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PNP 2012-096

November 7, 2012

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555-0001

SUBJECT: Response to Follow-up Request for Additional Information– License
Amendment Request – Replacement of Spent Fuel Pool Region I Storage
Racks

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

- References:
1. ENO letter, PNP 2012-005, "License Amendment Request – Replacement of Spent Fuel Pool Region I Storage Racks," dated February 28, 2012 (ADAMS Accession Numbers ML12061A288, ML12061A289, and ML12061A290)
 2. ENO letter, PNP 2012-071, "Response to Request for Additional Information – License Amendment Request – Replacement of Spent Fuel Pool Region I Storage Racks," dated September 6, 2012 (ADAMS Accession Number ML122541048)
 3. NRC electronic mail of October 18, 2012, "Palisades – Draft RAI Concerning SFP Region I Storage Racks (TAC No. ME8074)"
 4. NRC electronic mail of October 25, 2012, "Palisades Question RE: Spent Fuel Pool LAR"

Dear Sir or Madam:

In Reference 1, Entergy Nuclear Operations, Inc. (ENO) submitted a license amendment request to modify the Renewed Facility Operating License, Appendix A, Technical Specifications (TS), as they apply to the replacement of the spent fuel pool region I storage racks. In Reference 2, ENO responded to a previous request for

additional information (RAI). In References 3 and 4, ENO received two follow-up electronic RAI.

Attachment 1 provides the ENO responses to the two follow-up RAI (References 3 and 4).

A copy of this response, without the proprietary information, has been provided to the designated representative of the State of Michigan.

This letter contains no new or revised commitments.

I declare under penalty of perjury that the foregoing is true and correct. Executed on November 7, 2012.

Sincerely,



ajv/jlk

Attachments: 1. Response to Follow-up Request for Additional Information Regarding License Amendment Request for Replacement of Spent Fuel Pool Region I Storage Racks

cc: Administrator, Region III, USNRC
Project Manager, Palisades, USNRC
Resident Inspector, Palisades, USNRC
State of Michigan

ATTACHMENT 1

RESPONSE TO FOLLOW-UP REQUEST FOR ADDITIONAL INFORMATION REGARDING LICENSE AMENDMENT REQUEST FOR REPLACEMENT OF SPENT FUEL POOL REGION 1 STORAGE RACKS

Two electronic follow-up requests for information (RAI) were received, from the Nuclear Regulatory Commission (NRC), by electronic mail on October 18, 2012, and October 25, 2012. The Entergy Nuclear Operations, Inc. (ENO) responses to the two follow-up RAI are provided below.

NRC Request (October 18, 2012) ***Mechanical & Civil (EMCB)***

1. *Provide justification for not evaluating the inclined fuel assembly event in the spent fuel pool replacement rack analysis.*

ENO Response

1. An inclined fuel assembly drop on the top of a replacement rack is not explicitly analyzed because, in terms of damage to the rack, it is bounded by a straight (vertical) fuel assembly drop on the top of a rack. As discussed in Section 7.2 of Holtec report HI-2115004, "Licensing Report for replacement of the Palisades Region I Spent Fuel Storage Racks," the depth of damage to the rack due to a shallow fuel assembly drop must not exceed the so-called "crush zone," which is defined as the region from the top of the rack to a depth that is 1.5 inches below the top of the neutron absorber (Metamic). Based on the rack's geometry and physical construction, the maximum depth of damage occurs when a fuel assembly falls in a vertical orientation and impacts the top edge of a rack cell wall (see Figures 7.2.1 and 7.4.1 in report HI-2115004). This is because all of the dropped fuel assembly's kinetic energy is focused on a single storage cell location. In the event of an inclined fuel assembly drop, only a portion of the fuel assembly's kinetic energy is delivered to the initial impact point. Once the inclined fuel assembly comes in contact with the top of the rack, the fuel assembly will rotate downward to a horizontal position, at which point a secondary impact will occur across many storage cell locations. The larger impact area results in less depth of damage to the rack. Thus, a straight (vertical) drop of a fuel assembly bounds an inclined fuel assembly drop from a damage standpoint.

Beyond the physical damage assessment, the effect of a dropped fuel assembly lying horizontally on top of a replacement rack has also been considered in terms of both the thermal-hydraulic and criticality performance of the rack. As discussed in Section 5.4.1.2 of report HI-2115004, the hydraulic resistance of every rack cell in each spent fuel storage rack includes the inertial resistance that

would result from a dropped fuel assembly lying across the top of the rack. In addition, Section 4.6.6.2 of report HI-2115004 addresses the effect of a dropped fuel assembly lying horizontally on top of a Region 1 rack from a reactivity standpoint.

In summary, an inclined fuel assembly drop is not quantitatively addressed in report HI-2115004 because it is bounded by the straight (vertical) fuel assembly drop in terms of depth of damage to the rack. The thermal-hydraulic and criticality analyses of the replacement racks also give proper consideration to the effect of a dropped fuel assembly lying horizontally on top of a rack.

NRC Request (October 25, 2012)

2. What is the capacity of the spent fuel handling machine?

ENO Response

2. Plant records indicate that the spent fuel pool handling machine hoist and grapple have a load capacity of 3200 pounds. The hoist and grapple raise and lower loads within the stationary mast on the spent fuel pool handling machine. Additionally, an auxiliary hoist, with a load capacity of 2000 pounds, is used for fuel handling in some spent fuel pool north tilt pit storage locations that are inaccessible to the mast.