



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

April 19, 2017

Mr. Anthony Vitale
Site Vice-President, IPEC
Entergy Nuclear Operations, Inc.
450 Broadway, GSB PO Box 249
Buchanan, NY 10511-0249

SUBJECT: REQUESTS FOR ADDITIONAL INFORMATION FOR THE REVIEW OF THE
INDIAN POINT LICENSE RENEWAL APPLICATION RAI SET 2017-02 (CAC
NOS. MD5407 AND MD5408)

Dear Mr. Vitale:

By letter dated April 30, 2007, Entergy Nuclear Operations, Inc. submitted an application pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR) Part 54, to renew the operating licenses DPR-26 and DPR-64 for Indian Point Units 2 and 3, respectively, for review by the U.S. Nuclear Regulatory Commission (NRC or the staff). The staff is reviewing the information contained in the license renewal application and has identified, in the enclosure, areas where additional information is needed to complete the review.

These requests for additional information were discussed with Entergy staff, and a mutually agreeable date for the response is within 30 days from the date of this letter. If you have any questions, please contact me at 301-415-6332 or e-mail william.burton@nrc.gov.

Sincerely,

/RA/

William Burton, Senior Project Manager
Project Management and Guidance Branch
Division of License Renewal
Office of Nuclear Reactor Regulation

Docket Nos. 50-247 and 50-286

Enclosure:
Requests for Additional Information

cc w/encl: Listserv

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INDIAN POINT
LICENSE RENEWAL APPLICATION (LRA)
REQUESTS FOR ADDITIONAL INFORMATION (RAI)

RAI B.1.35-1

Background

By letter dated January 17, 2017, the applicant submitted the changed status of Commitments 41 and 42 for Indian Point Unit 2 and Unit 3 (IP2 and IP3 respectively). Previously, the applicant identified these license renewal commitments to manage cracking due to primary water stress corrosion cracking (PWSCC) for steam generator divider plates and tube-to-tubesheet welds. The January 17, 2017, letter indicates that the applicant eliminated Commitment 41 (regarding divider plates) and closed Commitment 42 (regarding tube-to-tubesheet welds) based on License Renewal Interim Staff Guidance (LR-ISG) 2016-01, "Changes to Aging Management Guidance for Various Steam Generator Components."

In the letter, the applicant also provided proprietary information to demonstrate that the industry analyses in EPRI Report 3002002850 are applicable and bounding for the applicant's units (as discussed in LR-ISG-2016-01). EPRI Report 3002002850 describes industry analyses of potential crack initiation and propagation in steam generator head components (e.g., divider plate cracking into the steam generator head). The EPRI report also addresses the implication of the potential cracking for the integrity of reactor coolant pressure boundary, taking into account material's resistance to PWSCC (e.g., resistance of Alloy 690) and steam generator loading conditions.

In addition, Tables 4-2 and 4-3 of EPRI Report 3002002850 identify the turbine roll test as one of the bounding thermal transients for the industry analyses. LRA Tables 4.3-1 and 4.3-2 describe design transients for ASME Class 1 fatigue analysis for IP2 and IP3, respectively. LRA Table 4.3-1 indicates that the number of turbine-roll-test cycles analyzed for IP2 is 20 cycles. LRA Table 4.3-2 indicates that the turbine-roll-test transient is not a design transient for IP3.

Issue

In its review of the applicant's information, the staff noted the following concerns:

- The number of turbine-roll-test cycles analyzed in EPRI Report 3002002850 is less than that analyzed for IP2 in LRA Table 4.3-1 (i.e., 20 cycles). This indicates that the loading conditions analyzed in the EPRI report for this transient may not bound the IP2 loading conditions.
- Given that the LRA Table 4.3-2 does not identify the turbine roll test as an IP3 design transient for ASME Class 1 fatigue analysis, it is not clear how the applicant ensures the loading conditions at IP3 are bounded by those analyzed in EPRI Report 3002002850 in terms of the turbine-roll-test transient.

Enclosure

Request

1. Explain why the IP2 steam generator loading conditions are bounded by those analyzed in EPRI Report 3002002850 even though the number of turbine-roll-test cycles analyzed in the EPRI report is less than that analyzed for IP2 in LRA Table 4.3-1.
2. Discuss how the applicant ensures that the loading conditions at IP3 are bounded by those analyzed in EPRI Report 3002002850 in terms of the turbine-roll-test transient.

RAI B.1.35-2

Background

By letter dated January 17, 2017, the applicant submitted information on the changed status of Commitments 41 and 42 for Indian Point Unit 2 and Unit 3. As the applicant's letter notes, the staff recently issued License Renewal Interim Staff Guidance (LR-ISG) 2016-01, "Changes to Aging Management Guidance for Various Steam Generator Components". LR-ISG-2016-01 includes the following guidance on aging management for steam generator components.

- Visual inspections: steam generator head internal areas (head interior surfaces, divider plate assemblies, tubesheets (primary side) and tube-to-tubesheet welds) are inspected to identify signs of cracking or loss of material (e.g., rust stains and distortion of divider plates). GALL Report AMP XI.M19, "Steam Generators," which includes these visual inspections, is used to manage (a) loss of material due to boric acid corrosion for channel heads and tubesheets and (b) cracking due to primary water stress corrosion cracking (PWSCC) for divider plate assemblies and tube-to-tubesheet welds.
- Frequency of the visual inspections: at least every 72 effective full power months or every third refueling outage, whichever results in more frequent inspections.
- Implementation of the EPRI steam generator guidelines, including: (a) EPRI Report 1022832 (primary-to-secondary leak guidelines); (b) EPRI Report 1025132 (in-situ pressure test guidelines); (c) EPRI Report 3002007571 (integrity assessment guidelines); and (d) EPRI Report 3002007572 (examination guidelines).

Issue

The staff needs to confirm whether the applicant's Steam Generator Integrity Program is consistent with the guidance in LR-ISG-2016-01.

Request

1. Clarify whether the Steam Generator Integrity Program is consistent with the guidance discussed above (i.e., conduct of visual inspections to manage loss of material and cracking due to PWSCC; visual inspection frequency; and implementation of or plans for implementation of the EPRI steam generator guidelines by the industry-provided

implementation dates). If the program is not consistent with the guidance, provide justification for why the applicant's program is adequate for aging management.

2. Discuss whether the Steam Generator Integrity Program is used to manage cracking due to PWSCC for divider plate assemblies (LRA item 3.1.1-81) and tube-to-tubesheet welds (LRA item 3.1.1-35).
3. Provide updated description of UFSAR supplement for the Steam Generator Integrity Program as necessary. As part of the response, clarify whether the program is consistent with Revision 3 of NEI 97-06 "Steam Generator Program Guidelines."