



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

April 1, 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 2014-01 (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).

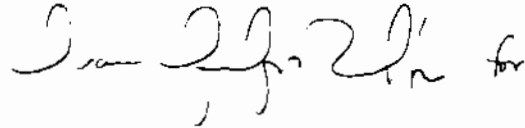
Since the issuance of SER Supplement 1, the staff has identified additional operating experience (OE) at several nuclear power plants regarding recurring internal corrosion, corrosion occurring under insulation, managing aging effects of fire water system components, and loss of coating integrity of internal coatings. To address this OE, the staff has issued interim staff guidance (ISG) documents, either as final or draft. As such, the staff is requesting additional information regarding how Entergy plans to manage the effects of aging as described in the ISG documents.

This RAI was discussed with Mr. Roger Waters, and a mutually agreeable date for Entergy's response is September 30, 2014.

- 2-

If you have any questions, please contact me at 301-415-1627, or by e-mail at [Kimberly.Green@nrc.gov](mailto:Kimberly.Green@nrc.gov).

Sincerely,

A handwritten signature in black ink, appearing to read 'Kimberly Green', followed by a small 'for'.

Kimberly Green, Senior. 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

If you have any questions, please contact me at 301-415-1627, or by e-mail at [Kimberly.Green@nrc.gov](mailto:Kimberly.Green@nrc.gov).

Sincerely,

**/RA Juan Uribe for/**

Kimberly Green, Senior 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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**ADAMS Accession No.: ML14084A387**

\*concurrent via email

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<b>NAME</b>	YEdmonds	KGreen (JUribe for)	YDiaz-Sanabria	KGreen (JUribe for)
<b>DATE</b>	3/28/2014	4/1/2014	3/31/2014	4/1/2014

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SUBJECT: REQUEST FOR ADDITIONAL INFORMATION FOR THE REVIEW OF THE  
INDIAN POINT NUCLEAR GENERATING UNIT NOS. 2 AND 3, LICENSE  
RENEWAL APPLICATION, SET 2014-01 (TAC NOS. MD5407 AND MD5408)

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REQUESTS FOR ADDITIONAL INFORMATION, SET 2014-01  
RELATED TO INDIAN POINT NUCLEAR GENERATING UNIT NOS. 2 AND 3  
LICENSE RENEWAL APPLICATION  
DOCKET NOS. 50-247 AND 50-286  
REGARDING LR-ISG-2012-02 AND DRAFT LR-ISG-2013-01

**RAI 3.0.3-1**

Background:

Recent industry operating experience (OE) and questions raised during the staff's review of several license renewal applications (LRAs) have resulted in the staff concluding that several aging management programs (AMPs) and aging management review (AMR) items in the LRA may not or do not account for OE involving recurring internal corrosion, corrosion occurring under insulation, managing aging effects of fire water system components, and certain other issues. In order to provide updated guidance, the NRC staff has issued LR-ISG-2012-02, "Aging Management of Internal Surfaces, Fire Water Systems, Atmospheric Storage Tanks, and Corrosion Under Insulation" (ADAMS Accession No. ML13227A361).

Issue:

The staff noted that the updated guidance may not have been incorporated into the respective AMPs and AMR items.

Request:

Provide details on how the updated guidance of LR-ISG-2012-02 has been accounted for in your AMPs and AMR items; or where the revised recommendations will not be incorporated, state an exception and the basis for the exception. If necessary, provide revisions to LRA Section 3 tables, Appendix A, and Appendix B.

**RAI 3.0.3-2**

Background:

The staff has noted several recent industry OE events related to loss of coating integrity of internal coatings. This has resulted in the staff concluding that several AMPs and AMR items in the LRA may not or do not account for this OE. The staff recently issued draft LR-ISG-2013-01, "Aging Management of Loss of Coating Integrity for Internal Service Level III (Augmented) Coatings" (ADAMS Accession No. ML13262A442).

Issue:

Loss of coating integrity for Service Level III (augmented) coatings

Industry OE indicates that degraded coatings have resulted in unanticipated or accelerated corrosion of the base metal and degraded performance of downstream equipment (e.g., reduction in flow, drop in pressure, reduction in heat transfer) due to flow blockage. Based on these industry OE examples, the staff has questions related to how the aging effect, loss of coating integrity due to blistering, cracking, flaking, peeling, or physical damage (e.g., cavitation

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damage downstream of a control valve) would be managed for Service Level III (augmented) coatings.

For purposes of this RAI, Service Level III (augmented) coatings include:

1. Those installed on the interior of in-scope piping, heat exchanges, and tanks which support functions identified under 10 CFR 54.4(a)(1) and (a)(2), and
2. Coatings installed on the interior of in-scope piping, heat exchangers, and tanks whose failure could prevent satisfactory accomplishment of any of the functions identified under 10 CFR 54.4(a)(3).

The term "coating" includes inorganic (e.g., zinc-based) or organic (e.g., elastomeric or polymeric) coatings, linings (e.g., rubber, cementitious), and concrete surfacers (e.g., concrete-lined fire water system piping). The terms "paint" and "linings" should be considered as coatings.

The staff believes that to effectively manage loss of coating integrity due to blistering, cracking, flaking, peeling, or physical damage of Service Level III (augmented) coatings an AMP should include:

1. Baseline visual inspections of coatings installed on the interior surfaces of in-scope components should be conducted as soon as practical.
2. Subsequent periodic inspections where the interval is based on the baseline inspection results should be performed. For example:
  - a. If no peeling, delamination, blisters, or rusting are observed, and any cracking and flaking has been found acceptable, subsequent inspections could be conducted after multiple refueling outage intervals (e.g., six years or more if the same coatings are in redundant trains).
  - b. If the inspection results do not meet the above; but, a coating specialist has determined that no remediation is required, subsequent inspections could be conducted every other refueling outage interval.
  - c. If coating degradation was observed that required repair or replacement, or for newly installed coatings, subsequent inspections should occur at least once during the next two refueling outage intervals to establish a performance trend on the coatings.
3. All accessible internal surfaces for tanks and heat exchangers should be inspected. A representative sample of internally coated piping components not less than 73 1-foot axial length circumferential segments of piping or 50 percent of the total length of each coating material and environment combination should be inspected.
4. Coatings specialists and inspectors should be qualified in accordance with an American Society for Testing and Materials International standard endorsed in Regulatory Guide 1.54, "Service Level I, II, and III Protective Coatings Applied to Nuclear Power Plants," including staff guidance associated with a particular standard.
5. Monitoring and trending should include pre-inspection reviews of previous inspection results.
6. The acceptance criteria should include that indications of peeling and delamination are not acceptable. Blistering can be evaluated by a coating specialist; however, physical testing should be conducted to ensure that the blister is completely surrounded by sound coating bonded to the surface.

Request:

If coatings have been installed on the internal surfaces of in-scope piping, piping components, heat exchangers, or tanks, state how loss of coating integrity due to blistering, cracking, flaking, peeling, or physical damage will be managed. Describe the following:

1. the inspection method
2. the parameters to be inspected
3. when baseline inspections will commence and finish, and the frequency of subsequent inspections
4. the extent of inspections and the basis for the extent of inspections
5. the training and qualification of individuals involved in coating inspections
6. how trending of coating degradation will be conducted
7. acceptance criteria
8. corrective actions for coatings that do not meet acceptance criteria, and
9. the program(s) that will be augmented to include the above activities

If necessary, provide revisions to LRA Section 3 tables, Appendix A, and Appendix B.