear Plant and she is
20 sitting right behind me.

21 We also have several members of the NRR
22 technical staff here in the audience to provide
23 additional information and answer your questions. The
24 staff felt that the Palisades Nuclear Plant
25 application was of sufficient quality that it resulted

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1 in the issuance of 174 formal requests for additional
2 information which is on the low end of the amount of
3 RAIs that we have issued for recent plants.

4 I know that the ACRS has been interested
5 in the number of questions that have come out of these
6 reviews in the past and believe that part of this
7 reduction is the result of the generic aging lessons
8 learned report. This application was submitted using
9 the draft GALL report that was issued back in January
10 of 2005.

11 However, it was reconciled with the
12 September 2005 version of the GALL report. In fact,
13 it resulted in a 95 percent consistency between their
14 application and the revised GALL. That made it a good
15 application for us to review in that respect to see
16 the consistency.

17 In addition, the staff at Palisades
18 provided excellent support for our on-site audits in
19 the inspections that were conducted and also the
20 headquarters reviews through the conference calls and
21 the numerous meetings that we had.

22 With that, I would like to turn it over to
23 Bob Vincent who is the manager of this project at
24 Palisades to begin the applicant's presentation.

25 MR. TURNER: Good morning. Good afternoon

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1 I should say. My name is Darrel Turner and I am the
2 Manager of Projects at Palisades nuclear site. With
3 me we brought the License Renewal Project team along
4 with a couple of guests from Palisades, the Nuclear
5 Management Company.

6 I would like to introduce those people if
7 I may. In our audience behind the committee is our
8 site Vice President Paul Harden. On my right is our
9 site engineering director Mr. John Broschak. And as
10 Bob was just introduced, Bob Vincent on my left. He
11 is the Manager of the License Renewal Project itself.

12 With the project team we've got Mark
13 Cimock who is the lead for Civil, Structural, and
14 Mechanical. We have to his left John Kneeland, Time
15 Limited Aging Analysis lead. To his left is Bill
16 Roberts, our program lead. To the right is Mark
17 Cimock is Larry Seamans, our electrical lead for the
18 project.

19 We are happy to be here and present to you our
20 Palisades plant and answer your questions. We have a
21 short introduction here. The next slide, please, Bob.
22 I'm going to go to the agenda. We are going to talk
23 a little bit about our plant, a little description,
24 the licensing history since its inception, some major
25 improvements that we have accomplished and performed

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1 over the last several years, our current plant status,
2 where we are on operating space.

3 We are going to review our license renewal
4 methodology that went into the application. I am
5 going to inform you about our commitment management
6 system at Palisades. We thought that the ACRS would
7 be interested in a few technical issues which we are
8 going to expound upon which you see on the slide.

9 Our plant is owned by Consumers Energy
10 Company and it is operated and run by the Nuclear
11 Management Company. We are situated in the Southeast
12 corner of Lake Michigan just right near the little
13 town of Covert, Michigan, on a site of 432 acres. We
14 have a combustion engineering nuclear steam supply
15 system and our architect engineer for the power plant
16 was Bechtel. We have two-loop reactor cooling system
17 with four primary coolant pumps, two steam generators.
18 Our containment is pre-stressed concrete containment.

19 You may have seen the photo earlier but we
20 have two banks of cooling towers, two draft cooling
21 towers, forced draft with 18 cells each. Our ultimate
22 heat sink is Lake Michigan through our service water
23 system. Our current license power is 2565.4 MWt. We
24 have a design electrical output of 820 megawatts
25 electric net and our probabilistic risk assessment for

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1 core damage frequency due to internal events is 2.86
2 E to the minus fifth. Our large early release
3 frequency, as we see, is 3.55 E to the minus seventh.

4 CHAIRMAN SIEBER: There's a couple ways of
5 using forced draft cooling towers. One of them is
6 using as part of a closed cycle condenser cooling
7 system. The other way is to use them as an after
8 cooler for open cycle where they don't run all the
9 time. Which is yours?

10 MR. TURNER: Our cooling tower fans are
11 run all the time. It's a closed cycle system.

12 CHAIRMAN SIEBER: You are closed cycle.
13 Okay.

14 MR. TURNER: Correct.

15 CHAIRMAN SIEBER: Thank you.

16 MEMBER BONACA: On the PRA, this number
17 2.8 E to the minus fifth for a CE type plant at that
18 time seems very low. Have you had improvements with
19 the plant over the years in the auxiliary fuel system
20 or the charging system of that plant?

21 MR. TURNER: Have we had improvements that
22 have improved our core damage frequency is the
23 question?

24 MEMBER BONACA: Yes.

25 MR. TURNER: We have a number of slides

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1 that we are going to discuss in just a little bit.

2 MEMBER BONACA: Okay. I'll wait.

3 MR. TURNER: One person I forgot to
4 introduce, excuse me, please, is Brian Brogan who is
5 our Probabilistic Risk Assessment Supervisor who
6 supported the team and we brought him with us.

7 That's a little bit on our plant
8 description. I would like to turn it over to Bob
9 Vincent, License Renewal Project Manager, to describe
10 some of our licensing history.

11 MR. VINCENT: I'm Bob Vincent, License
12 Renewal Project Leader.

13 CHAIRMAN SIEBER: Could you bring the
14 microphone over?

15 MR. VINCENT: Thank you for the reminder.

16 CHAIRMAN SIEBER: Okay.

17 MR. VINCENT: I'm Bob Vincent.
18 Construction for Palisades was issued in 1967 and
19 consistent with the licensing process of the time.
20 Palisades received a provisional operating license in
21 1971. The initial expiration date was in 2007. Then
22 in 1974 we applied for the full-term operating
23 license.

24 During the period 1978 to 1983 and
25 slightly beyond Palisades was one of the 11

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1 participants in the System Evaluation Program. The
2 full-term operating license for the plant was issued
3 in 1991 with an expiration date of 2007.

4 In 2000 we recovered the construction
5 period and our expiration date was changed to March
6 24, 2011, which is the current expiration date. Then
7 in 2005 our license power level was raised from 2530
8 to 2575.4 MWt. That was a measurement uncertainty
9 recaptured power upgrade. 2565 is the current license
10 power level in Palisades.

11 At this point I would like to turn it over
12 to John Broschak to talk about some of the major
13 improvements and planned upgrades and the current
14 plant status.

15 MR. BROSCHAK: Good afternoon. My name is
16 John Broschak and I am the Site Engineering Director
17 for the Palisades station. I will be providing a
18 brief overview of some of the more significant and
19 major plant modifications that have been performed
20 since original construction.

21 In 1974, '75 the plant was converted from
22 once-through cooling to cooling towers as described in
23 the description. At that time the condenser was
24 retubed from a Admiral T material to a copper nickel
25 90-10 material. In 1977 and again in 1987 the spent

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1 fuel pool storage capacity was expanded. In 1977
2 additional racks were installed in the pool to raise
3 the capacity to 798 assemblies. In 1987 some high-
4 density racks were replaced in the pool to get it up
5 to 892 usable assemblies and that is the licensed
6 amount of fuel storage in the spent fuel pool at this
7 time.

8 CHAIRMAN SIEBER: Do you use neutron
9 absorbers?

10 MR. BROSHAK: Yes, sir.

11 CHAIRMAN SIEBER: What are there?

12 MR. BROSHAK: I believe it's a boron
13 material.

14 CHAIRMAN SIEBER: Boroflex?

15 MR. BROSHAK: Mark Cimock, our lead
16 mechanic, would like to answer that.

17 MR. CIMOCK: This is Mark Cimock with the
18 Nuclear Management Company. We have some boroflex
19 racks in our fuel pool but we do not credit them as a
20 neutron absorber. Our analysis does not credit that.
21 But we also have a design that actually has boron
22 carbide plates that are sheaved in stainless steel.
23 We do credit those for neutron absorption.

24 CHAIRMAN SIEBER: Thank you.

25 MR. BROSHAK: Again John Broschak. Back

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1 to the major planned improvements. In 1983 we added
2 a third auxiliary feedwater pump and upgraded that
3 system to safety-grade. Also, in 1983 we upgraded the
4 control room HVAC to safety-grade.

5 MEMBER BONACA: So you do have steam
6 driven pump?

7 MR. BROSchak: Yes, sir.

8 MEMBER BONACA: And two electric driven
9 pumps?

10 MR. BROSchak: Two electric driven
11 auxiliary feedwater pumps, one steam driven auxiliary
12 pump.

13 MEMBER BONACA: One is capable of 100
14 percent?

15 MR. BROSchak: Yes, sir.

16 MEMBER BONACA: Okay.

17 CHAIRMAN SIEBER: Do you meet all the
18 separation criteria for those pumps from a fire
19 protection standpoint?

20 MR. BROSchak: Yes.

21 CHAIRMAN SIEBER: Different rooms?

22 MR. BROSchak: Yes, sir.

23 CHAIRMAN SIEBER: Okay.

24 MR. BROSchak: In 1985 and 1986 the
25 initial PRA applications were done at Palisades. Much

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1 of this was as the result of the Systematic Evaluation
2 Program issues that were being addressed, mainly the
3 main steam isolation valves. PRA was used as a method
4 for resolving questions that came up as a result of
5 the failure criteria 4 main steam isolation valves.

6 In 1989, again, as a result of PRA
7 insights the plant addressed on its own an issue
8 concerning the lack of diversification of off-site
9 power. There had been history of lightening strikes
10 and other environmental conditions that caused loss of
11 off-site power and through insights using PRA we were
12 able to add additional diversification to the
13 switchyard arrangement to basically eliminate that
14 vulnerability and reduce the risk of the plant to this
15 type of situation.

16 CHAIRMAN SIEBER: Maybe to explain that a
17 little bit, you could tell me a little bit more what
18 equipment you added. Did you add new lines, new
19 breakers?

20 MR. BROSHAK: Yes. If I could, I'll
21 refer that to Larry Seamans who is our electrical
22 lead.

23 CHAIRMAN SIEBER: Come over here to this
24 microphone.

25 MR. SEAMANS: I am Larry Seamans,

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1 electrical lead for license renewal. What we added at
2 that time was on our switchyard buses we had a
3 connection on one bus and then one hub initially.
4 That hub connection came through disconnects that had
5 to be manually disconnected to get the feedback.

6 At that time we added a motor operated
7 disconnect. We also added on the other bus a separate
8 feed and then we have the transformer, voltage
9 regulated transformer, and added a separate
10 underground feed back to the plant that goes to either
11 safety bus.

12 MR. VINCENT: Just to add onto that a
13 little bit more -- Bob Vincent again -- for clarity,
14 what we have now is basically three sources of off-
15 site power, two immediate access sources, one through
16 the original start-up lines which are a set of
17 overhead lines. The second source is totally from an
18 independent section of the switchyard with a
19 transformer in the switchyard and a set of underground
20 lines that can feed our vital buses directly.

21 Then the third source is back-feed through
22 the main transformer. With the motor-operated
23 disconnect Larry mentioned, that is almost immediately
24 access feed but we have to manually operate the motor-
25 operated disconnect. We have three prompt access

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1 feeds.

2 CHAIRMAN SIEBER: How many transmission
3 lines into and out of your switchyard?

4 MR. TURNER: The question is how many
5 transmission lines are into and out of our switchyard.
6 Larry, I would like to defer that one to you as well.

7 MR. SEAMANS: This is Larry Seamans again
8 with the Palisades license renewal team. We have
9 seven total off-site sources that come in.

10 CHAIRMAN SIEBER: Thank you.

11 MR. BROSchak: John Broschak again.
12 Getting back to the list in the presentation. In 1990
13 we placed the steam generators and also retubed the
14 main condenser and feedwater heaters. At that time
15 the tubing material was changed from the copper nickel
16 to stainless for the main condenser and feedwater
17 heaters.

18 DR. SHACK: And you steam generators are?

19 MR. BROSchak: Alloy 600.

20 DR. SHACK: Thermally treated?

21 MR. BROSchak: They were manufactured at
22 the same time as the original plant construction and
23 they are alloy 600 thermal treatment.

24 CHAIRMAN SIEBER: I don't know about that.

25 DR. SHACK: The 1990 versions are 600 and

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1 you don't know whether they are thermally treated or
2 not?

3 MR. VINCENT: Bob Vincent again. Those
4 were actually manufactured in 1977/78 time frame so we
5 kept them in storage for years before we finally did
6 install them.

7 CHAIRMAN SIEBER: I presume when they were
8 in storage that they were inert in some way?

9 MR. VINCENT: Absolutely. They were
10 maintained with inert atmosphere internally.

11 MEMBER BONACA: What's the performance of
12 the tubes?

13 MR. TURNER: What's the performance of the
14 tubes is the question?

15 MEMBER BONACA: Yes.

16 MR. BROSHAK: Currently 4.5 percent of
17 the tubes are plugged approximately on both
18 generators. That is in reference to the 3 percent
19 that were preferentially plugged when they were
20 originally installed. Over the past 16 years of
21 operation there has been approximately 1.5 percent of
22 the tubes additional that have been plugged on each of
23 the steam generators.

24 DR. SHACK: Why did you replace the steam
25 generators? What was the mode of degradation that did

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1 them in?

2 MR. VINCENT: Bob Vincent again. Early in
3 plant life we had chronic steam generator tube
4 leakages problems. The original steam generators had
5 carbon steal support plates. Most of the lateral
6 supports for tubes were carbon steel. That, of
7 course, created a denting problem.

8 We also had a wastage problem with the
9 original tubes primarily down near the tube sheet
10 under the sludge piles. We had a fair amount of
11 morpholine due to wastage. Those were the primary
12 problems early on.

13 CHAIRMAN SIEBER: Was your early chemical
14 treatment the TSP treatment?

15 MR. VINCENT: No. We started out with --
16 yes. I'm sorry. We did have trisodium phosphate
17 early on.

18 CHAIRMAN SIEBER: That's where the wastage
19 comes from.

20 MR. VINCENT: Right.

21 CHAIRMAN SIEBER: What is the treatment
22 since the new steam generators have been installed?

23 MR. VINCENT: At this point it's all
24 volatile.

25 CHAIRMAN SIEBER: Molar control?

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1 MR. TURNER: Hydrazide morpholine.

2 CHAIRMAN SIEBER: Yeah, but you try to get
3 a molar balance.

4 DR. SHACK: Do you follow the EPRI PWR
5 steam generator water chemistry guidelines?

6 MR. VINCENT: Yes, we do.

7 CHAIRMAN SIEBER: Let me ask about the
8 main unit condenser. After the first retubing do you
9 put copper nickel in there. What was the degradation
10 mechanism that caused you to go to stainless?

11 MR. TURNER: The degradation mechanism
12 that caused us to go to stainless tubes in the
13 condenser?

14 CHAIRMAN SIEBER: Right.

15 MR. VINCENT: The short answer to that one
16 is that I think the 90-10 copper nickel performed
17 rarely well but we wanted to get rid of copper in the
18 system.

19 CHAIRMAN SIEBER: So it wasn't
20 degradation. You just wanted to change the chemistry
21 of your secondary site.

22 MR. VINCENT: To the best of my memory,
23 yes.

24 CHAIRMAN SIEBER: Have you ever had a
25 problem with microbiologically induced corrosion?

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1 MR. BROSchak: This is John Broschak.
2 There are some examples of MIC, microbiologically,
3 induced corrosion throughout the plant. Mark Cimock,
4 I don't know if you have any specific examples. It is
5 a program that is monitored by the station and we do
6 inspections and periodic replacements based on what
7 inspection results we have.

8 MR. CIMOCK: I don't know if I can add
9 much more. Again, this is Mark Cimock, NMC. I don't
10 think I can add much more to that. I think most of
11 the MIC type issues we've had that have been
12 permanently on secondary or actually the raw water
13 systems. I'm not aware of any problems we've had on
14 the secondary side.

15 CHAIRMAN SIEBER: Usually if you have a
16 lot of defects in condenser tubes it changes your
17 steam generator chemistry sometimes enough to give you
18 lots of problems. That is really the gist of what I
19 was asking you is how bad was your condenser? How
20 much damage was it causing to the steam generators
21 that you still now have? I think what you're telling
22 me is that the motivation for going to stainless is
23 not related to degradation of the tubes but to a
24 desire to change the -- to get rid of copper which
25 most utilities have tried to do.

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1 MR. CIMOCK: That's correct.

2 MR. BROSchAK: John Broschak again. Back
3 to the list. In 1993 Palisades was the first
4 stationed implement an independent spent fuel storage
5 installation under a general license in Part 72. We
6 implemented the VSC-24 system at that time to
7 supplement pool storage capacity.

8 CHAIRMAN SIEBER: All right.

9 MR. BROSchAK: 1995, again due to PRA
10 insights, we modified the under-reactor vessel floor
11 drains to containment sump. This was a matter of
12 adding ceramic beads so that any designed basis fuel
13 that would potentially be introduced into the sump
14 would be prohibited based on interaction with those
15 ceramic beads.

16 2004 Palisades implemented a second
17 independent spent fuel storage installation to expand
18 capacity this time with the new home system. In 2006
19 just recently Palisades has implemented the most
20 significant of the SAMA improvement and modifications.
21 This was the addition of a non-safety backup diesel
22 generator.

23 This has allowed us to reduce the core
24 damage frequency from approximately four to 10 to the
25 minus fifth down to the 2.86 number understanding that

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1 the PRA model is a living model. That represented
2 approximately 40 percent reduction in the core damage
3 frequency by the addition of that non-safety backup
4 diesel generator.

5 CHAIRMAN SIEBER: So you have three diesel
6 generators?

7 MR. BROSHAK: That's correct.

8 CHAIRMAN SIEBER: What is either the
9 kilowatt-hour or horsepower of the non-safety diesel?

10 MR. BROSHAK: Non-safety currently
11 installed is 2,000 kilowatts. That is the amount we
12 need to carry the safety loads required under the
13 conditions that we would use them.

14 CHAIRMAN SIEBER: Okay.

15 MEMBER MAYNARD: Is that a swing diesel
16 that can work on either a safety train or is it one
17 that powers into the normal grid and provides like
18 all-site power would?

19 MR. BROSHAK: I guess the terminology
20 swing diesel would be appropriate. It can power
21 either of the safety buses that would be required to
22 power safety-related loads.

23 CHAIRMAN SIEBER: Can you connect your
24 safety vessels together?

25 MR. BROSHAK: No, we cannot.

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1 CHAIRMAN SIEBER: Okay.

2 MR. BROSHAK: Currently the plant status
3 is operating at 100 percent power in the 19th cycle of
4 operation. The next refueling outage is scheduled for
5 the fall of 2007. All NRC performance indicators are
6 green and there are no current NRC inspection findings
7 greater than green.

8 At this point I will turn it back over to
9 Bob Vincent to discuss the license renewal application
10 methodology.

11 MEMBER BONACA: All in all how would you
12 characterize the physical conditions of the plant?

13 MR. BROSHAK: Physical condition of the
14 plant is good to excellent. That is based on feedback
15 we get from external stakeholders that come to visit.
16 The physical condition, I would say, is good to
17 excellent.

18 MEMBER BONACA: We'll ask that question,
19 of course, to the inspectors later on.

20 MR. BROSHAK: Yes.

21 DR. SHACK: Have you done much replacement
22 of piping on your secondary side to switch to chrome
23 molly alloys or are you really relying on your
24 Corrosion Erosion Program to monitor that?

25 MR. BROSHAK: John Broschak again. We

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1 have a combination program of selective replacements
2 with the chrome molly in addition to active searching
3 for corrosion and erosion mechanisms and then doing
4 selective replacements as we identified those so it's
5 a combination rather than just a wholesale strategic
6 replacement piping.

7 MR. VINCENT: I am Bob Vincent again. The
8 license renewal application was dated March 22, 2005.
9 It was developed using the standard format of NEI 95-
10 endorsed by the NRC. The GALL revision used for
11 the application was the 2001 Revision 0 of the GALL
12 and the Standard Review Plan. In the application we
13 addressed all of the issued and draft ISGs that were
14 available publicly at that point.

15 CHAIRMAN SIEBER: How many was that?

16 MR. VINCENT: I believe the number was 15.
17 As I recall there were about 10 that had been issued
18 and I think five were in draft form at that point.

19 From the outset we designed the project of
20 Palisades to be a site-based, site-run project. In
21 the lead positions we staffed with highly experienced
22 plant people. In fact, among the leads I think we
23 represent over 150 years of Palisades site experience
24 and most of the leads had been through SRO training.

25 I think four had been formerly licensed.

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1 It was a highly plant-experienced staff. Then we
2 supplemented that staff with license renewal
3 experienced people we could find who had worked on
4 other sites. We thought that brought the best of both
5 worlds to the project.

6 Scoping, screening, and aging management
7 reviews were performed to industry standards.
8 Throughout the project we tried to stay very much in
9 tune with what was happening in the rest of the
10 industry. As we saw experience emerge from NRC
11 reviews and other applications that had been developed
12 that were applicable to Palisades, we tried to
13 incorporate that experience.

14 CHAIRMAN SIEBER: What did you do to get
15 the experience? Did you come to meetings like this
16 that other licensees were having?

17 MR. VINCENT: Yes. Numerous things.

18 CHAIRMAN SIEBER: I would point out that
19 we have Exelon and First Energy here watching you
20 which I think is a great idea.

21 MR. VINCENT: Yes.

22 CHAIRMAN SIEBER: I don't want to relive
23 all these experiences over and over again.

24 MR. VINCENT: We can sympathize. We were
25 actively involved with the License Renewal Task Force

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1 which was a tremendous benefit to us. We also
2 participated as reviewers for peer reviews at some
3 other plants and we had an industry peer review of our
4 application, provided additional insights using people
5 who had been experienced in license renewal projects
6 at other plants, provided more input from other plants
7 and how they did business. Just numerous things like
8 that kept us in tune.

9 One area where that made a particular
10 difference in the final result for Palisades was in
11 the area of scoping under 54.4(a)(2), non-safety
12 affecting safety. Rather late in the process we
13 changed our scoping methodology to adopt to spaces
14 approach based on experience actually at Dresden and
15 Quad. That greatly facilitated the NRC reviews in
16 that area.

17 The system descriptions and the boundaries
18 in the application were consistent with the FSER. As
19 I mentioned at the beginning, the AMR results in the
20 application were reconciled to the GALL Revision 0.
21 Then shortly after we submitted our application, we
22 did reassess our AMR results using the draft Revision
23 1 of the GALL and then again after the final Revision
24 1 was issued in September we again did a comparison.

25 We provided the results to the ACRS staff

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1 to facilitate their reviews and think the use of at
2 least draft of the GALL helped the process
3 considerably. Since we were in that transitional
4 period between Rev. 0 and Rev. 1 of the GALL, the
5 industry as well as the NRC were interested in
6 statistics, how much Rev. 1 really helped. We can say
7 from experience Rev. 1 was a substantial improvement
8 over Rev. 0. It greatly helped efficiency of the
9 review.

10 The final result is that aging over the
11 extended operating period will be managed by 24 Aging
12 Management Programs at Palisades. Twenty of those are
13 existing programs based on existing activities. Four
14 of those programs are new.

15 DR. SHACK: A substantial number of your
16 existing programs seem to have to have enhancements to
17 be consistent with GALL. Do you feel that indicates
18 you had some deficiency in your aging management
19 approach pre-GALL?

