

**UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION**

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of)	Docket Nos. 50-247-LR and
)	50-286-LR
ENTERGY NUCLEAR OPERATIONS, INC.)	
)	
(Indian Point Nuclear Generating Units 2 and 3))	
)	February 8, 2017

DECLARATION OF LISA KWONG

Pursuant to 28 U.S.C. § 1746, Lisa S. Kwong hereby declares as follows:

1. I serve as an Assistant Attorney General for the State of New York, counsel for Intervenor State of New York in this proceeding.
2. I submit this declaration and accompanying attachments in support of Intervenor's Notice of Withdrawal of Track 2 Contentions and Unopposed Motion to Dismiss Those Contentions and This Proceeding in its Entirety (Feb. 8, 2017) ("Intervenor's Motion"). The accompanying attachments are discussed in more detail below and in Intervenor's Motion, and consist of documents related to the parties' implementation of the January 8, 2017 Indian Point Agreement.
3. The purpose of my declaration is to explain the basis for the State's decision to withdraw its Track 2 contentions (NYS-25, NYS-26B/RK-TC-1B, and NYS-38/RK-TC-5) and seek dismissal of the contentions from this proceeding.
4. The Intervenor's notice of withdrawal and motion to dismiss Intervenor's Track 2 Contentions is based on a global settlement agreement entered into on January 8, 2017, between NYS, Riverkeeper, Inc. and Entergy (the "Indian Point Agreement"), which resolves pending state administrative proceedings and federal litigation between the parties related to Entergy's

current and future operation of Indian Point Units 2 and 3 (each respectively, “IP2” and “IP3”), including Intervenor’s remaining contentions in this license renewal proceeding before the Board. Among other things, the Agreement provides for the cessation of operations of IP2 and IP3 by no later than April 30, 2020 and April 30, 2021, respectively. Only in the event that the State determines that an emergency exists could Indian Point operate beyond 2020 and 2021, and then only for a maximum of two two-year periods, *i.e.*, until their renewed licenses terminate in 2024 (IP2) and 2025 (IP3).

5. The Intervenor’s motion is also based on augmented aging management and other safety measures agreed to by Entergy in the Indian Point Agreement, such as the accelerated inspection and replacement of baffle-former bolts at IP2 and IP3 in response to Indian Point and industry operating experience with bolt cracking. As discussed in more detail below, Entergy recently updated its reactor vessel internal aging management program to reflect these enhancements. Under the Agreement, Entergy’s other operational commitments at IP2 and IP3, such as its agreement to permit annual plant inspections by New York State personnel, its commitment to perform general inspections of the steam generator channel head and tubesheet region during the IP3 2017 and IP2 2018 refueling outages in accordance with newly-issued NRC guidance (ISG-LR-2016-1), and its agreement to expedite the transfer of fuel assemblies from the spent fuel pools to dry cask storage, among other things, are additional bases for Intervenor’s motion. Intervenor has determined that these contractually binding commitments by Entergy, along with its agreement for early retirement of IP2 and IP3, are sufficient to address the aging management concerns raised by Intervenor’s contentions.

The NRC’s Proceeding and Intervenor’s Track 2 Safety Contentions

6. Given the lengthy and somewhat complex procedural history of the Track 2

contentions, I provide a brief summary of the Track 2 contentions.

7. In April 2007, pursuant to 10 C.F.R. Part 54, Entergy submitted a license renewal application (“LRA”) to the NRC Staff to renew each of the operating licenses for IP2 and IP3 (License Nos. DPR-26 and DPR-64, respectively) for an additional 20 years. In November 2007, New York and Riverkeeper each moved to intervene by submitting various safety and environmental contentions to the Board.¹ In February 2012, the Board placed contention NYS-25 onto the second hearing track that already included NYS-38/RK-TC-5 and RK-EC-8, which had been placed in abeyance.² NYS-26 was also placed into the Track 2 proceeding.

8. In Contention NYS-25, the State challenged, among other things, Entergy’s approach to monitoring and managing the effects of aging due to embrittlement of the reactor pressure vessel and its internal components over the proposed 20-year period of extended operation. *See* NYS Petition, at 223-27. Subsequently, in September 2010 and in February 2015, New York moved to amend and supplement Contention NYS-25 to account for various revisions and amendments to Entergy’s “Reactor Vessel Internals Program” (or “RVI Program”) and to address NRC Staff’s Supplement 2 to its Safety Evaluation Report (SSER2).³

¹ *New York State Notice of Intention to Participate and Petition to Intervene* (“NYS Petition”) (Nov. 30, 2007) (ML073400187); *Riverkeeper, Inc.’s Request for Hearing and Petition to Intervene in the License Renewal Proceeding for the Indian Point Nuclear Power Plant* (“RVK Petition”) (Nov. 30, 2007) (ML073410093).

² *Entergy Nuclear Operations, Inc. (Indian Point Nuclear Generating Units 2 and 3), Order Granting NRC Staff’s Unopposed Time Extension Motion and Directing Filing of Status Updates* (February 16, 2012) (unpublished) (ML12047A308).

³ *State of New York’s Motion for Leave to File Additional Bases for Previously-Admitted Contention NYS-25, etc.* (Sept. 15, 2010) (ML103050402); *State of New York’s Motion to Supplement Previously-Admitted Contention NYS-25* (February 13, 2015) (ML15044A493); *New York State February 2015 Supplement to Previously-Admitted Contention NYS-25* (February 13, 2015) (ML15044A491).

The State's motions were supported by declarations of Dr. Lahey.⁴ The Board admitted contention NYS-25 in July 2008 and later admitted the State's amended and supplemental bases for Contention NYS-25.⁵

9. In Contention NYS-26, New York asserted that Entergy's LRA did not include an adequate plan to monitor and manage the effects of aging due to metal fatigue on key reactor components.⁶ In Riverkeeper Contention TC-1, Riverkeeper asserted that Entergy had performed an inadequate aging analysis of various important components, had not expanded its aging analysis to other components, and did not demonstrate that it would adequately manage metal fatigue of various components. Subsequently, Intervenor submitted amended and supplemental Contentions NYS-26A and Riverkeeper TC-1A to challenge Entergy's recalculation of cumulative usage factors for certain RVI components at IP2 and IP3 to account for the contribution of environmentally-assisted fatigue.⁷ Two years later, in September 2010, New York and Riverkeeper moved to admit a new and amended Consolidated Contention NYS-26B/RK-TC-1B, which challenged various aspects of Entergy's further revised calculations of environmentally-assisted fatigue and continued to argue that Entergy had not

⁴ Declaration of Richard T. Lahey, Jr. (Sept. 15, 2010) (included in ML103050402) (Exh. NYS000301); Declaration of Richard T. Lahey (February 13, 2015) (ML15044A499) (Exh. NYS000483).

⁵ *Entergy Nuclear Operations, Inc.* (Indian Point, Units 2 and 3), LBP-08-13, 68 N.R.C. 43 (July 31, 2008) (ML082130436); *Entergy Nuclear Operations, Inc.* (Indian Point, Units 2 and 3), Memorandum and Order Ruling on Pending Motions for Leave to File New and Amended Contentions (July 6, 2011) (unpublished) (ML111870344); *Entergy Nuclear Operations, Inc.* (Indian Point Nuclear Generating Units 2 and 3), Memorandum and Order (Granting Motions for Leave to File Amendments to Contentions NYS-25 and NYS-38/RK-TC-5) (March 31, 2015) (unpublished) (ML15090A771).

⁶ NYS Petition, at 227-233.

⁷ See Petitioner State of New York's Request for Admission of Supplemental Contention No. 26-A (Metal Fatigue) (Apr. 7, 2008) (included in ML081750691); Riverkeeper's Request for Admission for Amendment Contention 6 [TC-1A] (Mar. 5, 2008) (ML080840441) (this became Contention RK-TC-1).

submitted an adequate plan to manage the aging effects of metal fatigue.⁸ In November 2010, the Board admitted Consolidated Contention NYS-26B/RK-TC-1B.⁹ In June 2012, Intervenor submitted further support for Consolidated Contention NYS-26B/RK-TC-1B.¹⁰

10. In 2011, Intervenor added Consolidated Contention NYS-38/RK-TC-5, which alleged that Entergy's license renewal application lacked sufficient information, adequate programs, and enforceable, binding commitments concerning the aging management of certain components, such as the steam generators, to provide NRC with a record and a rational basis to grant a renewed license as required by NRC regulations at 10 C.F.R. § 54.21 and the Administrative Procedure Act, 42 U.S.C. §§ 2133 and 2232.

11. Intervenor's Track 2 safety contentions, as amended and consolidated, are currently designated: NYS-25, NYS-26B/RK-TC-1B, and NYS-38/RK-TC-5. Between July and October, 2015, the parties filed their statements of position, pre-filed expert testimony and exhibits, and replies for the Track 2 safety contentions. From November 16-19, 2015, the Board presided over hearings on Intervenor's three Track 2 safety contentions in Tarrytown, New York.

12. In January 2016, New York moved to admit six additional evidentiary exhibits

⁸ State of New York's and Riverkeeper's Motion for Leave to File a New and Amended Contention Concerning the August 9, 2010 Entergy Reanalysis of Metal Fatigue (Sept. 9, 2010) (ML102670665).

⁹ *Entergy Nuclear Operations, Inc.* (Indian Point Nuclear Generating Units 2 and 3), Memorandum and Order (Ruling on Motion for Summary Disposition of NYS 26/26A/Riverkeeper TC-1/1A [Metal Fatigue of Reactor Components] and Motion for Leave to File New Contention NYS-26B/Riverkeeper TC-1B) (Nov. 4, 2010) (ML103080987).

¹⁰ See Revised Statement of Position (Exh. NYS000439), pre-filed rebuttal testimony from Dr. Lahey (Exh. NYS000440) and Dr. Hopenfeld (Exh. RIV000114), and additional technical exhibits.

related to the Track 2 contentions.¹¹ The Board granted the motion on February 19, authorizing the parties to file the additional exhibits with supplemental testimony.¹² New York filed its supplemental testimony on March 4; Entergy and the Staff filed responsive testimony on March 18.

Baffle Former Bolt Cracking

13. On March 29, 2016, prior to New York's submission of its testimony in reply to the March 18 filings by Entergy and NRC Staff, Entergy advised the Board and the parties that, during a scheduled maintenance outage, visual and ultrasonic testing of the baffle-former assembly bolts in IP2 revealed that approximately one quarter of the baffle-former bolts showed signs of degradation.¹³ As a result of these findings and at the request of the parties,¹⁴ the Board deferred Track 2 post-hearing schedule for filings and evidentiary submissions.¹⁵

14. In a joint status report dated June 28, 2016,¹⁶ Entergy informed the Board that it planned to send cracked baffle-former bolts removed from IP2 to a "hot lab" facility for testing and recommended an extended briefing schedule to allow the parties time to prepare evidence and testimony related to bolt degradation issues. On July 13, the Board accepted the parties' recommended briefing schedule and requested the parties to address in their filings the cause

¹¹ State of New York Motion for Leave to File Six Documents as Additional Exhibits (Feb. 5, 2016).

¹² *Entergy Nuclear Operations, Inc. (Indian Point Nuclear Generating Units 2 and 3)*, "Order (Requesting Expert Testimony on New York's Proposed Exhibits and Suspending Deadline for Filing Proposed Findings of Fact and Law)" (Feb. 19, 2016).

¹³ Letter from Counsel for Entergy Nuclear Operations, Inc., to Lawrence G. McDade, Chairman, Dr. Michael F. Kennedy, and Dr. Richard Wardwell, Atomic Safety and Licensing Board (Mar. 29, 2016).

¹⁴ Joint Motion for Track 2 Hearing Schedule Deferral (Mar. 30, 2016).

¹⁵ *Entergy Nuclear Operations, Inc. (Indian Point Nuclear Generating Units 2 and 3)*, Order (Adopting Joint Motion for Track 2 Hearing Schedule Deferral) (Apr. 1, 2016) (unpublished).

¹⁶ Third Joint Status Report Regarding Proposed Track 2 Schedule (June 28, 2016).

and consequences of bolt failures, and what steps would be taken to promptly identify and mitigate such failures.¹⁷ Following several extensions of the briefing schedule to accommodate the parties' request for additional time, on November 2, the Board issued an order setting forth new deadlines for the parties' filing of supplemental testimony, and proposed findings of fact and conclusions of law.¹⁸

15. On December 8, 2016, the Board issued an order requesting updates on pending litigation and other matters related to Indian Point relicensing, including the status of Entergy's water use-related permits, approvals or licenses that could potentially affect NRC license renewal for IP2/IP3.¹⁹ Entergy filed its response on December 21. NRC filed its response on January 6, 2017.

Other Pending, Non-NRC Litigation: the NYSDEC Matter and the NOAA Matter

16. In addition to this NRC relicensing proceeding, the parties have been engaged in long-standing litigation in other matters related to Indian Point operation and relicensing.

NYSDEC Matter (WQC/SPDES Proceeding)

Entergy, New York and Riverkeeper, among other individuals and entities, are parties to consolidated, mandatory adjudicatory proceedings before a panel of NYSDEC Administrative Law Judges relating to (i) certain NYSDEC-Staff proposed modifications to the renewed State Pollutant Discharge Elimination System ("SPDES") Permit for Indian Point, and (ii) NYSDEC

¹⁷ Order (Adopting Schedule Deferral at Request of the Parties and Requesting Conference Call Availability) (June 8, 2016) (unpublished).

