



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

September 1, 2017

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

SUBJECT: PLAN FOR THE REGULATORY AUDIT OF THE SERVICE WATER INTEGRITY  
AGING MANAGEMENT PROGRAM PERTAINING TO THE INDIAN POINT  
NUCLEAR GENERATING UNIT NOS. 2 AND 3 LICENSE RENEWAL  
APPLICATION REVIEW (CAC NOS. MD5407 AND MD5408)

Dear Mr. Vitale:

By letter dated April 23, 2007 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML071210512), as supplemented by letters dated May 3, 2007 (ADAMS Accession No. ML071280700), and June 21, 2007 (ADAMS Accession No. ML071800318), 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 (Indian Point), for review by the U.S. Nuclear Regulatory Commission (NRC). The NRC staff documented its findings in the Safety Evaluation Report (SER) related to the license renewal of Indian Point, which was issued August 11, 2009 (ADAMS Accession No. ML092150012), and supplemented August 30, 2011 (ADAMS Accession No. ML11201A033), (SER Supplement 1), and November 6, 2014 (ADAMS Accession No. ML14288A608), (SER Supplement 2). Subsequent to the issuance of SER Supplement 1, the NRC staff identified additional operating experience at several nuclear power plants regarding recurring internal corrosion and other degradation issues that prompted the NRC staff to issue interim staff guidance (ISG) LR-ISG-2012-02, "Aging Management of Internal Surfaces, Fire Water Systems, Atmospheric Storage Tanks, and Corrosion under Insulation," in November 2013.

In accordance with the enclosed audit plan, the NRC staff plans to conduct an onsite audit of the Service Water Integrity aging management program at Entergy, during the week of July 31, 2017.

A. Vitale

- 2 -

If you have any questions, please contact me by telephone at 301-415-6332 or by e-mail at [william.burton@nrc.gov](mailto:william.burton@nrc.gov).

Sincerely,

*/RA/*

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

Docket Nos. 50-247 and 50-286

Enclosures:

1. Audit Plan
2. Audit Needs List

cc w/encls: See next page

SUBJECT: PLAN FOR THE REGULATORY AUDIT OF THE SERVICE WATER INTEGRITY  
AGING MANAGEMENT PROGRAM PERTAINING TO THE INDIAN POINT  
NUCLEAR GENERATING UNIT NOS. 2 AND 3 LICENSE RENEWAL  
APPLICATION REVIEW DATED

**E-MAIL:**

RidsNrrDir Resource	DMcIntyre, OPA
RidsNrrDirRarb Resource	JWeil, OPA
RidsNrrDirMccb Resource	MGray, RI
RidsNrrDirRerp Resource	GDentel, RI
RidsNrrDirMrpb Resource	DJackson, RI
RidsOgcMailCenter Resource	MModes, RI
RidsNrrPMIndianPoint Resource	NSheehan, RI OPA
SStuchell	DScrenci, RI OPA
BBeasley	DTift, RI
WBurton	NMcnamara, RI
WHolston	BHaagensen, RI
JGavula	ASiwy, RI
BAllik	SRich, RI
RGuzman	rlouie@entergy.com
STurk, OGC	rburron@entergy.com
DRoth, OGC	avitale@entergy.com
BHarris, OGC	rwalpol@entergy.com
SBurnell, OPA	

ADAMS Accession Number: **ML17207A165**

**\*via email**

OFFICE	LA:RPGb:DLR *	PM: RPGb:DLR	BC: RPGb:DLR	PM: RPGb:DLR
NAME	YEdmonds (SLent for)	WBurton	SStuchell (WBurton for)	WBurton
DATE	7/27/2017	8/31/2017	9/1/2017	9/1/2017

OFFICIAL RECORD COPY



## **Audit Plan**

# **Service Water Integrity Aging Management Program Review for the Indian Point Nuclear Generating Unit Nos. 2 and 3 License Renewal Application**

**August 1-3, 2017**

**Division of License Renewal  
Office of Nuclear Reactor Regulation  
U.S. Nuclear Regulatory Commission**

**Service Water Integrity  
License Renewal Aging Management Program Audit Plan  
Indian Point Nuclear Generating Unit Nos. 2 and 3**

**1. Background**

By letter dated April 23, 2007 Agencywide Documents Access and Management System (ADAMS) Accession No. ML071210512), as supplemented by letters dated May 3, 2007 (ADAMS Accession No. ML071280700), and June 21, 2007 (ADAMS Accession No. ML071800318), Entergy Nuclear Operations, Inc. (Entergy, the licensee), 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 (Indian Point, or IP2, and IP3), for review by the U.S. Nuclear Regulatory Commission (NRC). The NRC staff documented its findings in the Safety Evaluation Report (SER) related to the license renewal of Indian Point, which was issued August 11, 2009 (ADAMS Accession No. ML092150012), and supplemented August 30, 2011 (ADAMS Accession No. ML11201A033), (SER Supplement 1), and November 6, 2014 (ADAMS Accession No. ML14288A608), (SER Supplement 2). Subsequent to the issuance of SER Supplement 1, the NRC staff identified additional operating experience at several nuclear power plants regarding recurring internal corrosion and other degradation issues that prompted the NRC staff to issue interim staff guidance (ISG) LR-ISG-2012-02, "Aging Management of Internal Surfaces, Fire Water Systems, Atmospheric Storage Tanks, and Corrosion under Insulation," in November 2013.

The NRC staff from the Division of License Renewal will lead a supplemental regulatory audit to gain a better understanding of ongoing operating experience since the submittal of the license renewal application and changes made to components within the scope of the Service Water Integrity program.

