



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

April 9, 2014

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 2014-02 (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), 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).

By letter dated September 27, 2013, Entergy responded to a request for additional information (RAI). The staff has reviewed the response and has identified the need for additional information, which is enclosed.

This RAI was discussed with Mr. Roger Waters, and a mutually agreeable date for Entergy's response is within 60 days from the date of this letter. If you have any questions, please contact me at 301-415-1627, or by e-mail at Kimberly.Green@nrc.gov.

Sincerely,

A handwritten signature in cursive script that reads "Kimberly Green".

Kimberly Green, Sr. Mechanical Engineer
Aging Management of Plant Systems Branch
Division of License Renewal
Office of Nuclear Reactor Regulation

Docket Nos. 50-247 and 50-286

Enclosure:
As stated

cc: Listserv

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REQUEST FOR ADDITIONAL INFORMATION, SET 2014-02
RELATED TO INDIAN POINT NUCLEAR GENERATING UNIT NOS. 2 AND 3
LICENSE RENEWAL APPLICATION
DOCKET NOS. 50-247 AND 50-286
REGARDING REACTOR VESSEL INTERNALS PROGRAM

RAI 11-C

Applicant/Licensee Action Item 7 from the staff's final safety evaluation (SE) of MRP-227 requires the applicants/licensees of Babcock & Wilcox (B&W), Combustion Engineering (CE), and Westinghouse reactors to develop plant-specific analyses to be applied for their facilities to demonstrate that B&W In-Core Monitoring Instrumentation (IMI) guide tube assembly spiders and control rod guide tube (CRGT) assembly spacer castings, CE lower support columns, and Westinghouse lower support column bodies will maintain their functionality during the period of extended operation, and states that these analyses should also consider the possible loss of fracture toughness in these components due to thermal embrittlement (TE) and irradiation embrittlement (IE). For Indian Point Nuclear Generating Unit Nos. 2 and 3 (IP2 and IP3), the equivalent component to the lower support column bodies are the lower internals assembly - column caps (column caps).

By letter dated January 28, 2014, Entergy provided plant-specific information on the ferrite content and susceptibility to TE for the Indian Point Nuclear Generating Unit Nos. 2 and 3 lower internals assembly - column caps. Based on its evaluation of the plant-specific material information for the column caps, Entergy concluded that the IP2 and IP3 column caps are not susceptible to TE.

Entergy's conclusion related to TE notwithstanding, the column caps remain susceptible to IE. The staff is concerned that the linked Primary component for the column caps, the CRGT assembly lower flange welds, is not a good predictor of IE for the column caps since the CRGT lower flange welds receive substantially lower neutron fluence than the column caps (based on the estimated neutron fluence tabulated in MRP-191 for the two components). Irradiation assisted stress corrosion cracking (IASCC) is the only mechanism of cracking that screened in for the column caps. The CRGT lower flange welds are also not a good predictor for IASCC of the column caps, because the lower flange welds are susceptible to stress corrosion cracking (SCC) and fatigue cracking, but not IASCC.

The staff, therefore, requests that Entergy modify its Reactor Vessel Internals Inspection Plan (RVI Inspection Plan) to provide a link to a Primary component or components that is an appropriate predictor of IE and IASCC of the column caps.

RAI 16-B

In its September 27, 2013 response to RAI 16-A, Entergy proposed Commitment No. 50 stating that it would provide the NRC staff a detailed inspection plan for the IP2 split pins, including inspection methods, inspection coverage, and inspection frequency, by March 31, 2015, if the planned replacement of the IP2 split pins will not be accomplished in 2016. In order to resolve MRP-227-A Applicant/Licensee Action Item 3, the NRC staff requests Entergy submit the schedule for initial inspection, inspection methods, inspection coverage, and inspection frequency for the IP2 split pins in the event the IP2 split pins are not replaced by 2016, and that Commitment No. 50 be modified accordingly.

ENCLOSURE

RAI 17-A

In its September 27, 2013 response to RAI 17, Entergy provided a technical justification for the adequacy of the existing inspection requirements specified in MRP-227-A for the clevis insert bolts, which relies on its American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code), Section XI Inservice Inspection (ISI) Program. Entergy's response included the statement, "[t]he video camera visual inspections at a ten-year interval by qualified personnel that are specified in the ASME Code Section XI and MRP-227-A are capable of identifying wear or dislodged components of the clevis insert cap screws or dowel pins at any location, if they exist." To assure that the type of degradation documented in Westinghouse InfoGram IG-10-1 would be reliably detected at IP2 and IP3, the staff requests the following additional information:

1. Provide the ASME Code Section XI, Table IWB-2500 Examination Category and Item Number under which the IP2 and IP3 clevis insert bolts are classified.
2. Verify that the ASME Code, Section XI examination of the clevis inserts directly views all the clevis insert bolt heads, dowel pins and locking devices for each clevis insert.
3. If the ASME Code, Section XI examination does not directly view all the clevis insert bolts heads, locking devices, and dowel pins, propose a modification to Entergy's ASME Code, Section XI ISI Program to do so.
4. State when the most recent ASME Code, Section XI inspection of the clevis insert bolts was conducted at IP2 and IP3. Summarize the findings of that inspection for the clevis insert bolts.