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ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

July 11, 2006

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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

ACRS STAFF PRESENT:

MICHAEL JUNGE

FRANK GILLESPI

JUAN AYALA

DAVID JENG

MATTHEW MITCHELL

REPRESENTATIVES OF PALISADES NUCLEAR PLANT PRESENT:

DARREL TURNER

JOHN BROSCHAK

BOB VINCENT

PAUL HARDEN

MARK CIMOCK

LARRY SEAMANS

BILL ROBERTS

JOHN KNEELAND

BRIAN BROGAN

ALSO PRESENT:

MARK HARTZMAN

CORINNE CAREY

ALICE HIRT

KAY CUMBOW

GARY KARCH

KEVIN KAMPS

MICHAEL KEEGEN

KATHRYN BARNES

A-G-E-N-D-A

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 previous 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

members of the public regarding today's meeting.

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

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

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

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

Reactor Regulation to begin.

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

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

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

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

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

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

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

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

MR. TURNER: Good morning. Good afternoon

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

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

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

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

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

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

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

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

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

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

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

CHAIRMAN SIEBER: You are closed cycle. Okay.

MR. TURNER: Correct.

CHAIRMAN SIEBER: Thank you.

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

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

MEMBER BONACA: Yes.

MR. TURNER: We have a number of slides

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

MEMBER BONACA: Okay. I'll wait.

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

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

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

CHAIRMAN SIEBER: Could you bring the microphone over?

MR. VINCENT: Thank you for the reminder.

CHAIRMAN SIEBER: Okay.

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

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

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

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

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

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

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

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

CHAIRMAN SIEBER: Do you use neutron absorbers?

MR. BROSCHAK: Yes, sir.

CHAIRMAN SIEBER: What are there?

MR. BROSCHAK: I believe it's a boron material.

CHAIRMAN SIEBER: Boroflex?

MR. BROSCHAK: Mark Cimock, our lead mechanic, would like to answer that.

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

CHAIRMAN SIEBER: Thank you.

MR. BROSCHAK: Again John Broschak. Back

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

MEMBER BONACA: So you do have steam driven pump?

MR. BROSCHAK: Yes, sir.

MEMBER BONACA: And two electric driven pumps?

MR. BROSCHAK: Two electric driven auxiliary feedwater pumps, one steam driven auxiliary pump.

MEMBER BONACA: One is capable of 100 percent?

MR. BROSCHAK: Yes, sir.

MEMBER BONACA: Okay.

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

MR. BROSCHAK: Yes.

CHAIRMAN SIEBER: Different rooms?

MR. BROSCHAK: Yes, sir.

CHAIRMAN SIEBER: Okay.

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

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

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

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

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

CHAIRMAN SIEBER: Come over here to this microphone.

MR. SEAMANS: I am Larry Seamans,

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

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

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

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

feeds.

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

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

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

CHAIRMAN SIEBER: Thank you.

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

DR. SHACK: And you steam generators are?

MR. BROSCHAK: Alloy 600.

DR. SHACK: Thermally treated?

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

CHAIRMAN SIEBER: I don't know about that.

DR. SHACK: The 1990 versions are 600 and

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

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

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

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

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

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

MEMBER BONACA: Yes.

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

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

them in?

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

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

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

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

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

MR. VINCENT: Right.

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

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

CHAIRMAN SIEBER: Molar control?

MR. TURNER: Hydrazide morpholine.

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

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

MR. VINCENT: Yes, we do.

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

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

CHAIRMAN SIEBER: Right.

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

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

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

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

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

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

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

MR. CIMOCK: That's correct.

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

CHAIRMAN SIEBER: All right.

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

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

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

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

CHAIRMAN SIEBER: So you have three diesel generators?

MR. BROSCHAK: That's correct.

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

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

CHAIRMAN SIEBER: Okay.

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

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

CHAIRMAN SIEBER: Can you connect your safety vessels together?

