



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

September 10, 2012

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

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION FOR THE REVIEW OF THE
INDIAN POINT NUCLEAR GENERATING UNIT NOS. 2 AND 3, LICENSE
RENEWAL APPLICATION, SET 2012-02 (TAC NOS. MD5407 AND MD5408)

Dear Sir or Madam:

By letter dated April 23, 2007, as supplemented by letters dated May 3, 2007, and June 21, 2007, Entergy Nuclear Operations, Inc. (Entergy or the applicant), submitted an application pursuant to Title 10 of the *Code of Federal Regulations*, Part 54, to renew the operating licenses for Indian Point Nuclear Generating Unit Nos. 2 and 3, for review by the U.S. Nuclear Regulatory Commission (NRC or the staff). The staff documented its findings in the Safety Evaluation Report (SER) related to the License Renewal of Indian Point Nuclear Generating Unit Nos. 2 and 3, which was issued August 2009 and supplemented August 30, 2011 (SER Supplement 1).

As part of its review of Entergy's "Indian Point Energy Center Reactor Vessel Internals Inspection Plan," the staff requested additional information by letter dated May 15, 2012; Entergy responded by letter dated June 14, 2012. Since the issuance of that response, the staff has identified the need for additional information with respect to this plan and the associated Reactor Vessel Internals Inspection Program as described in the enclosure.

This request for additional information was discussed with Mr. Roger Waters, and a mutually agreeable date for Entergy's response is within 30 days from the date of this letter. If you have any questions, please contact me at 301-415-3873, or via e-mail at John.Daily@nrc.gov.

Sincerely,

A handwritten signature in black ink that reads "John Daily".

John Daily, Senior Project Manager
Projects Branch 1
Division of License Renewal
Office of Nuclear Reactor Regulation

Docket Nos. 50-247 and 50-286

Enclosure:
As stated

cc w/encl: Listserv

REQUESTS FOR ADDITIONAL INFORMATION, SET 2012-02
RELATED TO INDIAN POINT NUCLEAR GENERATING, UNITS 2 AND 3,
LICENSE RENEWAL APPLICATION
DOCKET NUMBERS 50-247 AND 50-286
REACTOR VESSEL INTERNALS PROGRAM

(Set 2012-02)

Amendment 9 to Entergy's License Renewal Application (LRA) was submitted by letter dated July 14, 2010 (Ref. 1), and contains the Indian Point Nuclear Generating Unit Nos. 2 and 3 Reactor Vessel Internals Program. The "Indian Point Energy Center Reactor Vessel Internals Inspection Plan" (RVI Inspection Plan) was submitted via letter dated September 28, 2011 (Ref. 2), and supplemented by letter dated February 17, 2012 (Ref. 3). By letter dated May 15, 2012 (Ref. 4), the staff requested additional information regarding the IPEC RVI Program and RVI Inspection Plan. The applicant responded by letter dated June 14, 2012 (Ref. 5).

RAI 13

The response to request for additional information (RAI) 3 states that the ASME Section XI Inservice Inspection (ISI) Program is the existing program credited with managing cracking of the "Upper Support Plate, Support Assembly (Including Ring)" in Tables 3.1.2-2-IP2 and 3.1.2-2-IP3 of LRA Amendment 9, which provide the results of the aging management review (AMR) of the reactor vessel internals (RVI) for Indian Point Nuclear Generating Units 2 and 3 (IP2 and IP3). The staff compared LRA Tables 3.1.2-2-IP2 and 3.1.2-2-IP3 for consistency with Table 5-4 of the RVI Inspection Plan, which identifies the applicant's "Existing Programs" components corresponding to Table 4-9 of MRP-227-A. This review identified some apparent inconsistencies between Table 5-4, "Existing Program Components at IPEC Units 2 and 3," of the RVI Inspection Plan and Tables 3.1.2-2-IP2 and 3.1.2-2-IP3, with respect to the existing program credited with managing the aging effect. The table below compares the aging effects and aging management programs (AMPs) identified in Table 5-4 of the RVI Inspection Plan versus those identified in Tables 3.1.2-2-IP2 and 3.1.2-2-IP3.

Furthermore, Table 5-4 of the RVI Inspection Plan identifies the aging mechanism causing the loss of material aging effect as wear, which the Water Chemistry – Primary and Secondary AMP does not address. The staff notes that the aging effects and mechanisms, AMPs, examination methods and coverage identified in Table 5-4 of the RVI Inspection Plan are consistent with those recommended in Table 4-9 of MRP-227-A. The staff also notes that there is a component named "Bottom Mounted Instrumentation - Flux Thimble Tube" in Tables 3.1.2-1-IP2 and 3.1.2-1-IP3, "Reactor Vessel," of the applicant's LRA.

ENCLOSURE

Item	IPEC Name	Effect/ Mechanism – Table 5-4	Aging Effect Requiring Management - Tables 3.1.2-2-IP2 and –IP3	AMP - Table 5-4	AMP - Tables 3.1.2-2-IP2 and –IP3
Bottom Mounted Instrumentation System – Flux Thimble Tubes	Flux Thimble Guide Tube	Loss of Material/ Wear	Loss of Material	NUREG-1801, Rev. 1	Water Chemistry – Primary and Secondary
Alignment and Interfacing Components – Clevis Insert Bolts	Lower Internals Assembly – Clevis Insert Bolt	Loss of Material/ Wear	Loss of Material	ISI	Water Chemistry – Primary and Secondary

Requested Information

1. Clarify the inconsistency between Table 5-4 of the RVI Inspection Plan and the AMR tables, with respect to the two components noted in the table above.
2. Clarify whether the component named “Bottom Mounted Instrumentation - flux thimble tube” in Tables 3.1.2-1-IP2 and 3.1.2-1-IP3, “Reactor Vessel,” of the IPEC LRA, is the same component as the component named “flux thimble guide tube,” in Tables 3.1.2-2-IP2 and 3.1.2-2-IP3 of Amendment 9 to the LRA.

