



**Entergy Nuclear Operations, Inc.**  
Pilgrim Nuclear Power Station  
600 Rocky Hill Road  
Plymouth, MA 02360

July 11, 2014

**John A. Dent, Jr.**  
Site Vice President

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

**SUBJECT:** Entergy Nuclear Operations, Inc.  
Pilgrim Nuclear Power Station  
Docket No. 50-293  
License No. DPR-35

Entergy Response to NRC Request for Additional Information (RAI),  
Pilgrim Proposed License Amendment Request to Modify Technical  
Specification 4.3.4, "Heavy Loads" to Facilitate Dry Storage Handling  
Operations

**REFERENCE:** 1. NRC Request for Additional Information transmitted by E-Mail,  
dated May 30, 2014

2. Entergy Letter No. 2.13.042, Proposed License Amendment Request to  
Modify Technical Specification 4.3.4, "Heavy Loads" to Facilitate Dry  
Storage Handling Operations, dated November 26, 2013

**LETTER NO:** 2.14.048

Dear Sir or Madam:

The attachments to this letter provide Entergy responses to the NRC Request for Additional Information (Reference 1) concerning Entergy proposed license amendment to modify Pilgrim Technical Specification 4.3.4, "Heavy Loads" (Reference 2).

The attached responses support the no significant hazards consideration determination provided in Reference 2.

This letter does not contain new regulatory commitments.

If you have any questions regarding the subject matter, please contact Joseph R. Lynch at (508) 830-8403.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on the 11<sup>th</sup> day of July, 2014.

Sincerely,

John A. Dent, Jr.  
Site Vice President

AOO1  
NRL



Attachments: 1. Entergy Responses to NRC RAI on Pilgrim Proposed License Amendment on Heavy Loads (3 pages).

2. Safe Load Path

cc: Ms. Nadiyah Morgan, Project Manager  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation  
U. S. Nuclear Regulatory Commission  
One White Flint North O-8F4  
11555 Rockville Pike  
Rockville, MD 20852

Regional Administrator, Region 1  
U.S. Nuclear Regulatory Commission  
2100 Renaissance Blvd, Suite 100  
King of Prussia, PA 19406-2713  
NRC Resident Inspector  
Pilgrim Nuclear Power Station

John Giarrusso, Jr.  
Planning and Preparedness Section Chief  
Mass Emergency Management Agency (MEMA)  
400 Worcester Road  
Framingham, MA 01702

John Priest, Director,  
Massachusetts Department of Public Health (MDPH)  
Radiation Control Program  
Commonwealth of Massachusetts  
529 Main Street, Suite 1M2A  
Charlestown, MA 02129-1121

**ATTACHMENT 1**

**to**

**Entergy Letter No. 2.14.048**

**Entergy Response to NRC RAI on Pilgrim Proposed License Amendment on Heavy Loads**

**(3 Pages)**

## **ATTACHMENT 1 TO ENTERGY LETTER NO. 2.14.048**

### **Entergy Responses to NRC RAI on Pilgrim Proposed License Amendment on Heavy Loads**

- REFERENCES:
1. NRC Request for Additional Information (RAI) from Mechanical and Civil Engineering Branch (EMCB) Transmitted by E-Mail on May 30, 2014.
  2. Entergy Letter No. 2.13.042, Proposed License Amendment Request to Modify Technical Specification 4.3.4, "Heavy Loads," to Facilitate Dry Storage Handling Operations, dated November 26, 2013 (ADAMS Accession No.: ML13346A026).

The following are the Responses to the NRC Mechanical and Civil Engineering Branch (EMCB) RAIs:

#### **REQUEST - EMCB-RAI-1:**

The guidelines of Section 5.1.6 of NUREG-0612, "Control of Heavy Loads at Nuclear Power Plants," July 1980 (ADAMS Accession No. ML070250180), and Section 111.4.C of NUREG-0800, Chapter 9.1.5, Revision 1, "Overhead Heavy Load Handling Systems" (ADAMS Accession No. ML062260190), specify that lifting devices in single failure handling systems should be selected to satisfy either of the following criteria:

1. A special lifting device that satisfies American National Standards Institute (ANSI) N14.6, "Radioactive Materials-Special Lifting Devices for Shipping Containers Weighing 10,000 Pounds (4500 kg) or More," January 1993, should be used for recurrent load movements in critical areas (reactor head lifting, reactor vessel internals, spent fuel casks). The lifting device should have either dual, independent load paths or a single load path with twice the design safety factor specified by ANSI N14.6 for the load.
2. Slings should satisfy the criteria of the American Society of Mechanical Engineers (ASME), ASME B30.9, "Slings," 2003, and be constructed of metallic material (chain or wire rope). The slings should be either (a) configured to provide dual or redundant load paths or (b) selected to support a load twice the weight of the handled load.

