

July 19, 2005

MEMORANDUM TO: P.T. Kuo, Program Director  
License Renewal and Environmental Impacts  
Division of Regulatory Improvement Programs  
Office of Nuclear Reactor Regulation

FROM: Dale F. Thatcher, Section Chief */RA/*  
Plant Support Branch  
Division of Inspection Program Management  
Office of Nuclear Reactor Regulation

SUBJECT: AUDIT TRIP REPORT REGARDING THE NUCLEAR MANAGEMENT  
COMPANY (NMC) APPLICATION FOR LICENSE RENEWAL FOR THE  
PALISADES NUCLEAR PLANT DATED MARCH 22, 2005

Plant Name: Palisades Nuclear Plant  
Utility Name: NMC  
Docket No.: 50-255 (DPR-20)  
TAC No.: MC6433  
Review Branch: IPSB  
Review Status: Pending resolution of identified issues

From June 27 through July 1, 2005, the Plant Support Branch (IPSB) performed an audit of the NMC (the applicant) license renewal scoping and screening methodology developed to support the Palisades Nuclear Plant license renewal application (LRA) dated March 22, 2005. The focus of the staff's audit was evaluation of the applicant's administrative controls governing implementation of the LRA scoping and screening methodology and review of the technical basis for selected scoping and screening results for various plant systems, structures, and components. The audit team also reviewed quality attributes for aging management programs. A trip report containing a summary of the audit results is attached.

Attachment: As stated

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(301) 415-3026

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TRIP REPORT REGARDING THE NUCLEAR MANAGEMENT COMPANY  
APPLICATION FOR LICENSE RENEWAL FOR  
THE PALISADES NUCLEAR PLANT,  
DATED MARCH 22, 2005 (TAC No. MC6433)

## **1. Introduction**

From June 20 through July 1, 2005, Paul Prescott, Richard McIntyre, Frank Talbot, and Milton Concepcion-Robles of the Plant Support Branch (IPSB), and Michael Morgan, License Renewal Projects staff, audited the Nuclear Management Company (NMC) (the applicant) license renewal scoping and screening methodology developed to support the Palisades Nuclear Plant (Palisades) license renewal application (LRA). The audit was performed at the Palisades facility in Covert, Michigan. The focus of the staff's audit was evaluation of the applicant's administrative controls governing implementation of the LRA scoping and screening methodology and review of the technical basis for selected scoping and screening results for various plant systems, structures, and components (SSCs). The audit team also reviewed quality attributes for aging management programs and training for personnel that developed the LRA.

## **2. Background**

Title 10 of the *Code of Federal Regulations*, Part 54 (10 CFR Part 54), "Requirements for Renewal of Operating Licenses for Nuclear Power Plants," (the Rule) Section 54.21, "Contents of Application — Technical Information," requires that each application for license renewal contain an integrated plant assessment (IPA). Furthermore, the IPA must list and identify those structures and components that are subject to an aging management review (AMR) from the SSCs that are within the scope of license renewal. 10 CFR 54.4(a) identifies the plant SSCs within the scope of license renewal. Structures and components within the scope of license renewal are screened to determine if they are long-lived, passive equipment that is subject to an aging management review in accordance with 10 CFR 54.21(a)(1).

## **3. Scoping Methodology**

The scoping evaluations for the Palisades LRA were performed by Palisade license renewal project personnel and contractors. The audit team conducted detailed discussions with the applicant's license renewal project management personnel and reviewed documentation pertinent to the scoping process. The audit team assessed if the scoping methodology outlined in the LRA and implementation procedures were appropriately implemented and if the scoping results were consistent with current licensing basis requirements. The audit team also reviewed a sample of system scoping results for the following: Main Steam and Shutdown Cooling/Low Pressure Safety Injection systems.

In general, the team determined that the applicant's overall approach to license renewal SSC scoping appeared to be adequate. However, the audit team identified several issues where

additional information will be required to complete the LRA review. These issues are documented in a draft request for additional information and are briefly described below.

- By a letter dated April 1, 2002, the Nuclear Regulatory Commission (NRC) issued a staff position to the Nuclear Energy Institute (NEI), which described the plant system portion of the offsite power system that is used to connect the plant to the offsite power source that should be included within the scope of license renewal.