20 MR. VINCENT: Two responses to that. One,
21 because of the way GALL was formatted, we essentially
22 repackaged many of our programs. We were performing
23 many of the activities so we credit that as an
24 existing program but we essentially repackaged some of
25 those with a high-level program document that would

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1 basically provide the umbrella, administrative
2 controls over all of the activities.

3 I would say it was more repackaging than
4 truly changing what we did. There were certainly some
5 enhancements that came out of the review, things that
6 we decided should be strengthened in our existing
7 activities. That was certainly no surprise. We learn
8 as we go.

9 DR. SHACK: You weren't terribly
10 successful in managing the aging of your control rod
11 drive houses. Do you think you have changes in your
12 programs that would prevent that? Did you make
13 changes after that?

14 MR. VINCENT: Bill, would you like to
15 comment on that? I would say in general in the
16 control rod drive area we are dealing with some design
17 issues, some early material selection and some --

18 DR. SHACK: Your chemistry controls. Are
19 you water chemistry controls changed from those days?
20 At least I read it was attributed to stress corrosion
21 cracking, chlorides, and stagnate oxygen levels.
22 Materials will still crack with chlorides and oxygen.

23 MR. VINCENT: I wouldn't want to compare
24 a compare today with your earlier program. I will say
25 today we are rigorous about complying with the EPRI

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1 standards for primary and secondary controls.
2 Primary, of course, applies to the control rod drives.
3 I wouldn't make any claims that we do much better or
4 worse today than we did back then.

5 Go ahead, Paul.

6 MR. HARDEN: This is Paul Harden, the site
7 Vice President at Palisades. I can answer the
8 question on a number of facets. First off, chemistry
9 controls today are much better than they were early in
10 plant life. The EPRI guidelines have --

11 DR. SHACK: I mean, it wasn't all that
12 ancient history.

13 MR. HARDEN: Relative to the control rod
14 drive housing cracking issue, it requires a couple of
15 things for the primary water stress version cracking.
16 One of the environment but the other is the residual
17 stresses that drive the cracking.

18 The original housings were designed and
19 manufactured with a technique that left a significant
20 amount of residual stresses. As a matter of fact,
21 grinding that had been done on the inside of them to
22 smooth out welds left lots of stress risers and things
23 that led to the cracking manifesting itself.

24 When we replaced those housings, we
25 improved both the materials as well as the

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1 manufacturing techniques using the latest technology
2 to ensure that all the stresses that historically due
3 to the older manufacturing techniques had stress
4 risers were actually manufactured in a manner that put
5 it in a compressive stress rather than tensile stress
6 to reduce the susceptibility.

7 MR. VINCENT: I would like to touch
8 briefly on commitment management. SER Appendix A does
9 list the commitments for future action that we made
10 during the course of the NRC review. We have entered
11 those commitments into our plant corrective action
12 tracking program which is the way we manage all our
13 commitments.

14 In addition, program descriptions, the
15 TLAA descriptions, and the commitments will be
16 incorporated into the FSER so we will control the
17 implementation of those commitments.

18 MEMBER WALLIS: Can I say something about
19 commitments here? There are 55 commitments or
20 something like that. Lots of new or enhanced
21 programs. I was just curious why it took license
22 renewal to sort of initiate all these programs. I
23 would have thought they would have been initiated as
24 matter of cost anyway because they were needed. It
25 seems as if it took license renewal to get you to do

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1 all that.

2 MR. VINCENT: Well, most of the
3 commitments do represent enhancements to programs that
4 were already in existence that we decided as a result
5 of license renewal we wanted to make. Some were made
6 to bring us into alignment with the GALL. A major
7 goal during the process was not to make sure
8 everything aligned with the GALL.

9 We were going to manage our activities in
10 the way that we thought made economic sense to get the
11 quality we wanted, etc. Being exactly equivalent to
12 GALL wasn't necessarily a goal but we did make a
13 number of changes to be consistent with GALL.

14 I'm not sure that the total number is too
15 inconsistent with the numbers of commitments that were
16 made by other licensees. I will point out in that
17 Appendix A list that during the course of the reviews
18 we made a number of short-term commitments to provide,
19 for example, comparison between the GALL version of
20 the chemistry standards, the EPRI standards for
21 chemistry, and the version of the EPRI chemistry
22 standard that we had implemented on site, things like
23 that.

24 Those were short-term commitments. They
25 were rough numbers, a dozen of those. Those are also

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1 listed in Appendix A but those are closed so the
2 actual number of commitments for future action is in
3 the low 40s.

4 CHAIRMAN SIEBER: On the other hand you
5 have 40 some commitments and basically five years to
6 do them. Is that correct?

7 MR. VINCENT: That's correct.

8 CHAIRMAN SIEBER: That's a lot of work, or
9 it can be depending on what the scope of each
10 commitment is.

11 MR. VINCENT: That's correct.

12 CHAIRMAN SIEBER: Are you prepared to get
13 that work done before the current license expires?

14 MR. VINCENT: Absolutely. One thing I
15 would point out, it is not unusual for license renewal
16 project teams to be dissolved basically at the point
17 where the license is issued and then rely on the plan
18 to implement all these new commitments. We have
19 designed our project so this team will stay in
20 existence through 2007.

21 By the time we are done in 2007 we will
22 have implemented all the new programs. We'll turn
23 over to the plant effective functioning programs. We
24 won't rely on them to implement this work in the
25 future.

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1 CHAIRMAN SIEBER: It seems to me that if
2 you take the ordinary plant staff and throw in a big
3 bundle of work like this in a limited amount of time
4 there will be a question, particularly for somebody
5 like me who doesn't know the details of every one of
6 these as to whether you are going to finish.

7 MR. BROSHAK: This is John Broschak.
8 What I can tell you is the site staff outside of the
9 license renewal project team has been very engaged and
10 integrated with these activities. The system
11 engineers in particular have provided their input and
12 reviewed the proposed program changes that were to be
13 made. They certainly aren't as intimate with the
14 details that the project team is but there has been a
15 tremendous amount of interaction with the normal plant
16 staff.

17 Also the way the schedule has been
18 arranged, we expect to see integration of the project
19 teams members and to certain strategic positions of
20 the plant staff. We are very confident that we are
21 not only going to get these programs into place but we
22 are very effectively looking at them.

23 MR. TURNER: This is Darrel Turner. I've
24 got one follow-up just to make it clear. Right from
25 the onset of the license renewal project when we got

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1 into developing the programs in alignment with the
2 GALL, we included the program engineers, about a dozen
3 of them, in the plant from which we all came to be
4 involved with the development of these programs and
5 revised programs.

6 Not only involved, they were reviewers and
7 subsequent approvers of the programs along with their
8 department heads so we've got a good alignment with
9 the plant people, as John said, to transition over the
10 next year and a half to slightly less than two years
11 every one of those commitments.

12 CHAIRMAN SIEBER: I would like to -- at
13 the risk of disrupting your entire presentation, I
14 would like to go back to something that you said maybe
15 15 minutes ago where you adopted the spaces approach
16 to scoping. I presume that the way you identified
17 what is in scope is to take PNIDs and take a colored
18 pen and mark all the things that are in scope in a
19 spaces environment, particularly where you have walls
20 which may be a boundary point for two over one
21 configurations and so forth.

22 PNID really doesn't lend itself to that
23 kind of thing. How did you deal with determining what
24 is the anchor point, how do I show it on a drawing,
25 how do I make sure that somebody in the future who you

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1 may have just hired understands the document that you
2 have so they know what is in scope and apply a program
3 to it. How did you do that?

4 MR. VINCENT: Mark Cimock, our mechanical
5 lead.

6 MR. CIMOCK: This is Mark Cimock,
7 mechanical lead with NMC. What you are saying is
8 true. We started out with PNIDs primarily for the A-1
9 work and scoping which is very conducive to and even
10 some A-3. We had not originally done a spaces
11 approach but we had originally used a couple criteria
12 that we changed in terms of duration and distance.

13 When we went back, the way that we pretty
14 much did that, one thing that helped us considerably,
15 as Bob pointed out, we've all been with the plant for
16 a long time and the major leads involved know the
17 plant quite well. We were able to do a couple things.

18 One is that we did sorts of our equipment
19 database to try to find out what rooms various
20 components existed in and if there was any other item
21 that showed up in that room automatically got put in
22 and we would identify what all those specific
23 components were. We would connect the dots, if you
24 will, between them to include the piping.

25 Then we did a final check basically that

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1 looked for any room that we identified wasn't in scope
2 we would walk it down to ensure that there wasn't
3 anything there just to make sure there's no problems
4 with the equipment database. We are able to do it
5 with a combination of looking at the paper, looking at
6 the equipment database, and filling in with selective
7 walk-downs.

8 As far as how we showed it on the
9 drawings, that did create some confusion sometimes
10 because sometimes the color would stop in the middle
11 of the pipe and then would continue. There were
12 questions that came out of the RAIs and the audits as
13 to why did this stop here. It was typically because
14 that's where changed areas and changed buildings or
15 rooms.

16 CHAIRMAN SIEBER: When we get to the
17 Region III discussion of what went on, I'm going to
18 ask the same question. Was the documentation that the
19 licensee provided to you to demonstrate that scoping
20 was properly done, was it clear what was in scope and
21 what was not based on the documents that you looked
22 at? You can wait until it's your turn to answer that.
23 Make a note of that because I think it's important.
24 I think it's an opportunity to make a mistake. Okay.
25 Thank you very much. Appreciate it.

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1 MR. BROSchak: This is John Broschak. If
2 it's all right, I'll get back to the presentation. I
3 don't feel that we've been detailed but I'll keep to
4 the script at this point.

5 CHAIRMAN SIEBER: I'll try harder next
6 time.

7 MR. BROSchak: I would like to go over a
8 few technical issues that we thought would be of
9 interest to the Subcommittee and address them
10 directly. Those issues will be pressurized thermal
11 shock, intergranular separation, also known as
12 underclad cracking, and some discussion of Generic
13 Safety Issue 191, or the PWR Sump Performance Issue.

14 For pressurized thermal shock Palisades is
15 projected to reach the screening criteria in 2014
16 using the existing rule in 10 C.F.R. 50.61. We have
17 known this for over 10 years and have employed
18 aggressive flux reduction strategies through the use
19 of ultra-low leakage cortizines to minimize the impact
20 of that flux influence on reactor vessel
21 embrittlement.

22 We have also participated actively with
23 NRC research programs developing updated methodologies
24 for analyzing this issue and evaluating it. We have
25 alternatives available to manage the issue for the

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1 period of extended operation. We are also aware of
2 proposed rulemaking to 10 C.F.R. 50.61 which may
3 preclude the need for a plant specific management
4 strategy but we are not counting on that because we
5 have alternatives that we will implement.

6 CHAIRMAN SIEBER: How many capsules do you
7 have left?

8 MR. BROSHAK: I'll refer to John
9 Kneeland, our TLAA Lead.

10 MR. KNEELAND: This is John Kneeland, NMC,
11 Palisades. We have three what we call wall capsules
12 remaining in the reactor vessel. They have about a 20
13 percent lead factor on what the vessel would see. We
14 also have one that is called a thermal capsule which
15 sits above the core and does not get the fluence.

16 DR. SHACK: Suppose you got the rule
17 change and the screening criteria went up? Would you
18 let a few more neutrons leak out? Does the low-
19 leakage core really inhibit your operation?

20 MR. KNEELAND: This is John Kneeland
21 again. It is a cost and we would take that into
22 account but we would have to evaluate that against how
23 long we want to operate the vessel.

24 CHAIRMAN SIEBER: In effect, the low-
25 leakage cores require more fuel and more expensive

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1 fuel management techniques. What you are paying for
2 is neutrons that you would otherwise expend into the
3 vessel wall. It seems to me that the balance between
4 the margin that you have in core analysis space and
5 your ultimate power level versus the fluence that you
6 put to the vessel wall. It is manageable but it does
7 cost money to do that.

8 MEMBER WALLIS: Ultra-low leakage sounds
9 impressive. By how much is it reduced from what it
10 was before?

11 MR. KNEELAND: This is John Kneeland
12 again. We have reduced it at least in half.

13 MEMBER WALLIS: It's significant. Ultra-
14 low sounds --

15 MR. KNEELAND: By ultra-low we mean we
16 can't do a whole lot more.

17 CHAIRMAN SIEBER: You would be surprised
18 what you can do when you have to.

19 MEMBER WALLIS: What are these
20 alternatives you mentioned here?

21 MR. BROSHAK: We can use site specific
22 material sampling and analysis and using the existing
23 master curve methodology to develop a pressure
24 temperature curve that we could use for the period of
25 extended operation.

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1 MEMBER WALLIS: You have scoped that out
2 and satisfied yourselves that would work out okay?

3 MR. BROSHAK: Yes.

4 MEMBER MAYNARD: What are you using now to
5 justify 20 additional years of operation. Take it
6 from 2011 to 2031, I guess. I'm not sure what I'm
7 hearing here, whether you are taking a position were
8 there alternatives available to us or whether you're
9 saying this justifies operation now. We do have other
10 alternatives available to us.

11 MR. BROSHAK: The rule requires us to
12 submit our plan three years prior to the expiration of
13 existing license or the time of reaching the screening
14 criteria.

15 CHAIRMAN SIEBER: There are a couple of
16 things that are the issue here. The question is will
17 you exceed the screening criteria before the end of 40
18 years? Then part two of that question is will you
19 exceed it at the end of 60 years? If so, can you
20 manage the fluence or do you go to the alternative
21 calculation methods? What space are you in right now
22 with that vessel?

23 MR. VINCENT: Where we sit currently we
24 will not exceed the screening criteria by the end of
25 the current 40-year license.

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1 CHAIRMAN SIEBER: Okay.

2 MR. VINCENT: If we took no action, we
3 would exceed the screening criteria during the
4 extended operating period. We understand the actions
5 that will need to be taken. We will manage those
6 actions so in license renewal space we are really
7 talking about option 3 which is the issue will be
8 managed for the extended operating period.

9 We can't say today what choice we will
10 make about which options we will implement. We know
11 those various technical options are available in the
12 rule change. If it continues on the commissioner
13 approved rulemaking schedule, that will give us
14 another alternative.

15 CHAIRMAN SIEBER: Let's assume that
16 doesn't occur. That doesn't shut you off but it
17 narrows the options we have. Right?

18 MR. VINCENT: Clearly the methodology that
19 the rule bases its limits on is fixed in the rule so
20 to depart from that methodology will require an
21 exemption from that rule. The exemptions could be
22 based, as John mentioned, on master curve technology
23 which has been implemented at a couple of other
24 plants.

25 It's not a new technology to the industry.

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1 There may be some other technical alternatives
2 including the safety analysis that the rule requires
3 to justify continued operation beyond the acceptance
4 criteria embedded in the rule. There are analytical
5 options that may involve exemptions to the rule.

6 MEMBER WALLIS: You could reduce power.
7 You could put in a call which is so low leakage that
8 it actually produces less power than you produce
9 today.

10 MR. VINCENT: Lower-power core is
11 certainly an alternative, yes.

12 MEMBER BONACA: You will have to submit a
13 plan by 2008?

14 MR. BROSchak: 2011.

15 MEMBER BONACA: 2011. Oh, three years
16 before you reach --

17 MR. BROSchak: Right.

18 MEMBER BONACA: Okay. So you do have time
19 to that point. By the time you are walking through
20 license renewal you have to have a plan.

21 MR. BROSchak: Correct.

22 MEMBER MAYNARD: Even though you get a 20-
23 year extension to the license, that still does not
24 authorize you to operate outside the rule. If all
25 these alternatives fell apart, you wouldn't be allow

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1 to operate.

2 MR. BROSchak: Right.

3 CHAIRMAN SIEBER: That's the same
4 condition they are in right now. If you don't meet
5 the criteria, it doesn't make any different how long
6 your license is, you shut down.

7 MEMBER MAYNARD: I think it's important to
8 note getting the license renewal doesn't authorize
9 operation outside of safety limits or regulations.

10 CHAIRMAN SIEBER: Another quick question
11 that you can just give me a number for. In order to
12 calculate the integrated fluence to the vessel you
13 have to make an assumption about the capacity factor.
14 What assumption did you use regarding your capacity
15 factor from initial operation until now and what
16 assumption are you using from now until the end of
17 life?

18 MR. VINCENT: John Kneeland, would you
19 like to --

20 MR. KNEELAND: This is John Kneeland
21 again. We used our actual operating capacity for the
22 past which has been somewhat less than we assume for
23 the future. For the future we're assuming
24 approximately a 90 to 91 percent capacity factor.
25 It's not as much as we'd like.

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1 CHAIRMAN SIEBER: It's been increasing.

2 MR. KNEELAND: The last several years have
3 been very good.

4 CHAIRMAN SIEBER: I'll just leave it at
5 that.

6 MEMBER WALLIS: On the big NRC research
7 program on PTS, wasn't Palisades one of the cuts they
8 made or am I forgetting something?

9 MR. VINCENT: No, Palisades is one of the
10 participants.

11 MEMBER WALLIS: What did they conclude
12 about PTS for Palisades in the light of their most
13 recent work?

14 MR. KNEELAND: This is John Kneeland
15 again. I have only seen a draft of the study so I
16 can't say for sure what the conclusion is but my
17 understanding is that PTS would not be considered an
18 issue.

19 MEMBER WALLIS: Maybe there is some
20 incentive for NRC to finish up that work.

21 CHAIRMAN SIEBER: Actually, there is more
22 than one plant in that study. I think the conclusion
23 was the same for all.

24 MEMBER WALLIS: It was a very thorough
25 study. It was very impressive to us. We had some

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1 comments on it and we were hoping that it would come
2 formally issued and be useful. We still hope that.

3 CHAIRMAN SIEBER: That would be good.

4 MR. VINCENT: We do, too.

5 MR. BROSHAK: This is John Broschak.

6 CHAIRMAN SIEBER: And the licensee.

7 MR. VINCENT: NUREG is still not a change
8 in the regulations.

9 CHAIRMAN SIEBER: Right.

10 MEMBER WALLIS: But it might lead to a
11 change in the regulations.

12 MR. VINCENT: Yes, they are working on
13 that.

14 CHAIRMAN SIEBER: Continue.

15 MR. BROSHAK: This is John Broschak
16 again. This has fun but we'll move on to the next
17 technical issue. Intergranular separation or
18 underclad cracking is the phenomenon that was
19 identified in the 1970s and was dispositioned at that
20 time as being acceptable for a 40-year operation
21 period.

22 Westinghouse specific plants has produced
23 a WCAP where they have provided a methodology to NRC
24 and shown acceptable results in terms of crack growth
25 or any effect on the reactor vessel for those plants.

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1 Palisades has been evaluated using the
2 same mythology and we have produced results that show
3 that there is little or no crack growth over a 60-year
4 period and that any potential cracks would have no
5 effect on the structural integrity of the reactor
6 vessel. Those results have been reported to the NRC
7 for review and acceptance.

8 MEMBER ARMIJO: The no-crack growth issue,
9 was that by analysis, strictly by analysis, or was
10 there any measurement made?

11 MR. BROCHAK: I'll defer to John
12 Kneeland.

13 MR. KNEELAND: John Kneeland again. It's
14 both. We had in-service inspection results that have
15 shown that some of the cracks that we did see have not
16 propagated at all between the inspections. We also
17 did a fatigue crack growth evaluation that is part of
18 the WCAP.

19 MEMBER ARMIJO: What was the period of
20 time between those inspections?

21 MR. KNEELAND: Twelve years.

22 MR. BROCHAK: John Broschak. Those
23 inspections were 1983 and in 1995.

24 CHAIRMAN SIEBER: Now, this item is the
25 confirmatory item --

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1 MR. BROSHAK: Correct.

2 CHAIRMAN SIEBER: -- that's listed in the
3 SER so you have determined that the WCAP is applicable
4 to your plant and you sent that response into the
5 staff a week ago?

6 MR. VINCENT: Yes, it was about a week
7 ago.

8 CHAIRMAN SIEBER: So the staff hasn't had
9 an opportunity to determine whether you meet the
10 requirement or not.

11 MS. LUND: This is Louise Lund. The staff
12 is still reviewing it so we got it in house and it's
13 been sent over to the technical staff.

14 CHAIRMAN SIEBER: Okay. It's important
15 that we know what the status is. It is particularly
16 important that it be resolved before we meet again.
17 I'm glad that the applicant is doing the work to make
18 that happen and perhaps there will be a good outcome
19 from the staff's review. There will be an outcome
20 from the staff's review. Okay.

21 MR. BROSHAK: John Broschak, technical
22 issue No. 3, Generic Safety Issue 191, Assessment of
23 Debris Accumulation on PWR Sump Performance. This
24 Generic Safety Issue is applicable to all pressurized
25 water reactors and the methodology defined in Generic

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1 Letter 2004-02 is being implemented at Palisades in
2 accordance with the requirements of that Generic
3 Letter. Palisades will be installing a passive
4 strainer system in addition to any other required
5 modifications.

6 MEMBER WALLIS: That's what you have
7 already, isn't it?

8 MR. BROSHAK: Correct.

9 MEMBER WALLIS: So you are going to
10 install a different one?

11 MR. BROSHAK: The methodology and the
12 assumptions that are now required to fully address the
13 issue as described in the Generic Letter and in the
14 NEI guidance documents require a different type of
15 strainer system.

16 MEMBER WALLIS: How much bigger will it
17 be? I assume it's going to be bigger.

18 MR. BROSHAK: It's going to be much
19 bigger.

20 MEMBER WALLIS: By how much? Is it a
21 factor of 10 or 100 or something like that?

22 MR. BROSHAK: Between a factor of 80 and
23 100.

24 MEMBER WALLIS: So you're putting in about
25 as big a strainer as you can fit in. Is that it?

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1 MR. BROSHAK: We're putting in the size
2 strainer necessary based on the results of the
3 methodology.

4 MEMBER WALLIS: A hundred times as big as
5 it was before? Do you remember how big it was before?

6 MR. BROSHAK: The Palisades arrangement
7 is underneath of the reactor vessel and has two trains
8 with subscreens. The approximate size of the
9 subscreens is 50 square feet.

10 MEMBER WALLIS: But they were tiny before.

11 MR. BROSHAK: They are tiny right now.

12 CHAIRMAN SIEBER: Smaller than they will
13 be.

14 MEMBER WALLIS: Okay. So they are going
15 to something like 5,000 square feet.

16 MR. BROSHAK: The order of 3,000.

17 CHAIRMAN SIEBER: Just for the record, I
18 would point out that this issue would be there whether
19 you were in license renewal space or not, as well as
20 the reactor vessel embrittlement issue. There is
21 nothing that specifically ties this to license
22 renewal. It is good that you tell us what you are
23 doing but it really doesn't have a bearing on the
24 outcome. You've got to do it whether you get your
25 license renewed or not.

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1 DR. SHACK: Is the installation primarily
2 cal-sil or a mix? What kind of fraction of cal-sil
3 versus fiber glass?

4 MR. BROSHAK: Palisades has a large
5 amount of cal-sil and a large amount of fiber.

6 MEMBER WALLIS: Are you going to take out
7 the cal-sil?

8 MR. BROSHAK: At this time we are not
9 planning to take the cal-sil out.

10 MEMBER WALLIS: It is something you might
11 consider doing if you had to because cal-sil is one of
12 the offenders in subscreen blockage.