¹⁸ See *Entergy Nuclear Operations, Inc. (Indian Point Nuclear Generating Units 2 and 3)* "Order (Granting Unopposed Motion for Extension of Time)" (Nov. 2, 2016); "Order (Granting Joint Motion for Reconsideration)" (Aug. 3, 2016); "Order (Scheduling of Further Filings on Track 2 Contentions)" (July 13, 2016).

¹⁹ *Entergy Nuclear Operations, Inc. (Indian Point Nuclear Generating Units 2 and 3)*, "Order (Requesting Updated Information on Pending Litigation and Other Matters)" (Dec. 8, 2016).

Staff's proposed denial of Entergy's application for a Water Quality Certificate ("WQC") under Section 401 of the Federal Clean Water Act ("CWA") (the proceedings relating to (i) and (ii) collectively referred to as the "NYSDEC Matter") for purposes of Indian Point operating license renewal.

CZMA Matter (NOAA Proceeding/N.D.N.Y. Action)

The parties have also been engaged in proceedings and other actions relating to Indian Point's compliance with the Federal Coastal Zone Management Act of 1972 ("CZMA"), in the context of license renewal. The CZMA issues involving Indian Point were pending before the National Oceanic and Atmospheric Administration ("NOAA") and the U.S. District Court for the Northern District of New York ("CZMA Matter").

The Indian Point Settlement Agreement

17. On January 8, 2017, as a result of extensive negotiations between Entergy, New York, and Riverkeeper, the parties reached a global settlement agreement to resolve all pending litigation between the parties related to Indian Point operations, including the NRC re-licensing proceeding, the NYSDEC Matter and the CZMA Matter (both of which are distinct from this NRC license renewal proceeding). The most significant aspect of the parties' agreement, and of greatest relevance to this proceeding, is Entergy's commitment to an early closure plan for IP2 and IP3. That commitment, and other key elements of the agreement are discussed below:

- **Early Closure Date:** Entergy will permanently cease operations at Indian Point Unit 2 by April 30, 2020, and Unit 3 by April 30, 2021. This would, in effect, result in closure of the plants 13 to 14 years earlier than anticipated under Entergy's original license renewal application. Only in the event of an emergency situation, such as a terrorist attack affecting electricity generation, would the State consider allowing operations to continue, but not beyond April 30, 2024 (IP2) and April 30, 2025 (IP3).
- **Reduced Re-Licensing Period:** Entergy will amend its license renewal application to update the proposed term of the renewed licenses from 20 years for each unit to

the periods ending April 30, 2024 for Unit 2 and April 30, 2025 for Unit 3. Renewed licenses for IP2 and IP3 would therefore expire no later than April 30, 2024 and April 30, 2025, respectively.

- **Enhanced Inspection Programs:** New York will make annual inspections of the plants relating to key operational, regulatory, and environmental matters. In addition, at every refueling outage through 2020 and 2021, Entergy will inspect all accessible baffle former bolts, and replace bolts as needed to ensure the reactors' structural integrity and maintain safety margin, taking into account the rate and pattern of bolt failures during operating experience.²⁰ Entergy will also inspect the steam generator channel heads and tubesheet region for potential cracking in accordance with newly-issued NRC guidance.

- **Retrieval of Loose Parts:** Entergy will inspect for, find and remove or assess the safety consequences of any loose parts on a cycle-to-cycle basis starting with the 2018 IP2 inspections.

- **Expedited Transfer of Spent Fuel to Dry Storage:** Entergy will use its best efforts to maximize the amount of spent fuel transferred to dry storage each year, with a minimum of four casks per year and a total of 24 casks by 2021.

- **Tritium Mitigation:** Entergy will implement in 2017 targeted plant and hardware modifications at Indian Point to minimize potential releases of radiologically-contaminated fluids to groundwater from normal and temporary plant systems and operations.

- **New Emergency Operations Facility:** Entergy will design and construct a new alternate emergency operations facility to provide key support for emergency planning activities for Indian Point.

- **Ongoing Environmental Protection:** Entergy has also agreed to establish a \$15 million fund to support environmental restoration and community benefit projects.

- **Resolution of Outstanding Litigation:** Entergy, New York, and Riverkeeper will terminate all pending state and federal administrative and judicial litigation related to Indian Point license renewal.

Notice of Parties' Global Settlement

18. By letter dated January 11, 2017, Counsel for Entergy advised the Board that the parties had entered into an agreement with New York and Riverkeeper regarding the continued

²⁰ This is a general description of the enhanced baffle bolt inspection program. More specific information regarding the program is contained in Entergy's updated RVI AMP, Attachment 4 to this Declaration.

operation of Indian Point Units 2 and 3 (“Settlement Agreement”).²¹ The letter requested a conference call to discuss the agreement and a proposed deferral of near-term filing deadlines. On January 12, the Board issued an order holding further filings in abeyance.²² On January 18, 2017, the Board held a telephone conference call with the parties in which Entergy provided a general description of the Agreement and Intervenors notified the ASLB of their intention to move to withdraw the contentions without prejudice.²³

Implementation of the Agreement

19. The parties have begun implementation of the Agreement. On January 27, 2017, the NYSDEC Commissioner issued a decision and order concluding the protracted adjudication of Entergy’s Water Quality Certification and discharge permit requirements and remanding the matter to DEC Staff for processing in accordance with State administrative procedure and environmental quality review regulations. A copy of the NYSDEC Decision and Order Regarding Termination of Administrative WQC and SPDES Proceeding dated January 27, 2017 is attached as Attachment 1 to this Declaration. Entergy has likewise withdrawn its appeal to NOAA regarding prior New York Department of State CZMA-consistency determinations. A copy of Entergy’s notice to the NRC of its withdrawal of its previous CZMA review claim (NL-17-015) dated January 24, 2017, is attached as Attachment 2 to this Declaration. On January 31, 2017, Entergy submitted to the New York Department of State a new CZMA consistency

²¹ Letter from Paul M. Bessette, Esq. to the Board (Jan. 11, 2017) (“Joint Request for Conference Call to Discuss the Parties’ Recent Settlement Agreement and Need for Immediate Deferral of Near-Term Filing Deadlines”).

²² Entergy Nuclear Operations, Inc. (Indian Point Nuclear Generating Units 2 and 3), “Order (Holding Further Filings in Abeyance and Requesting Availability for Telephone Status Conference)” (Jan. 12, 2017).

²³ See *Entergy Nuclear Operations, Inc. (Indian Point Nuclear Generating Units 2 and 3)*, “Official Transcript of Proceedings” (Jan. 18, 2017), Tr. 5,895-5,938.

certification, and the State's concurrence with the new CZMA consistency certification is expected to be issued shortly. A copy of Entergy's CZMA Consistency Certification dated January 31, 2017, is attached as Attachment 3 to this Declaration.

20. On February 6, Entergy submitted to NRC a revised RVI Aging Management Plan incorporating recent operating experience involving baffle bolt cracking. A copy of Entergy's submission to the NRC of its updated Reactor Vessel Internals Aging Management Plan (NL-17-020) dated February 6, 2017 is attached as Attachment 4 to this Declaration. Among other things, the updated RVI AMP describes Entergy's Spring 2016 bolt inspection and replacement activities, as well as its plan for addressing bolt cracking going forward. *Id.*, Attachment 2, Section 6.2, pp. 62-63. The plan provides that "[B]ased on as-found conditions and current industry knowledge, including the results of the fractographic examinations of the eight IP2 baffle former bolts discussed in Westinghouse Report MCPE-TR-16-18, IPEC concludes that performing a volumetric examination (i.e., UT) of the required original bolts during each refueling outage, and replacing those bolts found to be degraded until none of the remaining original bolts is required to be credited for the baffle structure to be capable of performing its intended safety function, is a reasonable and acceptable approach." Entergy's plan for baffle former bolts will consist of: UT inspections at every outage, including replacement bolts if degradation is observed. In addition to replacing all bolts with indications, Entergy will replace "good" bolts with new anti-cluster bolts as necessary to ensure adequate safety margin.

21. Today, Entergy filed with NRC a notice pursuant to 10 C.F.R. 50.82(a)(1)(i), of its intention to permanently cease operations for IP2 and IP3 by 2020 and 2021, respectively. A copy of Entergy's Notice of Permanent Cessation of Power Operations (NL-17-021) dated

February 8, 2017 is attached as Attachment 5 of this Declaration. Entergy also filed with the NRC an amendment to its license renewal application requesting a reduced renewal terms for IP2 and IP3. A copy of the License Renewal Application Amendment (NL-17-019) dated February 8, 2017 is attached as Attachment 6 to this Declaration.

22. Finally, Hudson River Sloop Clearwater has indicated that it does not oppose Intervenor's motion to withdraw their remaining contentions in this proceeding. A copy of Clearwater's Board of Directors' resolution of non-opposition dated January 26, 2017 is attached as Attachment 7 to this Declaration.

Conclusion

23. For the foregoing reasons, the State has determined that the above-described binding commitments by Entergy, along with its agreement for early retirement of IP2 and IP3, are sufficient to address the aging management concerns raised by Intervenor's Track 2 Contentions. I declare under penalty of perjury that the foregoing is true and correct.

Executed on February 8, 2017

Signed (electronically) by

Lisa S. Kwong
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of the State of New York
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Attachment 1

**NYSDEC Decision and Order Regarding Termination of Administrative WQC and SPDES Proceeding
dated January 27, 2017**


NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

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MEMORANDUM

VIA E-MAIL and CERTIFIED MAIL

TO: Service List

FROM: James T. McClymonds, Chief Administrative Law Judge 

RE: *Entergy Nuclear Indian Point Units 2 and 3: SPDES Permit Renewal and Modification (SPDES No. NY-0004472)*
Entergy Nuclear Indian Point Units 2 and 3: Water Quality Certification DEC Nos. 3-5522-00011/00030 (IP2) and 3-5522-00105/00031 (IP3)

DATE: January 27, 2017

Enclosed is a copy of the Decision signed by Commissioner Basil Seggos dated January 27, 2017 in the above entitled matter. Also enclosed is a Ruling and Order of Disposition of the Administrative Law Judge.

Enclosures



Department of
Environmental
Conservation

STATE OF NEW YORK
DEPARTMENT OF ENVIRONMENTAL CONSERVATION

In the Matter of a Renewal and Modification of a State
Pollutant Discharge Elimination System (“SPDES”)
Permit Pursuant to Environmental Conservation Law
 (“ECL”) Article 17 and Title 6 of the Official Compilation
of Codes, Rules and Regulations of the State of New York
Parts 704 and 750, et seq.

-by-

Entergy Nuclear Indian Point 2, LLC and
Entergy Nuclear Indian Point 3, LLC,

Permittee.

DEC No.: 3-5522-00011/00004
SPDES No.: NY-0004472

DECISION

In the Matter of the Application of

Entergy Nuclear Indian Point 2, LLC, and
Entergy Nuclear Indian Point 3, LLC

for a Water Quality Certificate Pursuant to Section 401
of the Federal Clean Water Act and Section 608.9 of Title
6 of the Official Compilation of Codes, Rules and
Regulations of the State of New York (“6 NYCRR”).

DEC Application Nos.:
3-5522-00011/00030 and
3-5522-00105/00031

On January 13, 2017, counsel for staff of the New York State Department of Environmental Conservation (the “Department”) in the above-referenced proceedings (the “Proceedings”) delivered to the Administrative Law Judges (the “ALJs”) for the Proceedings: (1) a final State Pollutant Discharge Elimination System (“SPDES”) permit, with accompanying Fact Sheet and Coastal Assessment Form, and (2) a final § 401 Water Quality Certification (“WQC”) (collectively, the “Final Permits”) for Entergy Nuclear Indian Point 2, LLC, Entergy Nuclear Indian Point 3, LLC, and Entergy Nuclear Operations, Inc.’s (collectively, “Entergy”) Indian Point Nuclear Power Plant (“Indian Point”).

Department staff counsel’s correspondence to the ALJs also included a proposed Supplemental Final Environmental Impact Statement (“SFEIS”) under the State Environmental Quality Review Act, pursuant to Environmental Conservation Law (“ECL”) Article 8 and 6 NYCRR Part 617 (collectively, “SEQRA”). Department staff counsel’s correspondence to the ALJs further included a Stipulation between Department staff, Entergy, and Riverkeeper, Inc. (on behalf of Riverkeeper, Inc., Scenic Hudson, Inc., and the Natural Resources Defense

Council, Inc.) outlining the process for issuance of the Final Permits and completion of the SEQRA process.

In a ruling and order of disposition dated January 27, 2017, the presiding ALJ determined that the Stipulation, along with the accompanying documents included in Department staff's submission on January 13, 2017, resolved the issues advanced by all parties to the Proceedings. The ALJ ruled that the Proceedings were concluded, closed the hearing record, and remanded the matter to Department staff.

I concur with and affirm the ALJ's January 27, 2017 ruling and order of disposition. All pending appeals are dismissed as academic, and the Proceedings in this matter are concluded. Notwithstanding any prior decision of this Department, including without limitation the 2008 Interim Decision in this matter, I affirm the ALJ's remand to Department staff for processing and issuance of the Final Permits and completion of the SEQRA process, including the issuance of the SFEIS and SEQRA findings in accordance with the applicable legal requirements.

After appropriate public process, upon the Department's issuance of the Final Permits, along with the SFEIS and SEQRA findings, the matter shall be concluded and SEQRA satisfied in accordance with ECL Article 8 and 6 NYCRR Part 617.