The staff requested the applicant to provide the description of their scoping methodology, as it related to the aforementioned letter, that was implemented for the evaluation of the 10 CFR 54.4(a)(3) criterion.

- Palisades License Renewal Project Guideline (LRPG) 3, "Scoping and Screening for License Renewal," Revision 3, Section 6.1.3, provides guidance for establishing system boundaries for nonsafety-related (NSR) piping systems connected directly to safety-related (SR) piping systems. The guideline states, in part, that for NSR SSCs directly connected to SR SSCs, the NSR piping and supports up to and including the first anchor, or equivalent anchor, beyond the SR/NSR interface, are within the scope of license renewal. An alternative to specifically identifying a seismic anchor or series of supports comprising an equivalent anchor(s) that support the SR/NSR piping interface is to include enough of the NSR piping run to conservatively encompass the anchor(s) and ensure the piping and anchor intended functions are maintained. The guideline stated that the following examples are typically used to establish the end of pipe stress analysis models and can be used to define conservative end points in the license renewal boundary:
  - A flexible connection is generally considered a pipe stress analyses model end point because the flexible connection does not support loads or transfer loads across it on to connecting piping.
  - A point where buried piping enters the ground because the ground acts like an anchor.

The staff requested the applicant to provide additional technical basis for establishing a flexible connection and a point where buried piping enters the ground, as adequate end points for determining piping within the scope of license renewal. The request was based on the staff's review of the applicant's scoping evaluation related to the 10 CFR 54.4(a)(2) criterion.

- By a letter dated December 3, 2001, the NRC issued a staff position to the NEI, which described areas to be considered and options it expected an applicant to use in determining which SSCs meet the 10 CFR 54.4(a)(2) criterion (i.e., All nonsafety-related SSCs whose failure could prevent satisfactory accomplishment of any safety-related functions identified in paragraphs (a)(1)(i), (ii), (iii) of this section).

Specifically, the staff's concern is that seismic II/I piping, though seismically supported, would be subjected to the same plausible aging effects as safety-related piping. For example, depending on piping material, geometrical configuration, operating condition such as water chemistry, temperature, flow velocity, external environment, erosion and

corrosion may be plausible aging effects for some seismic II/I piping. Those effects, if not properly managed, could result in age-related failures and adversely impact the safety functions of safety-related SSCs.

Based on a review of the LRA, the applicant's scoping and screening implementation procedures, and discussions with the applicant, the staff determined that additional information is required with respect to certain aspects of the applicant's evaluation of the 10 CFR 54.4(a)(2) criteria. The staff requests the applicant provide the following information:

- a. Section 2.1.2.1.2(3)(b) of the LRA stated that as long as the supports for these piping systems are managed, falling of piping sections was not credible, and the piping section itself would not be in scope for 54.4(a)(2) due to physical impact hazard (although the leakage/spray/flooding hazard may still apply).

The staff requested that the applicant clarify if it considered flow accelerated corrosion (FAC) piping failures, as demonstrated in NRC Information Bulletin 2001-09, regardless of whether the piping supports remain intact.

- b. Section 2.1.2.1.2(3)(a) of the LRA stated that all pressurized liquid/steam systems in the general area of safety-related components, passive or active, be considered in scope for license renewal.

The staff requested that the applicant clarify if it utilized system pressure as a means to exclude any liquid or steam piping systems, or portions of systems from the scope of license renewal. Specifically, did the applicant also consider nonpressurized liquid or steam systems within the scope of license renewal.

- In Table 2.1-3 of Chapter 2 in NUREG-1800, guidance is given for screening consumables. Table 2.1-3 states that consumables may be divided into the following four categories for the purpose of license renewal: (a) packing, gaskets, component seals, and O-rings; (b) structural sealants; (c) oil, grease, and component filters; and (d) system filters, fire extinguishers, fire hoses, and air packs.

Section 2.1.3.2 of the LRA stated, "Consumables are a special class of short-lived items that can include packing, gaskets, component seals, O-rings, oil grease, component filters, system filters, fire extinguishers, fire hoses, and air packs."

