



**Palisades Nuclear Plant**  
Operated by Nuclear Management Company, LLC

August 27, 2005

10 CFR 54

U. S. Nuclear Regulatory Commission  
ATTN: Document Control Desk  
Washington, DC 20555

Palisades Nuclear Plant  
Docket 50-255  
License No. DPR-20

Response to NRC Requests for Additional Information Relating to License Renewal  
dated July 26 and 27, 2005

In letters dated July 26, 2005 (ML052070727, ML052070788) and July 27, 2005 (ML052080205), the Nuclear Regulatory Commission (NRC) requested additional information regarding the License Renewal Application for the Palisades Nuclear Plant. This letter responds to those requests.

Enclosures 1, 2, and 3 provide the text of, and the NMC response to, each NRC request.

Please contact Mr. Darrel Turner, License Renewal Project Manager, at 269-764-2412, or Mr. Robert Vincent, License Renewal Licensing Lead, at 269-764-2559, if you require additional information.

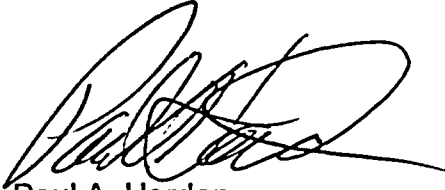
Summary of Commitments

This letter contains one new commitment, as follows:

NMC will update the appropriate sections of the License Renewal Application to reflect inclusion of the Auxiliary Feedwater (AFW) Pump steam supply line insulation within the AFW Pump Room in scope for license renewal, and provide the results of the aging management review. This information will be submitted for NRC review and approval by October 31, 2005.

A112

I declare under penalty of perjury that the foregoing is true and correct. Executed on August 27, 2005.

A handwritten signature in black ink, appearing to read 'Paul A. Harden', with a large, stylized flourish at the end.

Paul A. Harden  
Site Vice President, Palisades Nuclear Plant  
Nuclear Management Company, LLC

Enclosures (3)

CC            Administrator, Region III, USNRC  
              Project Manager, Palisades, USNRC  
              Resident Inspector, Palisades, USNRC  
              License Renewal Project Manager, Palisades, USNRC

**ENCLOSURE 1**

**NMC Response to NRC Request for Additional Information (ML052070727)  
Dated July 26, 2005**

**(2 Pages)**

## **ENCLOSURE 1**

### **NMC Response to NRC Request for Additional Information (ML052070727)**

**Dated July 26, 2005**

#### **RAI 2.5-1**

##### **10 CFR 54.4(a)(3) Scoping Criteria for Station Blackout (SBO) Equipment**

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

- Consistent with the staff position described in the aforementioned letter, the staff requests the applicant to describe the scoping methodology implemented for the evaluation of the 10 CFR 54.4(a)(3) criterion.

#### **NMC Response to NRC RAI 2.5-1**

In NRC letter to NEI dated April 1, 2002, Staff Guidance On Scoping Of Equipment Relied On To Meet The Requirements Of The Station Blackout (SBO) Rule (10 CFR 50.63) For License Renewal (10 CFR 54.4(a)(3)), the NRC provided guidance on scoping of equipment for Station Blackout (SBO). This letter became ISG-2. The letter stated, "The offsite power systems of U.S. nuclear power plants consist of a transmission system (grid) component that provides a source of power and a plant system component that connects that power source to a plant's onsite electrical distribution system which powers safety equipment." As noted in the NRC letter to NEI dated November, 14, 2001, Proposed Staff Guidance On Scoping Of Equipment Relied On To Meet The Requirements Of The SBO Rule, the Staff Position and Rationale stated the following. "The staff notes that it is not its intent to impose aging management programs on this country's transmission systems. As a practical matter its authority in this area is limited."

NMC has performed scoping of the SBO equipment in accordance with ISG-2.

