From:	Guzman, Richard
To:	Andrea Sterdis
Cc:	Danna, James; Sturzebecher, Karl
Subject:	Indian Point Unit No. 3 - SUBSEQUENT REQUEST FOR ADDITIONAL INFORMATION: LAR to Revise Licensing Basis for New Auxiliary Lifting Device [EPID L-2020-LLA-0051]
Date:	Friday, December 03, 2021 12:52:15 PM

Ms. Sterdis,

By letter dated March 24, 2020, as supplemented by letters dated October 2, 2020, November 9, 2020, February 26, 2021, and May 20, 2021, Entergy Nuclear Operations, Inc., (Entergy, the licensee at the time), submitted a license amendment request (LAR) for Indian Point Nuclear Generating Station, Unit No. 3 (Indian Point 3). In its LAR, the licensee proposed changes to the current licensing basis in the Updated Final Safety Analysis Report with regards to the installation and use of a new single failure proof auxiliary lifting device (i.e., the Holtec International HI-LIFT) to handle a dry cask storage transfer cask in the Indian Point 3 Fuel Storage Building.

By letter dated May 20, 2021 (ADAMS Accession No. ML21140A451), Entergy submitted its response to the NRC staff's Request for Additional Information (RAI) dated April 22, 2021 (ADAMS Accession No. ML21112A267). The NRC completed its review of the licensee's May 20, 2021, response, and determined that it was not fully responsive to the NRC's staff RAI informational needs. Accordingly, the NRC staff is issuing a subsequent round of questions, as described in the RAI shown below. On May 28, 2021, Holtec Decommissioning International, LLC (HDI) became the licensee for Indian Point Unit Nos. 1, 2, and 3.

On October 26, 2021, the NRC staff sent HDI the subject RAI as a draft. On November 16, 2021, the NRC staff conducted a conference call with the licensee staff to clarify the request. On December 3, 2021, you confirmed that the draft RAI did not contain Holtec-proprietary information and can be made a publicly available document. You also indicated that HDI will provide a response to this RAI within 30 days from the issuance of the RAI.

Updated below is the official RAI. This e-mail and RAI will be made an official agency record and placed in ADAMS, the NRC's official recordkeeping system. Please contact me should you have any questions in regard to this request.

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OFFICE OF NUCLEAR REACTOR REGULATION
REQUEST FOR ADDITIONAL INFORMATION
PROPOSED LICENSING BASIS AMENDMENT TO INCORPORATE THE INSTALLATION
AND USE OF A NEW AUXILIARY LIFTING DEVICE
ENTERGY NUCLEAR OPERATIONS, INC
INDIAN POINT NUCLEAR GENERATING UNIT 3
DOCKET NO. 50-286

Background

By application dated March 24, 2020 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML20084U773), Entergy Nuclear Operations, Inc., (Entergy, the licensee) requested to revise the Indian Point Nuclear Generating Unit No. 3 (IP3) licensing basis for spent fuel cask handling. The licensee requested approval to incorporate into the IP3 licensing basis, the installation and use of a new single failure proof auxiliary lifting device (i.e., the Holtec International HI-LIFT) to handle a dry cask storage transfer cask (i.e., the HI-TRAC) in the IP3 Fuel Storage Building. The change to the IP3 licensing basis would be documented in a revision to the IP3 Updated Final Safety Analysis Report (UFSAR).

Section 1.3, "General Design Criteria," of the IP3 UFSAR states that the licensee conducted a study of the method of compliance with NRC regulations contained in 10 CFR Part 50, including the General Design Criteria (GDC) of Appendix A to 10 CFR Part 50, and that the results of the compliance study were updated to reflect changes made to the configuration since the study was completed. The study was conducted in accordance with the provisions of NRC Confirmatory Order of February 11, 1980 and were submitted to the NRC on August 11, 1980.

By letter dated May 20, 2021 (ADAMS Accession No. ML21140A451), Entergy provided an assessment of the capability of the HI-LIFT to withstand uneven operation of the two swing cylinders that position the HI-LIFT and provide the force necessary to translate the fuel transfer cask between the area over the truck bay and the area over the spent fuel pit. This assessment included defining an acceptable threshold limit for uneven operation of the hydraulic cylinders and specific inspections and preventive maintenance to maintain leakage within the capability of control systems to mitigate, thereby ensuring that uneven cylinder operation would be detected and corrected before reaching the threshold limit.

The NRC staff evaluated the adequacy of the proposed inspections, preventive maintenance, and control system performance to prevent exceeding threshold limits against the original specified design performance. In Section 3.6.5 of the enclosure to the license amendment request dated March 24, 2020 (ADAMS Accession No. ML20084U773), Entergy provided the following non-proprietary performance criteria for the swing cylinders:

> The hydraulic cylinders that operate the swing arms are mechanically load tested and procured with enhanced factors of safety to make a catastrophic mechanical failure non-credible. Seal leaks and counterbalance valve

failures are possible, but they tend to be gradual failures. In this case (i.e., loss of hydraulic power), as well as swing cylinder control failure, hydraulic fluid can be manually bled from the cylinders, allowing gravitational force to pull the swing arms towards one end of travel. In the event the swing arms are at the apex position, rigging can be manually attached, and used to pull the swing arms sufficiently far for gravitational force to become effective. In either case, operators are able to throttle the fluid that is bled off from the cylinders to maintain a slow, controlled motion, such that the swing arms will be at the end of their travel. At that point, the load can then be lowered and placed in a safe condition.