The staff requested the applicant to clarify if it considered in the screening process structural sealants in the identification of short-lived components and consumables.

- The NRC staff noted that the Auxiliary Feedwater (AFW) room piping insulation was not within the scope of license renewal. To support this determination, the applicant provided an engineering analysis that calculated AFW room temperature with a loss of ventilation and the piping insulation installed. The applicant stated in the LRA that there are no locations where insulation on piping and components is credited to reduce heat transfer for individual room heat load calculations in support of accident analyses.

Based on the above, the staff requested the applicant provide additional justification that the pipe insulation in the AFW room is not required to ensure temperatures remain below the values that could cause safety-related equipment in the room to fail.

The staff will complete the evaluation of the applicant's scoping methodology pending resolution of these issues.

#### **4. Screening Methodology**

The audit team reviewed the methodology used by the applicant to determine if mechanical, structural, and electrical components within the scope of license renewal would be subject to further aging management review. The applicant provided the staff with a detailed discussion of the processes used for each discipline and provided administrative documentation that described the screening methodology. The audit team also reviewed the screening results reports for the Main Steam and Shutdown Cooling/Low Pressure Safety Injection systems. The team noted that the applicant's screening process was performed in accordance with their written requirements and was consistent with the guidance provided in NUREG-1800, "Standard Review Plan for Review of License Renewal Applications for Nuclear power Plants," and the NEI 95-10, "Industry Guideline for Implementing the Requirements of 10 CFR Part 54, the License Renewal Rule," Revision 4. The audit team determined that the screening methodology was consistent with the requirements of the Rule, and that the screening methodology will identify structures and components that meet the screening criteria of 10 CFR 54.21(a)(1).

#### **5. Aging Management Program Quality Assurance Attributes**

The audit team evaluated the quality assurance (QA) attributes for the applicant's Aging Management Program (AMP) activities described in Appendix B, "Aging Management Programs," of the LRA using the guidance contained in NUREG-1800, Section A.2, "Quality Assurance for Aging Management Programs (Branch Technical Position IQMB-1). Based on the staff's evaluation, the QA attributes (corrective action, confirmation process, and administrative controls) described in Section B1.2 of Appendix B, "Quality Assurance Program and Administrative Controls," of the LRA, for all programs credited for aging effects were consistent with Branch Technical Position IQMB-1. The team also determined that the applicant sufficiently described its license renewal program commitments in Appendix A, "FSAR [Final Safety Analysis Report] Supplement," of the LRA.

#### **6. Quality Assurance Controls Applied to LRA Development**

The audit team reviewed the QA controls used by the applicant to provide reasonable assurance that the LRA scoping and screening methodologies were adequately implemented. Although the applicant did not develop the LRA under an Appendix B to 10 CFR Part 50 QA program, the audit team determined that the applicant utilized the following QA processes during LRA development.

- Implementation of the scoping and screening methodology was controlled using written license renewal procedures, guidelines and project scoping position papers.

- The LRA was reviewed and approved by the Offsite Safety Review Committee and the Plant Review Committee prior to submitting the LRA to the NRC.
- The applicant planned to retain license renewal documents as quality records or controlled documents.
- The applicant performed an industry peer review of license renewal activities.
- Nuclear Oversight performed two self-assessments, identified deficiencies in the license renewal documents and verified corrective actions were implemented for license renewal procedures and position papers prior to submitting the LRA to the NRC.

The audit team concluded that these quality assurance activities, which exceed the current regulatory requirements, provided additional assurance that LRA development activities were performed consistently with the applicant's license renewal procedures and position papers.

## **7. Training for License Renewal Project Personnel**

The audit team reviewed the implementation of the applicant's training process to ensure the guidelines and methodology for the scoping and screening activities would be performed in a consistent and appropriate manner.

The applicant's LRA team consisted of several engineers, individuals with previous senior licensed operator experience, and contractors.