MR. BROSCHAK: No, we cannot.

CHAIRMAN SIEBER: Okay.

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

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

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

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

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

MR. BROSCHAK: Yes.

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

MR. BROSCHAK: John Broschak again. We

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

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

CHAIRMAN SIEBER: How many was that?

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

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

I think four had been formerly licensed.

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

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

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

MR. VINCENT: Yes. Numerous things.

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

MR. VINCENT: Yes.

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

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

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

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

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

We provided the results to the ACRS staff

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

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

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

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

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

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

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

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

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

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

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

Go ahead, Paul.

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

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

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

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

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

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

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

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

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

all that.

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

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

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

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

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

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

MR. VINCENT: That's correct.

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

MR. VINCENT: That's correct.

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

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

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

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

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

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

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

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

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

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

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

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

MR. VINCENT: Mark Cimock, our mechanical lead.

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

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

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

Then we did a final check basically that

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

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

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

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

CHAIRMAN SIEBER: I'll try harder next time.

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

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

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

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

CHAIRMAN SIEBER: How many capsules do you have left?

MR. BROSCHAK: I'll refer to John Kneeland, our TLAA Lead.

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

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

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

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

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

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

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

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

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

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

MEMBER WALLIS: What are these alternatives you mentioned here?

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

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

MR. BROSCHAK: Yes.

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

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

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

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

CHAIRMAN SIEBER: Okay.

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

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

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

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

It's not a new technology to the industry.

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

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

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

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

MR. BROSCHAK: 2011.

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

MR. BROSCHAK: Right.

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

MR. BROSCHAK: Correct.

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

to operate.

MR. BROSCHAK: Right.

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

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

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

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

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

CHAIRMAN SIEBER: It's been increasing.

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

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

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

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

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

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

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

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

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

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

CHAIRMAN SIEBER: That would be good.

MR. VINCENT: We do, too.

MR. BROSCHAK: This is John Broschak.

CHAIRMAN SIEBER: And the licensee.

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

CHAIRMAN SIEBER: Right.

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

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

CHAIRMAN SIEBER: Continue.

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

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

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

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

MR. BROSCHAK: I'll defer to John Kneeland.

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

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

MR. KNEELAND: Twelve years.

MR. BROSCHAK: John Broschak. Those inspections were 1983 and in 1995.

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

MR. BROSCHAK: Correct.

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

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

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

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

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

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

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

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

MR. BROSCHAK: Correct.

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

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

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

MR. BROSCHAK: It's going to be much bigger.

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

MR. BROSCHAK: Between a factor of 80 and 100.

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

MR. BROSCHAK: We're putting in the size strainer necessary based on the results of the methodology.

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

MR. BROSCHAK: The Palisades arrangement is underneath of the reactor vessel and has two trains with subscreens. The approximate size of the subscreens is 50 square feet.

MEMBER WALLIS: But they were tiny before.

MR. BROSCHAK: They are tiny right now.

CHAIRMAN SIEBER: Smaller than they will be.

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

MR. BROSCHAK: The order of 3,000.

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

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

MR. BROSCHAK: Palisades has a large amount of cal-sil and a large amount of fiber.

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

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

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

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

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

Generic Letter.

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

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

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

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

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

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

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

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

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

in my mind. We understand that this is independent.

MEMBER WALLIS: But you will claim to be.

MR. BROSCHAK: No, we will be.

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

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

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

MR. BROSCHAK: The Subcommittee has effectively got me off my presentation so I will jump back in.

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

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

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

MEMBER WALLIS: You have aluminum in this part?

MR. BROSCHAK: There is some aluminum in the containment, yes.

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

MR. BROSCHAK: Correct.

MEMBER WALLIS: And affects screens.

MR. BROSCHAK: And that has all been --

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

MR. BROSCHAK: You're right. In addition,

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

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

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

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

MR. BROSCHAK: That license amendment is under review by the staff at this time.

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

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

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

one.