RAI 14

RAI 14 is dropped.

RAI 15

The response to RAI 12 states that, for RVI components that are not covered by a time-limited aging analysis, Entergy will use the RVI Program to manage the effects of aging due to fatigue on the reactor vessel internals. The response also states that, as provided in Section 3.5.1 of the NRC’s safety evaluation for MRP-227-A, for locations with a fatigue time-limited aging analysis, Entergy will manage the effects of aging due to fatigue through its Fatigue Monitoring Program in accordance with 10 CFR 54.21(c)(1)(iii).

In its response, the applicant also stated that the Fatigue Monitoring Program as described in LRA Section B.1.12 provides assurance that the cumulative usage factors (CUFs) remain below the allowable limit of 1.0 and that, consistent with Section 3.5.1 of the safety evaluation for MRP-227-A, prior to entering the period of extended operation, Entergy will review the existing RVI fatigue calculations to evaluate the effects of the reactor coolant system water environment on the CUF. Specifically, under Commitment 43, Entergy stated that it will review the units’ design basis ASME Code Class 1 fatigue evaluations to determine whether the NUREG/CR-6260 locations that have been evaluated for the effects of the reactor coolant environment on fatigue usage are the limiting locations for IP2 and IP3. The applicant stated that this review will also include ASME Code Class 1 fatigue evaluations for reactor vessel internals. Based on this review, if more limiting locations are identified, Entergy will evaluate the most limiting location for the effects of the reactor coolant environment on fatigue usage. The

applicant's response is not clear regarding how the "ASME Code Class 1 fatigue evaluations for reactor vessel internals" will account for the effects of the reactor coolant environment, nor what actions will be taken if CUF's for RVI components exceed 1.0.

Requested Information

1. Clarify whether, as a result of the review described in the response to RAI 12, CUF calculations for RVI components that incorporate environmental factors (F_{en}) will be performed in response to Applicant/Licensee Action Item 8 of the Staff SE of MRP-227-A. If such calculations will not be performed, discuss how the effects of the reactor water environment on the existing CUF analyses for RVIs will be evaluated in response to Applicant/Licensee Action Item 8 of the Staff SE of MRP-227-A.
2. Clarify what action(s) will be taken if the consideration of environmental effects results in a CUF exceeding 1.0 for any RVI component.
3. Since ASME Code Class 1 components are designed to ASME Section III, Subsection NB (i.e., reactor coolant pressure boundary components, not reactor vessel internals), provide necessary revisions to clarify the term "ASME Code Class 1 fatigue evaluations for reactor vessel internals" and any inconsistency in the response to RAI 12.
4. For the purposes of clarity, provide a new commitment and an associated new UFSAR Supplement to address the review of reactor vessel internals for environmentally-assisted fatigue as part of the Fatigue Monitoring Program in response to Applicant/Licensee Action Item 8 of the Staff SE of MRP-227-A, in lieu of your proposal to use Commitment No. 43.

References

1. Letter from Fred Dacimo, Entergy, to NRC dated July 14, 2010. Subject: Amendment 9 to License Renewal Application (LRA) – Reactor Vessel Internals Program Indian Point Nuclear Generating, Units 2 and 3 Docket Nos. 50-247 and 50-286 License Nos. DPR-26 and DPR-64 (ADAMS Accession No. ML102010102)
2. Letter from Fred Dacimo, Entergy, to NRC dated September 28, 2011. Subject: Indian Point, Units 2 & 3 - License Renewal Application - Completion of Commitment #30 re Reactor Vessel Internals Inspection Plan, Docket Nos. 50-247 and 50-286–License Nos. DPR-26 and DPR-64 (ADAMS Accession No. ML11280A121)
3. Letter from Fred Dacimo to NRC dated February 17, 2012, Indian Point Energy Center Revised Reactor Vessel Internals Inspection Plan Compliant with MRP-227-A, Attachment 2 to Letter NL-12-037. Subject: License Renewal Application - Revised Reactor Vessel Internals Program and Inspection Plan Compliant with MRP-227-A, Indian Point Nuclear Generating, Units 2 and 3 Docket Nos. 50-247 and 50-286–License Nos. DPR-26 and DPR-64 (ADAMS Accession No. ML1206A312).
4. Letter from R.F. Kuntz, NRC, to Entergy, dated May 15, 2012. Subject: Request for Additional Information for the Review of the Indian Point Nuclear Generating Unit 1 Nos. 2 and 3, License Renewal Application RAI Set 19 - RVIs MRP 227 05-2012, (ADAMS Accession No. ML12125A342)

5. Letter from Fred Dacimo, Entergy, to NRC dated June 14, 2012, Subject: Indian Point, Units 2 and 3 - Reply to Request for Additional Information Regarding the License Renewal Application. Docket Nos. 50-247 and 50-286—License Nos. DPR-26 and DPR-64 (ADAMS Accession No. ML12184A037)

September 10, 2012

Vice President, Operations
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Sincerely,

/RA/

John Daily, Senior Project Manager
Projects Branch 1
Division of License Renewal
Office of Nuclear Reactor Regulation

Docket Nos. 50-247 and 50-286

Enclosure: As stated

cc w/endl: Listserv

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ADAMS Accession No.: **ML12223A388**

*concurring via email

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NAME	IKing	JDaily	DMorey	JDaily
DATE	8/14/12	9/5/12	9/10/12	9/10/12

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