New York State Department of Environmental
Conservation

By: _____/s/_____
Basil Seggos, Commissioner

Albany, New York
January 27, 2017

STATE OF NEW YORK
DEPARTMENT OF ENVIRONMENTAL CONSERVATION

In the Matter of a Renewal and Modification of a State
Pollutant Discharge Elimination System (“SPDES”)
Permit Pursuant to Environmental Conservation Law
 (“ECL”) Article 17 and Title 6 of the Official Compilation
 of Codes, Rules and Regulations of the State of New York
 Parts 704 and 750, et seq.

-by-

Entergy Nuclear Indian Point 2, LLC and
Entergy Nuclear Indian Point 3, LLC,

Permittee.

DEC No.: 3-5522-00011/00004
SPDES No.: NY-0004472

**RULING AND
ORDER OF
DISPOSITION**

In the Matter of the Application of

Entergy Nuclear Indian Point 2, LLC, and
Entergy Nuclear Indian Point 3, LLC

for a Water Quality Certificate Pursuant to Section 401
of the Federal Clean Water Act and Section 608.9 of Title
6 of the Official Compilation of Codes, Rules and
Regulations of the State of New York.

DEC Application Nos.:
3-5522-00011/00030 and
3-5522-00105/00031

Procedural History and Background

The predecessors in interest of Entergy Nuclear Indian Point 2, LLC and Entergy Indian Point 3, LLC (collectively, “Entergy” or “Applicant”) applied in 1992 for renewal of a State Pollutant Discharge Elimination System (“SPDES”) permit for the Indian Point nuclear powered steam electric generating stations 2 and 3 (the Indian Point Energy Center (“IPEC” or “the Stations”)). IPEC is located on the east side of the Hudson River in the Village of Buchanan, Westchester County, New York. The New York SPDES permit program is a federally-delegated, State-administered program governing the discharge of pollutants (including, as relevant to the electric sector, thermal discharges) into State surface and ground waters. Conditions contained in a SPDES permit govern the discharges of permit holders. New York also uses its SPDES program to enforce the cooling water intake structure requirements of § 316(b) of the federal Clean Water Act (33 U.S.C. § 1365 – “CWA”), and Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York (“6 NYCRR”) § 704.5.

In 1999, for purposes of the State Environmental Quality Review Act (“SEQRA”), Entergy’s predecessor (together with the then-owners of other Hudson River power plants, known as the “Hudson River Facilities”) produced a joint draft environmental impact statement

(“DEIS”) in support of their respective applications for SPDES permit renewals for the Hudson River Facilities.

On June 23, 2003, staff of the New York State Department of Environmental Conservation (“Department” or “DEC”) accepted and noticed for public comment a proposed Final Environmental Impact Statement (“FEIS”) for the Hudson River Facilities, including Indian Point.

On November 12, 2003, Department staff proposed various modifications to the existing SPDES permit for IPEC, including new conditions to implement closed cycle cooling as the best technology available (“BTA”) to minimize adverse environmental impacts from the Stations’ cooling water intake systems. Department staff’s BTA determination involved certain conditions related to Nuclear Regulatory Commission (“NRC”) issuance of license renewal determinations for the Stations, feasibility and SEQRA assessments for the proposed BTA technology, as well as Entergy’s right to propose an alternative BTA. Various entities, including Entergy, challenged Department staff’s proposed SPDES permit, and various third parties moved to intervene as parties or amici.

A public hearing and issues conference were held with respect to the draft SPDES permit. An issues ruling, granting party status and identifying certain issues for adjudication, was issued on February 3, 2006. In an interim decision dated August 13, 2008 (the “Interim Decision”), the Assistant Commissioner ruled on interlocutory appeals and advanced various issues to adjudication in the SPDES permit proceeding. *See Matter of Entergy Indian Point 2, LLC*, Interim Decision of the Assistant Commissioner, 2008 N.Y. Env. LEXIS 52 (August 13, 2008). Among other things, the Interim Decision directed the parties to proceed to hearings on the issue of the site-specific BTA for the Stations.

On April 30, 2007, Entergy filed with NRC the federal license 20-year renewal applications for IPEC. On April 6, 2009, Department staff received a joint application for a federal CWA § 401 Water Quality Certificate (“WQC”) on behalf of Entergy Nuclear Operations, Inc., Entergy Indian Point Unit 2, LLC, and Entergy Indian Point Unit 3, LLC. Entergy submitted the joint application for a § 401 WQC to the Department as part of Entergy’s license renewal application. Section 401 conditions federal licensing of an activity which causes a “discharge” into navigable waters on certification from the State in which the discharge might originate that the proposed activity would not violate federal or State water-protection laws. 33 U.S.C. § 1341(a). In order to grant a WQC, the Department must determine whether IPEC’s continued operation meets State water quality standards and criteria pursuant to CWA § 401 and § 608.9 of 6 NYCRR.

By letter dated April 2, 2010, Department staff issued a Notice of Denial of the WQC application, precipitating a hearing on the grounds identified by various entities, including Entergy. A public hearing was held on July 20, 2010, and the issues conference took place the following day, on July 21, 2010. In an Issues Ruling dated December 13, 2010 (“WQC Issues Ruling”), the administrative law judges (“ALJs”) advanced additional issues to adjudication relating to the joint §401 WQC application. *See Matter of Entergy Nuclear Indian Point, LLC*, Ruling on Proposed Issues for Adjudication and Party Status, 2010 N.Y. Env. LEXIS 86

(December 13, 2010). The ALJs determined that the hearings on the SPDES and WQC issues would proceed simultaneously, in order to develop a joint record.

The background and procedural history with respect to the renewal and modification of the SPDES permit are set forth in greater detail in the February 3, 2006 ruling on proposed issues for adjudication and petitions for party status, 2006 N.Y. Env. LEXIS 3; the Interim Decision, 2008 N.Y. Env. LEXIS 52 (August 13, 2008); the November 28, 2012 ruling of the Regional Director, 2012 N.Y. Env. LEXIS 80; and the February 3, 2015 issues ruling on permanent forced outages, 2015 N.Y. Env. LEXIS 4. The background and procedural history with respect to the §401 WQC proceeding are set forth in greater detail in the WQC Issues Ruling.

Parties to the adjudicatory proceedings have included the mandatory parties Department staff and Entergy; intervenors (Riverkeeper, Inc.; Scenic Hudson, Inc.; and the Natural Resources Defense Council, Inc. (collectively, “Riverkeeper”); County of Westchester; Town of Cortlandt; the African American Environmentalist Association (“AAEA”); and the Honorable Richard Brodsky); and amici (City of New York; Independent Power Producers of New York; and Central Hudson Gas & Electric (“CHG&E”)). By letter dated June 26, 2014, CHG&E withdrew from the proceedings.

Hearings have been held to consider Entergy’s proposed BTA (cylindrical wedge wire screens), Department staff’s proposed BTA (closed-cycle cooling, and summertime outages of 42 and 62 days at each unit), and Riverkeeper’s proposed BTA (summertime outages of 118 days at each unit), as well as radiological issues and the issue of best usages, as advanced to adjudication in the WQC Issues Ruling. SEQRA issues relating to each of the BTA alternatives were also the subject of hearings. The hearings began on October 17, 2011, and fifty-eight (58) days of hearings followed. The transcript in the proceedings is 16,423 pages long, and approximately 1,500 exhibits have been proposed to be admitted into the evidentiary record.

On January 13, 2017, counsel for Department staff in the above-referenced proceedings delivered to the ALJs: (1) a Stipulation; (2) a final WQC permit; (3) a final SPDES permit with accompanying Fact Sheet; and (4) a Supplemental Final Environmental Impact Statement (“SFEIS”), which included a completed Coastal Assessment Form and proposed SEQRA Findings.

In accordance with the terms of the Settlement Agreement, the parties were provided an opportunity to concur or otherwise respond to the Stipulation and other documents. The following were received:

- Notice of Withdrawal of Riverkeeper’s Intervention, signed by counsel for Riverkeeper on behalf of Riverkeeper, Scenic Hudson, Inc., and the Natural Resources Defense Council, Inc., and dated January 17, 2017;
- Email from the Town of Cortlandt dated January 18, 2017, stating that the Town neither concurs with nor objects to the Stipulation;
- Email from the County of Westchester dated January 18, 2017, stating that the County does not concur with the Stipulation;
- Email from the AAEA dated January 18, 2017, stating that the AAEA concurs with the settlement and termination of the proceedings;

- Email from the City of New York dated January 18, 2017, stating that the City takes no position on the Stipulation; and
- Email from Richard Brodsky dated January 20, 2017, attaching a letter of the same date, stating that Mr. Brodsky does not concur with, and objects to the Stipulation.

Mr. Brodsky and counsel for Entergy thereafter exchanged additional emails relating to Mr. Brodsky's objection, as follows:

- Email from Entergy dated January 23, 2017, at 9:38 a.m.;
- Email from Mr. Brodsky dated January 23, 2017, at 11:32 a.m.;
- Email from Entergy dated January 23, 2017, at 11:55 a.m.; and
- Email from Mr. Brodsky dated January 23, 2017, at 12:29 p.m.

The Stipulation, the final SPDES permit and WQC, as well as the related documents, resolve the issues advanced by the parties to the proceedings. This includes all issues that formed the basis of Mr. Brodsky's party status. Moreover, the three issues Mr. Brodsky raises in his January 20, 2017 letter do not warrant further adjudication or are otherwise outside the purview of these proceedings. Similarly, although in its January 18, 2017 e-mail the County of Westchester does not concur with the Stipulation, the County does not raise any adjudicable issues. Accordingly, the Stipulation is accepted and these adjudicatory proceedings are concluded.

Pursuant to the papers submitted to the ALJs, this matter is remanded to Department staff for processing and issuance of a final SPDES permit and WQC for IPEC. Issuance of the final SPDES permit and WQC shall include Department staff's appropriate action pursuant to SEQRA.

The above-referenced Part 624 permit hearing proceedings are concluded and the joint hearing record for these matters is closed.

/s/

Maria E. Villa
Administrative Law Judge

Albany, New York
January 27, 2017

c: Administrative Law Judge Daniel P. O'Connell
Service List

Attachment 2

NL-17-015

**Entergy Notice of Withdrawal of Previous CZMA Review Claim (NL-17-015)
dated January 24, 2017**



Entergy Nuclear Northeast

Indian Point Energy Center
450 Broadway, GSB
P.O. Box 249
Buchanan, NY 10511-0249
Tel 914 254 6700

Anthony J Vitale
Site Vice President

NL-17-015

ATTACHMENT "A"

January 24, 2017

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555-0001

SUBJECT: Notice of Withdrawal of Previous Review Claim Pursuant to the New York Coastal Management Program and Coastal Zone Management Act
Indian Point Nuclear Generating Unit Nos. 2 & 3
Docket Nos. 50-247 and 50-286
License Nos. DPR-26 and DPR-64

- REFERENCES:
1. Entergy Letter from Fred Dacimo to NRC Document Control Desk, "License Renewal Application" (Apr. 23, 2007) (NL-07-039) (ML071210507)
 2. Generic Environmental Impact Statement for License Renewal of Nuclear Plants: Regarding Indian Point Nuclear Generating Unit Nos. 2 and 3 (NUREG-1437, Supplement 38, Vol. 1) (Dec. 2010) (ML103350405)
 3. Entergy Letter from Fred Dacimo to NRC Document Control Desk, "Supplement to License Renewal Application — Compliance with Coastal Zone Management Act" (July 24, 2012) (NL-12-107) (ML12207A122)
 4. Motion and Memorandum by Applicant Entergy Nuclear Operations, Inc. for Declaratory Order That It Has Already Obtained the Required New York State Coastal Management Program Consistency Review of Indian Point Units 2 and 3 for Renewal of the Operating Licenses (July 30, 2012) (ML12212A383)
 5. Entergy Letter from Fred Dacimo to NRC Document Control Desk, "Transmittal of Consistency Certification Pursuant to the Coastal Zone Management Act" (Dec. 17, 2012) (NL-12-181) (ML13015A037)
 6. State of New York Attorney General Letter from J. Sipos to the ASLB, Attach. 1 (Nov. 6, 2014) (ML14310A346)
 7. New York State Department of State Letter to Fred Dacimo, "Coastal Zone Management Act Consistency Determination" (Nov. 6, 2015) (ML15314A013)

8. Letter from Sanford I. Weisburst to David Kaiser, NOAA, "Purported Objection of New York State Department of State Dated November 6, 2015" (Nov. 10, 2015)
9. Letter from Lois Schiffer, General Counsel, U.S. Dep't of Commerce, to Sanford I. Weisburst, Esq. and Linda Baldwin, Esq., "Response to Letter-Requests under the Coastal Zone Management Act in the Matter of Entergy Nuclear Operation, Inc." (Nov. 25, 2015) (ML16334A360)

Dear Sir or Madam:

Entergy Nuclear Operations, Inc.'s (Entergy) license renewal application (LRA) (Reference 1), as originally filed, and the Final Supplemental Environmental Impact Statement (FSEIS) (Reference 2) issued by the Nuclear Regulatory Commission (NRC) related to the LRA, anticipated that license renewal of Indian Point Unit 2 (IP2) and Unit 3 (IP3) would require a consistency determination by the State of New York (State) pursuant to the Coastal Zone Management Act (CZMA). Entergy subsequently re-evaluated how the CZMA applied to the pending LRA and, as a result, on July 24, 2012, supplemented the Environmental Report (ER) appended to the LRA to state that the LRA is not subject to further consistency review by the State because renewal would not result in coastal effects that are substantially different than effects previously reviewed by the State. (Reference 3)

Shortly thereafter, on July 30, 2012, Entergy filed a motion with the Atomic Safety and Licensing Board (Board) seeking a declaratory order (Motion) that it had already obtained the required consistency review of IP2 and IP3 for renewal of the operating licenses. (Reference 4) Meanwhile, Entergy concluded that it was prudent, in the alternative, to file a consistency certification pursuant to the CZMA, and did so on December 17, 2012. (Reference 5) On June 12, 2013, the Board denied Entergy's Motion, but held that the Motion might be re-filed after consultations between the NRC Staff and the State, pursuant to 15 C.F.R. § 930.51(e). *Entergy Nuclear Operations, Inc.* (Indian Point Nuclear Generating Units 2 and 3), Board Order (Granting New York's Motions, Denying Clearwater's Motion, and Denying CZMA Motions) (unpublished) (June 12, 2013) (ML13163A233). The Staff has since engaged in consultations with the New York State Department of State (NYSDOS) and Entergy, and the matter is still under Staff consideration.