Section 5.1 of the Reference states that the lifting devices should be selected to satisfy either of the above criteria. Section 3.0 of the Reference states that the handling devices for the single-failure-proof handling system are designed per ANSI N14.6 and ASME B30.9.

Please provide verification that the crane and handling system meet the single-failure-proof handling criteria of ANSI N14.6 and ASME B30.9 (with devices constructed of metallic material (chain or wire rope)). In addition, please show that the lifting devices will have either dual, independent load paths or a single load path with twice the design safety factor specified by ANSI N14.6 for the load and slings should be either (a) configured to provide dual or redundant load paths or (b) selected to support a load twice the weight of the handled load.

#### **Response:**

The upgrade of the Reactor Building Crane to NUREG-0554 and NUREG-0612 single-failure-proof regulatory guidance is described in Sections 3.0 (4th paragraph) and 4.2 (2nd paragraph) of Attachment 1, to Entergy letter dated November 26, 2013 (ADAMS Accession No.: ML13346A026). The upgrade was completed earlier this year and the crane has been

returned-to-service. The design of the MPC Lid single-failure-proof handling system components supported from the Reactor Building Crane 100 ton Main Hoist hook meets the requirements of ANSI N14.6 and ASME B30.9, and regulatory guidance of NUREG-0612 including the use of metallic slings, as described in Sections 3.0 (5th paragraph) and 4.1 (2nd paragraph) of Attachment 1, to Entergy letter dated November 26, 2013. The Lift Yoke used in the single-failure-proof handling system is designed with twice the normal stress design safety factor as specified by Section 6.2.1 of ANSI N14.6 -78 for the bounding condition of a loaded HI-TRAC cask. Similarly, the ASME B30.9 slings that connect the MPC Lid to the Lift Yoke use wire rope and other metallic rigging components and meet the same criteria with four load paths, collectively designed to support a load twice the weight of the handled load.

Collectively the upgraded Reactor Building Crane and the described handling components have been verified to constitute a single-failure-proof handling system meeting all applicable NRC regulatory guidance for handling the MPC Lid and the loaded HI-TRAC cask.

#### **REQUEST EMCB-RAI-2:**

Please provide a discussion of any modifications planned to the Reactor Building crane to make it single-failure-proof and in conformance with the guidelines of NUREG-0612 and NUREG-0554, "Single-Failure-Proof cranes for Nuclear Power plants," May 1979, to support commencement of dry cask storage operations.

#### **Response:**

The upgrade of the Reactor Building Crane to NUREG-0554 and NUREG-0612 single-failure-proof regulatory guidance is described in Sections 3.0 (4th paragraph) and 4.2 of Attachment 1, to Entergy letter dated November 26, 2013 (ADAMS Accession No.: ML13346A026).

#### **REQUEST EMCB-RAI-3:**

For the seismic analysis of the new main hoist and trolley, including qualification of the existing bridge, please provide confirmation that the bridge with the newly installed trolley and any additional weight, resulting from the single-failure-proof upgrade, will 1) be seismically qualified to the requirements of ASME NOG-1-2004, "Rules for Construction of Overhead and Gantry Cranes (Top Running Bridge, Multiple Girder) for Type 1 cranes, and 2) provide confirmation that demonstrates that the new trolley and the existing bridge will be adequate to support the Maximum Critical Load rating during a seismic event.

#### **Response:**

The upgrade of the Reactor Building Crane to single-failure-proof regulatory guidance is described in Sections 3.0 (4th paragraph) and 4.2 of Attachment 1, to Entergy letter dated November 26, 2013 (ADAMS Accession No.: ML13346A026). The replacement Trolley and Main Hoist are described as being designed and qualified in accordance with the appropriate requirements of ASME NOG-1-2004. The existing crane bridge was upgraded by evaluation to the regulatory guidance of NUREG-0554 supplemented by NUREG-0612, Appendix C. The existing bridge and new trolley of the Reactor Building Crane, are capable of sustaining a 100 ton load on the Main Hoist hook during design basis seismic events. Analytical confirmation of this capability is contained in calculations prepared by Holtec International's subcontractor American Crane & Equipment Corporation.

**REQUEST EMCB-RAI-4:**

Please provide confirmation that the runway crane supporting structure will be seismically qualified in accordance with the current licensing basis criteria to support the crane with the new trolley and additional weight resulting from the single-failure-proof upgrade.

**Response:**

The existing crane runway affected by cask handling operations and supporting structural steel superstructure of the Reactor Building are capable of sustaining a 100 ton load on the Main Hoist hook during design basis seismic events. Analytical confirmation of this capability is contained in calculations prepared by Holtec International which can be made available for review.

**REQUEST EMCB-RAI-5:**

Please provide the weights of the old trolley, the new trolley, the lift yoke, the lift yoke extension, and the slings.