**2. Regulatory Audit Bases**

License renewal requirements are specified in Title 10 of the *Code of Federal Regulations* (10 CFR), Part 54, "Requirements for Renewal of Operating Licenses for Nuclear Power Plants." Guidance is provided in NUREG-1800, Rev. 2, "Standard Review Plan for Review of License Renewal Applications for Nuclear Power Plants" (SRP-LR), dated December 2010, NUREG-1801, Rev. 2, "Generic Aging Lessons Learned (GALL) Report," dated December 2010, and license renewal interim staff guidance LR-ISG-2012-02, "Aging Management of Internal Surfaces, Fire Water Systems, Atmospheric Tanks, and Corrosion under Insulation," dated November 2013.

**3. Regulatory Audit Scope**

The scope of this regulatory audit for IP2 and IP3 is to resolve questions associated with the Service Water Integrity aging management program. Audit team members will focus on reviewing documents and areas discussed in the Audit Needs List (Enclosure 2) and discussing the information with Entergy's subject matter experts.

**4. Information and Other Material Necessary for the Regulatory Audit**

As described in the Audit Needs List (Enclosure 2).

**5. Team Assignments**

Area of Review	Assigned Auditor
Mechanical and Materials	James Gavula William Holston Roger Kalikian Brian Allik Alexander Chereskin Diane Render

**6. Logistics**

The audit will be conducted on location at the IP2 and IP3 site from August 1-3, 2017. Entrance and exit briefings will be held at the beginning and end of this audit, respectively.

**7. Special Requests**

The staff requests the applicant to provide computer access to allow independent searches of the condition report database and other related documentation by the regulatory audit team. The NRC staff requests a suitable facility for the audit team to caucus during the audit. In addition, the NRC staff requests that Entergy have one or more break-out rooms available for meetings between staff and Entergy personnel.

**8. Deliverables**

An audit report should be issued to the applicant within 90 days from the end of the audit.

**9. References**

- a. Response to Request for Additional Information Regarding Relief Request 3-43 for Temporary Repair to Service Water Pipe, Letter NL-07-120, dated October 3, 2007, (ADAMS Accession No. ML072890132).
- b. Reply to Request for Additional Information for the Review of the Indian Point Nuclear Generating Station Unit Nos. 2 and 3, License Renewal Application, SET 2017-01, Letter NL17-052 dated May 8, 2017, (ADAMS Accession No. ML17132A175).

**Service Water Integrity  
Aging Management Program Review  
Audit Needs List**

**1. Carbon Fiber Wrap**

- a. Review change-package information for in-scope service water system piping segment locations to evaluate the impact of the types of materials installed, installation process controls, verification of installed configurations, and evaluations/tests that support installation of the carbon fiber wrap in regard to the effectiveness of visual examinations to detect aging.
- b. Review and evaluate analyses/test reports that support installation of carbon fiber wrap. Discuss aspects of report IP-RPT-14-00022, "External Lining for Safety-Related Service Water Piping," intended to show that visual inspections, conducted by the Service Water Integrity program, to detect loss of material from ongoing internal corrosion, will not be adversely affected by installation of the carbon fiber wrap.
- c. Identify, review, and evaluate any plant-specific operating experience where leaks have been identified after carbon fiber wrap was installed, in order to evaluate leakage detection as an effective strategy to identify aging effects.
- d. Perform walkdowns of accessible in-scope safety-related and nonsafety-related carbon fiber wrap installations on piping or components where aging effects are being managed by the Service Water Integrity program

**2. Overall Service Water Integrity Program**

- a. Review plant-specific operating experience reports:
  - 1) to identify potential leaks that have occurred at locations other than welds. (e.g., CR-IP2-2005-1268, CR-IP2-2006-2133, RR3-43). Review associated volumetric inspections to identify coverage in areas that are adjacent to welds.
  - 2) to identify potential accelerated corrosion rates where AL6XN is welded to carbon steel piping, similar to "leading edge" effect associated with stainless steel to carbon steel interfaces in the Flow-Accelerated Corrosion program.
  - 3) to identify potential issues where the projected corrosion rate did not support continued structural integrity for the remainder of the operating cycle (e.g., October 3, 2007, letter (Reference a. in Audit Plan)).
  - 4) to establish effectiveness of internal visual inspection of the concrete lining to show that carbon steel is not degraded as long as cement lining is intact.
- b. Identify aboveground components where visual inspections (in lieu of volumetric inspections) are used for acceptance (e.g., components IP2 F-0018, IP2 F-1363) to determine parameters monitored for these locations (i.e., internal inspection for cement lining degradation, external inspection for leakage). Review operating experience to establish effectiveness of internal visual inspection of the concrete lining to show that carbon steel is not degraded as long as cement lining is intact.

- c. Review procedure IP-RPT-16-00046, "IPEC Service Water Piping Weld Repair Process and Re-Inspection Frequency Guidelines," within the context of CR-IP3-2008-02026, CR-IP3-2011-00680, CR-IP3-2011-01056 (condition reports that discuss problems with past repairs).
- d. Discuss response to request for additional information dated May 8, 2017, as it relates to:
  - 1) uninspected welds for IP2 and IP3, and extent of low margin in predicted service life.
  - 2) the weld evaluated using Code Case N-513 but was not repaired during the outage.
  - 3) statements associated with LER 247/2015-001 and LER 247/2015-004.
- e. Review a sample of structural integrity calculations (approximately 25 spread over both units and at least 5 years) to assess adequacy of assumed corrosion rates and service life prediction methodology as they relate to the Service Water Integrity program's acceptance criteria and corrective actions.