On November 5, 2014, Entergy notified NYSDOS and the NRC that Entergy was voluntarily withdrawing its consistency certification, with the intention to re-file it once NRC had issued FSEIS Supplement 2 that is to include updated aquatic impacts data. (Reference 6) NYSDOS subsequently disputed that Entergy had the ability to withdraw the certification, taking the position that the original certification remained pending.

Entergy's July 24, 2012 ER supplement also stated that the New York Coastal Management Plan exempts both IP2 and IP3 from further review, and therefore also exempts them from the CZMA, by virtue of grandfathering provisions of the NYCMP. On December 11, 2014, the State of New York Supreme Court, Appellate Division, Third Department, issued a decision agreeing with Entergy's position, holding that "Indian Point Nuclear Generating Unit No. 2 and Indian Point Nuclear Generating Unit No. 3 are exempt from New York's Coastal Management Program." *Entergy Nuclear Operation, Inc. v. N.Y. State Dep't of State*, 125 A.D.3d 21, 26 (N.Y.

App. Div. 2014). NYSDOS subsequently appealed that decision to the New York Court of Appeals (New York's highest court). The New York Court of Appeals issued its decision on the grandfathering issue on November 21, 2016. *Entergy Nuclear Operation, Inc. v. N.Y. State Dep't of State*, No. 179, slip op. (N.Y. Nov. 21, 2016).

In parallel, on November 6, 2015, NYSDOS objected to Entergy's December 17, 2012 consistency certification. (Reference 7) In response, on November 10, 2015, Entergy sought a determination from the National Oceanic and Atmospheric Administration (NOAA) that NYSDOS's objection was invalid and, in the alternative, sought an extension of time to file a notice of appeal. (Reference 8) On November 25, 2015, NOAA issued Entergy an extension of time to file its Notice of Appeal to NYSDOS's objection until 60 days after a decision by the New York Court of Appeals. (Reference 9)

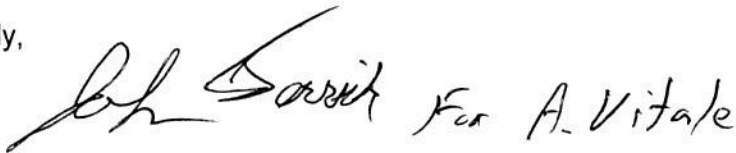
Pursuant to an agreement between Entergy and NYSDOS, among other parties, dated January 9, 2017, regarding the planned cessation of operation of IP2 and IP3, NYSDOS withdrew its challenge to Entergy's November 5, 2014 withdrawal of its consistency certification, and will proceed as if the withdrawal became effective on November 5, 2014, thereby (1) rendering NYSDOS's November 6, 2015 objection moot and of no effect and (2) requiring Entergy to submit a new certification. In accordance with that agreement, Entergy will submit a new consistency certification for NYSDOS review by January 31, 2017. NYSDOS will issue its decision on the new consistency certification within 30 days after submission.

As a result of the above actions, there is no need at this time for Entergy to pursue arguments regarding previous review or for the Staff, State, and NRC to engage in further consultations on previous review. Entergy, on January 18, 2017, also notified NOAA that it no longer plans to pursue an appeal of NYSDOS's objection.

There are no new commitments being made in this submittal.

Should you have any questions concerning this report, please contact Mr. Robert W. Walpole, Licensing Manager, at (914) 254-6710.

Sincerely,

Handwritten signature of Robert W. Walpole, with the text "For A. Vitale" written below it.

AJV/rl

cc: Mr. Daniel H. Dorman, Regional Administrator, Region I, NRC
Ms. Jane Marshall, Acting Branch Chief, NRR/DLR, NRC
Mr. William Burton, Senior Project Manager, NRR/DLR, NRC
Mr. Douglas Pickett, Senior Project Manager, NRR/DORL, NRC
Mr. Sherwin E. Turk, Special Counsel, OGC, NRC
Ms. Bridget Frymire, New York State Department of Public Service
Mr. John B. Rhodes, President and CEO NYSERDA
Ms. Rossana Rosado, Secretary of State, NYSDOS
NRC Resident Inspector's Office

Attachment 3

**Entergy CZMA Consistency Certification
dated January 31, 2017**



Entergy Nuclear Northeast
Indian Point Energy Center
450 Broadway, GSB
P.O. Box 249
Buchanan, NY 10511-0249
Tel (914) 254-2055

Fred Dacimo
Vice President
Operations License Renewal

NL-17-018

January 31, 2017

ATTACHMENT "B"

BY HAND DELIVERY

New York State Department of State
Office of Planning and Development
Attn: Consistency Review Unit
1 Commerce Plaza
99 Washington Avenue-Suite 1010
Albany, New York 12231

Re: Consistency Certification for Entergy Nuclear Indian Point 2 and Entergy Nuclear Indian Point 3 License Renewal Application

Dear Secretary Rosado:

Entergy Nuclear Indian Point 2, LLC, Entergy Nuclear Indian Point 3, LLC, and Entergy Nuclear Operations, Inc. (collectively, "Entergy") have submitted a license renewal application ("LRA") to the U.S. Nuclear Regulatory Commission ("NRC") requesting renewal of the Operating Licenses for Indian Point Nuclear Generating Units 2 and 3 ("IP2" and "IP3," collectively, "IPEC"). On December 17, 2012, Entergy filed with the New York State Department of State ("NYSDOS"), pursuant to the Coastal Zone Management Act ("CZMA"), a certification stating that renewal of the IPEC operating licenses was consistent with the New York State Coastal Management Program ("NYSCMP"). On November 5, 2014, Entergy withdrew that consistency certification. NYSDOS objected to Entergy's certification on November 6, 2015, and challenged Entergy's withdrawal.

Pursuant to an agreement between Entergy and NYSDOS, among other parties, dated January 9, 2017, NYSDOS withdrew its challenge to Entergy's November 5, 2014 withdrawal of its consistency certification, and agreed to proceed as if the withdrawal became effective on November 5, 2014, thereby (1) rendering NYSDOS's November 6, 2015 objection moot and of no effect and (2) requiring Entergy to submit a new certification. Pursuant to that same agreement, Entergy hereby submits the attached consistency certification for renewal of the IP2 and IP3 operating licenses.

This submission certifies that the proposed activity (renewal of the IPEC operating licenses) is consistent with all applicable and enforceable policies of the NYSCMP¹ pursuant to the CZMA, 16 U.S.C. § 1451 *et seq.* Accordingly, Entergy requests your concurrence with the enclosed Consistency Certification.

¹ New York State, Department of State, "New York State Coastal Management Program and Final Environmental Impact Statement," (incorporating approved changes from 1982 to 2006), available at http://www.dos.ny.gov/opd/programs/pdfs/NY_CMP.pdf.

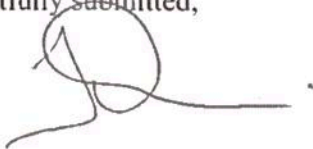
As specified in the NYSCMP and the regulations of the Department of Commerce, National Oceanic and Atmospheric Administration at 10 C.F.R. Part 930, Subpart D, the following documents are attached for your review:

- Entergy's Consistency Certification;
- Entergy's written analysis of the IPEC license renewal consistency with the policies of the NYSCMP;
- Entergy's Federal Consistency Assessment Form and signed consistency certification;
- IPEC site diagram and maps (6-mile and 50-mile radius) showing the geographic location of IPEC;
- Tables showing the environmental permits applicable to current IPEC operations, and the consultations related to IPEC license renewal; and
- List of owners of property abutting IPEC.

Additionally, the following necessary data and information are enclosed via electronic media:

- Entergy's LRA submitted to the NRC requesting renewal of the IPEC operating licenses,² and the eighteen amendments to the LRA since its original submission in 2007;³
- the Generic Environmental Impact Statement for License Renewal of Nuclear Power Plants, Supplement 38 Regarding Indian Point Nuclear Generating Unit Nos. 2 and 3 (Volumes 1-4, plus Draft Volume 5); and
- the New York State Department of Environmental Conservation's ("NYSDEC") final State Pollutant Discharge Elimination System ("SPDES") Permit and accompanying Fact Sheet, and final Water Quality Certification ("WQC"), authorizing continued operation of the Indian Point nuclear facility (Units 2 and 3), with the proposed Supplemental Final Environmental Impact Statement ("FSEIS") and State Environmental Quality Review Act ("SEQRA") documents, including the NYSDEC State Coastal Assessment Form.

Respectfully submitted,

A handwritten signature in black ink, consisting of a stylized 'E' followed by a horizontal line.

² The IPEC Environmental Report, submitted as Appendix E to the LRA, includes a description of the proposed activity, its associated facilities, and an analysis of coastal effects, alternatives, and mitigating actions, as well as a statement of the purpose and need for the activity.

³ Additional correspondence between Entergy and the NRC regarding the IPEC license renewal proceeding can be accessed via the NRC's official recordkeeping system, known as ADAMS-- <http://adams.nrc.gov/wba> (under the "Content Search" tab, add the document property "Docket Number" and value "05000247" (for IP2) or "05000286" (for IP3)).

Enclosures as stated

cc: Mr. Daniel Dorman, Regional Administrator, Region I, NRC
Ms. Jeffrey J. Rikhoff, Acting Branch Chief, RERP/DLR/NRR, NRC
Mr. William Burton, Sr. Project Manager, RSRG/DLR/NRR, NRC
Mr. Douglas Pickett, Sr. Project Manager, LPL1-1/DORL/NRR, NRC
Mr. Sherwin E. Turk, Special Counsel, Office of the General Counsel, NRC
NRC Resident Inspector's Office, Indian Point
Ms. Bridget Frymire, New York State Department of Public Service
Mr. John B. Rhodes, President and CEO, NYSERDA
Ms. Rossana Rosado, Secretary of State, NYSDOS

ENTERGY CERTIFICATION THAT IPEC LICENSE RENEWAL IS CONSISTENT WITH THE NEW YORK STATE COASTAL MANAGEMENT PROGRAM

Entergy Nuclear Indian Point 2, LLC; Entergy Nuclear Indian Point 3, LLC; and Entergy Nuclear Operations, Inc. (collectively, "Entergy") hereby provide to the U.S. Nuclear Regulatory Commission ("NRC") the below certification, pursuant to the requirements of the Coastal Zone Management Act of 1972 as amended ("CZMA") (16 U.S.C. §§ 1451-1465) and regulations of the U.S. Department of Commerce, National Oceanic and Atmospheric Administration ("NOAA") (15 C.F.R. Part 930, Subpart D), in support of Entergy's license renewal application ("LRA") for Indian Point Nuclear Generating Units 1 & 2 ("IP2" and "IP3," collectively, "IPEC").

CONSISTENCY CERTIFICATION

Entergy certifies to the NRC and the New York Department of State ("NYSDOS") that the proposed renewal of the IP2 and IP3 Operating Licenses complies with the enforceable policies of the New York State Coastal Management Program ("NYSCMP") and that continued operation of IPEC will be conducted in a manner consistent with the NYSCMP. Entergy expects IP2 and IP3 operations during the period of extended operation ("PEO") to be a continuation of current operations as described below, with no physical or operational station alterations that would affect New York State's coastal zone.

NECESSARY DATA AND INFORMATION

Federal Statutory and Regulatory Background

The CZMA imposes requirements on an applicant for a Federal license to conduct a review of an activity that could affect a state's coastal zone. The Act requires an applicant to certify to the Federal licensing agency that the proposed action would be consistent with the state's federally approved coastal zone management program. The Act also requires the applicant to provide to the state a copy of the certification statement and requires the state, at the earliest practicable time, to notify the Federal agency and the applicant whether the state concurs with, or objects to, the consistency certification. *See* 16 U.S.C. § 1456(c)(3)(A).

NOAA promulgated implementing regulations making the certification requirement applicable to renewal of Federal licenses for activities not previously reviewed by the state. *See* 15 C.F.R. § 930.51(b)(1). NOAA approved the NYSCMP in 1982.