13 MR. BROSHAK: I agree with you totally
14 that the debris that's in PWR containments are
15 offenders in terms of sub-blockage. The complexity of
16 the issue in terms of particulate or fiber has become
17 quite a fascinating science in terms of understanding
18 exactly how the phenomenon works so I can tell you
19 from the results that I've seen on specific testing
20 that it does get down to a site specific evaluation of
21 your particular mix of debris.

22 That is how we have these programs
23 structured now. We will make the appropriate removal
24 of insulation and sizing of screens and flow rates
25 that are necessary to meet the requirements in the

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1 Generic Letter.

2 MEMBER WALLIS: Any idea of the volume of
3 insulation that comes off in a large break LOCA?

4 MR. BROSHAK: I do but I would not want
5 to quote that in this setting off the top of my head.
6 That has all been submitted on the docket.

7 MEMBER WALLIS: Okay. We've heard numbers
8 of several thousand cubic feet. Yours maybe is one of
9 the plants that has a lot.

10 MR. BROSHAK: Those are very qualitative
11 terms and I would defer to what has already been
12 submitted on the docket.

13 CHAIRMAN SIEBER: Almost as bad as ultra-
14 low leakage.

15 MEMBER WALLIS: There's nobody here who
16 knows the number and more than just a vague statement?
17 You don't have an expert here who knows how much?

18 MR. BROSHAK: Since this is not a license
19 renewal we didn't bring those experts with us.

20 MEMBER WALLIS: Something we have to be
21 concerned about if we are going to allow the plant to
22 keep operating.

23 MR. BROSHAK: As I have stated here, we
24 will be in full compliance with the Generic Letter
25 requirements by the end of 2007. There's no question

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1 in my mind. We understand that this is independent.

2 MEMBER WALLIS: But you will claim to be.

3 MR. BROSHAK: No, we will be.

4 MEMBER WALLIS: If the staff knows what
5 those requirements are. You've got to show that
6 you're in compliance which is a very vague sort of
7 statement. You will make a case and then someone is
8 going to say whether it's good enough or not. I know
9 you intend to be in compliance.

10 MR. BROSHAK: We tend to be our own worse
11 critics and make sure that we can make that case to
12 any external stakeholder. As long as I'm the engineer
13 director we will make a strong case.

14 DR. SHACK: You're going to do a manual
15 injection of sodium hydroxide then to control your
16 sump pH? That will be the intent there rather than
17 doing it without pH control?

18 MR. BROSHAK: The Subcommittee has
19 effectively got me off my presentation so I will jump
20 back in.

21 The third bulleted item is to note that
22 due to the information notice on potential chemical
23 effects of the interaction of trisodium phosphate with
24 cal-sil insulation, Palisades is taking prompt and
25 aggressive action to remove trisodium phosphate until

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1 the final solution from the Generic Letter is in place
2 in the fall of 2007. That license amendment request
3 involves removal of trisodium phosphate and
4 implementation of provisions for manual injection of
5 sodium hydroxide.

6 It is worthy to note to the Subcommittee
7 that we have demonstrated through calculation that no
8 buffer is required to meet both off-site dose and
9 control room limits and, of course, with federal
10 regulations. We are choosing to inject the sodium
11 hydroxide to address potential corrosion issues.

12 MEMBER WALLIS: You have aluminum in this
13 part?

14 MR. BROSHAK: There is some aluminum in
15 the containment, yes.

16 MEMBER WALLIS: Sodium hydroxide has
17 interactions with aluminum that produces stuff.

18 MR. BROSHAK: Correct.

19 MEMBER WALLIS: And affects screens.

20 MR. BROSHAK: And that has all been --

21 MEMBER WALLIS: We don't know much about
22 it. We know it's in effect but we don't know how to
23 predict it. It would be interesting to see how you
24 are going to predict it.

25 MR. BROSHAK: You're right. In addition,

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1 an alternate buffering system will be installed as
2 part of the overall solution to the Generic Letter by
3 the fall of 2007. In other words, we do not intend at
4 this time to go back to trisodium phosphate.

5 MEMBER WALLIS: You're looking at a
6 different buffering system all together which would
7 not necessarily be sodium hydroxide.

8 MR. BROSHAK: Correct. There is a lot of
9 activity going on with Westinghouse owners group right
10 now to identify more acceptable buffering agents and
11 we would intend to use the output of that work,
12 evaluate for our plan application, and then implement
13 the appropriate item.

14 DR. SHACK: So your license amendment
15 hasn't been approved yet?

16 MR. BROSHAK: That license amendment is
17 under review by the staff at this time.

18 MEMBER WALLIS: Is it a fairly simple to
19 take out TSP. It's just sort of sacks of something in
20 containment. You just take it out. Is it a fairly
21 simple matter to take it out?

22 MR. BROSHAK: Yes, sir. In nuclear power
23 some things are simple. This one in particular --

24 MEMBER WALLIS: Removing things from
25 containment can be very tricky but this is a simple

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1 one.

2 MR. BROSHAK: These are fairly large
3 baskets that contain the trisodium phosphate and they
4 need to be picked up and removed and that's --

5 MEMBER WALLIS: It's not as if they are
6 inaccessible or anything.

7 MR. BROSHAK: No. In fact, we made
8 provisions during our last refueling outage to put
9 them in a lower dose area so that it will be easier to
10 remove them.

11 MEMBER BONACA: I have a question on the
12 inaccessible non-EQ medium voltage cables. I know you
13 have committed to essentially the process of GALL.
14 One of the inspection reports show that you had
15 manhole flooded and that you did not really find it,
16 the NRC inspectors found it. It's hard to understand.
17 I mean, so you do have a program for license renewal?
18 Do you have a program now that you are going to
19 implement?

20 MR. VINCENT: Yes, we do have a program
21 now. Larry, would you like to talk about underground
22 cables?

23 MR. SEAMANS: Yes. This is Larry Seamans,
24 Palisades license renewal. Just prior to the NRC
25 inspection as part of the license renewal I went out

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1 and looked at these manholes and I at that time found
2 water. There are three manholes. They are all tied
3 together as far as a drain system. At that point I
4 had the water removed. We did no more until the NRC
5 came on site.

6 At that time -- well, I'm sorry. We did
7 initiate corrective action document at that time also
8 besides pumping it out to get the long-term corrective
9 action into place. A little over a month later the
10 NRC was on-site. We again looked at the holes. The
11 water in there was significantly less but subsequent
12 to that we have initiated corrective action that
13 initiated a periodic activity that removes the water
14 monthly. After the second removal of the water we
15 have seen no more accumulation of water in the monthly
16 reviews.

17 Besides that, the plant about 10 years ago
18 initiated testing of all of these cables safety
19 related, even non-safety related, medium voltage
20 cables that go through these manholes and those are
21 tested on a frequency of every other refueling outage
22 currently. The commitment for license renewal is that
23 we will test them at least every 10 years. It looks
24 like currently we are on about an every four or five-
25 year frequency. That is what we do currently.

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1 CHAIRMAN SIEBER: How do you test?

2 MR. SEAMANS: Larry Seamans again. The
3 way we test those is with the MEGER. In the future we
4 are actually going to do a MEGER and a polarization
5 index. We have also stated that if there is some
6 other type of testing that comes out and is developed
7 and is proven that we will commit to doing that new
8 type of testing also.

9 MEMBER WALLIS: I think it's a very old
10 technique. My dad used to do that.

11 MR. SEAMANS: But we have some good
12 results from that, too.

13 MEMBER WALLIS: Lots of your commitments
14 have to do with inspections of varied tanks and things
15 like that. Are you satisfied that you got the
16 technology to do that or are you looking for some
17 improved methods?

18 MR. VINCENT: Bob Vincent. I think in
19 general we are not looking for any new technology to
20 support any of our new programs with the exception
21 that one of the commitments relates to reactor
22 internals. Currently we are doing visual inspections
23 that are required routinely under ASME Section 11, but
24 we are also -- our commitment is to monitor what is
25 happening with the MRP.

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1 When the industry recommendations come out
2 on the appropriate future testing or inspection
3 program for internals, we will provide -- we will
4 revise our internal program and submit that to the
5 staff for review. There are only a couple of
6 commitments that are similar to that one.

7 MEMBER WALLIS: There is an industry-wide
8 approach to that.

9 MR. VINCENT: That's correct.

10 MEMBER WALLIS: You are satisfied that you
11 can get enough measurements that are accurate enough
12 and all that?

13 MR. VINCENT: Buried tanks -- Mark, would
14 you like to talk about buried tanks?

15 MR. CIMOCK: This is Mark Cimock,
16 mechanical lead, NMC. We only have one buried tank
17 part of our program which is actually in a vault.
18 It's our fuel source tank. Buried tanks really isn't
19 an issue. The one that we have, like I say, is in a
20 vault. It does have dry compacted sand around it. It
21 is a double-walled tank that has moisture detection.
22 Buried tanks really isn't a problem at Palisades. We
23 do have a Buried Services Program but that gets into
24 buried piping and it may be another subject all
25 together.

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1 DR. SHACK: Just in your environmental
2 impact statement you sort of evaluated a number of
3 severe accident management alternatives that had
4 positive values. You implemented one of them that
5 gave you the big benefit. Are you planning on
6 implementing any of the others?

7 MR. HARDEN: This is Paul Harden, site
8 vice president. With the severe accident management
9 alternatives the station is committed and will
10 continue to evaluate the various alternatives and the
11 benefit that they provide.

12 However, the list as it is, the benefit
13 provided is each one individually, as you implement
14 one you then have to go back and revisit all the
15 others to reevaluate the benefit because, for example,
16 the supplemental diesel generator that was installed,
17 the benefit for many others that we listed is actually
18 negated by installation of that one so we just
19 completed implementation of the supplemental diesel
20 generator.

21 We are committed and we have budget in our
22 future budgets to continue to evaluate other
23 alternatives and what benefit they are going to
24 provide and to look for additional ways to reduce the
25 overall plant risk profile.

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1 MEMBER MAYNARD: One of those that I
2 didn't understand clearly was on the turbo driven aux
3 feedwater pump. You had installed a turbine driven
4 aux feedwater pump but apparently the one that you
5 have in there can't be operated manually. You can't
6 control the flow manually so one of the SAMAs was to
7 install a control system for that where you could
8 control it manually. Did I misread that?

9 MR. VINCENT: Brian Brogran, our PRA lead,
10 will address it.

11 MR. BROGAN: Brian Brogan from PSA.
12 Simply what we are going to do is proceduralize
13 throttling that turbine driver during the station
14 blackout of that. We have controls in place. What we
15 have to do is just match flow with decay heat. It's
16 something that we have in other pieces of procedures
17 that address Appendix R and other issues but we want
18 to formalize it for this specific application.

19 MEMBER MAYNARD: Okay. So the equipment
20 is there. You're talking about procedures and
21 criteria.

22 MR. BROGAN: That's correct. It is a
23 simple thing to do and we want to proceed with that
24 action.

25 CHAIRMAN SIEBER: So you're going to

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1 throttle the steam valve into the program?

2 MR. BROGAN: Correct.

3 CHAIRMAN SIEBER: In what parameter will
4 you look at that is available at the steam valve to
5 tell you how much to throttle?

6 MR. BROGAN: We are going to have pressure
7 indication up stream and down stream and we should be
8 able to correlate that back into the requisite flow.

9 CHAIRMAN SIEBER: What you are really
10 trying to achieve is the right level.

11 MR. BROGAN: Correct.

12 CHAIRMAN SIEBER: Not the right flow and
13 not the right pressure but level.

14 MR. BROGAN: We want to maintain level.

15 CHAIRMAN SIEBER: Whoever is operating
16 that valve won't know what the level is. You'll have
17 to be on the telephone or something. Is that correct?

18 MR. BROGAN: Yes, that's correct.

19 CHAIRMAN SIEBER: And you aren't going to
20 do anything about that. That's a hard thing to do.

21 MR. HARDEN: If I can, this is Paul Harden
22 again. That list of SAMA candidates, those are
23 concepts at this point in time. The only one that has
24 been taken through the study phase to in-depth layout
25 all the details and what would be required is the one

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1 we just finished implementation of with the
2 supplemental diesel generator.

3 For each one of those, as Brian and his
4 staff do the work to now go back and reevaluate the
5 candidates, we'll then take it through a study phase
6 to scope out what exactly would it take to ensure
7 ourselves we can do that and do that safely. Then
8 once we understand what that would take evaluate the
9 cost benefit from the risk reduction we would gain.

10 CHAIRMAN SIEBER: Okay. I presume you
11 would prefer I not help you design it.

12 MR. HARDEN: Tell them it's hard to do.

13 CHAIRMAN SIEBER: Any other questions from
14 the Committee? If not, thank you very much for your
15 presentation. What I would like to do is start into
16 the SER overview and perhaps do the scoping and
17 screening results. Then we can take a break after
18 that and then we'll come back and do the on-site
19 inspection results.

20 MS. LUND: Thank you. I'm going to go
21 ahead and turn this over. Thank you for the Palisades
22 license renewal staff to give their presentation and
23 I'm going to turn it over to Mr. Juan Ayala who is the
24 project manager for the Palisades review with the NRC
25 staff.

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1 MR. AYALA: Good afternoon. My name is
2 Juan Ayala and I am the project manager for the
3 staff's review of the Palisades license renewal
4 application. Joining me today I have Patricia
5 Lougheed who is the inspection team leader from Region
6 III. Also, I have Robert Hsu who is the audit team
7 leader. Also present in the audience is members of
8 the technical staff that are here to answer any
9 questions I cannot answer for you.

10 These are the topics that we'll be
11 covering today. I'll start with an overview of the
12 plant and the application followed by discussion of
13 the scoping and screening results. I'll turn it over
14 to Patricia who will talk about the license renewal
15 inspection and then I'll take over and talk about the
16 aging management review and the time-limited aging
17 analyses.

18 The license renewal application was
19 submitted by letter dated March 22, 2005. Palisades
20 is a combustion engineering PWR with dry AMB
21 containment and illustrated at 2565 MWth and 865 MWe.

22 MEMBER WALLIS: You have a different
23 number from what they have.

24 MR. AYALA: The number that the applicant
25 had is net capacity.

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1 MEMBER WALLIS: 820 they have.

2 MR. AYALA: That number is net capacity.
3 This is what it's rated at.

4 MEMBER WALLIS: They actually operate it
5 at 820.

6 MR. AYALA: They operate at 865 and then
7 they use -- I guess if the applicant can answer that
8 a little bit more.

9 MR. KNEELAND: This is John Kneeland. 820
10 is the maximum that we put out to the grid so that 865
11 minus in-house loads equals the 820.

12 MEMBER WALLIS: Ah, okay. It's just nice
13 to have the same number presented by the staff and the
14 applicant.

15 MR. AYALA: Okay. I'll continue. Once
16 again, I'm Juan Ayala. The operating license DRP-20
17 expires March 24, 2011 and the plant is located five
18 miles south of South Haven, Michigan.

19 This slide right here shows that the SER
20 was issued June 1, 2006, with no open items and one
21 confirmatory item that I'll talk about a little bit
22 later on. The license conditions are the standard
23 license conditions for all license renewal
24 applications that have gone through.

25 There were 174 RAIs issued as was

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1 mentioned earlier. That is consistent with the review
2 from some of the other plants that have gone through
3 renewal. There were also 412 questions asked during
4 the AMR and AMP audits.

5 MEMBER WALLIS: How do you keep track of
6 questions? Do you have a transcript or something?

7 MR. AYALA: We have all the questions --

8 MEMBER WALLIS: Are they written down?

9 CHAIRMAN SIEBER: They are all written
10 down.

11 MR. AYALA: All the questions are written
12 down and the applicant has a database that when we ask
13 a question they keep track of it and they provide
14 those responses to us.

15 MEMBER WALLIS: You also ask verbal
16 questions?

17 MR. AYALA: Yes, we do. Those verbal
18 questions are not captured in the 412. It's just the
19 questions that we provide in a written format that are
20 captured here.

21 MEMBER MAYNARD: The applicants usually do
22 a pretty good job of documenting and keeping track of
23 all the questions that are asked.

24 MEMBER WALLIS: It would be good to know
25 that you have 412 adequate answers as well.

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1 MR. AYALA: Right. All of these --

2 MEMBER WALLIS: Did you get 412 adequate
3 answers?

4 MR. AYALA: Yes, we did.

5 MEMBER WALLIS: Okay. Thank you.

6 CHAIRMAN SIEBER: Or we wouldn't be here.

7 MR. AYALA: As Louise mentioned earlier,
8 the application is 95 percent consistent with GALL
9 Rev. 1. The application was submitted using Rev. 0
10 and we did reconciliation with the September Rev. 1
11 and that helped us in the review process. There were
12 some minor components that were brought into scope and
13 we will address those at the appropriate time. This
14 slide here shows the dates of the audits and regional
15 inspection.

16 During the scoping and screening
17 methodology the audit team reviewed the current
18 licensing basis for the aux feedwater system and
19 determined that the aux feedwater pump pipe insulation
20 was not included in the scope of license renewal. The
21 applicant didn't include it and as a result of the
22 staff's review, the applicant brought this component
23 to scope of license renewal.

24 In Section 2.2, plant-level scoping, no
25 omission of systems or structures were found in the

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1 scope of license renewal. For mechanical system the
2 staff performed 100 percent scoping review of 29
3 mechanical systems. During the scoping and screen
4 review the staff was also on site and performed a
5 review of some of these mechanical systems.

6 This aided the staff in answering a lot of
7 the questions and reducing the need for RAIs. As a
8 result of this, very few items -- I have zero items
9 there. I was just talking to Patricia and she said
10 there were two items that refer to the regional
11 inspection team and she will address those in her
12 presentation.

13 Some of the components that were brought
14 into scope are listed on the slide here. There are
15 quite a few so I'll just show them up there and if you
16 have any questions on any, I can go into any of those.

17 MEMBER BONACA: There are not a few. For
18 example, why are the feedwater heaters not included?

19 MR. AYALA: The feedwater heaters --

20 MEMBER BONACA: Is it a issue of
21 methodology that you didn't capture it or is it just
22 an individual judgment of the engineer that they were
23 not being scoped?

24 MR. AYALA: I see that the applicant has
25 her hand up and I think they want to say something so

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1 let me turn it over to them.

2 MR. SEAMANS: For the feedwater heater
3 it's feedwater heater 1A and 1Bravo. They were in
4 scope if you looked at the drawings. It happened to
5 be that in the description that was in the system
6 description, it did not have them in there. As far as
7 the components themselves, they were in a list of
8 equipment but somehow we missed it in the description
9 and that is what he's talking about. That is where we
10 missed adding that to that description.

11 MEMBER BONACA: The bottom line is that
12 you don't feel that these exceptions here mean that
13 methodology --

14 MR. AYALA: There were several examples in
15 here where they were in scope in the drawing but they
16 weren't mentioned in the application and the
17 description so after talking to them they supplemented
18 the application and included a description for these
19 components in there. Since they were through RAIs,
20 that's why I have them listed up here.

21 MEMBER WALLIS: Air compressors are active
22 elements, aren't they? It's just the casing or
23 something that is in license renewal?

24 MR. AYALA: Yes. Active components are
25 not screened out.

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1 MEMBER WALLIS: When you say air
2 compressors, what do you mean? Aren't they active
3 components?

4 MR. AYALA: Yes. They screened out the
5 active components per NEI 95-10. What was screened
6 were the housing and --

7 MEMBER WALLIS: Housing?

8 MR. AYALA: Right. Moving on, in Sections
9 2.4, Containment, Structures, and Supports, and
10 Section 2.5, Electrical and Instrumentation and
11 Control, there were no omissions of components in both
12 of these sections.

13 In conclusion to the scoping and screening
14 methodology summary, it is the staff's determination
15 that the applicant's scoping methodology meets the
16 requirements of 10 C.F.R. 54.4.

17 CHAIRMAN SIEBER: Okay. I think this is
18 a -- unless there are questions from the members, this
19 would be a good time to take a break so let's do that
20 and come back at quarter after 3:00.

21 (Whereupon, at 3:01 p.m. off the record
22 until 3:21 p.m.)

23 CHAIRMAN SIEBER: I would like to
24 introduce from Region III Patricia Loughheed who was in
25 charge of the inspection process for this. Patricia.

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1 MS. LOUGHEED: Thank you. As Dr. Sieber
2 said, my name is Patricia Lougheed. I am the Lead
3 Inspector for License Renewal for Region III which is
4 the region which has Palisades in it. I'm not used to
5 operating the computer so you have to --

6 As is normal for license renewal
7 inspections we did a two-week inspection that combined
8 scoping, screening, and aging management. We
9 scheduled these inspections somewhat to support NRR
10 reviews, although we ended up doing this before
11 Monticello which you all looked at a couple of months
12 ago so this has been a long while since I've actually
13 been involved with Palisades.

14 As is usual with the Region III
15 inspection, I had a team of five very experienced
16 inspectors. We found that this has been a benefit for
17 the Region III inspections that we have used. The
18 same people consistently throughout the license
19 renewal inspections so that we know that from one
20 plant to another that we are looking at the same type
21 of things to the same depth. We did do it in
22 accordance with our inspection procedure.

23 Scoping and screening. To start, I'll
24 have to admit this slide contains an error. I made
25 this from my exit slides actually while I was on

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1 vacation. I did not have access to my inspection
2 report and I looked at the inspection report this
3 morning. We actually looked at 14 systems rather than
4 11. My team snuck a couple extra in on me from what
5 was in my original plan.

6 We did look at a combination of
7 electrical, mechanical, and structural systems with an
8 emphasis on plant physical walk downs and also on
9 those systems where we felt there was a safety, non-
10 safety boundary where components would be in scope or
11 out of scope.

12 We weren't too worried that the folks in
13 NRR caught everything that was in scope. What we were
14 worried about were the ones where the boundaries were
15 rather nebulous particularly in the A-4 area of non-
16 safety that could impact safety and that's where we
17 really concentrated our inspection efforts.

18 Basically I'm going to go into a little
19 bit more detail here than what is on the slide. The
20 systems that we found, there was one case in
21 electrical power where we found a component -- couple
22 components that had not been scoped in. However, they
23 were active components so they automatically screened
24 out as soon as they were scoped in.

25 Juan had mentioned that there were a

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1 couple areas that NRR did ask us to look at. One of
2 those had to do with the heating, ventilation, and
3 cooling, particularly the penetration subcooling HVAC.
4 That was an area that was out of scope and we looked
5 at it and the reasons why that system was there and
6 determined that it did not need to be in scope.

7 We also specifically looked at the HVAC
8 for the engineer safeguards and the auxiliary
9 feedwater system because those are safety related
10 systems and we wanted to verify that the cooling for
11 them indeed was not needed. We had no problems with
12 what the licensee had done.

13 We also looked on the spent fuel pump
14 cooling at the boron carbide panels and the boroflex
15 panels to verify that those were appropriately
16 screened in and that appropriate consideration was
17 taken for the types of panels there were and the use
18 of the boron. We had no problems with those.

19 CHAIRMAN SIEBER: Let me ask a question..
20 When the licensee told us -- we asked the licensee a
21 question about neutron absorbing panels and so forth
22 and spent fuel pool and they indicated they did not
23 take credit for boroflex. If you don't take credit
24 for it, would it be screened out?