The NRC staff determined that the proposed inspection and preventive maintenance program, control system design, and operator response was not adequate to provide appropriate protection against credible equipment failures that could cause established threshold limits to be exceeded and, thereby, potentially result in damage to irradiated fuel during handling. To resolve these concerns, the staff determined a regulatory audit would be the most efficient approach considering the facility is undergoing decommissioning. The staff has completed audit activities pursuant to the audit plan transmitted to Holtec International (the new licensee for Indian Point Unit 3) by letter dated August 26, 2021 (ADAMS Accession No. ML21231A182), and determined the following request for additional information was necessary to complete the staff's review.

RAI 9 (SCPB-Plant Systems): Crane Stability following Component Failures

Regulatory Basis:

The Nuclear Regulatory Commission (NRC, or Commission) staff evaluates whether the licensee's request can be approved per Title 10 of the *Code of Federal Regulations* (10 CFR), Section 50.92, "Issuance of Amendment," which states in part that, "In determining whether to issue an amendment to a license, the Commission will be guided by the considerations which govern issuance of initial licenses…." Applicable regulations considered in issuing initial licenses include 10 CFR 50.34, "Contents of Applications; Technical Information," and applicable general design criteria (GDC) from Appendix A to 10 CFR Part 50. Specifically, 10 CFR 50.34(b)(2) requires, in part, that the safety analysis report contain a description and analysis of fuel handling systems, with emphasis upon performance requirements, the bases upon which such requirements have been established, and the evaluations required to show that safety functions will be accomplished. The description shall be sufficient to permit understanding of the system designs and their relationship to safety evaluations. In addition, 10 CFR 50.34(b)(6) requires, in part, that the safety analysis report include plans for preoperational testing and conduct of normal operations, including maintenance and testing. Finally, GDC 4 requires appropriate protection for SSCs important to safety (e.g., irradiated fuel) against dynamic effects, including the effects of missiles (e.g., falling heavy loads) that may result from equipment failures.

Request

Consistent with regulatory guidance in NUREG-0554, heavy load handling systems should be designed to stop and hold the load following a loss of power and equipment failure. This standard satisfies GDC 4 by providing appropriate protection for irradiated fuel contained

within a fuel transfer cask or within the spent fuel pit. In order to satisfy regulatory requirements related to evaluations demonstrating safety functions will be accomplished and plans for preoperational testing and normal operation, additional information is necessary to define additional design features and conduct of preoperational tests, normal operations, and maintenance. Accordingly, please provide the following information:

1. Provide an update to HI-2188549, "IPEC Unit 3 HI-LIFT Specification," that includes:

    a. Information establishing the maximum acceptable threshold regarding uneven operation of the hydraulic cylinders, where the HI-LIFT structure, in its most limiting orientation(s), remains capable of supporting its full rated load. This update should include key assumptions, the method of analysis, the loading condition, and the acceptance criteria established for the HI-LIFT components and the interfacing structures. [The information in the response to a request for additional information provided by letter dated May 20, 2021 (ADAMS Accession No. ML21140A451), is acceptable for this purpose.]

    b. Information describing how the HI-LIFT would be prevented from exceeding this threshold considering credible single component failures and acceptable operating conditions that may affect the HI-LIFT response. This information may reference a separate failure modes and effects analysis to define credible failures and identify mitigating equipment. The response should specifically address:

        (1) hydraulic swing cylinders;
        (2) hydraulic system for movement of the swing cylinders, including valves;
        (3) control system for positioning swing cylinders;
        (4) instrumentation and actuation systems necessary to place the HI-LIFT in a safe state following credible malfunctions of the hydraulic control system;
        (5) operator actions; and
        (6) any equipment or design features necessary for the operator actions to be timely and effective.

    c. Information describing the basic design and performance requirements for systems or components performing important to safety functions controlling cylinder position (as described in the response to b. above).

    d. Preoperational and periodic test programs necessary to demonstrate that systems or components would be capable of performing important to safety functions in controlling cylinder position.

2. Provide a failure modes and effects analysis of the (a) hydraulic swing cylinders; (b) hydraulic system for movement of the swing cylinders, including valves; (c) control system for positioning swing cylinders; and (d) instrumentation and actuation systems necessary to place the HI-LIFT in a safe state following credible malfunctions of the hydraulic control system. To the extent necessary to support understanding of the design, failure mods, and mitigation strategies, also provide component descriptions and system drawings.

3. Provide an analysis demonstrating that the time available for any credited operator

actions necessary to place the HI-LIFT in a safe configuration following credible failures affecting the hydraulic swing cylinders or the associated control system is adequate.

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