New York State Coastal Management Program

The NYSCMP is administered by the Office of Planning and Development in the NYSDOS. For Federal agency activities, NYSDOS reviews projects to ensure adherence to the State program or an approved Local Waterfront Revitalization Program. Applicants for Federal agency approvals or authorizations are required to submit copies of Federal applications to NYSDOS, together with a Federal Consistency Assessment Form and the consistency certification. The Department reviews the consistency certification and proposal for consistency with the NYSCMP as

documented in 44 specific policies established in the Department's 1982 Final Environmental Impact Statement. The policies articulate the State's vision for its coast by addressing the following areas:

- Development
- Fish and Wildlife
- Flooding and Erosion Hazards
- General
- Public Access
- Recreation
- Historic and Scenic Resources
- Agricultural Lands
- Energy and Ice Management
- Water and Air Resources

Appendix A to this Determination identifies the 44 NYSCMP policies and Entergy's justification for certifying compliance.

Proposed Action

Entergy operates IPEC pursuant to NRC Operating Licenses DPR-26 (Unit 2) and DPR-64 (Unit 3). Entergy submitted a license renewal application ("LRA") to the NRC requesting renewal of these operating licenses for an additional 20 years beyond the current expiration dates (the period of extended operation, or "PEO"). The Unit 2 and Unit 3 licenses were set to expire September 28, 2013, and December 12, 2015, respectively, but continue in force under the NRC's "timely renewal" provision (10 C.F.R. § 2.109(b)) until the NRC makes a final determination on the LRA. Entergy expects IPEC operations during the PEO to be a continuation of current operations as described below, with no physical or operational changes that would affect the New York State coastal zone. License renewal would give Entergy the option of relying on IPEC to meet a portion of New York State's future needs for electric generation.

Table 1 lists consultations related to IPEC license renewal, Table 2 lists environmental permits applicable to current IPEC operations, and Table 3 lists owners of properties abutting IPEC.

On January 13, 2017, the New York State Department of Environmental Conservation ("NYSDEC") submitted to the Administrative Law Judges ("ALJs") the final State Pollutant Discharge Elimination System ("SPDES") Permit⁴ and a final Water Quality Certification ("WQC") for the continued operation of IPEC, pursuant to a stipulation that includes Entergy's commitment that IP2 shall permanently cease operations no later than April 30, 2020, and IP3 shall permanently cease operations no later than April 30, 2021; provided, however, the operation of either IP2, IP3, or both units, may be extended upon the mutual agreement of NYS and Entergy, which shall take account of, and be made in accordance with, applicable law and regulatory requirements. On January 27, 2017, the ALJs and NYSEC Commissioner issued their respective Order and Decision concluding the proceeding and directing NYSDEC Staff to

⁴ The cover page of the final SPDES Permit was subsequently replaced by NYSDEC to correct a stenographic error. The corrected page is included in the enclosed final SPDES Permit.

complete the requisite public notice of the final SPDES Permit and WQC, as well as the associated State Environmental Quality Review Act process. Copies of the final SPDES Permit and WQC are included with this Certification. Entergy intends to comply fully with the commitments, conditions and requirements of the SPDES Permit and WQC for continued operations through retirement.

IPEC Description

IPEC is located on approximately 239 acres of land on the east bank of the Hudson River at Indian Point, Village of Buchanan in upper Westchester County, New York. The site is about 24 miles north of the New York City boundary line. The nearest city is Peekskill, 2.5 miles northeast of Indian Point. *See Figs. 2 & 3.*

The layout of IPEC is shown in Figure 1. The plant consists of two pressurized water reactors with steam generators that produce steam which then turns turbines to generate electricity. Unit 2 is capable of an output of 3,216 megawatts (thermal) [MW(t)], with a corresponding net electrical output of approximately 1,078 megawatts (electric) [MW(e)]. Unit 3 is capable of an output of 3,216 MW(t), with a corresponding net electrical output of approximately 1,080 MW(e).

The circulating water systems for IP2 and IP3 include shoreline-situated intake structures along the Hudson River consisting of seven bays (six for circulating water and one for service water) for each unit. The circulating water intake bays have state-of-the-art, optimized, vertical Ristroph-type traveling water screens, developed and tested in concert with fisheries experts, including from the Hudson River Fisherman's Association, to minimize (impingement) impacts to fish. These screens have become the model for the United States Environmental Protection Agency's national rule on circulating water systems, and continued operation of these systems during the license renewal period was authorized in 2013 by the National Marine Fisheries Services as protective of federally listed sturgeon. Then, the water from each individual screenwell flows to a motor-driven, vertical, mixed flow condenser circulating water pump. After moving through the condensers, cooling water from IP2 and IP3 flows downward from the discharge water boxes via six 96-inch diameter down pipes and exits beneath the water surface in a 40-foot wide discharge canal. The cooling water from the canal is released into the Hudson River through an outfall structure located south of IP3, which was designed to and has been demonstrated to the satisfaction of NYSDEC to enhance mixing of cooling water and River water to minimize potential thermal impacts to the River in compliance with all applicable New York water quality standards.

Sanitary wastewater is transferred to the Village of Buchanan publicly owned treatment works system where it is managed appropriately, except for a few isolated areas which have their own septic tanks which are pumped out by a septic company, as needed, and taken to an offsite facility for appropriate management. Although the sanitary wastewaters are nonradioactive, a continuous radiation monitoring system is provided.

Entergy employs a permanent workforce of approximately 1,100 employees at IPEC. The majority of the IPEC workforce lives in Dutchess, Orange, and Westchester Counties. The site

workforce increases by approximately 950 workers for temporary (approximately 30 days) duty during staggered refueling outages that occur about every 24 months for each unit.

In compliance with the NRC regulations, Entergy has analyzed the effects of plant aging and identified activities needed for IPEC to operate for an additional 20 years. IPEC license renewal would involve no major plant refurbishment.

Power is delivered to the ConEdison transmission grid via two double-circuit 345-kV lines that connect the IP2 and IP3 main transformers to the Buchanan substation located across Broadway near the main entrance to IPEC. Except for the point where they cross over Broadway, the lines are located within the site boundary, are approximately 2,000 feet in length, and were constructed using tubular-steel transmission poles. ConEdison addresses impacts to the transmission line corridors in accordance with its vegetative management plan.

In 2010, IPEC generation represented approximately 10 percent of the total electricity consumption in New York State, 17 percent of the total electricity consumption in the Southeastern New York area, and up to 30 percent of the New York City area's base-load electricity. IPEC generates more electrical energy than any other facility in the Empire State.

Environmental Impacts

The NRC's *Generic Environmental Impact Statement for License Renewal of Nuclear Plants* ("License Renewal GEIS") analyzes the environmental impacts associated with the renewal of nuclear power plant operating licenses. The NRC codified its findings regarding these impacts at 10 C.F.R. Part 51, Subpart A, Appendix B, Table B-1. The codified findings (applicable as of the date the LRA was submitted to the NRC⁵) identify 92 potential environmental issues. The NRC's *Generic Environmental Impact Statement for License Renewal of Nuclear Power Plants, Supplement 38 Regarding Indian Point Nuclear Generating Unit Nos. 2 and 3* ("IPEC SEIS") documents the NRC's consideration of these topics as they pertain to IPEC license renewal.

Category 1 Issues (Generically Applicable)

The NRC generically identified 69 "Category 1" issues as having SMALL impacts.⁶ A SMALL significance level is defined by the NRC as follows:

For the issue, environmental effects are not detectable or are so minor that they will neither destabilize nor noticeably alter any important attribute of the resource. For the purpose of assessing radiological impacts, the Commission has concluded that those impacts that do not exceed permissible levels in the Commission's regulations are

⁵ The NRC updated the License Renewal GEIS and corresponding table in 10 C.F.R. Part 51 following submission of the IPEC LRA. Revisions to Environmental Review for Renewal of Nuclear Power Plant Operating Licenses, 78 Fed. Reg. 37,282 (June 20, 2013). The update resulted in consolidation and reclassification of certain issues such that the updated table now identifies 78 issues, rather than 92. *Id.*

⁶ The revised License Renewal GEIS and table in 10 C.F.R. Part 51 now identify 59 "Category 2" issues, rather than 69.

considered small as the term is used in this table. (10 C.F.R. Part 51, Subpart A, Appendix B, Table B-1)

10 C.F.R. Part 51, Subpart A, Appendix B, Table B-1 and the License Renewal GEIS discuss the following types of Category 1 environmental issues:

- Surface water quality, hydrology, and use;
- Aquatic ecology;
- Groundwater use and quality;
- Terrestrial resources;
- Air quality;
- Land use;
- Human health;
- Socioeconomics;
- Uranium fuel cycle and waste management; and
- Decommissioning.

Absent findings of new and significant information, the NRC will rely on its codified findings, as amplified by supporting information in the License Renewal GEIS, for its assessment of environmental impacts associated with license renewal. Entergy has not identified any new and significant information, and has adopted by reference the License Renewal GEIS analysis for all Category 1 issues.⁷

Category 2 Issues (Plant-Specific)

The NRC also identified 21 issues as “Category 2,” for which license renewal applicants must submit additional, site-specific information.⁸ Summaries of the conclusions⁹ for each subcategory of applicable¹⁰ issues are as follows:

⁷ This includes the nine new or amended Category 1 issues in the revised License Renewal GEIS and table in 10 C.F.R. Part 51. See NL-15-028, Letter from F. Dacimo, Entergy, to NRC, Reply to Request for Additional Information Regarding the License Renewal Application Environmental Review (TAC Nos. MD5411 and MD5412), Attachment at 3-29 (Mar. 10, 2015). See also IPEC SEIS (documenting the NRC’s consideration of these topics; Volume 5 considers the new or amended Category 1 issues).

⁸ The revised License Renewal GEIS and table in 10 C.F.R. Part 51 now identify 17 “Category 2” issues, rather than 21.

⁹ As to the new or amended Category 2 issues in the revised License Renewal GEIS and table in 10 C.F.R. Part 51, Entergy concluded that: the potential environmental impacts would be SMALL for Terrestrial Resources and Groundwater Resources; the NRC’s SMALL Environmental Justice conclusion in the Indian Point License Renewal GEIS remains valid; and cumulative impacts on the listed resource areas would be SMALL, but, if climate change is considered a cumulative impact contributor, then the cumulative impact on Water Resources could range from SMALL to MODERATE. See NL-15-028 at 30-39. Although the NRC has proposed, in a draft supplement to the IPEC SEIS, to conclude that impacts to on-site Groundwater Resources may be MODERATE at present (but acknowledging they may move to SMALL due to natural attenuation), see IPEC SEIS, Draft Vol. 5, Entergy has submitted additional information rebutting the NRC’s conclusion and showing the impacts to on-site groundwater resources are SMALL. See NL-16-021, Letter from F. Dacimo, Entergy, to C. Bladey, NRC, Comments on Second Draft Supplement to Final Supplemental Environmental Impact Statement for Indian Point License Renewal (Mar. 4, 2016); NL-16-044, Letter from F. Dacimo, Entergy, to C. Bladey, NRC, Entergy’s Corrections and Clarifications in Response to Third-Party Comments on the NRC’s Second Draft Supplement to the Final Supplemental Environmental Impact Statement for Indian Point Nuclear Generating Units 2 and 3 License Renewal (Apr. 25, 2016).

Aquatic ecology: Historic and current studies have shown no negative trend in overall aquatic River species populations related to plant operations. The final SPDES permit will ensure impacts remain SMALL.¹¹

Threatened and endangered species: Entergy has no plans to perform major refurbishment activities; therefore, impacts due to refurbishment are not expected. The final SPDES permit will ensure impacts to these species through license renewal would be SMALL.

Human Health: IPEC transmission lines meet the National Electric Safety Code® recommendations for preventing electric shock from induced currents; therefore, the impact related to license renewal would be SMALL.

Socioeconomics: Entergy has no plans for refurbishment activities and does not anticipate increasing its workforce during the period of extended operation. Therefore, any impacts on local transportation, available housing, and local water systems would be SMALL.

Offsite land use: Entergy has no plans to perform major refurbishment activities; therefore, any impacts due to license renewal would be SMALL.

Historic and archeological resources: Entergy has no plans to perform major refurbishment activities; therefore, impacts due to license renewal would be SMALL.

Severe accident mitigation alternatives ("SAMA"):¹² Entergy identified certain potentially cost-beneficial modifications that may have the potential to reduce the impacts of a severe accident. However, none relate to adequately managing the effects of aging during the period of extended operation. Thus, any impacts related to license renewal would be SMALL.

¹⁰ Some Category 2 issues are applicable to plants having features that are not present at IPEC, or apply only to activities that are not proposed as part of the IPEC license renewal.

¹¹ Although the NRC has proposed, in a draft supplement to the IPEC SEIS, to conclude that impacts to Aquatic Ecology would be SMALL to MODERATE, *see* IPEC SEIS, Draft Vol. 5, Entergy has submitted additional information rebutting some of the NRC's species-specific conclusions. *See* NL-16-021; NL-16-044.

¹² On September 12, 2016, the NRC issued requests for additional information to Entergy regarding the IPEC SAMA analyses; Entergy's answers are due by January 10, 2017. The NRC may present its evaluation of this information in a further volume of the IPEC SEIS, if warranted.

Category N/A Issues (Not Categorized)

The NRC identified two issues as “Category N/A,” for which the 10 C.F.R. Part 51 categorization and impact findings do not apply.¹³ Summaries of the conclusions for these two issues are as follows:

Environmental Justice: Entergy has no plans to perform major refurbishment activities; therefore there would be no adverse impacts to minority and low income populations from such activities in the vicinity of IP2 and IP3. Environmental Justice impacts of continued plant operation during the license renewal period would be SMALL.