25 MS. LOUGHEED: I think that some of the

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1 panels are screened out. I'm going to have to ask
2 Mark because it's been a while since I've looked at
3 Palisades.

4 CHAIRMAN SIEBER: Okay.

5 MR. CIMOCK: This is Mark Cimock with NMC.
6 The fuel racks are in scope for structural support of
7 the fuel rods but as far as the boroflex component of
8 them, they were not credited because they were not
9 considered in the criticality analysis. We actually
10 did credit some soluble boron and analysis of those.
11 The other panels that we did take credit for were the
12 boron carbide encased in stainless steel panels.

13 CHAIRMAN SIEBER: They are in scope.

14 MR. CIMOCK: And they are in scope. The
15 boron carbide themselves do have an antenna function
16 of neutron absorption and we've had some back and
17 forth in the RAI string. There's a long RAI string
18 but basically the end result was that we felt they had
19 no aging effect for current management but that we
20 were going to do some blackness testing to confirm
21 that both before the end of the current operating
22 period and within 10 years after the extended period
23 of operation.

24 CHAIRMAN SIEBER: Okay. Thank you.

25 MS. LOUGHEED: Basically the other

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1 question you had asked whether the regional inspectors
2 were able to clearly to see from the documents we
3 reviewed where the boundaries lay. We looked at a
4 number of different things when we were looking at
5 boundary. The first thing is that from Palisades they
6 are kind of unique that I would say probably 99
7 percent of their equipment is in scope.

8 It seemed like everywhere we went things
9 were actually in scope. In fact, if you read the
10 inspection report there was one system that we chose
11 which was shut down cooling which other plants have
12 said, "That's non-safety related. It doesn't need to
13 be in scope."

14 In Palisades it was 100 percent in scope.
15 We looked at the drawings but we primarily were
16 relying on the system scoping documents. What I
17 remember and what I just confirmed from the licensee
18 is that they are planning on taking the information,
19 or at least some of the information from those scoping
20 and screening documents I'm putting it into their
21 plant equipment database and that will be the official
22 way of telling what components are in scope for the
23 future rather than a marked-up set of drawings.

24 CHAIRMAN SIEBER: I have a question then
25 about that. As I recall, plant equipment databases,

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1 in some places they call them Q lists or what have
2 you, it consist of components as opposed to lengths of
3 pipe being in the supports and things like that which
4 in a lot of plants are typically not in the plant
5 equipment database because it's not really equipment.

6 It's the stuff in between the pieces of
7 equipment. What is in your plant equipment database
8 does it include all these long-lived passive
9 components and lengths of pipe and so forth that
10 typically aren't in most folks' equipment list?

11 MR. VINCENT: This is Bob Vincent. You
12 are correct. The equipment database really has all
13 the components that have tag numbers, ID numbers.
14 Clearly in license renewal we have commodities that
15 don't have tag numbers. While I can't tell you right
16 this minute how we are going to track things that we
17 have treated as commodities from an aging management
18 review perspective, clearly we have to define the
19 population that's in those commodities and capture
20 those.

21 Whether that's kind of a new component
22 type in an equipment database that we call a commodity
23 and have some definition or whether we use some other
24 mechanism for that we haven't decided yet.

25 CHAIRMAN SIEBER: So you really don't have

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1 a system for doing it, right?

2 MR. VINCENT: Other than the reports that
3 define those commodities currently.

4 CHAIRMAN SIEBER: Drawings that are marked
5 up.

6 MR. VINCENT: Today that's true.

7 CHAIRMAN SIEBER: Let me ask then if you
8 look at your Section 11 ASME program, it deals with
9 the same kinds of things. It doesn't deal with
10 components. It deals with lengths of pipe and hangers
11 and other structural members and things like that.

12 The drawings of significance to track all
13 that is usually isometric drawings and each piece of
14 pipe will have a line number on it between -- you
15 know, if it's a piece of pipe that is between
16 component A and component B, sump pump and the heat
17 exchanger or valve. You can track things for Section
18 11 purposes that way. Would you intend to do
19 something similar to that to track what is in scope
20 with regard to license renewal?

21 MR. VINCENT: What you are describing for
22 ASME Class 1, 2, and 3 is correct. We have those pipe
23 segments identified.

24 CHAIRMAN SIEBER: Well, you've got half
25 the job done.

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1 MR. VINCENT: We clearly have those which
2 leaves non-safety related piping assets that we are
3 talking about. I can't tell you we are going to use
4 the same type of approach but we clearly have to
5 capture those and track those.

6 CHAIRMAN SIEBER: Some place along the
7 line somebody has to examine what you did with regard
8 to applying aging management that involves the
9 examination to specific systems. You need a way to
10 know, to walk into a room and say, "There's a pipe up
11 in the ceiling. It's in scope because it's on this
12 document," as opposed to reading some broad definition
13 some place and saying, "It must be in scope. I think
14 it's in scope," but it isn't written down any place.

15 MR. VINCENT: You're right. We absolutely
16 agree with that. We need a definitive reference to
17 show exactly what is and what is not.

18 Mark, do you want to add to that?

19 MR. CIMOCK: This is Mark Cimock. I
20 understand exactly what you're talking about. Right
21 now the way that this is controlled our scoping and
22 screening documents, AMR documents, program based
23 documents are still live. We've been updating them as
24 RAIs come in and as things change along the way.

25 What you are referring to is the

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1 conversion to go forward method. We are still looking
2 at some options and what you are seeing are very good
3 points and there's a few ways we can do it. We
4 haven't settled on the one.

5 The way that we are currently doing it is
6 basically all our AMRs, aging management review
7 reports, and our scoping and screening reports were
8 basically generated by a large database that we
9 captured this all on. For these commodity groups like
10 the pipe segments and stuff we have created equipment
11 IDs, if you will, that are license renewal specific.

12 One option obviously is to load that in
13 with a little more definition, as you were talking
14 about, point A to point B. The way we currently do it
15 we might have aux feedwater pipe carbon steel would be
16 a commodity for pipe that is now -- which parts of
17 that you look at the color-coded system drawing.

18 What we have to decide, and we haven't
19 yet, it may be a combination of loading these things
20 in with a broad description with the color-coded
21 drawings to show you the details similar to what we
22 have for ISI type of color-coded drawings. Or it may
23 be putting that intelligence into the equipment ID.

24 We are still in a transition phase and we
25 haven't finalized that yet but I can assure you that

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1 will be very clear so that we know what we do have to
2 examine and what we don't. As Patricia said, in some
3 cases like in the aux building for a certain system
4 everything in the building so you say all aux building
5 piping.

6 CHAIRMAN SIEBER: That makes it easy. On
7 the other hand, not everything is like that.

8 MR. VINCENT: Right. It would be easier
9 probably for us if we were to put it in verbiages to
10 write exclusionary statements rather than
11 inclusionary.

12 CHAIRMAN SIEBER: I keep thinking in terms
13 not so much as the site vice president or those kinds
14 of jobs like general manager or NRC staff person, but
15 the poor slob that is out in the plant saying, "I
16 wonder where that is? I know I have to do this.
17 Which one?" I would think that some place along the
18 line there should be some kind of inspection at the
19 time the renewed license starts that actually looks at
20 the documentation to see if you can really identify
21 where all the stuff is.

22 Some of it is easy, you know. All the
23 ASME stuff is easy because you already did it for the
24 Section 11 program. All the non-safety stuff unless
25 everything in the room is in scope, there needs to be

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1 some other kind of database somewhere along the line.
2 That gives you something to do in the next five years
3 along with some other things you might want to do
4 during that time. That is not a simple job. It's
5 probably a pretty good size database.

6 MR. VINCENT: This is Bob Vincent again.
7 I would add to what I said before. In a couple of
8 areas, though, it is fairly straightforward to track
9 that. For example, we have a fairly robust system
10 walk-down program that will a lot more robust once we
11 make the changes we plan to.

12 Those walk-down programs really cover an
13 entire system. We'll provide more guidance for the
14 person doing the walk-down to make sure they cover the
15 entire system but it will cover the entire system. In
16 the structural area the structural inspections that
17 are already done under the maintenance rule are being
18 enhanced and they are really oriented more to a spaces
19 type approach.

20 Basically inspect pipe supports,
21 structural members, concrete, etc. in a space. Again,
22 that will be all encompassing and we don't necessarily
23 need to track pipe segment by pipe segment with that
24 kind of approach. What we have to sort out is where
25 that approach applies and where we need to track it

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1 segment by segment.

2 CHAIRMAN SIEBER: I think your point is
3 well taken, particularly if the Aging Management
4 Program that you are applying is something like
5 chemistry. The chemistry applies through the whole
6 system so you don't need to care if it's this piece of
7 pipe or that piece of pipe. On the other hand, if it
8 involves some direct examination, you've got to know
9 what you're dealing with. I won't belabor the point
10 but I keep trying to think if I were young again and
11 I was assigned the job of doing this, how would I do
12 it.

13 MS. LUND: This is Louise Lund. I just
14 want to mention before Patricia goes on is that they
15 do have another license renewal inspection that the
16 regions do before the period of extended operation and
17 I know just listening to Patricia and her supervisor,
18 Anne Marie Stone, I know they have had some
19 discussions about what the context would be of the
20 inspections and what we would need to focus on. I
21 think these discussions have already started.

22 CHAIRMAN SIEBER: That is sort of the
23 point of my question is to encourage people to think
24 about that.

25 MS. LUND: That's a good point.

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1 MS. LOUGHEED: And I did write that down
2 as a comment of something to add into what we should
3 look at for the 95003 which is the inspection that's
4 done just prior to or, if I had my way, right after
5 the license renewal extension took effect.

6 CHAIRMAN SIEBER: I think it's an
7 important thing and I apologize for interrupting your
8 presentation.

9 MS. LOUGHEED: No, it's a good point.

10 CHAIRMAN SIEBER: And I will stay quiet
11 for at least 30 seconds.

12 MS. LOUGHEED: Okay. Aging Management.
13 We looked at 14 AMP and two TLAA programs. Our review
14 differs from NRR a little bit in that we are looking
15 at what is actually existing in the plant to see if
16 they are meeting today pretty much what they have
17 committed to do in the future and to get an
18 understanding of where the enhancements are to see if
19 they understand what those enhancements really are and
20 what needs to be done.

21 I know there was some discussion earlier
22 about the water in the manholes. I do have to echo
23 Larry's comment. He did find that back several months
24 prior to our inspection and did write a corrective
25 action document.

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1 Unfortunately, what happened was the
2 corrective actions kind of fell in the crack a little
3 bit so that when we went back out in October he was
4 chagrined to find some water in there again.
5 Following our finding it the second time, then the
6 corrective actions that he had planned from the first
7 time did actually take place so there's not water now.

8 I know that there has been some discussion
9 about the MEGERING and the type of testing being done.
10 That is one of those areas where there is a commitment
11 done or license renewal to improve the testing
12 programs. We are going to have to wait for another
13 five years or so before they take effect on that.
14 They are keeping them dry now which is an important
15 thing.

16 CHAIRMAN SIEBER: It's important, I guess,
17 for everybody to recognize that if you have manholes
18 and underground cable ducts in a place where it rains
19 occasionally, they are going to be wet. If you aren't
20 pumping them out, you are missing the boat.

21 MS. LOUGHEED: And we have found that at
22 several region plants. We are actually looking at
23 that now as part of our regular -- not part of a
24 license renewal program. It's part of our regular
25 inspection program.

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1 CHAIRMAN SIEBER: Okay.

2 MS. LOUGHEED: Again, we spend a lot of
3 time in the plant during these inspections. We try to
4 do lock-downs to verify how things are actually being
5 done rather than relying just on paperwork reviews.
6 Over all there is not very much here. Palisades we
7 had very, very few problems with.

8 We found that their programs were very
9 well put together, their plant staff very
10 knowledgeable. We felt that what they had done was
11 definitely adequate for license renewal. We wish they
12 had gone first so they could have shown some of the
13 other guys -- I'll leave that.

14 Again, the scoping and screening programs
15 as well, we didn't have any problems with them. Very
16 minor issues if at all. We don't see any impediments
17 to the license renewal process.

18 That concludes my portion. No, it
19 doesn't. I forgot. I get to talk about current
20 performance, although that is not really part of the
21 inspection. That's still current operations. There
22 is a slide coming up. They are in the licensee
23 response column, all greens, of our NRC action matrix.
24 We don't have any cross-cutting issues at this time.
25 We continue to follow the baseline reactor oversight

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1 process where we do routine inspections. That's the
2 slide.

3 These are the recent inspection findings.
4 There is one I would kind of like to highlight, one
5 under barrier integrity that was found in the fourth
6 quarter of 2005. That actually was a through-wall
7 leak on a heat exchanger, something which we hope that
8 the enhancements that are going to be made to the
9 service water, open cycle cooling water system will
10 help prevent in the future.

11 However, it was something just to
12 demonstrate that even if issues slip through and
13 problems exist that they are identified in a timely
14 manner and corrected before they become big problems
15 for the plant.

16 CHAIRMAN SIEBER: Is this is a tube leak?

17 MS. LOUGHEED: I believe it was a tube
18 leak.

19 CHAIRMAN SIEBER: In what heat exchanger?
20 Do you know?

21 MS. LOUGHEED: I looked at that yesterday
22 and I don't remember.

23 MR. HARDEN: This is Paul Harden, Site
24 Vice President. It was in our non-safety related
25 containment air cooler coil.

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1 MS. LOUGHEED: Okay.

2 CHAIRMAN SIEBER: So under an action
3 sequence where you've got containment pressurization,
4 leakage would be from containment through that leak to
5 the outside?

6 MS. LOUGHEED: Right.

7 CHAIRMAN SIEBER: Okay.

8 MS. LOUGHEED: And it was correctly
9 prompted. Overall I believe none of the other
10 findings on here really had anything to do with
11 license or could be conceived to have anything to do
12 with license renewal.

13 CHAIRMAN SIEBER: I presume that finding
14 was licensee identified?

15 MS. LOUGHEED: Self-revealing, yes.

16 CHAIRMAN SIEBER: Okay.

17 MS. LOUGHEED: Back to Juan.

18 MR. AYALA: Thank you, Patricia. Now I am
19 going to go into the staff's review of the Aging
20 Management Program and aging management reviews. The
21 staff reviewed 24 Aging Management Programs. Of those
22 20 are existing AMPs and four are new, as the
23 applicant stated. Thirteen of those are consistent
24 with GALL, 10 of them are consistent with exceptions
25 or enhancements, and one is plant specific.

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1 CHAIRMAN SIEBER: Could you describe the
2 one that is plant specific?

3 MR. AYALA: I'm going to get into that one
4 in a slide.

5 CHAIRMAN SIEBER: Okay. I'll wait.

6 MR. AYALA: Okay. The Buried Services
7 Corrosion Monitoring Program is a new AMP consistent
8 with GALL which uses visual inspections of external
9 surfaces. The applicant had initially committed to
10 performing visual inspections of buried piping within
11 10 years after entering the period of operation. As
12 a result of the staff's review, the applicant will now
13 perform visual inspections within 10 years prior to
14 entering the period of extended operation and within
15 10 years of entering the period of extended operation.

16 There is one below-grade tank, as the
17 applicant mentioned earlier, and that is the diesel
18 fuel oil storage tank. As they mentioned, it is
19 contained in a vault and not exposed to soil.

20 CHAIRMAN SIEBER: Since we are talking
21 about tanks, if I look at the picture on the
22 application of the plant, I see a lot of tanks.
23 Probably tanks like the RWST. In Westinghouse plants
24 they would call them coolant recovery tanks,
25 condensate storage tanks and so forth, various tanks

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1 that aren't buried but they sit on the ground.

2 Since they sit on the ground you can't
3 inspect from underneath. You can't dig a tunnel under
4 the tank to get to the bottom of it so you have to
5 inspect it from the inside. Some of those tanks will
6 build up kind of a sludge or something on the bottom
7 of the tank as it settles out.

8 Are the bottoms of the surface constructed
9 tanks inspected the same as it would have been if it
10 were a below-ground tank? Is that part of the Aging
11 Management Program? Perhaps the licensee can tell me
12 about that.

13 MR. ROBERTS: Bill Roberts, Programs Lead,
14 Palisades. Bottom thickness testing?

15 CHAIRMAN SIEBER: Yes.

16 MR. ROBERTS: On the inside. That's what
17 we plan on doing.

18 CHAIRMAN SIEBER: Okay. That's
19 ultrasonic?

20 MR. ROBERTS: Right, for thickness.

21 CHAIRMAN SIEBER: Okay.

22 MR. AYALA: Moving on, the Bolting
23 Integrity Program is an existing program consistent
24 with enhancements. The applicant is going to revise
25 their master ISI plan. They are going to evaluate

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1 high-strength bolting used in component supports.

2 Non-safety related bolting will be
3 monitored by the System Monitoring Program and
4 structural bolting including fastener will be managed
5 by the Structural Monitoring Program. ASME Class 1,
6 2, and 3 bolting is inspected by the ASME Section XI
7 ISI program once per 10-year interval. The inspection
8 is going to involve bolts two inches or larger.

9 Bolting Integrity Program will incorporate
10 the guidance of EPRI and the staff determined that the
11 guidelines reflected industry practice and meets the
12 recommendations in GALL.

13 CHAIRMAN SIEBER: For structural bolting,
14 I presume that the indication of a problem is when the
15 bolting fails for structural bolts. You don't run
16 around doing ultrasonic examinations through the shank
17 of the bolt. What is considered a failure in
18 structural bolting?

19 MR. AYALA: David Jeng --

20 MR. JENG: This is David Jeng of the
21 Division of Engineering. The concern is about the
22 high strength structure bolting, 150 psi, and we are
23 concerned about cutting aspect in so much the regular
24 material normally control it and managed by the
25 Structural Monitoring Program. In high-strength

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1 structural bolting, then they commit to technical
2 variation of cracking or not.

3 CHAIRMAN SIEBER: Well, it seems to me
4 that being able to monitor high-strength bolts is
5 important because of the seismic issues. If you get
6 a seismic event, even though the bolting may be
7 satisfactory for normal plant operation without a
8 seismic event, the combination of plant operation and
9 the seismic event raises the stress intensity pretty
10 high. You may have self-revealing cracks that turn
11 into failures.

12 MR. JENG: Seismic induced stresses and
13 other stresses are covered by the design configuration
14 requirements.

15 CHAIRMAN SIEBER: Okay. Thank you.

16 MR. AYALA: Okay. Moving on to the Boric
17 Acid Corrosion Program, the applicant stated that this
18 program was consistent with GALL with enhancements.
19 Three enhancements that the applicant provided were
20 also provided as commitments and they are listed on
21 the slide here.

22 Enhancements are scheduled for
23 implementation prior to the period of extended
24 operation and the staff found that with these
25 commitments the program is consistent with GALL.

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1 The Flow-Accelerated Corrosion Program is
2 an existing program consistent with GALL. The license
3 renewal application originally stated that the trigger
4 point for conducting engineering evaluation for non-
5 safety related piping was less conservative than that
6 of safety-related piping. As a result of the staff's
7 review the applicant will use the same criteria that
8 they used for safety-related piping for non-safety
9 related piping.

10 The Reactor Vessel Integrity Surveillance
11 Program. The applicant stated that the program is
12 consistent with enhancements. The staff reviewed
13 these enhancements and these enhancements were also
14 once again submitted as commitments and are listed
15 here. With the four enhancements the staff found that
16 the program is consistent with GALL. The next slide
17 shows the other two commitments and enhancements that
18 the applicant provided.

19 Moving on, the System Monitoring Program
20 is a plant-specific program that the applicant had in
21 the application. It is consistent with GALL and
22 XIM29, above-ground carbon steel tanks, and is used to
23 identify the greater conditions on external surfaces,
24 piping, tanks, and other components and equipment
25 prior to the loss of systems in components that tend

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1 to function.

2 The applicant will credit opportunistic
3 inspections of external surfaces when insulation is
4 removed. If insufficient data exist, the applicant
5 will remove additional insulation from additional
6 locations to increase the sample. The data will be
7 available to the regional staff for review and
8 determination if the sample size is sufficient.
9 Moving on to the aging management reviews.

10 MEMBER BONACA: Before we move to that, I
11 have a question. Some of these problems you would
12 expect to have them in place already. I was thinking
13 about the boric acid corrosion problem that you had on
14 page 25.

15 MR. AYALA: Yes.

16 MEMBER BONACA: There are three
17 commitments. One is revise procedures to include
18 criteria for observing susceptible SSC for boric acid
19 leakage, etc. I would expect that after Davis-Besse
20 people have implemented already procedures of this
21 nature. Are these significant changes for license
22 renewal or do they have already problem that does this
23 kind of inspections?

24 MR. AYALA: If I can ask the applicant if
25 they can address the implementation of the

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1 enhancements.

2 MR. ROBERTS: Bill Roberts, Program Lead,
3 Palisades. I think that Bob Vincent typified this
4 earlier. A lot of our commitments is we took maybe a
5 narrow view and said we think our programs comply but
6 we are going to say that we need this enhancement
7 implemented to be fully consistent with the GALL.

8 If I would go through these three
9 commitments, the first one on the slide there, revise
10 procedures to include criteria for observing
11 susceptible SSC for boric acid leakage and degradation
12 during system walk-downs. We have a separate boric
13 acid inspection program and separate procedures.

14 What we want to do here is make sure that
15 the system walk-down procedures also includes a
16 criteria and so to come full circle we want to make
17 sure that the boric acid -- we take credit from the
18 system honoring program and the walk-downs for boric
19 acid component. We felt that was an enhancement.

20 The second one revised the procedures to
21 include explicit acceptance criteria. I think our
22 acceptance criteria was always any signs of boric acid
23 but we hadn't really spelled that out to the degree
24 that we think it's necessary to call us consistent
25 with GALL.

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1 I think the Region challenged us on that
2 and we said, "Yeah, you're right. We need to come up
3 with some more explicit acceptance criteria rather
4 than just any signs of boric acid. Maybe we need to
5 do a little more extended condition and determine if
6 it was a drip from another pipe or internally came
7 from the pipe that it's on, that kind of thing.

8 The third one, revise the procedures. We
9 have the maintenance rule structural monitoring
10 program which, again, looks at the structural aspects
11 of the plant. This is again reference, I think, to
12 the walk-down procedures. We want to make sure that
13 the system walk-down procedure also observe structural
14 members and components and look for boric acid also.

15 We don't just want the structural
16 monitoring program to be the only program that's going
17 to look for boric acid in the structures. We want the
18 system monitoring program to look at that. That is my
19 explanation as to why we chose to call those
20 enhancements and not just flat out say we are
21 consistent with the GALL from the get go.

22 MEMBER BONACA: Thank you.

23 MR. AYALA: Once again, Juan Ayala.
24 Moving on to the aging management review results. The
25 staff performed a 100 percent review of 29 plant

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1 systems, 10 structures, and nine commodity groups. In
2 the auxiliary systems the LRA did not identify any
3 aging management program for degradation of neutron
4 absorbing panels. The applicant does not have a
5 coupon program for the boring carbide panels.