The audit team reviewed completed qualification and training records of several of the applicant's license renewal staff that performed scoping and screening activities. Formal classroom training as well as interviews between a qualification trainee and a subject matter expert were conducted to determine adequate understanding of a particular subject. The applicant compiled and maintained a comprehensive training qualification record for each of the staff as part of the application development process, as delineated in LRPG 2, "Staff Training Requirements and Qualifications," Revision 2. Training requirements were determined by the License Renewal Project Manager or responsible Discipline Lead and were prescribed based on trainee qualifications, area of responsibility, and experience related to licensing renewal. The audit team verified through discussions conducted during the audit that the applicant's staff was knowledgeable on license renewal process requirements and the specific technical issues within their areas of responsibility.

On the basis of discussions with the applicant's license renewal project team responsible for the scoping and screening process, and a review of selected documentation in support of the process, the audit team concluded that the applicant's staff understood the requirements of and adequately implemented the scoping and screening methodology documented in the LRA. Training provided a framework for ensuring that the staff assigned to the technical portion of the LRA acquired a fundamental level of knowledge of the license renewal process and associated regulatory requirements. The audit team concluded that license renewal personnel were qualified to perform the applicable license renewal activities.

## **8. Exit Meeting**

A public exit meeting was held with the applicant on July 1, 2005, to discuss the results of the scoping and screening methodology audit. The audit team identified preliminary areas where additional information would be required to support completion of the staff's LRA review. Draft requests for additional information related to the applicant's scoping and screening methodology were forwarded to the NRR License Renewal and Environmental Impacts Program Director on July 14, 2005 (ADAMS Accession No. ML051960116).

## 9. Documents Reviewed

LRPG 1	"License Renewal Project Guideline"	Revision 2
LRPG 2	"Staff Training Requirements and Qualifications"	Revision 2
LRPG 3	"Integrated Plant Assessment Scoping and Screening"	Revision 3
LRPG 6	"Electrical Aging Management Review"	Revision 3
LRPG 12	"LRP Operating Experience Database Development and Use Guide"	Revision 2
LRPG 15	"License Renewal Application Preparation, Review, Validation, and Submittal"	Revision 1
LR-TR-001-SR	"Component Identification and Data Processing for Safety-Related SSC Within Scope of 10CFR54.4(a)(1)"	Revision 2
LR-TR-002-NSAS	"Component Identification and Data Processing for Non-Safety Related Affecting Safety Related SSC Within Scope of 10CFR54.4(a)(2)"	Revision 2
LR-TR-003-FP	"10 CFR 50.48 - Component Identification and Data Processing for SSC Within Scope of 10CFR54.4(a)(3) for Fire Protection"	Revision 3
LR-TR-004-EQ	"10 CFR 50.49 - Component Identification and Data Processing for SSC Within Scope of 10CFR54.4(a)(3) for Environmental Qualification"	Revision 2
LR-TR-007-SBO	"10 CFR 50.61 - Component Identification and Data Processing for SSC Within Scope of 10CFR54.4(a)(3) for Station Blackout"	Revision 3
LR-TR-012	"Mechanical and Electrical Scoping and Screening Methodology and Summary Report"	Revision 2
LR-TR-019	"Insulation Report"	Revision 0
LR-TR-020	"Aging Effects and Mechanisms Determination for Containment Penetration Insulation"	Revision 0



LR-TR-022	“Civil Structural Integrated Plant Assessment (IPA) - Scoping/Screening and Aging Management Review Methodology and Results”	Revision 2
LR-AMR-MISC	“Miscellaneous and Bulk Commodities”	Revision 1
LR-SS-SWY	“System/Structure Scoping and Screening Results for Switchyard”	Revision 1
EA-DTE-797-01	“Degradation of Mobil DTE-797 Lubricant as Related to the Loss of Ventilation in the Auxiliary Feedwater (AFW) Pump Room”	May 13, 1987
Palisades Administrative Procedure 9.30	“Q-List”	Revision 18
Palisades Administrative Procedure 9.32	“Equipment Database”	Revision 7

**10. Personnel Contacted During Methodology Audit**

Darrel Turner	License Renewal Project Manager
Mark Cimock	Mechanical and Civil Structural Lead
Larry Seamans	Electrical Lead
Robert Vincent	Licensing Lead
John Kneeland	TLLA and Reactor Vessel Lead
Bill Roberts	Programs Lead