Electromagnetic Fields: The NRC staff has determined that appropriate Federal health agencies have not reached a consensus on the existence of chronic adverse effects from electromagnetic fields. Therefore, no further evaluation of this issue is required.¹⁴

Findings

1. The NRC has determined that the significance of Category 1 issue impacts is SMALL. Entergy has adopted by reference the NRC findings for Category 1 issues.
2. For applicable Category 2 issues, Entergy has determined that the environmental impacts are SMALL¹⁵ as that term is defined by the NRC. Impact to the coastal zone, therefore, would also be SMALL.
3. To the best of its knowledge, Entergy is in compliance with New York licenses, permits, approvals, and other requirements as they apply to IPEC impacts on the New York coastal zone.
4. IPEC license renewal and continued operation of IPEC facilities, and their effects, are all consistent with the enforceable policies of the New York Coastal Management Program.

State Notification

By this Certification, the State of New York is notified that the IPEC license renewal is consistent with the New York State Coastal Management Program. Attached to this Certification is a completed New York State Department of State Federal Consistency Assessment Form. The

¹³ Environmental justice was not evaluated on a generic basis and must be addressed in a plant specific supplement to the GEIS. Information on the chronic effects of electromagnetic fields was not conclusive at the time the GEIS was prepared.

¹⁴ The revised License Renewal GEIS and table in 10 C.F.R. Part 51 continue to identify the chronic effects of electromagnetic fields as N/A.

¹⁵ As noted above, Entergy has submitted information rebutting the NRC's draft proposed conclusions regarding Groundwater Resources, and some species-specific findings regarding Aquatic Ecology. *See supra* notes 9, 12. Cumulative impacts on the listed resource areas will be SMALL unless climate change is considered a cumulative impact contributor, in which case the cumulative impact could range from SMALL to MODERATE.

State's concurrence, objections, or notification of review status shall be sent to the following contacts:

Entergy's counsel for this matter:

William B. Glew, Jr., Esq.
Entergy Services, Inc.
440 Hamilton Avenue
White Plains, NY 10601
Telephone: (914) 272-3360
E-mail: wglew@entergy.com

Kathryn Sutton
Morgan, Lewis & Bockius LLP
1111 Pennsylvania Avenue, NW
Washington, DC 20004
Telephone: +1 202.739.5738
Email: kathryn.sutton@morganlewis.com

The NRC project manager for this matter:

Mr. William Burton
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001
Telephone: +1 301.415.6332
Email: william.burton@nrc.gov

NEW YORK STATE DEPARTMENT OF STATE
COASTAL MANAGEMENT PROGRAM

Federal Consistency Assessment Form

An applicant, seeking a permit, license, waiver, certification or similar type of approval from a federal agency which is subject to the New York State Coastal Management Program (CMP), shall complete this assessment form for any proposed activity that will occur within and/or directly affect the State's Coastal Area. This form is intended to assist an applicant in certifying that the proposed activity is consistent with New York State's CMP as required by U.S. Department of Commerce regulations (15 CFR 930.57). It should be completed at the time when the federal application is prepared. The Department of State will use the completed form and accompanying information in its review of the applicant's certification of consistency.

A. **APPLICANT** (please print)

Entergy Nuclear Indian Point 2, LLC; Entergy Nuclear Indian Point 3, LLC; and

1. Name: Entergy Nuclear Operations, Inc. (collectively, "Entergy")
2. Address: Indian Point Energy Center, 450 Broadway, Buchanan, NY 10511
3. Telephone: Area Code (914) 254-2055

B. **PROPOSED ACTIVITY:**

1. Brief description of activity:

Entergy is applying to the U.S. Nuclear Regulatory Commission ("NRC") to renew the operating licenses of Indian Point Nuclear Generating Units 2 and 3 (collectively, "IPEC"). No change of existing coastal facilities, activities, or effects is proposed.

2. Purpose of activity:

To continue producing up to 2158 MW of baseload electrical power for the energy consumers of New York State.

3. Location of activity:

<u>Westchester</u>	<u>Buchanan</u>	<u>450 Buchanan</u>
County	City, Town, or Village	Street or Site Description

4. Type of federal permit/license required: Renewal of NRC Operating Licenses

5. Federal application number, if known: Docket Nos. 50-247-LR and 50-286-LR

6. If a state permit/license was issued or is required for the proposed activity, identify the state agency and provide the application or permit number, if known:

A SPDES Permit & Water Quality Certificate from the Dep't of Environmental Conservation. §

C. COASTAL ASSESSMENT Check either "YES" or "NO" for each of these questions. The numbers following each question refer to the policies described in the CMP document (see footnote on page 2) which may be affected by the proposed activity.

1. Will the proposed activity result in any of the following: YES/NO
 - a. Large physical change to a site within the coastal area which will require the preparation of an environmental impact statement? (11, 22, 25, 32, 37, 38, 41, 43) — ☒
 - b. Physical alteration of more than two acres of land along the shoreline, land under water or coastal waters? (2, 11, 12, 20, 28, 35, 44) — ☒
 - c. Revitalization/redevelopment of a deteriorated or underutilized waterfront site? (1) — ☒
 - d. Reduction of existing or potential public access to or along coastal waters? (19, 20) — ☒
 - e. Adverse effect upon the commercial or recreational use of coastal fish resources? (9,10) — ☒
 - f. Siting of a facility essential to the exploration, development and production of energy resources in coastal waters or on the Outer Continental Shelf? (29) — ☒
 - g. Siting of a facility essential to the generation or transmission of energy? (27) — ☒
 - h. Mining, excavation, or dredging activities, or the placement of dredged or fill material in coastal waters? (15, 35) — ☒
 - i. Discharge of toxics, hazardous substances or other pollutants into coastal waters? (8, 15, 35) ☒ —
 - j. Draining of stormwater runoff or sewer overflows into coastal waters? (33) ☒ —
 - k. Transport, storage, treatment, or disposal of solid wastes or hazardous materials? (36, 39) ☒ —
 - l. Adverse effect upon land or water uses within the State's small harbors? (4) — ☒

2. Will the proposed activity affect or be located in, on, or adjacent to any of the following: YES/NO
 - a. State designated freshwater or tidal wetland? (44) ☒ —
 - b. Federally designated flood and/or state designated erosion hazard area? (11, 12, 17) ☒ —
 - c. State designated significant fish and/or wildlife habitat? (7) — ☒
 - d. State designated significant scenic resource or area? (24) ☒ —
 - e. State designated important agricultural lands? (26) — ☒
 - f. Beach, dune or Barrier Island? (12) — ☒
 - g. Major ports of Albany, Buffalo, Ogdensburg, Oswego or New York? (3) — ☒
 - h. State, county, or local park? (19, 20) — ☒
 - i. Historic resource listed on the National or State Register of Historic Places? (23) — ☒

3. Will the proposed activity require any of the following: YES/NO
 - a. Waterfront site? (2, 21, 22) ☒ —
 - b. Provision of new public services or infrastructure in undeveloped or sparsely populated sections of the coastal area? (5) — ☒
 - c. Construction or reconstruction of a flood or erosion control structure? (13, 14, 16) — ☒
 - d. State water quality permit or certification? (30, 38, 40) ☒ §
 - e. State air quality permit or certification? (41, 43) — ☒

4. Will the proposed activity occur within and/or affect an area covered by a State-approved local waterfront revitalization program, or State-approved regional coastal management program? (see policies in program document*) — ☒

‡ No change of existing activities or facilities is proposed.

§ These are provided in the January 13, 2017 NYSDEC Resolution Notice attached to this consistency certification

D. ADDITIONAL STEPS

1. If all of the questions in Section C are answered "NO", then the applicant or agency shall complete Section E and submit the documentation required by Section F.

2. If any of the questions in Section C are answered "YES", then the applicant or agent is advised to consult the CMP, or where appropriate, the local waterfront revitalization program document*. The proposed activity must be analyzed in more detail with respect to the applicable state or local coastal policies. On a separate page(s), the applicant or agent shall: (a) identify, by their policy numbers, which coastal policies are affected by the activity, (b) briefly assess the effects of the activity upon the policy; and, (c) state how the activity is consistent with each policy. Following the completion of this written assessment, the applicant or agency shall complete Section E and submit the documentation required by Section F.

E. CERTIFICATION

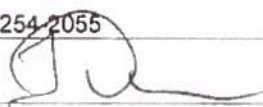
The applicant or agent must certify that the proposed activity is consistent with the State's CMP or the approved local waterfront revitalization program, as appropriate. If this certification cannot be made, the proposed activity shall not be undertaken. If this certification can be made, complete this Section.

"The proposed activity complies with New York State's approved Coastal Management Program, or with the applicable approved local waterfront revitalization program, and will be conducted in a manner consistent with such program."

Applicant/Agent's Name: Fred Dacimo

Address: Indian Point Energy Center, 450 Broadway, Buchanan, NY 10511

Telephone: Area Code (914) 254-2055

Applicant/Agent's Signature: 

Date: 1/31/2017

F. SUBMISSION REQUIREMENTS

1. The applicant or agent shall submit the following documents to the New York State Department of State, Office of Planning and Development, Attn: Consistency Review Unit, One Commerce Plaza-Suite 1010, 99 Washington Avenue, Albany, New York 12231.

- a. Copy of original signed form.
- b. Copy of the completed federal agency application.
- c. Other available information which would support the certification of consistency.

2. The applicant or agent shall also submit a copy of this completed form along with his/her application to the federal agency.

3. If there are any questions regarding the submission of this form, contact the Department of State at (518) 474-6000.

*These state and local documents are available for inspection at the offices of many federal agencies, Department of environmental Conservation and Department of State regional offices, and the appropriate regional and county planning agencies. Local program documents are also available for inspection at the offices of the appropriate local government.