6 As a result of the staff's review the
7 applicant has committed to performing industry
8 approved neutron absorption testing to monitor for
9 degradation. In the interim the applicant also
10 sampled spent fuel pool water on a monthly basis for
11 total organic carbon with typical values around 0.2
12 PPM. This will provide an indication of degradation
13 of material.

14 For thermal sleeves the applicant stated
15 that thermal sleeves did not serve an intended
16 function and no aging was required. As a result of
17 the staff's review the applicant added the aging
18 effects for cracking due to stress corrosion cracking
19 and primary water stress corrosion cracking.

20 The applicant will manage stainless steel
21 sleeves with the ASME Section XI ISI Program and the
22 Water Chemistry Programs. Alloy 600 nozzle of sleeves
23 are managed by the alloy 600 and Water Chemistry
24 Programs. For feedwater nozzle thermal sleeves, loss
25 of material due to general corrosion is managed by the

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1 Water Chemistry Programs and credits inspections of
2 adjacent nozzles using the ADME Section XI program.
3 Loss of material due to FAC is credited -- credits the
4 FAC program and inspections of adjacent nozzles.

5 Moving on to inaccessible concrete. The
6 applicant stated and the staff verified that below
7 grade environment is non-aggressive. Periodic testing
8 of ground water will be performed as part of the
9 Structures Monitoring Program at least every five
10 years.

11 The staff found that the applicant had
12 appropriately addressed the aging effects and
13 mechanisms as recommended by GALL. As shown on the
14 table here, the results are well below acceptance
15 criteria and no adverse trends exist.

16 Moving on to the electrical and I&C
17 components. The application grouped these as nine
18 commodity groups and they are listed on the right
19 here. The staff reviewed these and found that
20 everything was consistent with GALL and there was no
21 action required by the applicant.

22 Moving on to the Time-Limited Aging
23 Analyses, these were the TLAA's described in the
24 license renewal application. I'm going to first start
25 by talking about reactor vessel neutron embrittlement.

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1 There are three analyses affected by irradiation
2 embrittlement. These are PTS, upper shelf energy, and
3 pressure temperature limits.

4 I'm going to go into a deeper discussion
5 on the first two. For the 60-year operation the
6 applicant used 42.37 EFPY in their calculations. As
7 the applicant mentioned, the capacity factor that they
8 are using is 91 percent.

9 RV pressurized thermal shock. Limiting
10 material is intermediate shell and lower shell axial
11 welds. As a result of the calculation, the screening
12 criteria will be exceeded in 2014 and this calculation
13 was verified by the staff. In the next slide we'll
14 address the options that the applicant has to address
15 this concern.

16 Palisades' plan for PTS are as follows:
17 The applicant can continue to use an ultra-low leakage
18 core design and submit final PTS resolution three
19 years before 2014. Some of the options that the
20 applicant has is that they can further reduce flux and
21 preheating safety injection water, or perform thermal
22 annealing of the reactor vessel.

23 MEMBER WALLIS: Has thermal annealing ever
24 been done on a U.S. reactor?

25 MR. AYALA: No.

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1 MEMBER WALLIS: This would be a novel
2 thing to do.

3 PARTICIPANT: It's been done in Europe.

4 MEMBER WALLIS: It's been done in Europe,
5 yes, but it hasn't been done over here.

6 MR. MITCHELL: This is Matthew Mitchell,
7 Chief of the Vessels in the Internals Integrity
8 Branch. I would in response to Dr. Wallis's
9 observations say that we did a number of years ago
10 complete an annealing demonstration project at an
11 unused facility. The technology at least in that
12 sense for thermal annealing was effectively
13 demonstrated. You are correct, there has been no
14 actual annealing of a U.S. vessel.

15 MEMBER WALLIS: Thank you.

16 CHAIRMAN SIEBER: When you do an
17 annealing, how can you tell when you're done that you
18 actually annealed it?

19 MR. MITCHELL: Again, Matthew Mitchell.
20 Part of the process for exercising 5066, the thermal
21 annealing rule, would require a licensee to undertake
22 a material program to demonstrate the benefits that
23 were gained as a result of the annealing process.
24 That would likely be as a result of testing sample
25 coupons to a simulated annealing process to

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1 demonstrate what type of material property recovery
2 would have been effected by the thermal annealing.

3 CHAIRMAN SIEBER: But that would not
4 examine the actual vessel itself in any way?

5 MR. MITCHELL: Well --

6 CHAIRMAN SIEBER: Just coupons, right?

7 MR. MITCHELL: There would be other
8 options available. Of course, one could contemplate
9 taking actual material samples from the vessel itself.
10 However, I think that would probably be secondary.

11 CHAIRMAN SIEBER: I would rather not do
12 that.

13 MR. MITCHELL: Yeah. I think having the
14 right material available in the appropriately
15 irradiated condition to then subsequently perform
16 effectively the annealing process on to demonstrate
17 property recovery would be probably the preferred
18 method of demonstration.

19 CHAIRMAN SIEBER: Okay.

20 MR. AYALA: Thank you, Matt, for that.
21 Once again this is Juan Ayala. Moving onto reactor
22 vessel upper shelf energy. The limiting plate is the
23 lower shell plate and it is expected to exceed the
24 acceptance criteria in 2021. This calculation was
25 also confirmed by the staff and the options for this

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1 concern will be addressed in the next slide.

2 The limiting weld is the intermediate to
3 lower shell circumferential weld. The analysis for
4 this was found acceptable and the calculation was
5 confirmed by the staff. The plan that Palisades has
6 for addressing upper shelf energy is to submit an
7 equivalent margin analysis three years before 2021.

8 MEMBER WALLIS: Presumably that works out.
9 Presumably this 50 ft-lbs is a conservative first
10 estimate and then when you do a more thorough job you
11 can prove that it's okay even with a lower value?

12 MR. MITCHELL: Again, Matthew Mitchell.
13 Like the screening criteria that we are familiar with
14 in 5061, the 50 ft-lb limit that's in 10 C.F.R. Part
15 50, Appendix G, has been exceeded by more than one
16 facility. An equivalent margins analysis has been
17 routinely successful at demonstrating equivalent
18 margins of safety down, I would say, significantly
19 below the values he listed for the limiting plate at
20 Palisades.

21 MEMBER WALLIS: The difference between
22 48.97 and 50 doesn't seem like very much. You would
23 think they could figure out how to improve that
24 somehow.

25 MR. MITCHELL: It's, shall I say, a matter

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1 of literal compliance with the regulation. If you go
2 below the 50 ft-lbs then it does require an enhanced
3 analysis. I would suspect such an analysis to be
4 successful.

5 MR. AYALA: Okay. Moving on, for the
6 metal fatigue TLAA the CUF for criterion is met for
7 all components. If there are any locations where
8 environmental effects of fatigue will not -- where the
9 minimum will not be reached, the Fatigue Monitoring
10 Program will ensure that the CUF remains below 1 for
11 the period of extended operation. The staff found
12 these evaluations acceptable.

13 DR. SHACK: When they did the
14 environmental analysis they came up with a CUF of 4.4
15 or something for the limiting component. The Fatigue
16 Monitoring Program sits there and counts cycles.
17 Let's just assume that they count the cycles and the
18 cycles actually happen to coincide with the stuff that
19 they did the analysis and sometime the CUF will equal
20 1. What do you do then?

21 MR. AYALA: Mark Hartzman.

22 MR. HARTZMAN: This is Mark Hartzman from
23 the Engineering Mechanics Branch. I think the
24 monitoring program does more than just count cycles.
25 It actually calculates CUFs on a continuous basis

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1 apparently. Therefore, it's both. It counts cycles
2 and when it sees that the CUF is approaching 1 it will
3 take some sort of measure.

4 DR. SHACK: But every time I read this it
5 sounds as though the Fatigue Monitoring Program is
6 computing CUF ASME code version and it's not applying
7 an environmental correction. I'm not sure exactly how
8 you make the connection and what you would do if you
9 do hit the CUF of 1.

10 MR. HARTZMAN: They are supposed to
11 replace or repair -- repair or replace.

12 DR. SHACK: They can't inspect and
13 analyze?

14 MR. HARTZMAN: Maybe they can. Supposedly
15 the analysis that goes into the Fatigue Monitoring
16 Program is already what one would call a pencil-
17 sharpened analysis so, therefore, at that point they
18 are most likely to either repair or replace. Maybe
19 the applicant cares to address that.

20 DR. SHACK: Am I right that the CUF that
21 you're computing in the fatigue monitoring program
22 does not include an environmental enhancement, or does
23 it?

24 MR. HARTZMAN: I can't address that
25 because I didn't review that program.

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1 MR. KNEELAND: This is John Kneeland, NMC.
2 The numbers that you see due include the environmental
3 correction factor. The particular number that you're
4 referencing, the 4.65, I believe it is, we have
5 updated that calculation in a later submittal. We
6 used an overly conservative environmental factor in
7 that particular case. We should have used a much
8 smaller number and that number is now less than 1.

9 MR. HARTZMAN: At the time the SER was
10 written we didn't have that information.

11 DR. SHACK: Oh, okay, because you then
12 manage it through the fatigue program. When you hit
13 the 1 you just replace the compound.

14 MR. HARTZMAN: Right. Well, repair or
15 replace.

16 DR. SHACK: Or replace. Right.

17 MR. HARTZMAN: That's the commitment.

18 DR. SHACK: So then the Fatigue Monitoring
19 Program does include an environmental enhancement
20 factor?

21 MR. HARTZMAN: That is correct.

22 DR. SHACK: It's never clear to me when I
23 read that.

24 MR. AYALA: Once again, Juan Ayala.
25 Moving on to environmental qualification of electrical

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1 equipment. The staff reviewed the applicant's TLAA
2 and determined that it was acceptable and concluded
3 that the evaluation was acceptable for the EQ
4 components.

5 Okay. Moving on to underclad crack
6 growth. This is the only confirmatory item that we
7 have in the Safety Evaluation Report. This is a new
8 TLAA that is not in the application and came about as
9 a result of the staff's audit review. The applicant
10 addressed the issue of underclad crack as a TLAA that
11 stated that the bonding fracture mechanics and staff-
12 approved WCAP would be applicable to Palisades.

13 The staff just received last week a plant
14 specific WCAP and is in the process of reviewing it.
15 This plant specific WCAP uses the same methodology
16 used in the staff-approved WCAP. We will address that
17 issue in the final SER.

18 To summarize the TLAA's, the TLAA list is
19 complete and acceptable. The analysis have been found
20 to either remain valid for the period of extended
21 operation projected to the end of the period of
22 extended operation or will be managed during the
23 period of extended operation. There are also no plant
24 specific exceptions.

25 In conclusion, the staff has concluded

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1 that there is reasonable assurance that the activities
2 authorized by the renewed license will continue to be
3 conducted in accordance with the current licensing
4 basis. That concludes our presentation.

5 MEMBER BONACA: Question for Patricia. I
6 wasn't here when you started the presentation. I
7 wanted to ask about the physical conditions of this
8 plant. You recently -- well, you've been looking at
9 a number of plants.

10 MS. LOUGHEED: I have to admit that I have
11 not been at Palisades in a while other than the
12 inspection in October and Palisades is not a plant
13 that I normally go to. Having said that, the licensee
14 is working on improving the physical condition of the
15 plant. It does meet our minimum standards. I think
16 there are others. I would hesitate to say it was
17 excellent but it is definitely not poor in any way.

18 MEMBER BONACA: There was an inspection
19 report where, for example, they are quoting extensive
20 corrosion in a diesel --

21 MS. LOUGHEED: Yes. There were a few
22 components. These are non-safety related components
23 where there has been corrosion and the licensee was
24 aware of it. As of right now there is no requirement
25 for them to monitor that. They did write corrective

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1 action documents for it. It was not on any of the
2 safety related stuff. It was all non-safety related
3 components.

4 I think the utility has made some
5 decisions in the recent past because they have decided
6 to seek a new owner and to seek license renewal,
7 whereas previously they had been thinking strongly
8 about shutting down in a few years and that has
9 affected how they have maintained the plant.

10 MEMBER BONACA: Thank you.

11 CHAIRMAN SIEBER: Any additional questions
12 from any of the members? Okay. If there are no
13 questions, I want to thank the staff for their
14 presentation and their hard work.

15 MR. GILLESPI: I would like to -- I don't
16 know if you noticed it in the presentation. It takes
17 us two years to figure out if we did something right
18 because we're on a 22-month review schedule.
19 Palisades was nice enough to step up and actually use
20 a draft GALL document and do a comparison. They did
21 in this whole process go a bit above and beyond to
22 help us prove, you might say, the goodness of a GALL
23 document that doubled in scope. Also to help we've
24 created a new document.

25 I know ACRS hates to hear this because when we

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1 created the audit reports it was an extra 700 pages
2 you had to read. An important document that came out
3 of the audit process that evolved at Palisades in the
4 couple of plants that volunteered was the question and
5 answer database which is on the official record where
6 the audit team actually looks at the application and
7 says knowing nothing else but what's in the
8 application with every question we can think of.

9 Then they send that to the applicant and
10 that becomes kind of the first step in the audit
11 process. Additional questions are developed and that
12 database actually becomes almost a supplement to the
13 application with the additional detail we are
14 dependent upon.

15 It has actually become now with current
16 reactors since Palisades kind of a critical element in
17 the whole process of documenting what happens in an
18 audit on the public record as opposed to summarizing
19 something in an audit report because it's the
20 applicant's own words that answer the questions.

21 They have contributed to an improvement in
22 the process and improvement in our openness in how we
23 are moving forward. Now we have to figure out how to
24 eliminate. We've created this new thing, this new
25 database. Now we have to try to hopefully get rid of

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1 something in the middle there.

2 Maybe the audit report isn't as important
3 now that we have the question and answer database.
4 That raises that question. I do want to thank the
5 licensee for bearing with us and trying something a
6 little new which we have met, I think, with some
7 success both in process and documentation.

8 MS. LUND: I just wanted to mention from
9 a programmatic standpoint we welcomed Patricia to our
10 staff on a rotational basis just this week and it
11 really helps us to get regional inspector insight into
12 our programs. Anyway, she's going to be with us for
13 the next couple of months.

14 DR. SHACK: Where is this question and
15 answer database now?

16 MR. GILLESPI: Actually, I know you hate
17 to hear this, but it's in ADAMS. I know, isn't that
18 deadly? In fact, I'm going up to Pilgrim and Vermont
19 Yankee next week. I apologize for not being here
20 tomorrow for Nine Mile but I'm going to be at Oyster
21 Creek for the draft environmental safety. P.T. Kuo,
22 who normally would be here if I'm not here, has been
23 on three weeks of sick leave for some surgery he had
24 done.

25 I apologize for not being here tomorrow.

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1 We are actually going to take copies of the question
2 and answer database with us to the public meetings
3 which are the exit meetings, if you would, from the
4 audits because that really becomes kind of the public
5 documentation of what took place at the audits.

6 DR. SHACK: This is on the license renewal
7 website there where you have the application and the
8 environmental impact statement.

9 MR. GILLESPI: When I sat today with the
10 guys, I said, "We've got this question and answer
11 database. It's really good stuff. It's the
12 licensee's own words about how we responded. They
13 said, "Well, it's in ADAMS." I had the same reaction
14 and we are working maybe to get it on the website.
15 It's just a decision we hadn't made yet but it is a
16 significant body of information which is very focused
17 and it is the next stepping-off point from the
18 application.

19 MS. LUND: Very much like the RAIs. It
20 gets supplemented over time and then it gets provided
21 in one lump sum at the end, you know, when all have
22 been answered. I guess we have been treating it a lot
23 like the RAI responses in that, you know, it goes all
24 into ADAMS rather than we don't put RAI responses on
25 the website. I guess this is something that we just

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1 have to kind of consider how to --

2 MR. GILLESPI: I really hesitated to go to
3 a meeting with the general public and have to give
4 them an ADAMS number. What we are actually doing is
5 the two project managers are going to leave their e-
6 mails and we will e-mail a copy to anyone who actually
7 wants a copy of that database because it's very
8 timely. It's like two weeks or three weeks after the
9 audit it's available and so it's more like instant
10 gratification of what really went on.

11 CHAIRMAN SIEBER: I actually found
12 something in ADAMS a couple of weeks ago.

13 DR. SHACK: If they give you the number,
14 it's okay but how do you get the number?

15 MR. GILLESPI: We are going to give out
16 the number. We are kind of reexamining a publication
17 documentation of everything we are doing because we
18 are doing a lot of good stuff but if it gets hidden in
19 ADAMS no one knows it. At least to have them
20 available and maybe sorted in some reasonable way
21 where we can get information would be good.

22 DR. SHACK: Some place that it could be
23 Googled.

24 MR. GILLESPI: Yes, some place you could
25 Google it.

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1 CHAIRMAN SIEBER: You can Google ADAMS at
2 its own Google.

3 DR. SHACK: Yes, I know, but there's a
4 difference between Google and the ADAMS search.

5 CHAIRMAN SIEBER: Well, thanks very much.
6 Appreciate that.

7 DR. SHACK: Google works.

8 CHAIRMAN SIEBER: Again, thanks to the
9 staff. Just to follow up on your remarks, I see
10 improvements in this process both from the standpoint
11 of the application and the staff including the region-
12 based staff as we go along. Hopefully by the time we
13 have done all the plants it will be a really good
14 process.

15 DR. SHACK: The next go-around.

16 CHAIRMAN SIEBER: I think that is a credit
17 to licensees and also to the staff to try to make the
18 process work that is thorough and has meaning for the
19 application that is being applied to. I give my
20 congratulations. The documents are getting easier,
21 better organized and easier for me to read and
22 understand. That's important. Again, thanks to
23 everyone here that contributed to this process.

24 Are there additional questions,
25 statements, or remarks by anyone?

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1 MS. CAREY: Yes. Can I speak up? Can
2 anyone hear me? Hello?

3 CHAIRMAN SIEBER: Yes.

4 MS. CAREY: Hi. Do I count?

5 CHAIRMAN SIEBER: I don't know who you
6 are.

7 MS. CAREY: I'm Corinne Carey in Grand
8 Rapids, Michigan.

9 CHAIRMAN SIEBER: Oh, good.

10 MS. CAREY: I appreciated your joke there
11 about actually finding something on ADAMS.
12 Incidentally, is ADAMS or ATOMS?

13 CHAIRMAN SIEBER: ADAMS.

14 MS. CAREY: Oh, okay.

15 CHAIRMAN SIEBER: Automatic something or
16 the other.

17 MS. CAREY: I'm relatively an amateur at
18 all this, of course, but I appreciate that many of you
19 have spent many long hours in training and all of that
20 in working out these hopeful solutions to nuclear
21 power, etc. I am strongly questioning many of the
22 things about this process.

23 Among other things that you are not
24 considering the very issue that this nation is at war
25 about. We are at war on terrorism and you are not

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1 considering it on our nuclear plant? This is
2 incredible to me and how you can call that outside the
3 scope according to a letter that I've been reading
4 here from Valkyre. Is that his name? It just seems
5 to me that you have no right to not change the
6 procedure. I don't care what your procedure has been
7 in the past.

8 In fact, there have been times when I have
9 driven right up to the reactor fence all by myself,
10 just an ordinary person, etc., etc., partly just to
11 see what would happen if I did it. Now, of course, I
12 assume that is not allowable but, in the meantime, how
13 can you not include the issues of terrorism on 100
14 some nuclear bombs just sitting and waiting to get hit
15 that are scattered throughout our country?

16 CHAIRMAN SIEBER: Would you like me to
17 address that?

18 MS. CAREY: Yes, please.

19 CHAIRMAN SIEBER: As I am sure you are
20 aware, the responsibility of the Nuclear Regulatory
21 Commission do extend to a wide variety of things, one
22 of which is license maintenance, license renewal, and
23 compliance. Another one is security. We do not mix
24 and match. When we deal with a specific subject, we
25 follow the regulations that exist on that subject, but

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1 that does not mean that issues like security and so
2 forth are not being addressed for the Palisades plant
3 or any other plant.

4 MS. CAREY: Well, I assume it certainly is
5 but to not include that in the process of renewal for
6 another 20 years when I understand that the original
7 engineer design of any nuclear power plant was 30
8 years. Then the original NRC licensing was done for
9 40 years which I understand was an industry
10 requirement or request because of financial need to
11 break even or however you describe it. But then to
12 add another 20 years and Grand Rapids is 70 miles down
13 wind but that's not far enough if things go wrong.

14 CHAIRMAN SIEBER: Well, my grandchildren
15 live there so I have something at stake, too.

16 MS. CAREY: Then why are you anywhere near
17 approving it?

18 CHAIRMAN SIEBER: We haven't said whether
19 we are going to approve it or not.

20 MS. CAREY: No, but you have denied any
21 kind of legal process that hundreds of
22 environmentalists and other citizens. They are
23 citizens. They are not even a lot of them
24 environmentalists but they are saying, "They're
25 risking us? They're risking my land, my home, my

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1 children, my grandchildren, great-grandchildren."

2 How can you not look at terrorism as part
3 of that when the world -- when this country has killed
4 -- has had 25,000 and more of our people die fighting
5 a war on terrorism and you are not including it in
6 renewal procedures? Sounds like a nut, doesn't it?

7 MEMBER WALLIS: We are considering it in
8 a different context, as my colleague explained. We
9 look at the security of plants but we don't include it
10 in this particular hearing on license renewal. It's
11 a different context. We are addressing it in a
12 different place, but we are certainly addressing the
13 security and the terrorism issue.

14 MS. CAREY: Well, not in the letter that
15 I got.

16 MEMBER WALLIS: Well, unfortunately it is
17 a subject of security so we don't do it in public
18 because we don't want the terrorist to hear what we
19 say about security of nuclear plants.

20 MS. CAREY: Well, I appreciate that. We
21 don't want to give anybody any ideas. Believe me, if
22 even a little former fourth-grade teacher can think of
23 some ideas of what could happen, I'm sure that anybody
24 that was really determined to do something could come
25 up with some horrible things. But to officially

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1 exclude it from the procedure of renewal and to
2 consider renewing the plant when it's already
3 embrittled it doesn't make any sense at all.

4 CHAIRMAN SIEBER: Okay. Well, we
5 certainly appreciate your comments and you are part of
6 the record here.

7 MS. CAREY: Thank you.

8 CHAIRMAN SIEBER: It will appear in the
9 transcript.

10 MS. CAREY: Good.

11 CHAIRMAN SIEBER: You can get it under
12 ADAMS.

13 MS. CAREY: One voice of millions.

14 CHAIRMAN SIEBER: Okay. Thank you very
15 much.

16 MS. BARNES: May I make a comment? May I
17 ask a question?

18 MS. CAREY: Are you asking me?

19 MS. BARNES: I'm asking the group there.

20 CHAIRMAN SIEBER: I'm sorry. I can't hear
21 you very well.

22 MS. BARNES: Oh, yes. Can I make a
23 comment, ask a question? This is Katherine Barnes.

24 CHAIRMAN SIEBER: Oh, okay. Sure.

25 MS. BARNES: I have a concern. I recently

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1 read that there was some flooding of radioactive
2 effluent onto the soil within the compound in 1990 and
3 Consumers Power -- I think it was Consumers Power at
4 that time -- had asked for exemptions to a clean up.
5 They said by leaving the soil there that they didn't
6 think it was affecting anybody because the people
7 didn't have wells and used city water. Because it was
8 a fenced-in compound they didn't think anybody but
9 their workers would be there. I was wondering, did
10 they clean that up or did you allow that to just sit
11 there?

