



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

July 17, 2017

Vice President, Operations
Entergy Nuclear Operations, Inc.
Indian Point Energy Center
450 Broadway, GSB
P.O. Box 249
Buchanan, NY 10511-0249

SUBJECT: INDIAN POINT NUCLEAR GENERATING, UNIT NOS. 2 AND 3 - REQUEST FOR ADDITIONAL INFORMATION REGARDING INTER-UNIT TRANSFER OF SPENT FUEL (CAC NOS. MF8991 AND MF8992)

Dear Sir or Madam:

By letter dated December 14, 2016, as supplemented on April 19, 2017, Entergy Nuclear Operations, Inc., submitted a license amendment request to revise the Appendix C Technical Specifications (TSs) Limiting Condition for Operation (LCO) 3.1.2 for Indian Point, Units 2 and 3 (IP2 and IP3) and Appendix A TS LCO 3.7.13 for IP2 in order to increase the population of IP3 fuel eligible for transfer to the IP2 spent fuel pit and maintain full core offload capability for IP3.

The Nuclear Regulatory Commission staff is reviewing the submittal and has determined that additional information is needed to complete its review. The specific questions are found in the enclosed request for additional information (RAI). Based on our discussions we understand that a response to the RAI will be provided within 30 days of the date of this letter.

Please contact me at (301) 415-1030 if you have any questions on this issue.

Sincerely,

A handwritten signature in black ink, appearing to read "R. Guzman", with a long horizontal flourish extending to the right.

Richard V. Guzman, Senior Project Manager
Plant Licensing Branch I
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. 50-247 and 50-286

Enclosure:
Request for Additional Information

cc w/encl: Distribution via Listserv



UNITED STATES
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REQUEST FOR ADDITIONAL INFORMATION

OFFICE OF NUCLEAR REACTOR REGULATION

ENTERGY NUCLEAR OPERATIONS, INC.

INDIAN POINT NUCLEAR GENERATING UNIT NOS. 2 AND 3

DOCKET NOS. 50-247 AND 50-286

By letter dated December 14, 2016 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML16355A066), as supplemented by letter dated April 19, 2017 (ADAMS Accession No. ML17114A467), Entergy Nuclear Operations, Inc. (the licensee), submitted a license amendment request (LAR) to revise the Appendix C Technical Specifications (TSs) Limiting Condition for Operation (LCO) 3.1.2 for Indian Point Units 2 and 3 (IP2 and IP3) and Appendix A TS LCO 3.7.13 for IP2 in order to increase the population of IP3 fuel eligible for transfer to the IP2 spent fuel pit and maintain full core offload capability for IP3.

Title 10 of the *Code of Federal Regulations* (10 CFR) Section 50.68, "Criticality accident requirements," and General Design Criterion (GDC)-62, provide requirements for licensees with regards to maintaining sub-criticality in the spent fuel pool (SFP). For licensees that utilize neutron absorbing materials (NAM) in the SFP, the condition of the NAM (including Boron-10 areal density) must be verified so that the assumptions related to the NAM in the SFP criticality analysis are supported. In order for the Nuclear Regulatory Commission (NRC) staff to verify the requirements of 10 CFR 50.68 and GDC-62 are met, the staff requests additional information regarding the condition of the NAM, and the programs in place to ensure the condition of the NAM.

Request for Additional Information (RAI)-1 (RCCB)

In the supplement dated April 19, 2017, the licensee stated that the preliminary results from the 2017 BADGER campaign demonstrate that the Boraflex degradation in Region 1-2 is still bounded by the current IP2 SFP criticality analysis of record (CAOR). In order to verify that the Boraflex degradation is bounded, the NRC staff requests that the licensee provide:

- a. A comparison of the maximum local degradation recorded during the 2017 BADGER campaign to the IP2 SFP CAOR.
- b. A comparison of the average panel degradation recorded during the 2017 BADGER campaign to the IP2 SFP CAOR.
- c. A comparison of the maximum and average gap size recorded during the 2017 BADGER campaign to the IP2 SFP CAOR.
- d. Any additional relevant information that demonstrates the Boraflex degradation is bounded by the current IP2 SFP CAOR.

Enclosure

RAI-2 (RCCB)

In order for the staff to have reasonable assurance that the Boraflex will continue to perform its safety function, provide a comparison between the test results from the 2017 BADGER campaign and the RACKLIFE predicted degradation (e.g. was the RACKLIFE escape coefficient adjusted, continuing and future monitoring plans, etc.).

RAI-3 (SNPB)

The current IP2 and IP3 TSs limit the IP3 fuel that can be moved over to the IP2 SFP to fuel that has a maximum 4.4 weight percent (w/%) enrichment of uranium-235 (U235), minimum 3.2 w/% enrichment of U235, and from operations earlier than IP3 Cycle 12. The restriction on IP3 fuel discharged prior to Cycle 12 carries with it an implicit minimum burnup of the fuel and minimum cooling time. These TS restrictions provided margin that the NRC staff relied upon in the initial licensing of the shield transfer canister. As initially proposed the LAR of December 14, 2016, would have revised the IP2 and IP3 TSs in a way that would have permitted the transfer of fresh unpoisoned fuel with a maximum 5.0 w/% enrichment of U235 from IP3 to IP2 SFP. This would have removed margin without providing sufficient justification for doing so. In response to the NRC staff's request for supplemental information, Entergy submitted the April 19, 2017, supplemental letter, which revised the LAR in that only the lower enrichment limit in the current TSs would be removed. Additionally, the supplemental letter provided information on the remaining limited population of fuel assemblies still residing in the IP3 SFP that would meet the stipulation that they be from operations earlier than IP3 Cycle 12. However, the supplemental letter did not revise the proposed TSs from the initial LAR letter submitted on December 14, 2016. Therefore, the NRC staff requests that the licensee, submit a revision to its proposed IP2 and IP3 TSs and/or proposed license conditions (consistent with the revision in the April 10, 2017, supplemental letter) that will control the transfer of IP3 fuel to the IP2 SFP.

RAI-4 (SNPB)

The NRC staff has determined that the vast majority of the proprietary markings in HI-2094289 Appendix 4.A are inappropriate as they do not meet the requirements in 10 CFR, Section 2.390(b)(iv). The analysis follows NUREG/CR-6698, "Guide for Validation of Nuclear Criticality Safety Computational Methodology" (ADAMS Accession No. ML012000481), which is publicly available. The licensee's April 19, 2017, supplemental letter did not rectify this discrepancy. Therefore, the NRC staff also requests that the licensee provide a revision to HI-2094289 Appendix 4.A with proprietary markings that are consistent with 10 CFR 2.390(b).

SUBJECT: INDIAN POINT NUCLEAR GENERATING, UNIT NOS. 2 AND 3 - REQUEST FOR ADDITIONAL INFORMATION REGARDING INTER-UNIT TRANSFER OF SPENT FUEL (CAC NOS. MF8991 AND MF8992) DATED JULY 17, 2017

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***Concurrence via e-mail or memo**

OFFICE	DORL/LPL1/PM	DORL/LPL1/LA	DSS/SNPB/BC*	DLR/RASB/BC*	DORL/LPL1/BC*
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