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

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

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

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

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

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

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

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

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

CHAIRMAN SIEBER: How do you test?

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

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

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

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

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

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

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

MR. VINCENT: That's correct.

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

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

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

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

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

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

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

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

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

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

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

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

CHAIRMAN SIEBER: So you're going to

throttle the steam valve into the program?

MR. BROGAN: Correct.

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

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

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

MR. BROGAN: Correct.

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

MR. BROGAN: We want to maintain level.

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

MR. BROGAN: Yes, that's correct.

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

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

we just finished implementation of with the supplemental diesel generator.

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

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

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

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

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

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

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

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

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

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

MEMBER WALLIS: 820 they have.

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

MEMBER WALLIS: They actually operate it at 820.

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

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

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

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

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

There were 174 RAIs issued as was

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

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

MR. AYALA: We have all the questions --

MEMBER WALLIS: Are they written down?

CHAIRMAN SIEBER: They are all written down.

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

MEMBER WALLIS: You also ask verbal questions?

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

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

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

MR. AYALA: Right. All of these --

MEMBER WALLIS: Did you get 412 adequate answers?

MR. AYALA: Yes, we did.

MEMBER WALLIS: Okay. Thank you.

CHAIRMAN SIEBER: Or we wouldn't be here.

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

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

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

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

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

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

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

MR. AYALA: The feedwater heaters --

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

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

let me turn it over to them.

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

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

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

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

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

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

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

MEMBER WALLIS: Housing?

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

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

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

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

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

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

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

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

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

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

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

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

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

Juan had mentioned that there were a

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

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

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

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

MS. LOUGHEED: I think that some of the

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

CHAIRMAN SIEBER: Okay.

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

CHAIRMAN SIEBER: They are in scope.

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

CHAIRMAN SIEBER: Okay. Thank you.

MS. LOUGHEED: Basically the other

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

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

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

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

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

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

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

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

CHAIRMAN SIEBER: So you really don't have

a system for doing it, right?

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

CHAIRMAN SIEBER: Drawings that are marked up.

MR. VINCENT: Today that's true.

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

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

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

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

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

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

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

Mark, do you want to add to that?

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

What you are referring to is the

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

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

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

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

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

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

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

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

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

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

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

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

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

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

segment by segment.

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

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

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

MS. LUND: That's a good point.

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

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

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

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

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

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

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

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

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

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

CHAIRMAN SIEBER: Okay.

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

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

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

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

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

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

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

CHAIRMAN SIEBER: Is this is a tube leak?

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

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

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

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

MS. LOUGHEED: Okay.

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

MS. LOUGHEED: Right.

CHAIRMAN SIEBER: Okay.

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

CHAIRMAN SIEBER: I presume that finding was licensee identified?

MS. LOUGHEED: Self-revealing, yes.

CHAIRMAN SIEBER: Okay.

MS. LOUGHEED: Back to Juan.

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

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

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

CHAIRMAN SIEBER: Okay. I'll wait.

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

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

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

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

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

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

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

CHAIRMAN SIEBER: Yes.

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

CHAIRMAN SIEBER: Okay. That's ultrasonic?

MR. ROBERTS: Right, for thickness.

CHAIRMAN SIEBER: Okay.

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

high-strength bolting used in component supports.

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

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

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

MR. AYALA: David Jeng --

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

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

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

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

CHAIRMAN SIEBER: Okay. Thank you.

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

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

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

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

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

to function.

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

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

MR. AYALA: Yes.

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

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

enhancements.

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

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

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

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

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

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

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

MEMBER BONACA: Thank you.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

MR. AYALA: No.

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

PARTICIPANT: It's been done in Europe.

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

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

MEMBER WALLIS: Thank you.

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

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

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

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

MR. MITCHELL: Well --

CHAIRMAN SIEBER: Just coupons, right?

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

CHAIRMAN SIEBER: I would rather not do that.

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

CHAIRMAN SIEBER: Okay.