**Response:**

The weight of the old trolley indicated on Crane Manufacturing and Service Corp. Drawing D556B (Pilgrim ref. M-23-3-2) is 66,000 lb. The weight of the new trolley indicated on American Crane and Equipment Corp. Drawing D-21136-001 (Pilgrim ref. C1916 SH24) is 90,000 lb. The total weight of the Lift Yoke Ancillary indicated on Holtec Drawing 7941 R2 is 3,644 lb. inclusive of the lift yoke, main pin shackles and slings. A lift yoke extension device will not be used at Pilgrim Station.

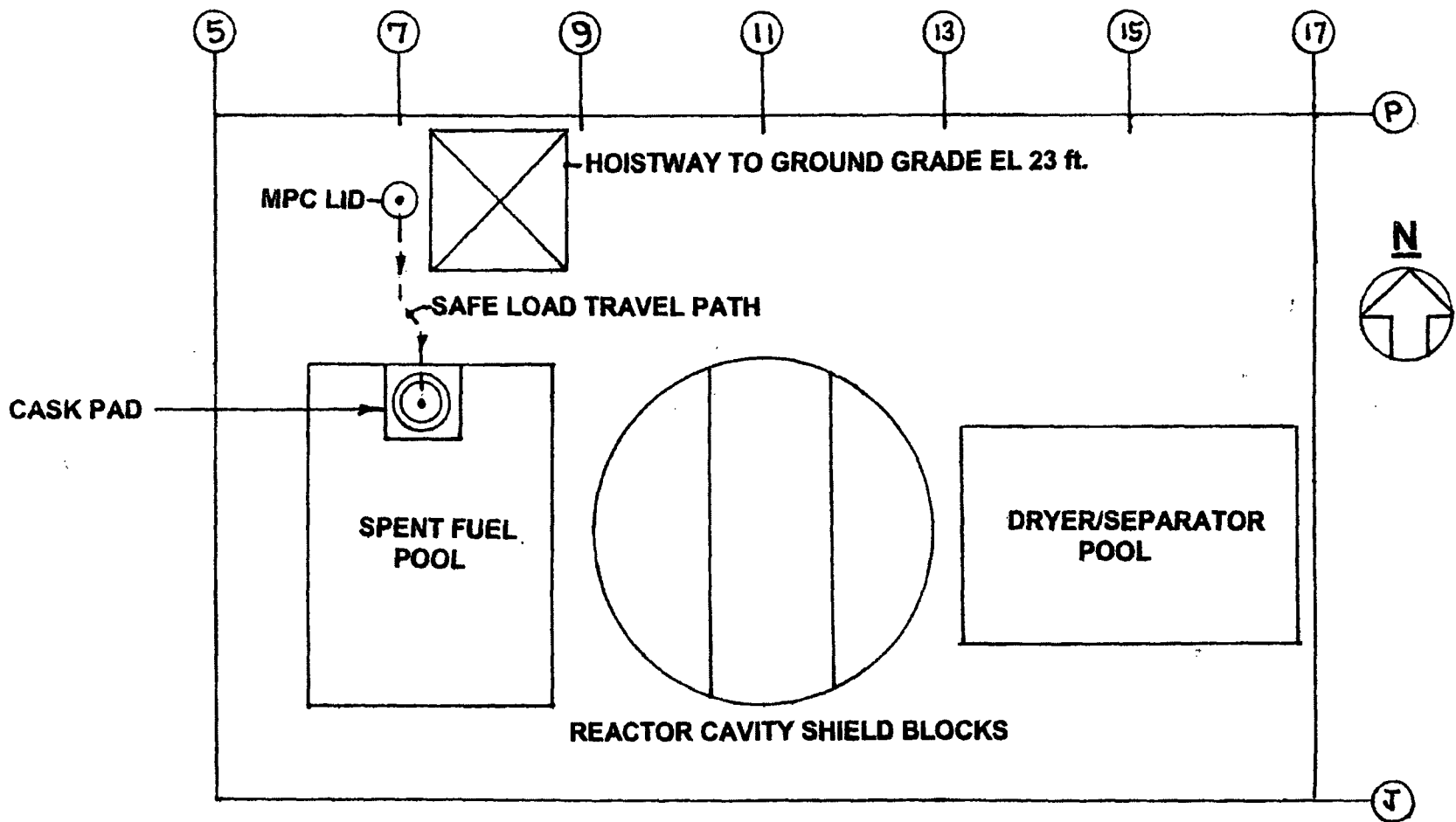
**REQUEST EMCB-RAI-6:**

Please provide a simple sketch of the layout showing the arrangements for the Safe Load Path as per NUREG-0612.

**Response:**

The Safe Load Path is shown on Attachment 2 "Safe Load Path" of the Letter. The proposed Safe Load Path meets the NUREG-0612 guidance.

**ATTACHMENT 2**  
**to**  
**Entergy Letter No. 2.14.048**  
**Safe Load Path**  
**(1 Page)**



**SAFE LOAD PATH**

**ATTACHMENT 2 TO ENERGY LETTER NO. 2.14.048**

**REFUEL FLOOR EL. 117 ft.**