FIGURE 1 – Indian Point Energy Center

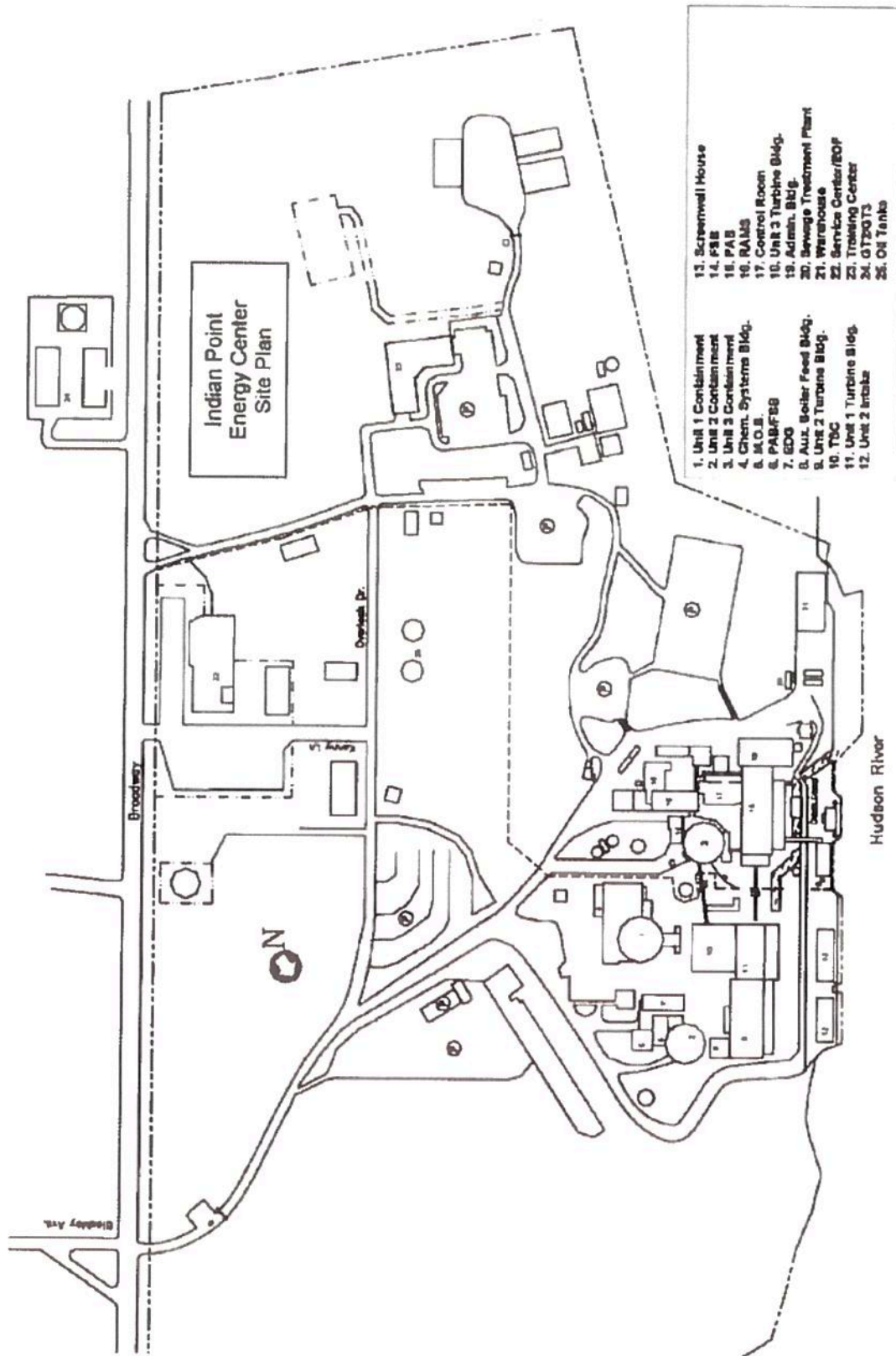


FIGURE 2 – 50 Mile Radius



FIGURE 3 – 6 Mile Radius

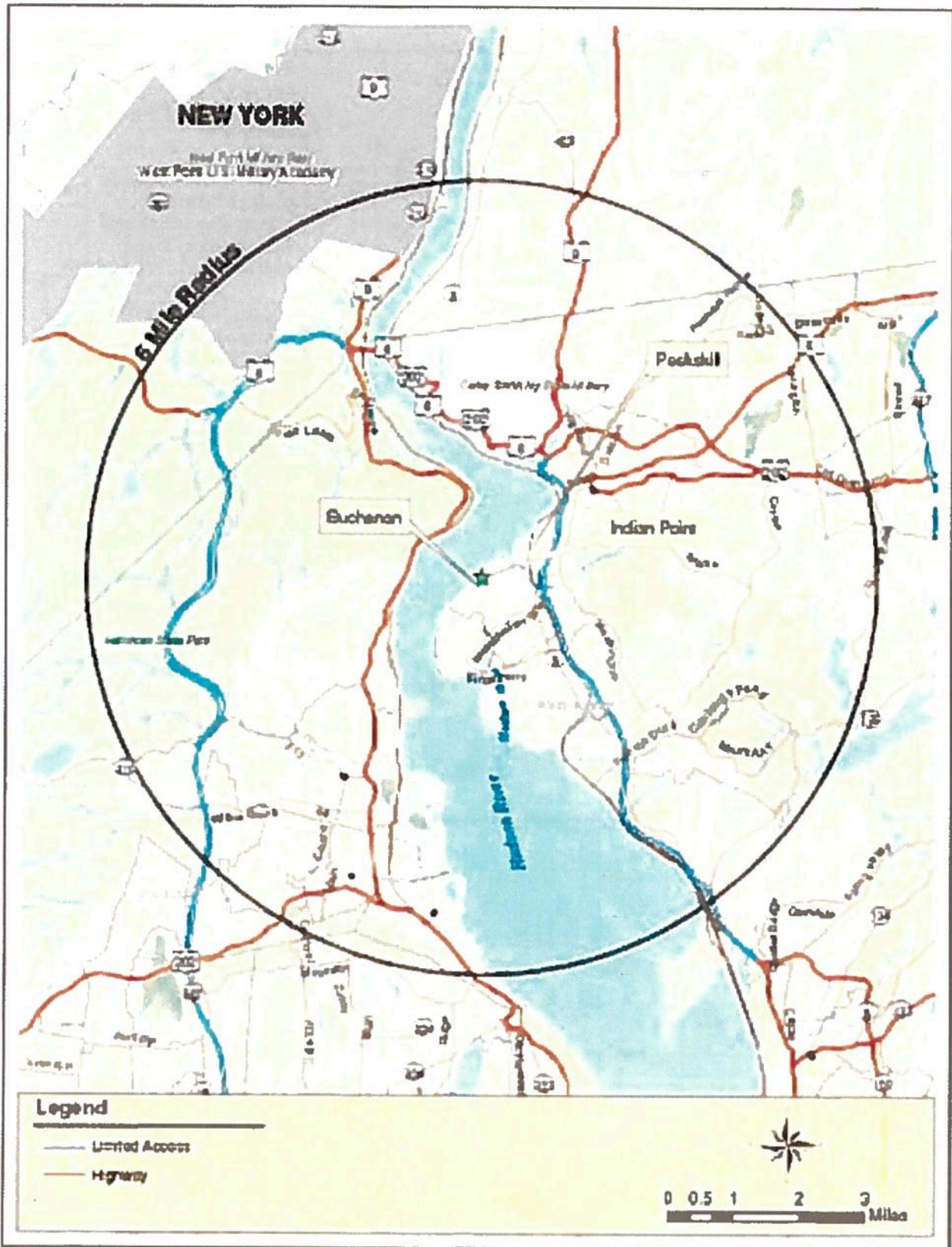


TABLE 1 – Consultations

Agency ¹⁶	Authority	Activity Covered
U.S. Fish and Wildlife Service and National Marine Fisheries Service	Endangered Species Act Section 7 (16 USC 1636)	Requires federal agency issuing a license to consult with USFWS and NMFS.
New York Natural Heritage Program	Endangered Species Act Section 7 (16 USC 1636)	Requires federal agency issuing a license to consult with the fish and wildlife agency at the state level.
New York State Office of Parks, Recreation, and Historic Preservation	National Historic Preservation Act Section 106	Requires federal agency issuing a license to consider cultural impacts and consult with SHPO
New York State Department of State	Federal Coastal Zone Management Act (16 USC 1451 et seq.)	Requires an applicant to provide certification to the federal agency issuing the license and to the designated state agency that license renewal would be consistent with the federally-approved state coastal zone management program.
New York State Department of Environmental Conservation	Clean Water Act Section 401 (33 USC 1341)	Requires New York State certification that discharge would comply with state water quality standards

¹⁶ Consultations with additional non-federal and non-NYS entities are included in the IPEC SEIS, Volume 3, Appendix E.

TABLE 2 – Environmental Permits

Agency	Authority	Description	Number	Expiration Date
USNRC	Atomic Energy Act, 10 CFR 50	IP1 License to Possess	DPR-5	September 28, 2013
USNRC	Atomic Energy Act, 10 CFR 50	IP2 License to Operate	DPR-26	September 28, 2013 ¹
USNRC	Atomic Energy Act, 10 CFR 50	IP3 License to Operate	DPR-64	December 12, 2015 ¹
USDOT	49 CFR 107, Subpart G	IP2 DOT Hazardous Materials Certificate of Registration	060415600002XZ	June 30, 2018
USDOT	49 CFR 107, Subpart G	IP3 DOT Hazardous Materials Certificate of Registration	060415600003XZ	June 30, 2018
TDEC	Tenn. Comp. R. & Regs. 0400-20-10-.32	IP1 & IP2 Radioactive Waste License-for-Delivery	T-NY010-L17	December 31, 2017
TDEC	Tenn. Comp. R. & Regs. 0400-20-10-.32	IP3 Radioactive Waste License-for-Delivery	T-NY-005-L17	December 31, 2017
NYSDEC	6 NYCRR Part 325	IP2 Pesticide Application Business Registration	12696	April 30, 2018
NYSDEC	6 NYCRR Part 325	IP3 Pesticide Application Business Registration	13163	April 30, 2018
NYSDEC	6 NYCRR Parts 704 and 750	IP1, 2, and 3 SPDES Permit	NY 000 4472	October 1, 1992 ²
NYSDEC	6 NYCRR Part 704	Simulator Transformer Vault SPDES Permit	NY 025 0414	March 31, 2018
NYSDEC	6 NYCRR Part 704	Buchanan Gas Turbine SPDES Permit	NY 022 4826	February 28, 2018
NYSDEC	6 NYCRR Parts 200 and 201	IP2 & IP3 Air Permit	3-5522-00011/00026	November 20, 2024
WCDOH	Chapter 873, Article XIII, Section 873.1306.1 of the Laws of Westchester County	IP2 Gas Turbine 1 Air Permit	#00021	December 31, 2018

TABLE 2 – Environmental Permits (Cont.)

Agency	Authority	Description	Number	Expiration Date
WCDOH	Chapter 873, Article XIII, Section 873.1306.1 of the Laws of Westchester County	IP2 Gas Turbine 3 Air Permit	#00023	December 31, 2018
WCDOH	Chapter 873, Article XIII, Section 873.1306.1 of the Laws of Westchester County	IP2 Boiler Permit	52-4493	Not Applicable
WCDOH	Chapter 873, Article XIII, Section 873.1306.1 of the Laws of Westchester County	IP2 Vapor Extractor Air Permit	52-5682	December 31, 2018
WCDOH	Chapter 873, Article XIII, Section 873.1306.1 of the Laws of Westchester County	IP3 Boiler Permit	52-6497	No Expiration Date
WCDOH	Chapter 873, Article XIII, Section 873.1306.1 of the Laws of Westchester County	IP3 Training Center Boiler Permit	52-6498	No Expiration Date
WCDOH	Chapter 873, Article XIII, Section 873.1306.1 of the Laws of Westchester County	IP3 Vapor Extractor Air Permit	-- ⁴	-- ⁴
NYSDEC	6 NYCRR Part 610	IP2 Major Oil Storage Facility	3-2140	-- ³
WCDOH	Westchester County Sanitary Code, Article XXV	IP3 Petroleum Bulk Storage Registration Certificate	3-166367	September 7, 2020
NYSDEC	6 NYCRR Part 372	IP2 Hazardous Waste Generator Identification	NYD991304411	No Expiration Date

TABLE 2 – Environmental Permits (Cont.)

Agency	Authority	Description	Number	Expiration Date
NYSDEC	6 NYCRR Part 372	IP3 Hazardous Waste Generator Identification	NYD085503746	No Expiration Date
NYSDEC	6 NYCRR Part 373	IP2 Hazardous Waste Part 373 Permit	NYD991304411	February 28, 2007 ³
USEPA	40 CFR 264	IP2 Hazardous Solid Waste Amendment Permit	NYD991304411	October 14, 2002 ⁵
USEPA	40 CFR 264	IP3 Hazardous Solid Waste Amendment Permit	NYD085503746	October 17, 2001 ⁵
<p>Notes: Current as of January 2017.</p> <p>(1) Timely renewal application was submitted; having met the requirements in 10 CFR 2.109, Entergy is allowed to continue to operate IP2 and IP3 under the existing licenses until the NRC reaches a final decision on the license renewal request.</p> <p>(2) The expiration date of the new SPDES Permit will be determined in accordance with the January 13, 2017 NYSDEC Resolution Notice attached to this consistency certification.</p> <p>(3) Timely renewal application was submitted; therefore, permit is administratively continued under New York State Administrative Procedures Act.</p> <p>(4) Application has been submitted to WCDOH, but a permit has not yet been issued.</p> <p>(5) Permit has been administratively continued based on conditional mixed waste exemption.</p> <p>CFR = Code of Federal Regulations USDOT = U.S. Department of Transportation TDEC = Tennessee Department of Environment and Conservation USEPA = U.S. Environmental Protection Agency IP1 = Indian Point, Unit 1 IP2 = Indian Point, Unit 2 IP3 = Indian Point, Unit 3</p>				

TABLE 3 – Owners of Properties Abutting IPEC

Tax Assessor Map Parcel Identification Number	Name & Current Address of Owner (as provided in Tax Assessors Database)	Property Address (as Provided in Tax Assessors Database)
Abutters to Entergy's License Renewal -related properties, as identified above		
43.6-1-2	NEW YORK STATE ATOMIC & SPACE AUTHORITY EMPIRE STATE PLAZA-NEW YORK STATE DEA BUILDING 4 ALBANY NY 12223	HUDSON RIVER
43.7-1-1	VILLAGE OF BUCHANAN PARK TATE AVE BUCHANAN NY 10511	BROADWAY
43.10-1-2	Continental Buchanan 350 BROADWAY BUCHANAN NY 10511	350 BROADWAY
43.11-1-1	CREX-DIMAR B LLC C/O GLENN GRIFFEN 1234 LINCOLN TERRACE PEEKSKILL NY 10566	BLEAKLEY AVE & BROADWAY
43.11-2-1	RITORATO SANDRA L 14 COACHLIGHT SQ MONTROSE NY 10548	300 BLEAKLEY AVE
43.11-2-31	CON EDISON CO OF NY TAX DEPARTMENT C/O: STEPHANIE J. MERRIT 4 IRVING PL RM 74 NEW YORK NY 10003	BROADWAY
43.11-2-33	CON EDISON CO OF NY TAX DEPARTMENT C/O: STEPHANIE J. MERRIT 4 IRVING PL RM 74 NEW YORK NY 10003	BROADWAY
43.11-2-34	MANNFOLK MARY M 461 BROADWAY BUCHANAN NY 10511	461 BROADWAY
43.14-2-1	CON EDISON CO OF NY TAX DEPARTMENT C/O: STEPHANIE J. MERRIT A 4 IRVING PL RM 74 NEW YORK NY 10003	375 BROADWAY
43.14-2-2	ST MARYS ROMAN CEMETERY CEMETERY PO BOX 609 VERPLANCK NY 10596	345 BROADWAY

TABLE 3 – Owners of Properties Abutting IPEC (Cont.)