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

concern will be addressed in the next slide.

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

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

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

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

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

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

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

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

MR. AYALA: Mark Hartzman.

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

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

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

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

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

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

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

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

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

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

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

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

DR. SHACK: Or replace. Right.

MR. HARTZMAN: That's the commitment.

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

MR. HARTZMAN: That is correct.

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

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

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

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

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

To summarize the TLAAs, the TLAA list is complete and acceptable. The analysis have been found to either remain valid for the period of extended operation projected to the end of the period of extended operation or will be managed during the period of extended operation. There are also no plant specific exceptions.

In conclusion, 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 current licensing basis. That concludes our presentation.

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

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

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

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

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

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

MEMBER BONACA: Thank you.

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

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

I know ACRS hates to hear this because when we

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

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

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

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

something in the middle there.

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

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

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

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

I apologize for not being here tomorrow.

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

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

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

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

have to kind of consider how to --

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

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

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

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

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

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

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

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

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

DR. SHACK: Google works.

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

DR. SHACK: The next go-around.

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

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

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

CHAIRMAN SIEBER: Yes.

MS. CAREY: Hi. Do I count?

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

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

CHAIRMAN SIEBER: Oh, good.

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

CHAIRMAN SIEBER: ADAMS.

MS. CAREY: Oh, okay.

CHAIRMAN SIEBER: Automatic something or the other.

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

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

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

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

CHAIRMAN SIEBER: Would you like me to address that?

MS. CAREY: Yes, please.

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

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

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

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

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

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

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

children, my grandchildren, great-grandchildren."

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

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

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

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

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

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

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

MS. CAREY: Thank you.

CHAIRMAN SIEBER: It will appear in the transcript.

MS. CAREY: Good.

CHAIRMAN SIEBER: You can get it under ADAMS.

MS. CAREY: One voice of millions.

CHAIRMAN SIEBER: Okay. Thank you very much.

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

MS. CAREY: Are you asking me?

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

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

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

CHAIRMAN SIEBER: Oh, okay. Sure.

MS. BARNES: I have a concern. I recently

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

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

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

MS. LOUGHEED: Ma'am.

MS. BARNES: -- some documentation on it.

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

MS. BARNES: Okay.

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

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

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

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

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

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

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

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

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

MS. LOUGHEED: It should be --

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

MS. LOUGHEED: Ma'am?

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

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

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

MS. LOUGHEED: Ma'am?

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

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

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

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

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

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

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

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

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

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

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

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

MS. CAREY: Excuse me. How are you going

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

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

MS. CAREY: Well, thank you.

MS. LOUGHEED: So is there a contact?

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

MS. CAREY: That's a dilemma.

MS. LOUGHEED: I believe --

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

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

CHAIRMAN SIEBER: Okay.

MS. LOUGHEED: Juan has the information.

CHAIRMAN SIEBER: Okay. Thank you.

MS. BARNES: Thank you for letting us speak.

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

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

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

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

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

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

CHAIRMAN SIEBER: What waste are you referring to?

MS. HIRT: The radioactive waste.

PARTICIPANT: What waste?

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

CHAIRMAN SIEBER: I don't know whether

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

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

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

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

CHAIRMAN SIEBER: Go ahead.

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

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

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

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

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

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

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

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

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

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

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

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

MEMBER WALLIS: Do you want to try that?

CHAIRMAN SIEBER: You go ahead.

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

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

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

MEMBER WALLIS: You want my name?

MS. CUMBOW: Um-hum.

MEMBER WALLIS: I'm Graham Wallis.

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

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

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

MS. CUMBOW: Of the ECRS.

MEMBER WALLIS: ACRS.

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

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

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

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

be available?

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

MR. KARCH: Okay.

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

MR. KARCH: Right.

CHAIRMAN SIEBER: Look up today's date.

MR. KARCH: Okay. Very good.

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

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

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

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

MS. BARNES: Oh.