12 CHAIRMAN SIEBER: I'm not familiar with
13 that incident so I can't respond to your question.

14 MS. BARNES: Okay. Well, there's --

15 MS. LOUGHEED: Ma'am.

16 MS. BARNES: -- some documentation on it.

17 MS. LOUGHEED: Ma'am, there will be a
18 meeting in a few weeks of the inspection process
19 called the Mid-Cycle Assessment. That would be an
20 excellent meeting to address that question.

21 MS. BARNES: Okay.

22 MS. LOUGHEED: They would be able to
23 answer it.

24 MS. BARNES: Okay. I have another
25 question and that is about Pack Sore. I understand it

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1 has bad wells and is sitting in kind of a cask that is
2 actually on unstable ground and it is surrounded by
3 other casks. Now, they know that's a problem cask,
4 that it could -- that the wells could break, it could
5 leak.

6 My question is why aren't they dealing
7 with it? Why are they just having it there and have
8 they ever assessed how much time it would take them if
9 that cask started to leak to get all those other casks
10 out of the way so that they could even deal with it.
11 Just by letting it sit there is seems like negligence
12 to me. Why aren't they handling that? Why aren't
13 they doing something about that cask?

14 MS. LOUGHEED: Again, ma'am, this is
15 Patricia Loughheed of the Regional Inspection Office.
16 That is a question that should be asked of the
17 regional folks that are assessing current operation
18 and not license renewal. It sounds like you have a
19 problem with what is going on today.

20 MS. BARNES: This is something that has
21 been continuing. The cask has been there for quite a
22 while.

23 MS. LOUGHEED: Right. It's something that
24 is currently there that you have a problem with that's
25 current and you don't necessarily want to wait another

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1 four or five years before it gets addressed so I would
2 say --

3 MS. BARNES: I'm just saying that --

4 MS. LOUGHEED: It should be --

5 MS. BARNES: -- if it is part of license
6 renewal it should be addressed. These are major
7 issues that could cause major problems.

8 MS. LOUGHEED: Ma'am?

9 MS. BARNES: I just wondered because I
10 didn't hear any mention of the problem in the
11 discussion today. To me I believe these are very
12 important issues.

13 MS. LOUGHEED: I agree that they are
14 important issues but it sounds like they are current
15 issues and so you should be taking them up in the mid-
16 cycle assessment meetings because they are current
17 problems. I believe that you would find a more
18 receptive audience than one which is looking at a
19 licensing process, not a current process.

20 MS. BARNES: This would be part of the
21 license because these are conditions there.

22 MS. LOUGHEED: Ma'am?

23 MS. BARNES: I live near a re-licensed
24 plant that disaster is waiting to happen and has
25 possible soil contamination which by this time, since

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1 1990, 16 years ago, has probably leaked into the Great
2 Lakes.

3 MS. LOUGHEED: So you're saying you are
4 not concerned today. You are only concerned in 2014.

5 MS. BARNES: I'm concerned with the
6 relicensing that they are even considering relicensing
7 a plant that has shown that it's negligent. I mean,
8 it has had so many near disasters. Besides terrorism
9 they are not taking other things into account -- the
10 track record. They are not taking into account the
11 contamination of soil. They are not taking into
12 account the problems in the past.

13 They are not taking into account
14 deteriorating water quality or the cancer pocket, the
15 health of the residents in that area. There are so
16 many things that have happened there. At one point
17 they turned off the alarms because they didn't want to
18 disturb people so they turned off the alarm system for
19 a while. There's just a lot of things that have gone
20 on here.

21 Someone within the nuclear industry that
22 used to work there, he said he wouldn't work there
23 anymore, that he didn't like the way they run things.
24 He said it is well known within the nuclear industry
25 that Palisades is the most likely to blow of all the

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1 nuclear power plants in the United States. We have a
2 right to be concerned.

3 My whole life, my whole family, my
4 friends, the ecosystem, the Great Lakes, that precious
5 water, everything is at stake. I think this should be
6 part of the relicensing because these are important
7 issues. Your scientists and experts there should be
8 looking at these things as well.

9 CHAIRMAN SIEBER: Well, unfortunately we
10 are restricted by the Code of Federal Regulations Part
11 54 which describes what we review -- when we consider
12 license renewal. The issues you raise I'm sure are
13 important to you and a lot of folks. I suggest and
14 agree with Patricia that it ought to be brought up at
15 the mid-cycle assessment meeting that the region holds
16 in the vicinity of the plant. I think that is an
17 appropriate forum for you to state your concerns.

18 MS. BARNES: Do you know when that meeting
19 will be, sir?

20 MS. LOUGHEED: This is Patricia Lougheed.
21 I do not know when that meeting will be but I will be
22 happy to find out and get back to you.

23 MS. BARNES: Okay. I would very much
24 appreciate it. Thank you.

25 MS. CAREY: Excuse me. How are you going

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1 to get back to us if you don't know who we are and
2 where we live?

3 MS. LOUGHEED: That's what I was just
4 about to ask.

5 MS. CAREY: Well, thank you.

6 MS. LOUGHEED: So is there a contact?

7 CHAIRMAN SIEBER: Perhaps that is
8 something we can do off-line because I would prefer
9 not to have people's names and addresses in the public
10 record.

11 MS. CAREY: That's a dilemma.

12 MS. LOUGHEED: I believe --

13 MS. BARNES: The project directors have
14 our e-mails and phone numbers and such.

15 MS. CAREY: But we don't live anywhere
16 near together. We are miles apart.

17 CHAIRMAN SIEBER: Okay.

18 MS. LOUGHEED: Juan has the information.

19 CHAIRMAN SIEBER: Okay. Thank you.

20 MS. BARNES: Thank you for letting us
21 speak.

22 CHAIRMAN SIEBER: Okay. You're welcome
23 and we appreciate hearing your point of view.

24 MS. CAREY: Yes. Well, we'll continue to
25 listen if you have other comments.

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1 CHAIRMAN SIEBER: Well, I think that we
2 have come to the time in our meeting where we can
3 close the transcript.

4 MS. HIRT: I also have a question. I'm
5 Alice Hirt. I live in Holland, Michigan.

6 MS. CUMBOW: And I also have a question.
7 My name is Kay Cumbow and I live in Brown City,
8 Michigan.

9 MS. HIRT: My question is -- this is Alice
10 Hirt -- what are you -- are you still considering the
11 fact that the waste is piling up on the beach and that
12 is out of scope also? You don't really seem concerned
13 that 20 more years of nuclear waste on Lake Michigan
14 is important? Is that also out of scope, sir?

15 CHAIRMAN SIEBER: What waste are you
16 referring to?

17 MS. HIRT: The radioactive waste.

18 PARTICIPANT: What waste?

19 MS. HIRT: The waste on the nuclear power
20 plant that is now sitting on the shores of Lake
21 Michigan. I am wondering if it is out of scope to be
22 concerned about the waste piling up there on the beach
23 for 20 more years if this license is renewed. I would
24 like to know if that issue is out of scope.

25 CHAIRMAN SIEBER: I don't know whether

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1 it's covered in the environmental impact statement or
2 not. I don't know.

3 MS. HIRT: It's certainly in my scope. I
4 live within 50 miles of the plant and I have a feeling
5 that it is out of scope because we have tried to bring
6 this issue before the Atomic Safety Licensing Board
7 and we have been ruled out of scope on every issue we
8 have brought forward. Just want to remind you that we
9 don't consider it out of scope.

10 MS. BARNES: Also the casks are sitting on
11 these pads which you mentioned in your meeting. They
12 are sitting there like a bunch of bowling balls just
13 waiting to be knocked over. If one goes, then more
14 will go.

15 MS. CUMBOW: My name is Kay Cumbow and I
16 also would like to ask a question.

17 CHAIRMAN SIEBER: Go ahead.

18 MS. CUMBOW: I had several actually. One
19 is that EPRI just had a report published June of this
20 year that showed intergranular cracking at Davis-
21 Besse not only in 600 but also in alloy 182. I
22 wondered how much of 182 is in the Palisades power
23 plant.

24 Also, the steam generators you mentioned
25 that they were also -- the new ones that were put in

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1 in the early 1990s that they were also made with -- I
2 believe it was in the 1990s -- that they were made
3 with 600 and that seems like a big red flag because
4 they had such big problems with them plugging. Also,
5 you mentioned that there were only four formally
6 licensed engineers and that seemed like a small number
7 of engineers that were formally licensed.

8 One of the questions I had was somebody
9 asked about how to tell if annealing works and they
10 said that you test the sample coupons but Palisades
11 has no original sample coupons left in the reactor.

12 One question I had was how efficient is it
13 to keep on using Palisades as they are using ultra-low
14 leakage. It just seems like efficiency comes into the
15 package because we are the taxpayers and taxpayers
16 subsidize a whole lot of the cost of nuclear power
17 plants and there are more efficient ways to make
18 electricity.

19 The other question I had was about
20 earthquakes because of the proximity to the New Madrid
21 earthquake zone. The last time there were three huge
22 earthquakes down there in the New Madrid zone and in
23 St. Louis those quakes actually made waves on Lake
24 Michigan and rang church bells in Maine and broke
25 windows in Washington, D.C. It just seems like that

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1 should be taken into account, especially because the
2 pads that hold those huge heavy casks are built right
3 on sand dunes.

4 The last point I would like to make is
5 that Palisades does have a pretty incredible history
6 when the NRC had a watch list Palisades was on and off
7 that watch list continuously and it seems to me blind
8 on the part of the Nuclear Regulatory Commission that
9 they did away with the watch list. It seems like it
10 didn't make any sense at all.

11 The other thing is that in 1986 Palisades
12 had actually 4,000 repair orders that were backlogged.
13 I agree that was back in 1986 but I am just telling
14 you there is quite a bit of history here and it's not
15 a pretty history.

16 The other thing was in 1979 there was a
17 huge leak of radioactive iodine and the NRC actually
18 went out and checked fishing boats to check people's
19 fish for radioactive iodine. Palisades was fine
20 during that time. They were fine because when they
21 realized they were releasing radioactive iodine, they
22 did not stop.

23 I could go on and on. The public has
24 plenty that concerns us like the chemical
25 contamination that is based on Lake Station, Michigan.

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1 There's a lot of unanswered questions about this
2 plant. I would appreciate if somebody could answer
3 some of the questions that I had -- all the questions
4 I had.

5 MEMBER WALLIS: Do you want to try that?

6 CHAIRMAN SIEBER: You go ahead.

7 MEMBER WALLIS: I was thinking while you
8 were speaking about who would be the right person to
9 answer your questions. I don't think this
10 subcommittee can answer your questions at this time.
11 They are more questions for somebody else and it
12 probably falls to the NRC in some way.

13 Then also what you have said is on the
14 record. This meeting we are having today is to gather
15 information. It's not as if we are making a decision
16 today so how your comments go into the final decision
17 I think is yet to be decided, but they are on the
18 record and I don't think they will disappear. Thank
19 you very much.C

20 MS. CUMBOW: Could I ask your name, sir?

21 MEMBER WALLIS: You want my name?

22 MS. CUMBOW: Um-hum.

23 MEMBER WALLIS: I'm Graham Wallis.

24 MS. CUMBOW: Okay. You know, not knowing
25 anyone or seeing any name cards it's a little hard to

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1 know who is talking. What is your position, Mr.
2 Wallis?

3 MEMBER WALLIS: I am actually the Chairman
4 of the ACRS.

5 MS. CUMBOW: Of the ECRS.

6 MEMBER WALLIS: ACRS.

7 MS. CUMBOW: Oh, ACRS. Okay. Thank you.

8 MR. KARCH: My name is Gary Karch. I
9 would like to say that as a member of the public I
10 have to complain about the quality of the audio on
11 this conference call that we're connected with.

12 About the only person I could ever hear
13 clearly aside from these comments right at the end,
14 which were very clear, one of the only other persons
15 I heard well was Patricia was the only one I could
16 hear clearly. It may not have been on purpose but it
17 seems the net result is that the public could not hear
18 the proceedings clearly so I wanted to complain about
19 that.

20 You professionals are capable of talking
21 about highly technical issues here and you can split
22 atoms but you can't, you know, create a decent audio
23 system for the public to hear clearly. Therefore, my
24 other question is will there be minutes available,
25 transcript of this proceedings and how soon will that

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1 be available?

2 CHAIRMAN SIEBER: There is on the NRC
3 website a copy of transcripts of ACRS meetings and
4 subcommittee meetings. I don't know how quickly they
5 appear but I usually read them and it seems to me
6 like three weeks or four weeks after the meeting is
7 held that the transcript appears on the website. You
8 will want to go to the category Electronic Reading
9 Room on the website.

10 MR. KARCH: Okay.

11 CHAIRMAN SIEBER: When you get there you
12 look for All Document Collections. When you get there
13 you look for ACRS and it will have schedules, meeting
14 agendas, and transcripts.

15 MR. KARCH: Right.

16 CHAIRMAN SIEBER: Look up today's date.

17 MR. KARCH: Okay. Very good.

18 MS. BARNES: Could I ask one more
19 question? I understand that the precautionary
20 principle is being applied by the IJC, International
21 Joint Commission, which is, of course, the treaty
22 arrangement between the United States and Canada for
23 the safety and welfare of the Great Lakes. Now, how
24 does the NRC apply the precautionary principle?

25 CHAIRMAN SIEBER: I have no idea, ma'am.

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1 MS. BARNES: As I would define
2 precautionary principle, it is up to the industry and
3 the NRC and any other corporate or producer of deadly
4 waste to prove it does no harm rather than the
5 longstanding position that has been taken which is
6 that, "Public, you prove that it was our chemical that
7 you died from," etc. Since the precautionary
8 principle is getting more and more recognition among
9 credible regulators and producers of all kinds of
10 products, how does that currently fit into the NRC
11 code?

12 CHAIRMAN SIEBER: Well, frankly, until you
13 discussed it here I had never heard of that.

14 MS. BARNES: Oh.

15 CHAIRMAN SIEBER: So I am not aware of
16 that.

17 MS. BARNES: Oh. Well, I would appreciate
18 if you would Google it. It is an extremely important
19 principle that has been, oh, at least 10 years in
20 application to my understanding.

21 MS. HIRT: Excuse me. This is Alice Hirt
22 again and I have one more quick question if I may be
23 given that chance. I would like to ask
24 straightforward to the NRC people and the Nuclear
25 Management people at this meeting today do you have

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1 original coupons in the reactor vessel that can be
2 removed to check levels of embrittlement? Could you
3 answer that please straightforward? Original coupons
4 of the original material that the vessel was created
5 from.

6 MS. LOUGHEED: Ma'am, I don't believe we
7 are prepared to answer that at this meeting.

8 MS. HIRT: It has a lot to do with the
9 issue.

10 MS. LOUGHEED: Ma'am, I understand that it
11 has a very -- that it is relevant. I'm just saying we
12 are not prepared to answer it at this meeting.

13 MS. HIRT: There is no one there that can
14 address --

15 MS. LOUGHEED: We do not have the right
16 people.

17 MS. HIRT: -- that issue?

18 MR. KARCH: You came unprepared to answer
19 questions from the public?

20 MS. LOUGHEED: Yes. This is not a public
21 meeting. This is a meeting for the ACRS.

22 MS. HIRT: If you cannot answer that, I
23 would like the answer to that question sent to me as
24 soon as possible, please. Surely someone can answer
25 that question. If not this afternoon tomorrow.

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1 MR. KNEELAND: This is John Kneeland of
2 the NMC. We answered this question earlier in the
3 meeting.

4 MS. HIRT: I've been listening ever since
5 the meeting started. I know you said that there were
6 three -- I can't say the exact wording. I did hear
7 everything that was said but that does not answer my
8 exact question. It did not say they were original,
9 very original capsules.

10 MR. KNEELAND: They are three of the
11 original capsules that were fabricated in 1966.

12 MS. BARNES: Those are not original. 1966
13 is not -- 1966? Do you have written proof of that?

14 MR. KNEELAND: Yes, ma'am.

15 MS. HIRT: We would like to see that,
16 please.

17 MS. BARNES: We would because we have seen
18 other things that say that is not so.

19 MS. HIRT: Could you please provide that
20 to one of us? I'll give you my name and address and
21 I would like to see that proof, please.

22 MR. KARCH: You did not allow him to
23 finish what he had. Could you say what you have?

24 MR. KNEELAND: We have three surveillance
25 capsules remaining in the reactor vessel that have

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1 been there since the beginning of plant operation. We
2 have an additional surveillance capsule that sits just
3 above the reactor vessel that has been in there since
4 the beginning of plant operation.

5 MS. BARNES: I have a question. This is
6 Katherine Barnes again.

7 MS. HIRT: Thank you. I look forward to
8 seeing that information and documentation.

9 MR. JUNGE: We have somebody here we need
10 to let speak and ask questions for now if you don't
11 mind holding your question, please.

12 MR. KAMPS: Thank you. My name is Kevin
13 Kamps and I work at Nuclear Information and Resource
14 Service here in Washington, D.C. I have been asked by
15 a number of intervenors who went before the Atomic
16 Safety Licensing Board to represent them here today.

17 I just wanted to say that I heard a lot
18 during the course of this afternoon about plans and
19 commitments in the future. I think that the ACRS as
20 a whole should take -- and the NRC staff as well
21 should take plans and commitments from this company
22 with a grain of salt.

23 One of the people on the phone brought up
24 cask No. 4 as an example of promises by this company
25 that have been broken in the past. The company

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1 publicly stated, and it was reported in the local
2 newspapers that that container would be unloaded
3 because it had problems. Here we are 12 years later
4 and that cask is still sitting there.

5 Another very relevant promise that was
6 stepped away from in the past had to do with the
7 embrittlement problem. Again, the company said
8 publicly that it would anneal the reactor vessel and
9 that has not happened. I think this challenge goes as
10 much to the NRC as it does to the company and that is
11 it seems like every time that Palisades comes up
12 against the embrittlement standard at NRC that
13 standard is weakened or changed in some way.

14 It is incredible that here we are in the
15 year 2006. Palisades again is brushing up against the
16 NRC's screening criteria for pressurized thermal shock
17 and, wouldn't you know it, there's another proposed
18 change in the rules. We can only assume that is going
19 to accommodate Palisades reactor yet again not for 40
20 years of operations but for 60 years.

21 We are very concerned about the safety
22 implications of this and we call upon the ACRS and the
23 NRC to uphold NRC safety regulations. That is the
24 mission of this agency. The stakes are too high to do
25 anything else. I would like to point out to the ACRS

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1 because they might not be aware of this.

2 The NRC staff might not be aware of this
3 as well but the company went before regulators in
4 Michigan on May 10th of this year. The meeting had to
5 do with the sale of the plant and Patricia brought
6 that up earlier that this plant is for sale. The
7 company identified five areas that are leading it to
8 want to sell this plant.

9 As I understand it, at the end of June
10 that was the time line, the deadline for submissions,
11 bids from other companies. I know that Exelon had a
12 representative here today so I'm curious if they might
13 be one of the bidders. Detroit Edison has expressed
14 interest publicly. Anyway, Consumers Energy listed
15 the following five areas as reasons for wanting to
16 sell the plant.

17 Reactor vessel head replacement at a cost
18 of \$100 million. Steam generator replacement.
19 Reactor vessel embrittlement concerns. Increasing NRC
20 fees and fire protection regulations. No. 5,
21 containment coatings on sump strainers. I just find
22 a disconnect or a contradiction between the company
23 making all these commitments, promises, plans for the
24 future while at the same time putting the plant up for
25 sale.

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1 One big picture question I have is does
2 the company that buys this facility have to comply
3 with all the commitments that have been made by the
4 current owner. That is one question. Another
5 question I have from today's presentation is although
6 the steam generator was discussed during the course of
7 today, it wasn't mentioned that there was another
8 replacement in the works.

9 There's a lot of connection between
10 current operations and 20 additional years at this
11 facility. For safety sake and for protection of
12 public health we hope that they will be rigorously
13 addressed before this license extension is granted
14 because we see a lot of promises but I don't think
15 that promises can be accepted from this company. I
16 think facts on the ground are the only thing that can
17 be accepted. Thanks for the opportunity to ask these
18 questions.

19 CHAIRMAN SIEBER: Okay. Thank you. I
20 think that we are to the point now where we can close
21 the record.

22 MR. KEEGEN: Could I raise one question?
23 This is Michael Keegen in Michigan.

24 CHAIRMAN SIEBER: One question.

25 MR. KEEGEN: Yes, one question. Regarding

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1 the third cycle interval in-service inspection of the
2 reactor internals, my understanding is that will occur
3 after the relicensing process. How can the ACRS
4 approve relicensing when they haven't looked under the
5 hood, so to speak? Did that get addressed? I didn't
6 hear it.

7 CHAIRMAN SIEBER: Yeah. I'm contemplating
8 your question. You are, of course, aware that every
9 plant whether it has a renewed license or an original
10 license is on a 10-year ISI cycle.

11 MR. KEEGEN: Correct.

12 CHAIRMAN SIEBER: That means that the
13 basic structure of the plant all the components during
14 various outages during that 10-year interval are
15 inspected to make sure that they have integrity. The
16 idea of having a structured timed program like that is
17 to be able to measure degradation.

18 If you were to advance one of those 10-
19 year intervals to now to accommodate license renewal,
20 then there will be a period where you would not have
21 information. That would be a concept that violates
22 the ASME code which is what --

23 MR. KEEGEN: I believe that is what
24 precisely is occurring. They have requested a delay
25 of that inspection until beyond their relicensing.

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1 They have actually over the course of 35 years they
2 have not done their third 10-year inspection yet and
3 it is being deferred deferred.

4 CHAIRMAN SIEBER: Well, I think that's an
5 issue that is current operation and I'm sure that the
6 staff can address that.

7 MR. KEEGEN: Wouldn't the ACRS be
8 concerned about having the results of that inspection
9 prior to issuing a 20-year license renewal? That is
10 my question.

11 CHAIRMAN SIEBER: I really don't know what
12 the answer to that question is until the issue is
13 resolved.

14 MR. KEEGEN: It's unresolved, and yet you
15 are making a decision for 20 more years of license
16 extension. That's my point.

17 CHAIRMAN SIEBER: We are not making a
18 decision.

19 MEMBER WALLIS: Let me suggest this might
20 be something we will look into because we are not
21 making a decision today.

22 MR. KEEGEN: Very good. Very good. That
23 is satisfactory if you look into it and it's part of
24 the public record.

25 CHAIRMAN SIEBER: Okay.

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1 MR. KEEGEN: Thank you.

2 MS. BARNES: Thank you for letting us
3 speak.

4 CHAIRMAN SIEBER: You're welcome. Any
5 other comments? If there are no further comments, I
6 think that we can close the transcript at this point.
7 I want to thank everyone who has participated in the
8 meeting today for their work and their patience with
9 the process. This meeting is adjourned.

10 (Whereupon, at 4:59 p.m. the meeting was
11 adjourned.)

