NMC
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Palisades Nuclear Plant
Operated by Nuclear Management Company, LLC

October 14, 2005

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U. S. Nuclear Regulatory Commission
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Palisades Nuclear Plant
Docket 50-255
License No. DPR-20

NMC Response to NRC Requests for Additional Information Dated September 14, 2005 Relating to License Renewal for the Palisades Nuclear Plant

In a letter dated September 14, 2005, the Nuclear Regulatory Commission (NRC) transmitted Requests for Additional Information (RAIs) regarding the License Renewal Application for the Palisades Nuclear Plant. In addition, on October 3, 2005, a follow up question was received concerning NMC's previous response to NRC RAI B2.1.3-1(d). This letter responds to those requests.

Enclosures 1 and 2 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 no new commitments or changes to existing commitments.

I declare under penalty of perjury that the foregoing is true and correct. Executed on October 14, 2005.

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

A112

27780 Blue Star Memorial Highway • Covert, Michigan 49043-9530
Telephone: 269.764.2000

Enclosures (2)

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

27780 Blue Star Memorial Highway • Covert, Michigan 49043-9530
Telephone: 269.764.2000

ENCLOSURE 1

NMC Responses to NRC Requests for Additional Information
Dated September 14, 2005

(5 pages)

RAI 2.4.1-1

On page 2-201 of the PNP LRA, it is stated in the last paragraph of the page that "The portions of the Auxiliary Building that are in-boundary and contain components..." Clarify the meaning of the phrase "in-boundary" as used in Section 2.4 and using the auxiliary building as an example to explain the criteria used in defining the three dimensional "in-boundary" lines for in-scope PNP structures.

NMC Response to NRC RAI 2.4.1-1

"In-boundary" means "in-scope of license renewal". The in-scope boundaries are defined in the LRA structure description, as necessary. For example, on page 2-200, Section 2.4.1 Auxiliary Building states, "The Auxiliary Building, with the exception of the administration area and the access control area, is a Class 1 structure." The sentence on page 2-201 quoted in the question goes on to say, "The portions of the Auxiliary Building that are in-boundary and contain components subject to an AMR include the original Auxiliary Building (except administrative areas), the Auxiliary Building Radwaste Addition and the Auxiliary Building TSC/EER/HVAC Addition." This is further clarified in the scoping function S0200B-NSAS on page 2-203 where it includes the other non-class 1 access control portion of the Auxiliary Building in-scope of license renewal due to non-safety affecting safety. As described in the function comment: "The Access Control area of the Auxiliary Building is Consumers Design Class 3. However, concrete walls below the roof slab of Access Control Area supports the Load Distribution System (LDS) that is used to transport spent fuel assemblies. They are in-scope of 10CFR 54.4. These walls are part of the Auxiliary Building framing system which supports safety related components."

Thus, the only portion of the Auxiliary Building and additions that is not in-scope (in-boundary) of license renewal is the administrative support area.

RAI 2.4.1-2

LRA Table 2.4.1-1, Auxiliary Building provides three fuel related component entries. It is not clear to the staff as to whether PNP's spent fuel racks including their neutron absorbing material (if applicable), are designated as items requiring an aging management review (AMR). If yes, indicate the location in the LRA where the items are listed. Also, the table does not explicitly list cranes and their supporting rails as items requiring an AMR. The applicant is requested to provide additional information related to scoping and screening of the above mentioned PNP components.

NMC Response to NRC RAI 2.4.1-2

The "Description" of each LRA Section 2.4.x provides a description of what can be found in that section. LRA Section 2.4.1, "Auxiliary Building", and the other building-specific LRA sections, contain component groups associated with GALL Sections IIA and IIIA; that is, concrete and steel. The spent fuel racks, because of their component (ie, fuel) support function, are addressed on pages 2-209 and 2-222 in Section 2.4.2, "Component Supports." This section addresses component and piping supports for all in-scope structures. The various building cranes are addressed on pages 2-240 & 244 in Section 2.4.8, "Miscellaneous Structures and Bulk Commodities."

RAI 2.4.2-1

A review of Table 2.4.2-1 indicates that the applicant has not identified any pipe (penetration) passing through the PNP containment as Class MC piping, as allowed by Figure NE-1120-1 of Subsection NE of Section III of the ASME Code. The applicant is requested to verify that all Class MC pipe supports are in the scope of license renewal.

NMC Response to NRC RAI 2.4.2-1

ASME Code Section III Subsection NE Article NE-1000 establishes the rules for material, design, etc. for metal containment vessels. Palisades' containment is steel lined, prestressed concrete, and, therefore, does not have Class MC piping or Class MC piping supports. See LRA Section 2.4.3 Containment description.