CHAIRMAN SIEBER: So I am not aware of that.

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

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

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

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

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

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

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

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

MS. HIRT: -- that issue?

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

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

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

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

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

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

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

MR. KNEELAND: Yes, ma'am.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

because they might not be aware of this.

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

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

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

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

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

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

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

CHAIRMAN SIEBER: One question.

MR. KEEGEN: Yes, one question. Regarding

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

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

MR. KEEGEN: Correct.

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

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

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

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

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

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

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

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

CHAIRMAN SIEBER: We are not making a decision.

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

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

CHAIRMAN SIEBER: Okay.

MR. KEEGEN: Thank you.

MS. BARNES: Thank you for letting us speak.

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

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

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

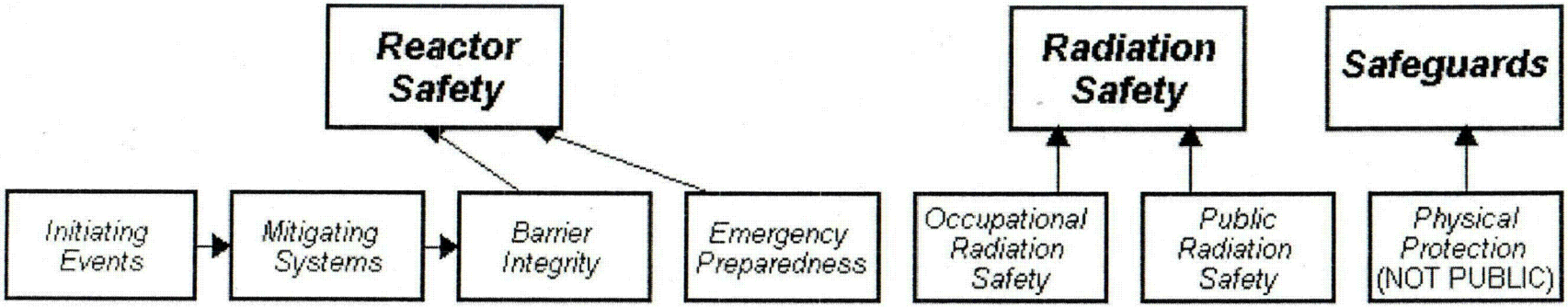
- Palisades scoping, screening and aging management programs sufficient for extended operation