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CERTIFICATE

This is to certify that the attached proceedings
before the United States Nuclear Regulatory Commission
in the matter of:

Name of Proceeding: Advisory Committee on
Reactor Safeguards
Subcommittee on Plant License
Renewal
Docket Number: n/a
Location: Rockville, MD

were held as herein appears, and that this is the
original transcript thereof for the file of the United
States Nuclear Regulatory Commission taken by me and,
thereafter reduced to typewriting by me or under the
direction of the court reporting company, and that the
transcript is a true and accurate record of the
foregoing proceedings.



Charles Morrison
Official Reporter
Neal R. Gross & Co., Inc.



Palisades Nuclear Plant License Renewal Safety Evaluation Report

Staff Presentation to the ACRS
Juan Ayala, Project Manager
Office of Nuclear Reactor Regulation
July 11, 2006



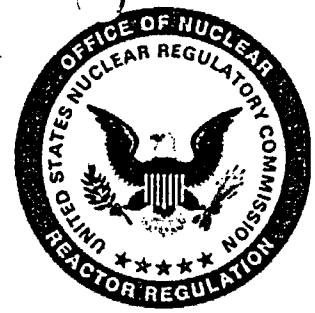
Introduction

- Overview
- Section 2: Scoping and Screening Review
- License Renewal Inspections
- Section 3: Aging Management Review Results
- Section 4: Time-Limited Aging Analyses (TLAAs)



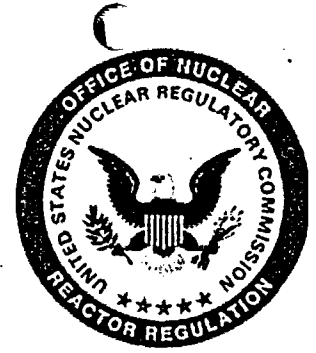
Overview

- LRA submitted by letter, dated March 22, 2005
- CE PWR-DRYAMB containment
- 2565 MWth, 865 MWe
- Operating License DRP-20 expires March 24, 2011
- PNP located 5 miles S of South Haven, MI



Overview

- SER issued June 1, 2006
- No Open Items
- One Confirmatory item
- Four (4) license conditions
- 174 RAIs issued, 412 audit questions
- ≈95% consistent with draft GALL Report, Revision 1
- Minor components brought into scope



Review Highlights

- AMP GALL Audit
 - June 20 - 24, 2005
- Scoping and Screening Methodology Audit
 - June 27 - July 1, 2005
- AMR GALL Audit
 - August 1 - 5, 2005
- Regional Inspections
 - October 24 - 28, 2005
 - November 14 - 18, 2005

Section 2: Scoping and Screening Review



Section 2.1 - Scoping and Screening Methodology

- On-site Audit - June 27 - July 1, 2005
- Staff audit and review concluded that the applicant's methodology satisfies the rule (10 CFR 54.4(a) and 10 CFR 54.21)
 - AFW Pump Room pipe insulation brought into scope

Section 2.2 – Plant-Level Scoping

- No omission of systems or structures within the scope of license renewal

Section 2: Scoping and Screening Review



Section 2.3 – Mechanical Systems

- 29 mechanical systems
- 100% reviewed
- On-site review of mechanical systems
- 0 items referred to Regional inspection team

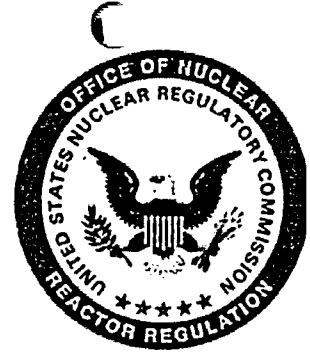
Section 2: Scoping and Screening Review



Section 2.3 – Mechanical Systems

- Components brought into scope
 - Steam generator feedwater ring
 - Boric acid pump filters
 - Air supply line and air reservoirs
 - Solenoid valves
 - First and second stage air compressors, including the load/unload valves
 - Feedwater heaters
 - Primary system make-up storage tank underground piping

Section 2: Scoping and Screening Review



Section 2.4 – Containment, Structures, and Supports

- No omission of structures or supports within the scope of license renewal

Section 2.5 – Electrical and Instrumentation & Control

- No omission of electrical and instrumentation & control systems components within the scope of license renewal

Section 2: Scoping and Screening Summary



- The applicant's scoping methodology meets the requirements of 10 CFR Part 54
- Scoping and screening results, as amended, included all SSCs within the scope of license renewal and subject to AMR



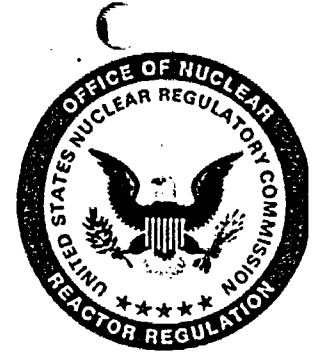
License Renewal Inspections

Patricia Lougheed
Region III



Overview

- Two-week onsite inspection from October 24 to November 16, 2005
- Scheduled to support NRR reviews
- Team of five experienced inspectors
- Inspection performed in accordance with NRC Inspection Procedure 71002



Scoping and Screening

- Reviewed 11 systems
- Looked at electrical, structural, and mechanical systems
- Emphasized plant physical walk downs
- Concentrated on non-safety systems whose failure could impact safety systems

Scoping and Screening Conclusions



- Systems appropriately scoped
- Some minor inconsistencies identified
- Scoping and screening acceptable for license renewal



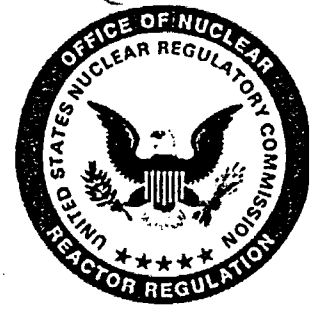
Aging Management

- Reviewed 14 AMP and 2 TLAA programs
- Reviewed
 - existing plant documentation
 - operational experience information
 - corrective actions to current plant issues and
 - proposed enhancements and commitments
- Followed up on NRR review efforts
- Performed plant walk downs

Aging Management Conclusions



- Aging Management Programs adequate for period of extended operation when enhanced or implemented in accordance with commitments



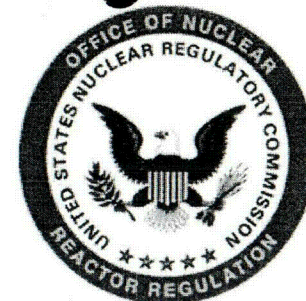
Overall Conclusions

- Palisades scoping, screening and aging management programs sufficient for extended operation
- Region III does not see any inspection impediments to renewing the operating license

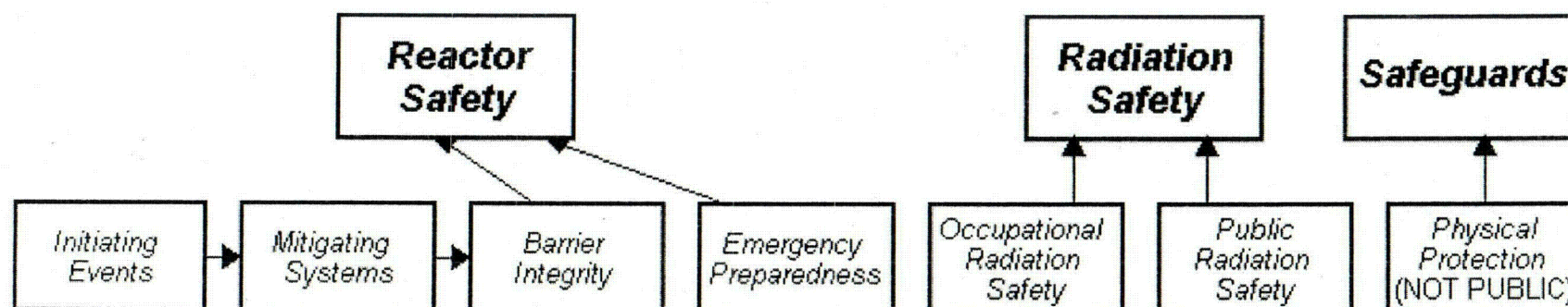


Current Performance

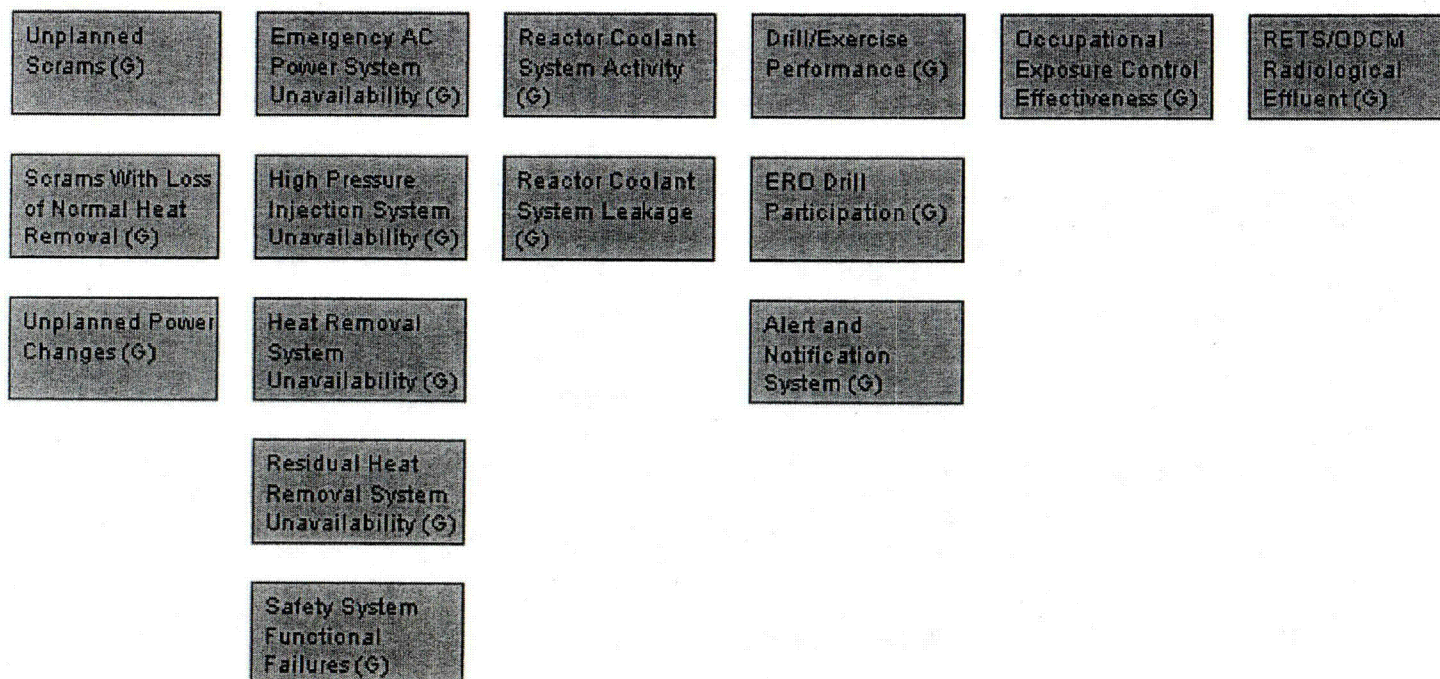
- Licensee is in the Licensee Response Column (Column I) of the NRC's Action Matrix
- NRC does not currently have any cross-cutting issues open at Palisades
- Revised Reactor Oversight Process continues to be followed



Performance Indicators

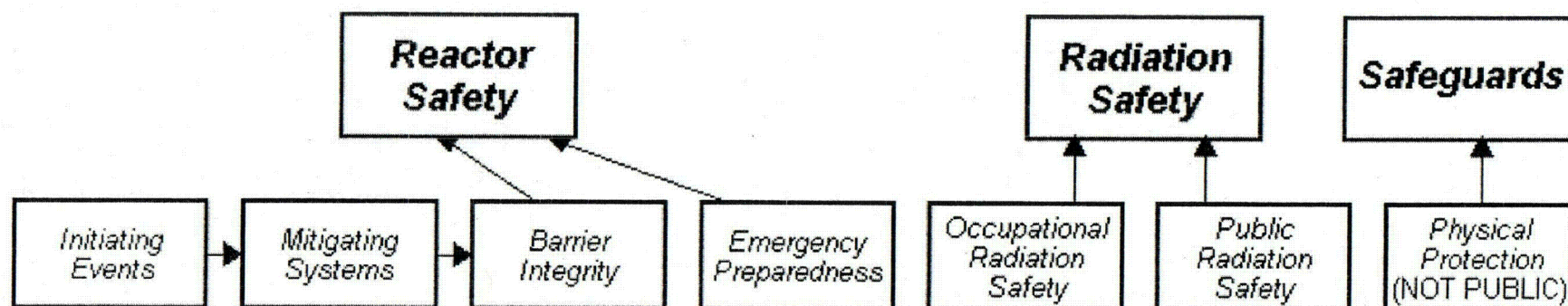


Performance Indicators





Inspection Findings

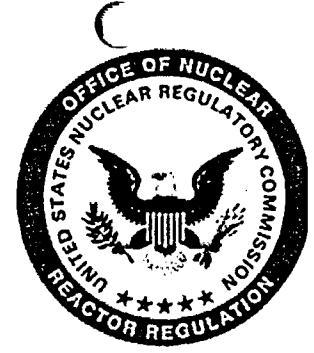


Most Significant Inspection Findings

1Q/2006	No findings this quarter	G	No findings this quarter	No findings this quarter	No findings this quarter	No findings this quarter
4Q/2005	G	No findings this quarter	G	No findings this quarter	No findings this quarter	No findings this quarter
3Q/2005	No findings this quarter	G	No findings this quarter	No findings this quarter	No findings this quarter	No findings this quarter
2Q/2005	G	G	No findings this quarter	No findings this quarter	G	No findings this quarter

Miscellaneous findings

Section 3: Aging Management Review Results



- 3.1 Reactor Coolant System
- 3.2 Engineered Safety Features
- 3.3 Auxiliary Systems
- 3.4 Steam and Power Conversion Systems
- 3.5 Containments, Structures, and Component Supports
- 3.6 Electrical and I&C Components

Aging Management Programs (AMPs)



- 24 AMPs
 - 20 existing AMPs, 4 new AMPs
 - Consistent with GALL Report - 13
 - Consistent with GALL Report with exceptions/enhancements – 10
 - Plant-specific – 1

Buried Services Corrosion Monitoring Program

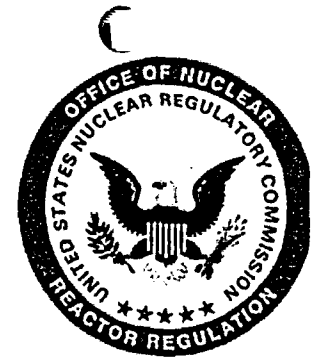


- New AMP Consistent with GALL
 - 10-year frequency
 - If insufficient data exist, focused inspections will be performed
 - Include inspections of opportunity
 - Only one below-grade tank
 - Diesel fuel oil storage tank is contained in a vault and not exposed to soil

Bolting Integrity Program



- Existing AMP Consistent with enhancements (2)
 - (1) review and revise the ASME ISI master plan and plant maintenance procedures to reflect GALL Report guidance and
 - (2) evaluate high-strength bolting used in component supports for cracking
- System Monitoring Program
 - Non-Safety Related bolting
- Structural Monitoring Program
 - Structural bolting
- ASME Section XI IWB, IWC, IWD, IWF ISI Program
 - ASME Class 1, 2, and 3 bolting



Boric Acid Corrosion Program

- Enhancements were provided as commitments
- Three (3) Commitments
 - Revise procedures to include criteria for observing susceptible SSC for boric acid leakage and degradation during system walkdown inspections.
 - Revise procedures to include explicit acceptance criteria for boric acid inspections.
 - Revise procedures to include inspection of structural steel and non-ASME component supports for evidence of boric acid residue and boric acid wastage/corrosion.

Flow-Accelerated Corrosion Program



- Existing program consistent with GALL
- Proposed criteria less conservative for NSR piping
- NSR piping brought to same criteria as safety-related piping

Reactor Vessel (RV) Integrity Surveillance Program



- Enhancements were submitted as commitments
- Four (4) Commitments
 - Ensure that pressure-temperature and LTOP curves are updated to bound the extended operating period. Curves will be updated and submitted to NRC for approval prior to the period of extended operation
 - Document and establish the requirement to save and store all pulled and tested RV surveillance capsules for future reconstitution use.

Reactor Vessel (RV) Integrity Surveillance Program



- Four (4) Commitments (continued)
 - Ensure that at least one surveillance capsule remains in the RV and is tested during the period of extended operation to monitor the effects of neutron irradiation.
 - Develop a program level procedure to implement and control Technical Specification and FSAR activities associated with the RV Integrity Surveillance Program.

System Monitoring Program

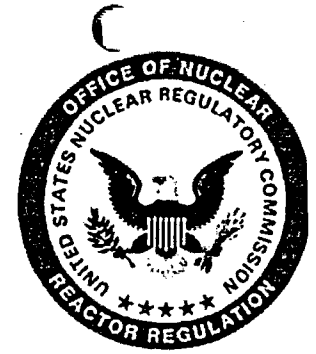


- Plant specific AMP consistent with GALL AMP XI.M29, "Aboveground Carbon Steel Tanks"
- Used to identify degraded conditions on external surfaces of piping, tanks, and other components and equipment
- Opportunistic inspections of external surfaces when insulation is removed
- Commitment
 - If there is insufficient data, applicant will remove insulation in additional locations to increase sample size

Section 3: Aging Management Review Results



- 100% Review
 - 29 plant systems
 - 10 structures
 - 9 commodity groups



Auxiliary Systems

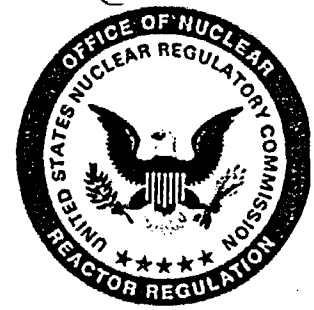
- SFP Neutron Absorbing Sheets
 - For fuel racks with boron carbide panels, no coupon program exists
 - Applicant has committed to performing industry approved neutron absorption testing to monitor for degradation.
- Thermal Sleeves
 - Aging effects requiring management added for cracking due to SCC and PWSCC
 - Managed with ASME Section XI ISI and Water Chemistry Programs

Aging Management of In-Scope Inaccessible Concrete



	Acceptance Criteria	PNP		
		1966	1996	2004
pH	>5.5	6.1 - 7.7	N/A	7.0
Chlorides	<500 ppm	4.0 - 39	23	139
Sulfates	<1500 ppm	9.47 - 33.17	15.2	11.5

- Below-grade environment is non-aggressive
- Periodic testing of ground water will be performed as part of the Structures Monitoring Program



Electrical and I&C Components

- 9 commodity groups reviewed
 - Electrical cables and connections not subject to 10 CFR 50.49 EQ requirements
 - Electrical cables and connections used in instrumentation circuits not subject to 10 CFR 50.49 EQ requirements that are sensitive to reduction in conductor IR
 - Electrical Portion of the Non-EQ Electrical and I&C Penetration Assemblies (Cables and Connections)
 - Fuse Holders
 - Non-Segregated Phase Bus and Connections
 - High-Voltage Transmission Conductors
 - High-Voltage Switchyard Bus and Connections
 - Inaccessible medium-voltage (2kV to 15kV) cables and connections not subject to 10 CFR 50.49 EQ requirements
 - High-Voltage Insulators

Section 4: Time-Limited Aging Analyses (TLAA)



- 4.1 TLAA Process
- 4.2 Reactor Vessel Neutron Embrittlement
- 4.3 Metal Fatigue
- 4.4 Environmental Qualification of Electrical Equipment
- 4.5 Concrete Containment Tendon Prestress Analysis
- 4.6 Containment Liner Plate and Penetrations Load Cycle
- 4.7 Plant Specific TLAA
 - 4.7.1 Crane Load Cycles
 - 4.7.2 Alloy 600 Nozzle Safe Ends Life Assessment Analysis
 - 4.7.5 Reactor Pump Fly Wheel Fatigue or Crack Growth Analysis
 - 4.7.6 Reactor Vessel Underclad Cracking (New TLAA)



Section 4 - Overview

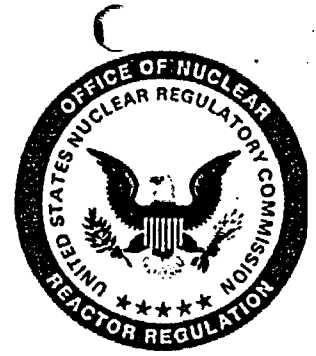
- Section 4.2: Reactor Vessel and Internals
Neutron Embrittlement
 - Three analyses affected by irradiation embrittlement identified as TLAAs
 - Pressurized Thermal Shock
 - Upper Shelf Energy
 - Pressure Temperature Limits
- Applicant used 42.37 EFPY (60 years)



Section 4 - Overview

- RV Pressurized Thermal Shock

Limiting Material for PTS	Screening Criteria	Calculated 42.37 EFPY RT_{PTS} value	Conclusion
Intermediate shell and lower shell axial welds (W5214)	270 °F	Applicant: 287 °F (Calculation Confirmed by Staff)	Screening Criterion is exceeded in 2014



Section 4 - Overview

- Palisades Plan for PTS
 - Continue to use an ultra low leakage core design
 - Submit final PTS resolution three years before 2014 (10 CFR 50.61)
- Options
 - Change of operation: further flux reduction and preheating the safety injection water
 - Thermal annealing of the reactor pressure vessel (10 CFR 50.66)



Section 4 - Overview

- RV Upper Shelf Energy (USE)

Limiting Plate and Weld for USE	Acceptance Criterion	Calculated USE Value for 42.37 EFPY	Conclusion
Lower shell plate (D-3804-1)	Projected USE > 50 ft-lbs	48.97 ft-lbs (Calculation Confirmed by Staff)	Acceptance criterion is exceeded in 2021
Intermediate to lower shell circ. Weld (9-112)	Projected USE > 50 ft-lbs	50.83 ft-lbs (Calculation Confirmed by Staff)	Acceptable [TLAA satisfies §54.21(c)(1)(ii)]



Section 4 - Overview

- Palisades Plan for USE
 - Submit Equivalent Margins Analysis (EMA)
three years before 2021
(10 CFR 50, Appendix G)

Section 4.3: Metal Fatigue



- Acceptability Criterion: Cumulative Usage Factor, $CUF \leq 1.0$ for all ASME Class 1 piping components based on a 60-year life
- Fatigue Monitoring Program will ensure that the CUF remains ≤ 1 for PEO
- Staff accepted the evaluations in accordance with 10 CFR 54.21(c)(1)(i),(ii) and (iii)

Section 4.4: Environmental Qualification (EQ) of Electrical Equipment



- Applicant's EQ Program consistent with GALL AMP X.E1, "Environmental Qualification of Electrical Equipment"
- Staff concluded the EQ Program is adequate to manage the effects of aging on the intended function of electrical components
- The staff accepted the evaluation in accordance with 10 CFR 54.21(c)(1)(iii)

Reactor Vessel Underclad Cracking



- Confirmatory Item: Underclad Crack Growth
 - Technical basis is WCAP 15338-A which has been approved by the staff
 - Staff is verifying a plant specific WCAP, using the same methodology as WCAP 15338-A, for PNP