Unlike Figure NE 1120-1 - "Typical Containment Penetrations", that shows penetration sleeves for piping as Class MC, since they are welded to and supported by the steel liner, the Palisades penetration sleeves are anchored into the containment concrete. Refer to FSAR Figure 5.8-2 - for "Containment Structure Typical Penetration Piping" and LRA Section 3.5.2.2.1.7, page 3-280. Piping, HVAC, and electrical penetrations are designed, fabricated, inspected, and installed in accordance with the ASME B&PV Code, Section III, Subsection B (see LRA page 4-48 and FSAR 5.8.6.3.2).

RAI 2.4.8-1

Table 2.4.8-1 lists Water Treatment Building and Riprap-Yard-Soil components with their intended functions. Discuss the PNP's basis for not including these components as part of the Section 2.4 listing of structures and structural commodities. Also, explain as to why miscellaneous commodities (such as, fire barrier, elastomer, seal, gasket or filler) that are used in (1) containment interior structures, (2) feed water purity building (3) component supports and (4) other in-scope safety or non-safety structures are not specifically listed in Table 2.4.8-1 as items requiring aging management review.

NMC Response to NRC RAI 2.4.8-1

The water treatment building is part of and included with the turbine building, as discussed in section 2.4.10 on page 2-251. The rip-rap is not a stand alone structure. It is a component type that protects the intake crib. The rip-rap component type is included in the Miscellaneous and Bulk Commodities group due to its uniqueness, consisting of stone, sand, and concrete filled sacks, as described on page 2-240.

Miscellaneous commodities are addressed as follows:

Containment Interior Structures
The containment interior structure elastomers identified in-scope of license renewal for panels and junction boxes are gaskets; and for other structural uses are caulk, thermal expansion/seismic separation joint filler, gap and crack seal, and gaskets. These are shown in Table 2.4.8-1 on page 2-246. (Note : Containment pressure boundary related elastomers - hatch gaskets and base slab to containment shell gap filler are covered in Section 2.4.3) There are no fire barriers for containment interior structures since the containment is one fire area. The only containment fire barrier is the containment shell.

Feedwater Purity building
Only a small portion of the Feedwater Purity building, the boiler room, is in scope of license renewal to support piping used as a backup emergency diesel generator fuel oil source. There are no elastomers identified as in scope. Similarly, there are no fire barriers in scope because the in-scope piping is only required in the event of a fire in the Intake Structure which houses the primary fuel oil supply transfer pumps that normally supply the emergency diesel generators. It is not necessary to postulate multiple fires in separate areas. See system function S0800-FP on LRA page 2-235.

Component Supports
No elastomers, seals, gaskets or fire barriers have been identified in scope for component supports

Other In-Scope Safety or Non-Safety Structures
The listing of structures/components in Table 2.4.8-1 includes all other in scope elastomers, seals, gaskets and fire barriers requiring AMR.

RAI 2.4.9-1

Section 2.4.9 of the LRA provides a general description of the Switchyard and Yard Structures components that require an AMR. Confirm that precast reinforced concrete elements, such as manholes and rigid steel or PVC conduits and reinforced concrete duct banks, are items that require an AMR and list them in Table 2.4.9-1. Also, the discussion related to "Tank Foundations" on page 2-248 of the LRA states, "...with backfill compacted to 95% to support the tank bottoms." Clarify the meaning of the 95% number referenced in the above phrase.

NMC Response to NRC RAI 2.4.9-1

Precast reinforced concrete elements such as manholes, rigid steel, PVC conduits, and reinforced concrete duct banks are included in Table 2.4.9-1, Component Group "Building Framing - Switchyard - Concrete, Below Grade" on page 2-249 of the LRA. They are discussed further on page 2-248 in two places that discuss cable trench commodities (including manholes, duct bank, conduit, etc.).

The backfill inside the tank foundation was compacted to greater than 95% maximum density as determined by the Modified Proctor Method (ASTM D1557).

Enclosure 2

NMC Response to NRC Follow Up Question Concerning RAI B2.1.3-1(d)

(3 Pages)

Follow Up Question Concerning NRC RAI B2.1.3-1(d)

NMC response to RAI B.2.1.3-1(d) states:

"Review of structural and component support bolting drawings and specifications has identified A490 bolting as the only bolting type in structural applications at Palisades with the potential for actual yield strength to exceed 150ksi. Certified Material Test Report (CMTR) documentation is not readily available to validate actual yield strength values. Therefore, Palisades is conservatively treating all A490 bolting as high strength bolting with yield strength potentially > 150ksi."