- 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

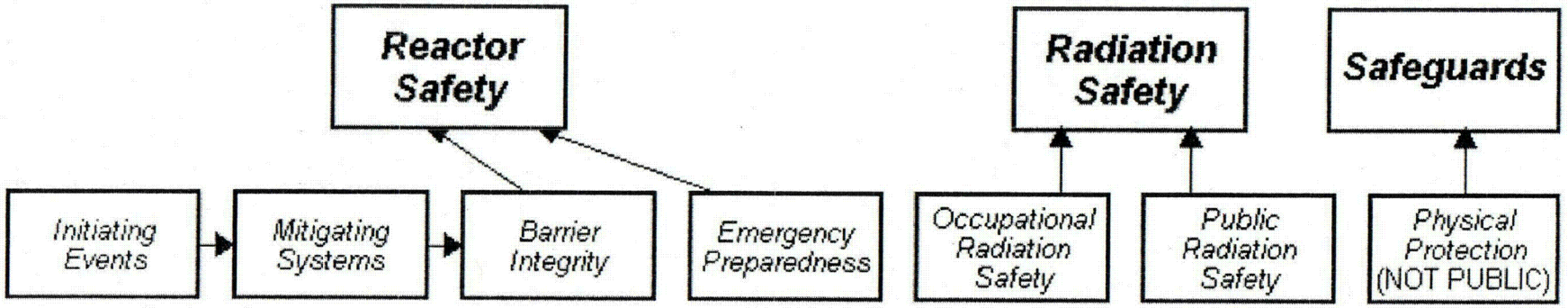
Performance Indicators



Performance Indicators

- Unplanned Scrams (G)
- Emergency AC Power System Unavailability (G)
- Reactor Coolant System Activity (G)
- Drill/Exercise Performance (G)
- Occupational Exposure Control Effectiveness (G)
- RETS/ODCM Radiological Effluent (G)
- Scrams With Loss of Normal Heat Removal (G)
- High Pressure Injection System Unavailability (G)
- Reactor Coolant System Leakage (G)
- ERO Drill Participation (G)
- Unplanned Power Changes (G)
- Heat Removal System Unavailability (G)
- Alert and Notification System (G)
- Residual Heat Removal System Unavailability (G)
- Safety System Functional Failures (G)

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 ≤ 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

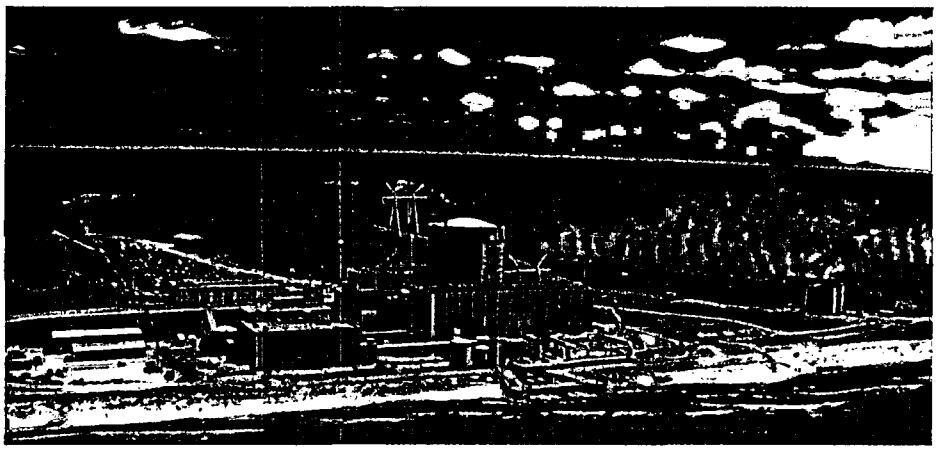
- TLAA list was complete and acceptable in accordance with 10 CFR 54.3
- 10 CFR 54.21(c)(1)
  - (i) analyses remain valid for PEO
  - (ii) analyses projected to the end of the PEO
  - (iii) effects of aging will be adequately managed for the PEO
- There are no plant-specific exemptions in accordance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

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

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)

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

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

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

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

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

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)