The Palisades Plant system that connects that (offsite) power source to the NMC electrical distribution system is described as follows: The switchyard sections and connections to the plant distribution system that are in scope are shown on LRA drawings LR-WD-1421-31 and LR-WD-950-A. As noted in the LRA Section 2.1.2.1.3 item 5 on page 2-28, "The preferred source of offsite power is via the motor operated disconnect 24F1, fed from the front bus of the switchyard, which has multiple sources of supply from the transmission system to the Safeguards transformer. The scoping boundary for the preferred source of offsite power is via the motor operated disconnect 24F1, Safeguards transformer 1-1, direct buried cables, Safeguards bus, non-segregated bus, medium voltage cables, and isolation breakers. The alternate source of offsite power is via the motor operated disconnect 24R2, which is fed from the rear bus of the 345 KV switchyard, which has multiple sources of supply from the 345 transmission system. The scoping boundary for the alternate source of offsite power is via the motor operated disconnect 24R2, high voltage overhead lines and towers, startup transformers, load isolation breakers, and medium voltage cables." The

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preferred source of power connects to the NMC distribution system at the Safeguards Bus breaker 152-401. The alternate source of power connects to the NMC distribution system at the breakers 152-106, 152-202, 152-303, 252-102, 252-202, 252-302 and 252-402.

ISG-2 goes on to state the following, "This path typically includes the switchyard circuit breakers that connect to the offsite system power transformers (startup transformers), the transformers themselves, the intervening overhead or underground circuits between circuit breaker and transformer and transformer [sic] and onsite electrical distribution system, and the associated control circuits and structures."

At Palisades the devices that connect to both off site power sources are motor operated disconnects. These are the Palisades isolation devices between the plant system and the transmission system. These disconnects are equivalent to the switchyard breaker mentioned in ISG-2 as an example of a starting point for the plant system. The motor operated disconnects are normally closed and can be operated remotely or manually. The rest of the system, as described above, includes the associated control circuits and structures.

The remainder of the switchyard components on the grid side of the motor operated disconnects, including the incoming lines, switches, and front and rear busses, are integral parts of the transmission (grid) system. They are not part of the plant system.

In conclusion, the Palisades scoping of SBO equipment for license renewal is consistent with the direction provided in ISG-2.

**ENCLOSURE 2**

**NMC Responses to NRC Requests for Additional Information (ML052070788)  
Dated July 26, 2005**

**(1 Page)**

**RAI 3.4-1**

**Evaluation of Thermal Insulation**

During a sampling of systems, the NRC staff noted that the Auxiliary Feedwater (AFW) System Pump 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, but with 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. The applicant further stated that other rooms containing safety-related equipment had analyses performed that did not credit insulation to reduce heat transfer in support of accident analyses. However, in case of AFW, there was no documentation presented to the staff to prove that the thermal insulation is not credited to reduce room temperatures and prevent a loss of system intended function.

Based on the above, the staff requests the applicant provide justification that the pipe insulation in the AFW Pump Room is not required to ensure temperatures remain below the values that could cause safety-related equipment in the room to fail. Otherwise, please provide the aging management review and program for the insulation.

**NMC Response to NRC RAI 3.4-1**

On further review, Palisades has determined that the insulation on the steam supply piping to and from the steam driven Auxiliary Feedwater (AFW) Pump within the AFW Pump Room is in scope of license renewal. NMC will update the appropriate sections of the LRA to reflect inclusion of the Auxiliary Feedwater (AFW) Pump steam supply line insulation within the AFW Pump Room in scope for license renewal, and provide the results of the aging management review. This information will be submitted for NRC review and approval by October 31, 2005.

**ENCLOSURE 3**

**NMC Responses to NRC Requests for Additional Information (ML052080205)  
dated July 27, 2005**

**(5 Pages)**



## **ENCLOSURE 3**

### **NMC Responses to NRC Requests for Additional Information (ML052080205) dated July 27, 2005**

#### **RAI 2.1-1**

##### **Use of Alternatives to Seismic Anchors or Equivalent Anchors**

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 non-safety-related (NSR) piping systems connected directly to safety-related (SR) piping systems. The guideline states, in part, that for NSR systems, structures, or components (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 states 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. Based on the staff's review of the applicant's above scoping evaluation related to the 10 CFR 54.4(a)(2) criterion, the staff requires additional information to complete its review.

Specifically, the staff requests the applicant to provide the 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.