NMC is requested to confirm that none of the above mentioned A490 high strength bolting with nominal diameter greater than 1 inch (if applicable) is used for Class 1 component supports. If some of the A490 high strength bolting with nominal diameter greater that 1 inch are used for Class 1 component supports, discuss PNP's technical basis (e.g., PNP operating experience based justification) for not performing volumetric examination of the bolting as a means to manage potential stress corrosion cracking (SCC).

NMC Response to Follow up Question Concerning NRC RAI B2.1.3-1(d)

Palisades' class 1 component supports do include A490 bolting in diameters greater than 1 inch. Specifically, A490 bolting is used in the following class 1 component support applications:

- Steam Generator upper guide lateral supports and associated horizontal snubbers.
- Pressurizer frame support members.
- Primary Coolant Pump support structure base plates

In addition, the U-bolt lateral supports of the Regenerative Heat Exchangers were evaluated as high strength material potentially susceptible to SCC. These U-bolt supports are not A490 bolting material, but rather SA-193-B7 material, which is a low alloy quenched and tempered (LAQT) material. In certain configurations this material could be potentially susceptible to Stress Corrosion Cracking (SCC).

For SCC to occur in high strength/LAQT materials, three conditions must exist: high tensile stress, a corrosive environment, and a susceptible material. Additionally, since SCC-caused failures have not been observed in bolting smaller than 1 1/4 inch, bolting 1 inch and less is not considered susceptible to SCC. A discussion of these factors for each of the Palisades applications of high strength bolting materials is provided below.

Steam Generator
A490 bolts are used in two applications associated with the upper guide lateral supports and snubbers. The "A-frame" upper guide base plates are through bolted using 2 ½" A490 bolts that are double nutted so they can be reused, indicating they are not heavily preloaded and not exposed to continuous high tensile stress. The design configuration of the A490 bolts used for the snubber installations are such that they would permit removal and reinstallation, indicating that they would not be fully tensioned in order to permit reuse of the bolts, and consequently would not be exposed to continuous, high tensile stress. NMC has conservatively assumed, however, that the snubber supports which are not double nutted could be fully preloaded, and has identified SCC as a potential aging effect requiring management.

Pressurizer
The Pressurizer support frame members utilize 1-3/8" embedded A490 anchor bolts and 1-3/8" A490 through bolted base plates. The design of the restraint system places the anchoring concrete in compression indicating the anchor bolts are not exposed to high, sustained loading under normal operating conditions. However, NMC has conservatively assumed that the A490 support bolting could be fully preloaded and has identified SCC as a potential aging effect requiring management.

Primary Coolant Pumps
The Primary Coolant Pump sliding frame support members have base plates bolted to an embedded bearing plate with 1½" ASTM A-490 bolts and with 2 ½" A490 through bolts with self-locking nuts. Additionally, the drawing for the pump supports state that all connection and anchor bolts are A490 unless noted otherwise. The drawing for the configuration, however, provides specific instructions that bolts are to be "wrench tight" which does not cause full preloading of the A-490 bolts; therefore, a high sustained tensile stress is not present. Additionally, the concrete under the supports carries the dead and live loads so the anchor bolts are not subject to sustained dead and live loads. Therefore, the Primary Coolant Pump bolts are not susceptible to SCC.

Regenerative Heat Exchanger
The heat exchanger is supported vertically by steel "dishes" and is "U-bolted", horizontally, near the top and bottom of the steel frame. The ¾" U-bolts are SA-193-B7 and the nuts are SA-194-2H. An interfacing compressible material, asbestos, is placed between the carbon steel U-bolt and the stainless steel heat exchanger shell such that a high sustained tensile stress is not present. Also, the U-bolts are less than 1" diameter which is below the threshold of susceptibility to SCC. Therefore, the Regenerative Heat Exchanger U-bolts are not susceptible to SCC.

In summary, for the Class 1 component support A490 and SA-193-B7 bolting applications described above, SCC has been conservatively determined to be

applicable to only the steam generator snubber supports and the pressurizer supports. For those instances where SCC has been identified as an aging effect requiring management, NMC will perform visual inspection to identify the potential for SCC by detecting evidence of corrosion or a corrosive environment. If the potential for cracking is found, the extent of any degradation may be identified and measured by removing the bolting for further inspection, proof testing by tension or torquing, in situ ultrasonic testing, or hammer testing. See the response to NRC RAI B2.1.3-3(a), in NMC letter dated August 12, 2005, for more detailed information.