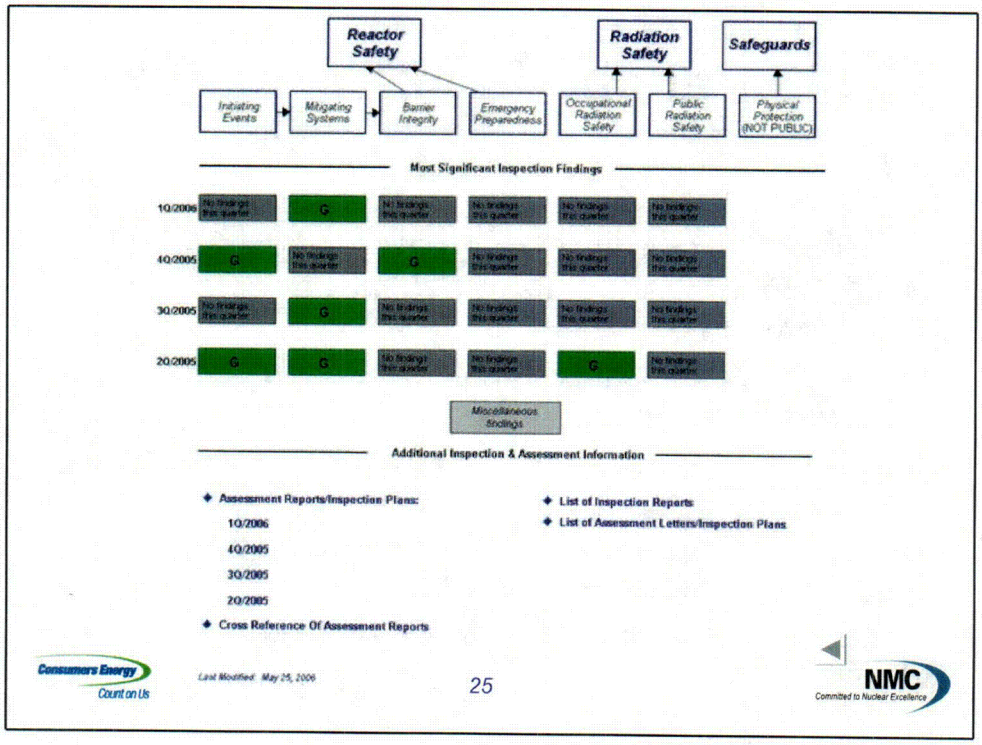
SAMA Candidates

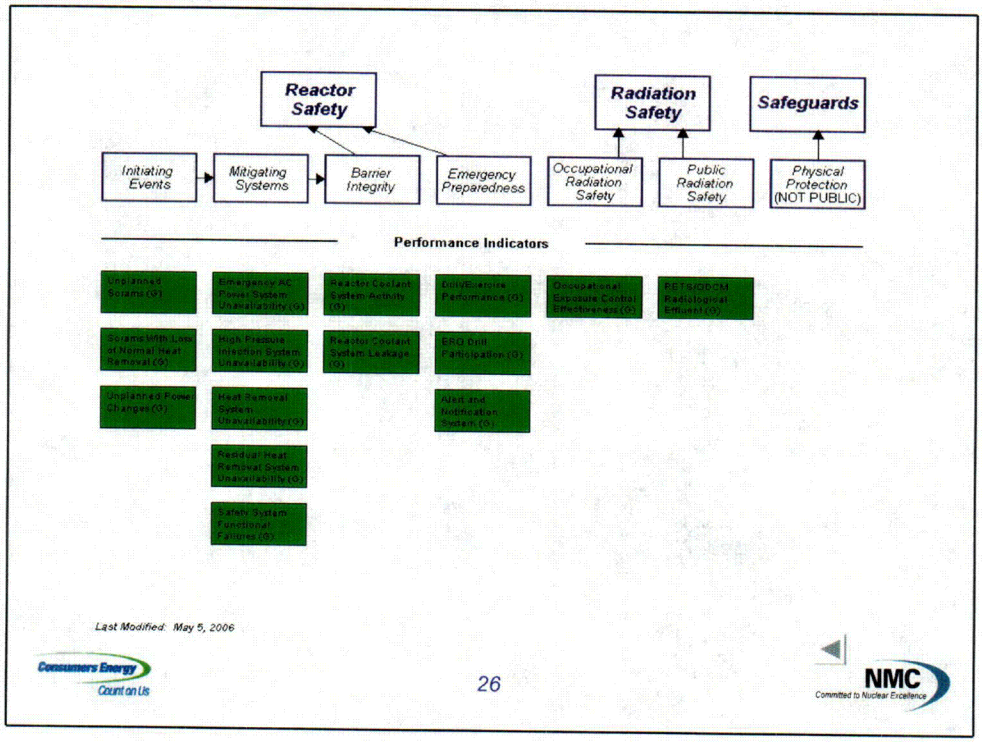
The following SAMA Candidates are Being Evaluated:

- 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

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


Reactor Safety
Radiation Safety
Safeguards
Initiating Events
Mitigating Systems
Barrier Integrity
Emergency Preparedness
Occupational Radiation Safety
Public Radiation Safety
Physical Protection (NOT PUBLIC)
Most Significant Inspection Findings
1Q/2006
4Q/2005
3Q/2005
2Q/2005
G
No findings this quarter
Miscellaneous findings
Additional Inspection & Assessment Information
Assessment Reports/Inspection Plans:
1Q/2006
4Q/2005
3Q/2005
2Q/2005
Cross Reference Of Assessment Reports
List of Inspection Reports
List of Assessment Letters/Inspection Plans
Consumers Energy
Count on Us
Last Modified: May 25, 2006
25
NMC
Committed to Nuclear Excellence


Reactor Safety
Radiation Safety
Safeguards
Initiating Events
Mitigating Systems
Barrier Integrity
Emergency Preparedness
Occupational Radiation Safety
Public Radiation Safety
Physical Protection (NOT PUBLIC)
Performance Indicators
Unplanned Scrams (6)
Emergency AC Power System Unavailability (6)
Reactor Coolant System Activity (6)
Drill/Exercise Performance (6)
Occupational Exposure Control Effectiveness (6)
RETS/ODCM Radiological Effluent (6)
Scrams With Loss of Normal Heat Removal (6)
High Pressure Injection System Unavailability (6)
Reactor Coolant System Leakage (6)
ERO Drill Participation (6)
Unplanned Power Changes (6)
Heat Removal System Unavailability (6)
Alert and Notification System (6)
Residual Heat Removal System Unavailability (6)
Safety System Functional Failures (6)
Last Modified: May 5, 2006
Consumers Energy
Count on Us
26
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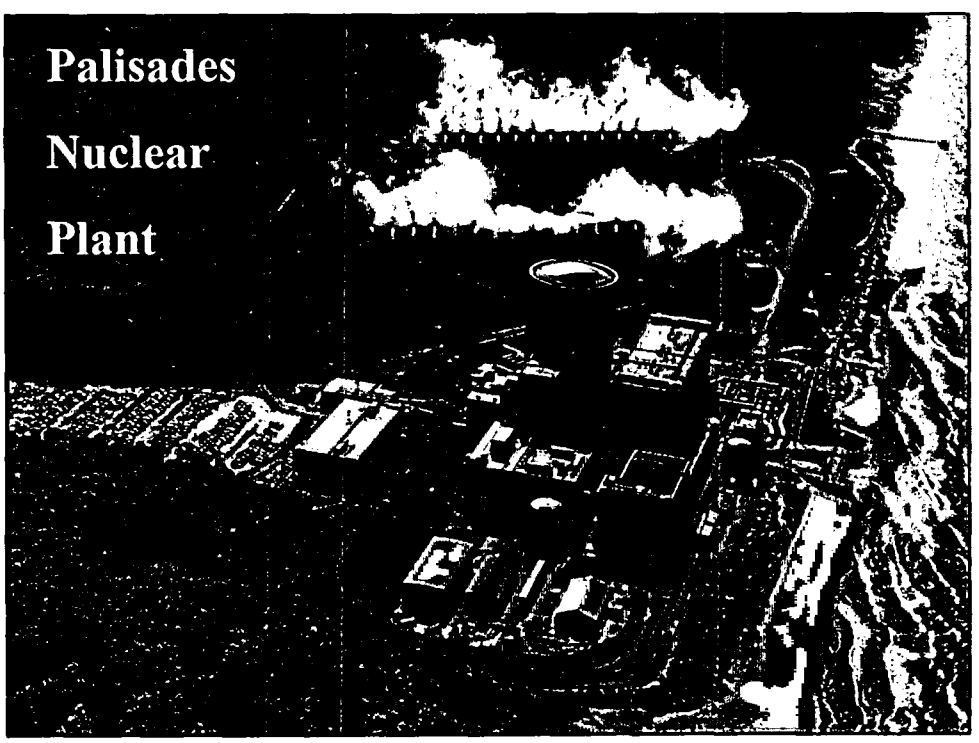
2005 Palisades Performance

- 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



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 ≤ 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)