#### **NMC Response to NRC RAI 2.1-1**

The termination of piping analysis at a flexible connection is standard stress analysis practice. The intended function of such connections are to eliminate the transmission of loads across the connection. Palisades' current analysis criteria states, "A run and branch pipe may also be decoupled by using a flex hose, in conjunction with appropriate restraints, to effectively eliminate interaction between them." Similarly, NEI 95-10 Appendix F, Revision 6 (draft RG 1.188 that accepts NEI 95-10 rev 6 without exceptions was sent to ACRS for review on 8/15/05), provides the following discussion, "Expansion joints and flexible hoses are designed such that significant piping system loads are not transferred across the connection. For this reason, the piping system is adequately supported to allow analysis endpoints to be established prior to the flexible connection. Therefore, establishing the LR boundary endpoint at flexible connections ensures that the analysis endpoint is enveloped."

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Use of the point of entry of piping into the ground as an anchor point is common practice in stress analysis modeling in the industry. Piping is typically terminated at the point of entry into the ground due to the stiffness contribution of the buried piping even though the buried piping is not included in the analysis model. Given that the non-safety attached to safety piping in question is only in scope for its structural function, and not a pressure boundary function, any degradation of the buried portion of piping would make itself evident via leakage (leak before break) before any significant loss of structural integrity occurs. In addition, piping typically penetrates the ground through a grouted penetration which will provide the requisite restraint regardless of the condition of buried portion of the piping. This is supported by current Palisades Plant piping analysis guidance that states, "The stress analysis model, when possible, will represent a piping system bounded by full translation and rotational restraints (6 DOF restraints). These generally are equipment connections, penetrations and structural anchors. Piping going underground is typically represented as an anchor even though that assumption likely overstates stiffness."

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**RAI 2.1-2**

**10 CFR 54.4(a)(2) Scoping Criteria for Non-safety-related SSCs**

By letter dated December 3, 2001, the NRC issued a staff position to the NEI, which described areas to be considered and options it expects an applicant to use in determining which SSCs meet the 10 CFR 54.4(a)(2) criterion (i.e., All non-safety-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, and 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 license renewal application (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:

- Section 2.1.2.1.2(3)(b) of the LRA states that as long as the supports for these piping systems are managed, falling of piping sections is 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 requests 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.

- Section 2.1.2.1.2(3)(a) of the LRA states 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 requests 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, were nonpressurized liquid or steam systems considered within the scope of license renewal.

**NMC Response to NRC RAI 2.1-2**

The dynamic and spatial effects due to potential Flow Accelerated Corrosion (FAC) failures were considered for susceptible non-safety related piping whose failure could

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affect safety related SSCs, regardless of whether the piping supports remain intact. Thus, the LRA section 2.1.2.1.2(3)(b) statement on page 2-22, "Therefore, as long as the supports for these piping systems are managed, falling of piping sections is not credible..." is hereby revised to read, "Therefore, as long as the effects of aging on the supports for these piping systems are managed, falling of piping sections, except for FAC failure, is not credible..."

NMC did not utilize system pressure as a means to exclude any liquid or steam piping systems, or portions of systems, from the scope of License Renewal at Palisades with one exception. Non-pressurized chemical addition tanks and piping with spill retention dikes were excluded from scope if there were no safety related SSCs within the dike enclosed area.

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## **NMC Responses to NRC Requests for Additional Information (ML052080205) dated July 27, 2005**

### **RAI 2.1-3**

#### **Consumables**

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. For Category (b), NUREG-1800, Table 2.1-3 states that these sub-components may perform a function without moving parts or a change in configuration, and they are not typically replaced. The table further states that it is expected that the applicant's Structural Aging Management Program will address these items with respect to an aging management review program on a plant-specific basis. Section 2.1.3.2 of the LRA states, "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 requests the applicant to clarify if it considered in the screening process structural sealants in the identification of short-lived components and consumables.

#### **NMC Response to NRC RAI 2.1-3**

The following information supplements the LRA Section 2.1.3.2 discussion of consumables.

Palisades' structural sealants perform a function without moving parts or a change in configuration and are not periodically replaced. Accordingly, Palisades has included structural sealants in scope of License Renewal and has performed aging management review on them, as evidenced in the following sections of the License Renewal Application:

- Section 2.4.8, second bullet on page 2-240
- Function "Consumables (BLB)-NSAS" on page 2-242
- Table 2.4.8-1, multiple component types on pages 2-246 and 2-247
- Table 3.5.2-8, multiple component types on pages 3-372 to 3-374