TLAA Summary

- TLAA list was complete and acceptable in accordance with 10 CFR 54.3
- 10 CFR 54.21(c)(1)
 - (i) analyses remain valid for PEO
 - (ii) analyses projected to the end of the PEO
 - (iii) effects of aging will be adequately managed for the PEO
- There are no plant-specific exemptions in accordance with 10 CFR 54.21(c)(2)

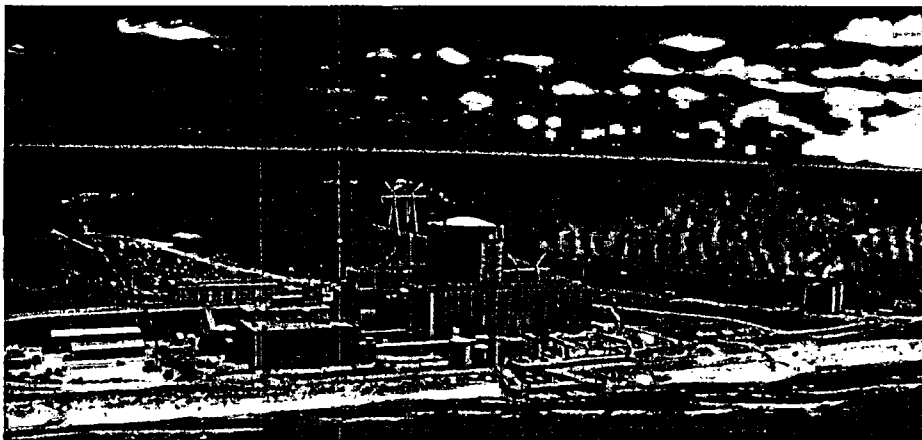


Conclusions

- The staff has concluded that there is reasonable assurance that the activities authorized by the renewed license will continue to be conducted in accordance with the CLB
- Any changes made to the PNP CLB are in accord with the Act and the Commission's regulations and to comply with 10 CFR 54.29(a)

Palisades Nuclear Plant

Presentation to ACRS License Renewal Subcommittee



July 11, 2006



Palisades Nuclear Plant Presentation to ACRS License Renewal Subcommittee

Attendees

- Darrel Turner – Site Manager of Projects
- John Broschak – Site Engineering Director
- Bob Vincent – License Renewal Project Manager
- Paul Harden – Site Vice President
- Mark Cimock – Mechanical and Civil/Structural Lead
- Larry Seamans – Electrical Lead
- Bill Roberts – Programs Lead
- John Kneeland – TLAA Lead
- Brian Brogan – Site PRA / Safety Analysis Lead



Agenda

- Description of Plant
- Plant Licensing History
- Major Plant Modifications
- Current Plant Status
- License Renewal Methodology
- Commitment Management
- Technical Issues
 - Pressurized Thermal Shock
 - Intergranular Separation
 - GSI-191



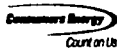
Plant Description

- Owned by Consumers Energy Company
- Operated by Nuclear Management Company
- 432 Acre Site Located in Covert, Michigan
- Combustion Engineering NSSS / Bechtel AE
 - 2 Loops, 4 Primary Coolant Pumps, 2 Steam Generators
- Pre-Stressed Concrete Containment



Plant Description

- Forced Draft Cooling Towers
- Ultimate Heat Sink is Lake Michigan via Service Water System
- Licensed Power 2565.4 Mwt.
- Design Electrical Output 820 Mwe_{net}
- Plant PRA Shows Overall CDF (Internal Events) 2.86E-05/yr; LERF 3.55E-7/yr



Licensing History

- 1967 - Construction Permit Issued
- 1971 - Provisional Operating License (POL) Issued to Expire in 2007
- 1974 – Applied for Full Term Operating License (FTOL)
- 1978 - 1983 – NRC Systematic Evaluation Program
- 1991 – FTOL Issued to Expire in 2007
- 2000 – License Expiration Changed to March 24, 2011
- 2005 – Licensed Power Raised from 2530 Mwt to 2565.4 Mwt



Major Plant Modifications/Improvements

- 1974-75 – Converted Once-Through Circulating Water to Cooling Towers, Retubed Condenser
- 1977, 1987 – Expanded Spent Fuel Pool Storage
- 1983 – Added Third Auxiliary Feedwater Pump and Upgraded System to Safety-Grade
- 1983 – Upgraded Control Room HVAC to Safety-Grade



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Major Plant Modifications/Improvements

- 1985-86 – Initial PRA Applications at Palisades
- 1989 – Diversified Connection Paths to Offsite Power Supplies (PRA Insight)
- 1990 – Replaced Steam Generators
- 1990 – Retubed Main Condenser and Feedwater Heaters
- 1993 – Implemented Dry Spent Fuel Storage (VSC-24)



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Major Plant Modifications/Improvements

- 1995 – Modified Under-Reactor Vessel Floor Drains to Containment Sump (PRA Insight)
- 2004 – Implemented Second Dry Spent Fuel Storage System (NUHOMS)
- 2006 – Implemented SAMA Improvement - Non-Safety Backup Diesel Generator ▶



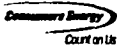
Current Plant Status

- Operating at 100% Power in 19th Cycle
- Next Refueling Outage Fall 2007
- All NRC Performance Indicators are Green ▶
- No NRC Inspection Findings >Green ▶



License Renewal Application Methodology

- LRA Dated March 22, 2005
- NEI 95-10 Standard Format
- NUREG 1801 (GALL) Revision 0 (2001)
- NUREG 1800 (SRP-LR) was Revision 0 (2001)
- Interim Staff Guidance Documents (ISGs) were Addressed in LRA
- Project was Staffed with Plant-Experienced Leads and LR-Experienced Support



License Renewal Application Methodology

- Scoping, Screening and Aging Management Reviews Performed to Industry Standards
- Experiences of Prior Applicants Incorporated
- Implemented Spaces Approach for 10 CFR 54.4(a)(2)
- LRA System Descriptions and Boundaries Consistent with FSAR
- AMR Results in LRA Reconciled to GALL Revision 0 (2001)



License Renewal Application Methodology

- Assessed Consistency of Results with January 2005 Draft Revision 1 of GALL
- Reassessed Consistency after Final GALL Revision 1 Issued in September 2005
- 24 Aging Management Programs (4 new, 20 existing) ▶



Commitment Management

- Commitments for Future Action are Confirmed in SER Appendix A
- Commitments are Tracked in Plant Corrective Action Program
- Program Descriptions, TLAA Descriptions, and Commitments will be Incorporated Into FSAR



Technical Issues

- Pressurized Thermal Shock
- Intergranular Separation
- GSI-191, Assessment of Debris Accumulation on PWR Sump Performance



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Pressurized Thermal Shock (PTS)

- Reach 10 CFR 50.61 Screening Criterion in 2014
- Aggressive Flux Reduction Implemented by Ultra-low Leakage Core Design
- Participating in NRC Research Program Developing Updated Technical Methodology
- Alternatives are Available to Manage Issue for Period of Extended Operation
- Proposed 10 CFR 50.61 Rule Change may Preclude Need for Plant-Specific Management Strategy



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Intergranular Separation (Under-Clad Cracking)

- Generic Industry Question in 1970s – Acceptable for 40 Years
- Westinghouse Evaluated for 60 Years in WCAP-15338 (NRC Accepted Methodology and Results)
- Palisades Evaluated Using Same Methodology
- Palisades Results Consistent with WCAP-15338
 - Little/No Growth Over 60 Years
 - No Effect on Structural Integrity
- Results Reported to NRC for Review and Acceptance



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GSI-191: “Assessment of Debris Accumulation on PWR Sump Performance”

- GSI-191 Applicable to All PWRs (GL 2004-02)
- Palisades will install Passive Sump Strainers by 12/31/07
- License Amendment requested for Removal of Tri-Sodium Phosphate and Manual Injection of Sodium Hydroxide
- Alternate Buffering System will be installed by 12/31/2007



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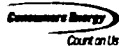




Backup Slides

Palisades Aging Management Programs

- Alloy 600 Program
- ASME Section XI IWB, IWC, IWD, IWF Inservice Inspection Program
- Bolting Integrity Program
- Boric Acid Corrosion Program
- Buried Services Corrosion Monitoring Program (new)
- Closed Cycle Cooling Water Program
- Compressed Air Program
- Containment Inservice Inspection Program
- Containment Leakage Testing Program
- Diesel Fuel Monitoring and Storage Program
- Fire Protection Program
- Flow Accelerated Corrosion Program

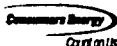


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Palisades Aging Management Programs (cont)

- Non-EQ Electrical Commodities Condition Monitoring Program (new)
- One-Time Inspection Program (new)
- Open Cycle Cooling Water Program
- Overhead Load Handling Systems Inspection Program
- Reactor Vessel Integrity Surveillance Program
- Reactor Vessel Internals Inspection Program
- Steam Generator Tube Integrity Program
- Structural Monitoring Program
- System Monitoring Program
- Water Chemistry Program
- Electrical Equipment Qualification Program
- Fatigue Monitoring Program (new)



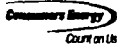
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SAMA Candidates

The following SAMA Candidates are Being Evaluated:

- Modify Turbine-driven AFW Pump procedures to Support Indefinite Operation Without AC, DC or Air Services
- Add Nitrogen Backup to Critical instrumentation to Reduce Importance of Loss of Instrument Air
- Insulate Emergency Diesel Generator Exhaust Ducts to Reduce Potential for Room Overheating
- Replace Bus Undervoltage Relays with Seismically Qualified Models
- Modify PCS Cooldown Procedures to Reduce Probability of Reactor Coolant Pump Seal Failures



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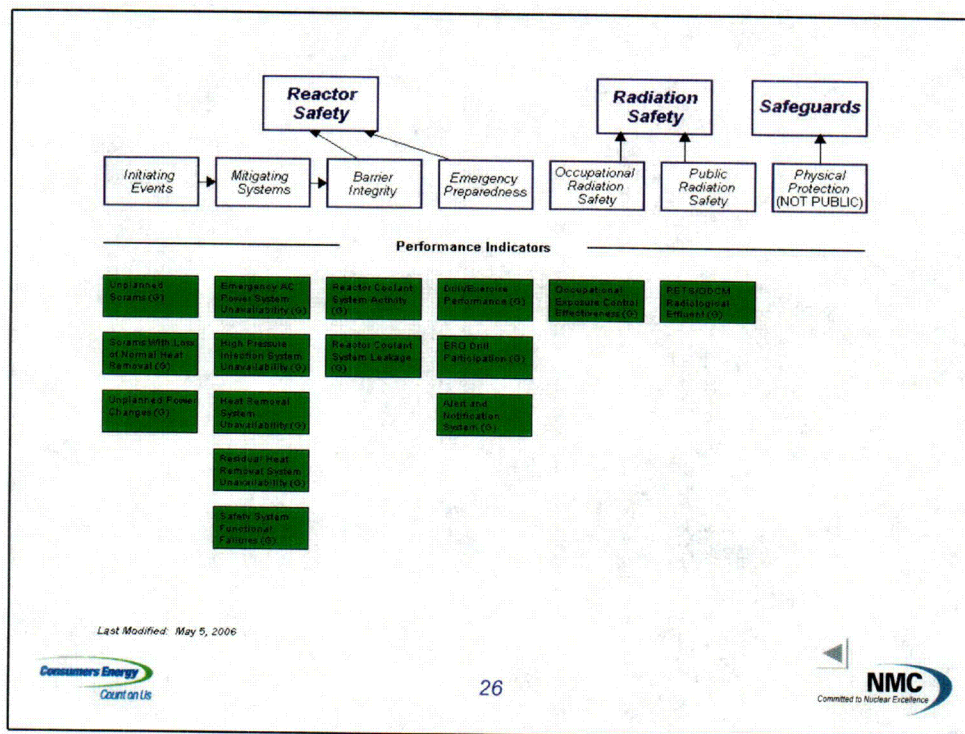
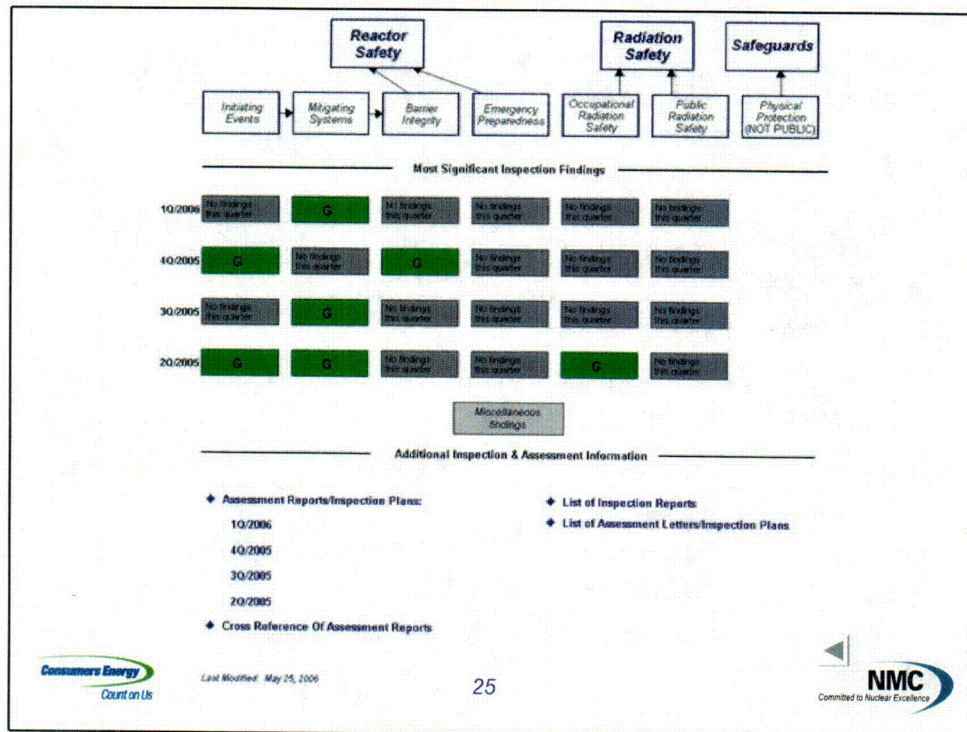
SAMA Candidates (cont)

- Install Direct Drive Diesel Injection Pump to Back Up Turbine-driven AFW Pump
- Install Additional Emergency Diesel Generator
- Install Permanent, Dedicated Cooling Water Line to Emergency Diesel Generators
- Provide Additional Field Flashing Capability to Emergency Diesel Generators
- Replace Air-Operated Containment Sump Valve with Motor-Operated Valve



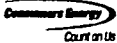
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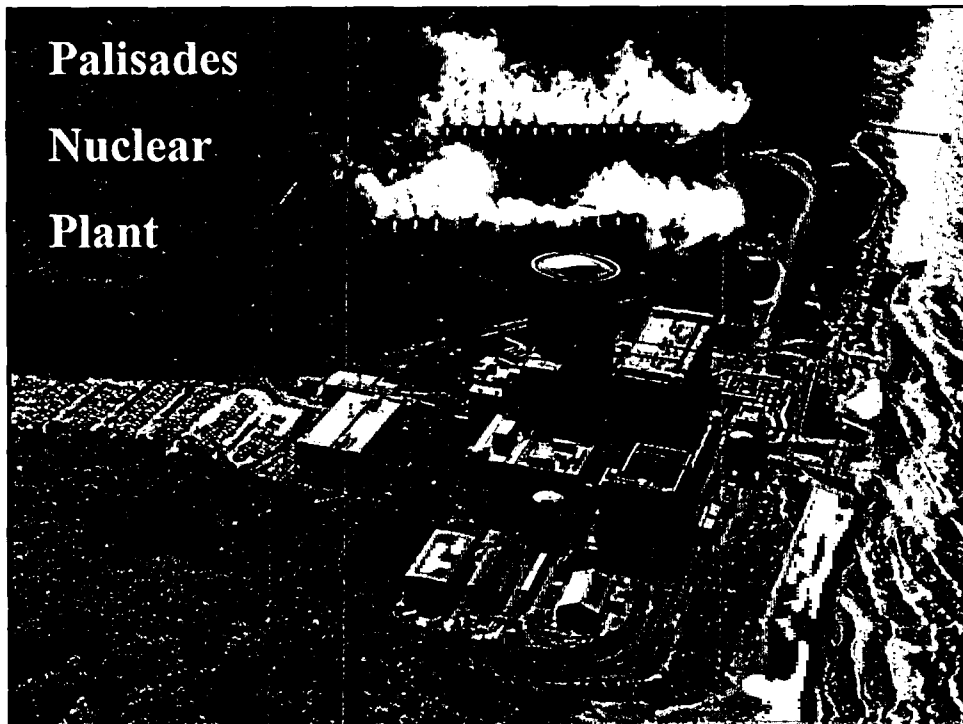


2005 Palisades Performance

- Highest Production Year, 5% Higher Than Previous Best
- 9 of Last 10 Years Are Top-10 Generation Years
- NMC Fleet Standardized Organization Fully Implemented at Palisades
- Lowest Yearly Radiation Dose Record, 50% Lower Than Previous Best
- Industry 'Top Quartile' On-Line Corrective Work Order Backlog at 9
- Industry 'Top Quartile' On-Line Elective Maintenance Backlog at 263
- New Reactor Head Has Been Forged



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Auxiliary Systems

- SFP Neutron Absorbing Sheets
 - For fuel racks with boron carbide panels, no coupon program exists
 - Applicant has committed to performing industry approved neutron absorption testing to monitor for degradation.
- Thermal Sleeves
 - Aging effects requiring management added for cracking due to SCC and PWSCC
 - Managed with ASME Section XI ISI and Water Chemistry Programs

Aging Management of In-Scope Inaccessible Concrete



	Acceptance Criteria	PNP		
		1966	1996	2004
pH	>5.5	6.1 - 7.7	N/A	7.0
Chlorides	<500 ppm	4.0 - 39	23	139
Sulfates	<1500 ppm	9.47 - 33.17	15.2	11.5

- Below-grade environment is non-aggressive
- Periodic testing of ground water will be performed as part of the Structures Monitoring Program

Electrical and I&C Components



- 9 commodity groups reviewed
 - Electrical cables and connections not subject to 10 CFR 50.49 EQ requirements
 - Electrical cables and connections used in instrumentation circuits not subject to 10 CFR 50.49 EQ requirements that are sensitive to reduction in conductor IR
 - Electrical Portion of the Non-EQ Electrical and I&C Penetration Assemblies (Cables and Connections)
 - Fuse Holders
 - Non-Segregated Phase Bus and Connections
 - High-Voltage Transmission Conductors
 - High-Voltage Switchyard Bus and Connections
 - Inaccessible medium-voltage (2kV to 15kV) cables and connections not subject to 10 CFR 50.49 EQ requirements
 - High-Voltage Insulators

Section 4: Time-Limited Aging Analyses (TLAA)



- 4.1 TLAA Process
- 4.2 Reactor Vessel Neutron Embrittlement
- 4.3 Metal Fatigue
- 4.4 Environmental Qualification of Electrical Equipment
- 4.5 Concrete Containment Tendon Prestress Analysis
- 4.6 Containment Liner Plate and Penetrations Load Cycle
- 4.7 Plant Specific TLAA
 - 4.7.1 Crane Load Cycles
 - 4.7.2 Alloy 600 Nozzle Safe Ends Life Assessment Analysis
 - 4.7.5 Reactor Pump Fly Wheel Fatigue or Crack Growth Analysis
 - 4.7.6 Reactor Vessel Underclad Cracking (New TLAA)



Section 4 - Overview

- Section 4.2: Reactor Vessel and Internals Neutron Embrittlement
 - Three analyses affected by irradiation embrittlement identified as TLAAs
 - Pressurized Thermal Shock
 - Upper Shelf Energy
 - Pressure Temperature Limits
- Applicant used 42.37 EFPY (60 years)



Section 4 - Overview

- RV Pressurized Thermal Shock

Limiting Material for PTS	Screening Criteria	Calculated 42.37 EFPY RT_{PTS} value	Conclusion
Intermediate shell and lower shell axial welds (W5214)	270 °F	Applicant: 287 °F (Calculation Confirmed by Staff)	Screening Criterion is exceeded in 2014



Section 4 - Overview

- Palisades Plan for PTS
 - Continue to use an ultra low leakage core design
 - Submit final PTS resolution three years before 2014 (10 CFR 50.61)
- Options
 - Change of operation: further flux reduction and preheating the safety injection water
 - Thermal annealing of the reactor pressure vessel (10 CFR 50.66)



Section 4 - Overview

- RV Upper Shelf Energy (USE)

Limiting Plate and Weld for USE	Acceptance Criterion	Calculated USE Value for 42.37 EFPY	Conclusion
Lower shell plate (D-3804-1)	Projected USE > 50 ft-lbs	48.97 ft-lbs (Calculation Confirmed by Staff)	Acceptance criterion is exceeded in 2021
Intermediate to lower shell circ. Weld (9-112)	Projected USE > 50 ft-lbs	50.83 ft-lbs (Calculation Confirmed by Staff)	Acceptable [TLAA satisfies §54.21(c)(1)(ii)]



Section 4 - Overview

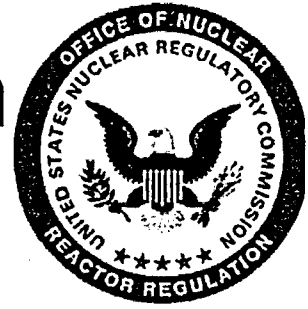
- Palisades Plan for USE
 - Submit Equivalent Margins Analysis (EMA)
three years before 2021
(10 CFR 50, Appendix G)



Section 4.3: Metal Fatigue

- Acceptability Criterion: Cumulative Usage Factor, $CUF \leq 1.0$ for all ASME Class 1 piping components based on a 60-year life
- Fatigue Monitoring Program will ensure that the CUF remains ≤ 1 for PEO
- Staff accepted the evaluations in accordance with 10 CFR 54.21(c)(1)(i),(ii) and (iii)

Section 4.4: Environmental Qualification (EQ) of Electrical Equipment



- Applicant's EQ Program consistent with GALL AMP X.E1, "Environmental Qualification of Electrical Equipment"
- Staff concluded the EQ Program is adequate to manage the effects of aging on the intended function of electrical components
- The staff accepted the evaluation in accordance with 10 CFR 54.21(c)(1)(iii)

Reactor Vessel Underclad Cracking



- Confirmatory Item: Underclad Crack Growth
 - Technical basis is WCAP 15338-A which has been approved by the staff
 - Staff is verifying a plant specific WCAP, using the same methodology as WCAP 15338-A, for PNP



TLAA Summary

- TLAA list was complete and acceptable in accordance with 10 CFR 54.3
- 10 CFR 54.21(c)(1)
 - (i) analyses remain valid for PEO
 - (ii) analyses projected to the end of the PEO
 - (iii) effects of aging will be adequately managed for the PEO
- There are no plant-specific exemptions in accordance with 10 CFR 54.21(c)(2)



Conclusions

- The staff has concluded that there is reasonable assurance that the activities authorized by the renewed license will continue to be conducted in accordance with the CLB
- Any changes made to the PNP CLB are in accord with the Act and the Commission's regulations and to comply with 10 CFR 54.29(a)