Tax Assessor Map Parcel Identification Number	Name & Current Address of Owner (as provided in Tax Assessors Database)	Property Address (as Provided in Tax Assessors Database)
43.14-3-1	Town of Cortlandt 1 Heady Street Cortlandt Manor, NY 10567	BROADWAY
43.14-3-2	HICKEY JOSEPH W & JULIA 320 BROADWAY PO BOX 701 VERPLANCK NY 10596	320 BROADWAY
43.15-1-13	DE CRENZA JOHN 142 WESTCHESTER AVE BUCHANAN NY 10511	142 WESTCHESTER AVE
43.15-1-14	Mary Quinn 148 WESTCHESTER AVE BUCHANAN NY 10511	148 WESTCHESTER AVE
43.15-1-16	CENTRAL SCHOOL DISTRICT 3 TROLLEY RD MONTROSE NY 10548	WESTCHESTER AVE
43.15-1-21	CENTRAL SCHOOL DISTRICT 3 TROLLEY RD MONTROSE NY 10548	WESTCHESTER AVE
43.18-1-1	MC GUIGAN JOSEPH & ELIZABETH PO BOX 273 303 BROADWAY VERPLANCK NY 10596	303 BROADWAY
43.18-1-2	KEESLER FREDERICK F & MARGARET PO BOX 136 VERPLANCK NY 10596	38 MANOR LN
43.18-1-5.1	COUGHLANE EILEEN PO BOX 746 33 MANOR LN VERPLANCK NY 10596	33 MANOR LN
43.18-2-1	KERTELITS THOMAS J & KELLY H 3 PHEASANTS RUN BUCHANAN NY 10511	3 PHEASANTS RUN
43.18-2-14	SCHNEIDER ROBERT L & RENEE 5 PHEASANTS RUN BUCHANAN NY 10511	5 PHEASANTS RUN

APPENDIX A

ENTERGY ANALYSIS OF IPEC LICENSE RENEWAL CONSISTENCY WITH THE POLICIES OF THE NEW YORK STATE COASTAL MANAGEMENT PROGRAM

POLICY	JUSTIFICATION / CONSISTENCY
DEVELOPMENT	
<p style="text-align: center;"><u>1: Waterfront Redevelopment</u></p> <p>Restore, revitalize, and redevelop deteriorated and underutilized waterfront areas for commercial, industrial, cultural, recreational, and other compatible uses.</p>	<p>Policy 1 is inapplicable. IPEC already exists as a highly productive well maintained waterfront facility within Buchanan. If and to the extent Policy 1 is deemed applicable to License Renewal, IPEC License Renewal is fully consistent with Policy 1.</p>
<p style="text-align: center;"><u>2: Water-dependent Uses</u></p> <p>Facilitate the siting of water dependent uses and facilities on or adjacent to coastal waters.</p>	<p>Policy 2 is inapplicable. License Renewal does not involve the siting of new facilities within the coastal zone. IPEC is an existing water-dependent use located within the coastal zone. If and to the extent Policy 2 is deemed applicable to License Renewal, IPEC License Renewal is fully consistent with Policy 2.</p>
<p style="text-align: center;"><u>3: Development of New York's Major Ports</u></p> <p>Further develop the state's major ports of Albany, Buffalo, New York, Ogdensburg, and Oswego as centers of commerce and industry, and encourage the siting, in these port areas, including those under the jurisdiction of state public authorities, of land use and development which is essential to, or in support of, the waterborne transportation of cargo and people.</p>	<p>Policy 3 is inapplicable to IPEC License Renewal. IPEC is not within and will not affect any of the ports identified in Policy 3.</p>
<p style="text-align: center;"><u>4: Encouraging Development of Small Harbors</u></p> <p>Strengthen the economic base of smaller harbor areas by encouraging the development and enhancement of those traditional uses and activities which have provided such areas with their unique maritime identity.</p>	<p>Policy 4 is not applicable to IPEC License Renewal. Buchanan does not have a "small harbor." License Renewal will not affect any small harbors.</p>
<p style="text-align: center;"><u>5: Development in Areas with Adequate Essential Services and Facilities</u></p> <p>Encourage the location of development in areas where public services and facilities essential to such development are adequate.</p>	<p>IPEC License Renewal will not entail new development, but rather continued generation of reliable, virtually emission-free energy for New York State consumers at an existing industrial center that has adequate infrastructure to support both current and future operations under License Renewal. IPEC License Renewal will not trigger the need for additional infrastructure, such as roads, water or sewer services, schools or other social services, or additional transmission facilities. If and to the extent Policy 5 is deemed applicable to License Renewal, IPEC License Renewal is fully consistent with Policy</p>

APPENDIX A (Cont.)

	5.
<p><u>6: Expedited Permitting for Development Activities</u></p> <p>Expedite permit procedures in order to facilitate the siting of development activities at suitable locations.</p>	<p>Policy 6 is inapplicable to IPEC License Renewal. License Renewal does not entail the siting of new development activity within the coastal zone or state and local permitting for the same.</p>
FISH AND WILDLIFE	
<p><u>7: Significant Coastal Fish and Wildlife Habitats ("SCFWH")</u></p> <p>Significant coastal fish and wildlife habitats will be protected, preserved, and where practical, restored so as to maintain their viability as habitats.</p>	<p>No new construction or activities are proposed as part of IPEC License Renewal that reasonably could be expected to raise Policy 7 concerns, even for nearby SCFWHs. Extensive data collected under the oversight and direction of the New York State Department of Environmental Conservation ("NYSDEC") regarding the effects of IPEC operations on aquatic organisms, populations, and communities over a 35-year period indicate that IPEC cannot reasonably be considered to have caused an adverse impact on habitats within the Hudson River, let alone in a nearby SCFWH,¹⁷ including Hudson Highlands, and no destruction or significant impairment of such habitat can reasonably be expected from continued operations during the License Renewal period. Moreover, adequate assurances of protection exist under applicable New York law, including the State Pollutant Discharge Elimination System ("SPDES") program, pursuant to which NYSDEC assures IPEC's compliance with applicable Federal and State law. Therefore, if and to the extent Policy 7 is deemed applicable, IPEC License Renewal is fully consistent with Policy 7.</p>
<p><u>8: Hazardous Wastes and Pollutants that Bioaccumulate or Cause Lethal or Sub-lethal Effects</u></p> <p>Protect fish and wildlife resources in the coastal area from the introduction of hazardous wastes and other pollutants which bioaccumulate in the food chain or which cause significant sub-lethal or lethal effects on those</p>	<p>IPEC License Renewal will result in the continuation of existing operations. Based on over 40 years of operation, historic discharges by IPEC of pollutants or hazardous substances have not caused sub-lethal or lethal effects on the Hudson River's aquatic biota and have not bioaccumulated in aquatic food chains. IPEC is and will continue to be extensively regulated</p>

¹⁷ Note that the August 15, 2012 revisions to SCFWH definitions in the NYCMP, including Hudson Highlands, are not applicable to the IPEC license renewal application. In its approval of those revisions, NOAA explained that "new and revised enforceable policies shall only be applied to applications for federal authorization filed *after* [NOAA]'s approval." Letter from J. Gore, NOAA, to G. Stafford, NYSDOS at 1 (Nov. 30, 2012) (emphasis added).

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resources.	by NYSDEC. If and to the extent Policy 8 is deemed applicable, IPEC License Renewal is consistent with Policy 8.
<p><u>9: Recreational Use of Fish and Wildlife Resources</u></p> <p>Expand recreational use of fish and wildlife resources in coastal areas by increasing access to existing resources, supplementing existing stocks, and developing new resources.</p>	No new construction or operational changes are proposed as part of IPEC License Renewal. Data from recent creel surveys, data collected through the Hudson River Biological Monitoring Program ("HRBMP") for over 35 years, and analysis of IPEC's operations indicate that IPEC has not impeded existing use or development of the recreational fisheries. Policy 9 is inapplicable to IPEC License Renewal. However, IPEC License Renewal is fully consistent with Policy 9 if and to the extent it is deemed applicable.
<p><u>10: Commercial Fishing</u></p> <p>Further develop commercial finfish, shellfish, and crustacean resources in the coastal area by encouraging the construction of new, or improvement of existing on-shore commercial fishing facilities, increasing marketing of the State's seafood products, maintaining adequate stocks, and expanding aquaculture facilities.</p>	No new construction or operational changes are proposed as part of IPEC License Renewal. Data collected through the HRBMP for over 35 years, and analysis of IPEC's operations, indicate that IPEC has not impeded existing development of commercial fisheries. Therefore, if and to the extent that Policy 10 is deemed applicable, IPEC License Renewal is fully consistent with Policy 10.
FLOODING AND EROSION HAZARDS	
<p><u>11 through 14 –Siting Structures to Minimize Flooding and Erosion</u></p> <p>11: Buildings and other structures will be sited in the coastal area so as to minimize damage to property and the endangering of human lives caused by flooding and erosion.</p> <p>12: Activities or development in the coastal area will be undertaken so as to minimize damage to natural resources and property from flooding and erosion by protecting natural protective features including beaches, dunes, barrier islands, and bluffs.</p> <p>13: The construction or reconstruction of erosion protection structures shall be undertaken only if they have a reasonable probability of controlling erosion for at least thirty years as demonstrated in design and construction standards and/or assured maintenance or replacement programs.</p> <p>14: Activities and development, including the</p>	<p>Policies 11 through 14 are inapplicable to License Renewal. The IPEC site is not in a NYSDEC-designated coastal erosion hazard area, and only those facilities located immediately adjacent to the shoreline are within the 100-year floodplain. The remaining portions of the site are outside the 500-year floodplain. No new erosion control structures are proposed as part of License Renewal. If and to the extent Policies 11 through 14 are deemed applicable, IPEC License Renewal is fully consistent with any relevant aspects of Policies 11 through 14.</p>

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construction or reconstruction of erosion protection structures, shall be undertaken so that there will be no measurable increase in erosion or flooding at the site of such activities or development, or at other locations.	
<p><u>15: Mining, Excavating, or Dredging</u> Mining, excavation or dredging in coastal waters shall not significantly interfere with the natural coastal processes which supply beach materials to land adjacent to such waters and shall be undertaken in a manner which will not cause an increase in erosion of such land.</p>	Policy 15 is inapplicable to License Renewal. No maintenance dredging is proposed as part of IPEC License Renewal. Any future dredging that may be required would be implemented pursuant to applicable federal and/or State permits which would ensure that any dredging would not cause coastal erosion or flooding.
<p><u>16: Public Funding for Erosion Protection</u> Public funds shall only be used for erosion protective structures where necessary to protect human life, and new development which requires a location within or adjacent to an erosion hazard area to be able to function, or existing development; and only where the public benefits outweigh the long term monetary and other costs including the potential for increasing erosion and adverse effects on natural protective features.</p>	IPEC License Renewal would not use public funds for erosion protective structures. Thus, Policy 16 is not applicable to IPEC License Renewal.
<p><u>17: Non-Structural Measures for Flood and Erosion Control</u> Non-structural measures to minimize damage to natural resources and property from flooding and erosion shall be used whenever possible.</p>	Policy 17 is not applicable to License Renewal. IPEC does not and will not require non-structural measures to minimize damage to natural resources and property from flooding and erosion. If and to the extent Policy 17 is deemed applicable, IPEC License Renewal is fully consistent with Policy 17.
GENERAL	
<p><u>18: Safeguarding the State's Vital Economic, Social and Environmental Interests</u> To safeguard the vital economic, social, and environmental interests of the state and of its citizens, proposed major actions in the coastal area must give full consideration to those interests, and to the safeguards which the state has established to protect valuable coastal resource areas.</p>	<p>IPEC License Renewal will protect the welfare of New York's citizenry by preserving and maintaining a virtually emission-free, reliable, lower cost energy resource; important employment opportunities; and financial support to local communities.</p> <p>IPEC License Renewal will safeguard the environment. IPEC License Renewal allows New York State to address air quality standards, to address global warming, and to minimize the precursors to acid rain, while at the same time adequately safeguarding its environmental interests in the coastal zone. If</p>

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	and to the extent that Policy 18 may be deemed applicable, IPEC License Renewal is fully consistent with Policy 18.
PUBLIC ACCESS	
<p style="text-align: center;"><u>19 and 20 – Public Access</u></p> <p>19: Protect, maintain, and increase the level and types of access to water-related recreation resources and facilities.</p> <p>20: Access to the publicly-owned foreshore and to lands immediately adjacent to the foreshore or the water's edge that are publicly owned shall be provided and it shall be provided in a manner compatible with adjoining uses.</p>	<p>Policies 19 and 20 do not apply to IPEC License Renewal. IPEC is an existing facility and no new facilities or operations are proposed that could interfere with public access to publically-owned foreshore or recreational resources.</p> <p>IPEC License Renewal will not reduce access to water-related recreational resources or the publicly-owned foreshore or recreational resources. The only publicly-owned lands near IPEC are Lents Cove Village Park and the Westchester RiverWalk. Lents Cove Village Park already has water access and the purpose of the Westchester RiverWalk is to link existing water-related recreational resources, such as Lents Cove and Steamboat.</p> <p>If and to the extent Policies 19 and 20 are deemed applicable to IPEC, continued operation under IPEC License Renewal is fully consistent with Policies 19 and 20. In fact, the many publicly-owned and publically-funded recreational areas in the vicinity of IPEC have been constructed or improved during the past 15 years with the indirect financial support of IPEC's payments-in-lieu-of-taxes.</p>
RECREATION	
<p style="text-align: center;"><u>21 and 22 – Water-Related Recreational Opportunities</u></p> <p>21: Water-dependent and water-enhanced recreation will be encouraged and facilitated, and will be given priority over non-water-related uses along the coast.</p> <p>22: Development, when located adjacent to the shore, will provide for water-related recreation, whenever such is compatible with reasonably anticipated demand for activities, and is compatible with the primary purpose of the development.</p>	<p>Policies 21 and 22 are inapplicable to License Renewal. If and to the extent deemed applicable, IPEC License Renewal is fully consistent with Policies 21 and 22. IPEC's presence has not and will not impede continued development of water-related recreational opportunities, including boating access to the Hudson River from a variety of marinas in the vicinity of IPEC, and numerous waterfront parks and trails.</p>

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HISTORIC AND SCENIC RESOURCES	
<p><u>23: Man-Made Historic, Archaeological and Cultural Resources</u></p> <p>Protect, enhance, and restore structures, districts, areas, or sites that are of significance in the history, architecture, archaeology, or culture of the state, its communities, or the nation.</p>	<p>License Renewal will not result in any land disturbance. Therefore, Policy 23 is inapplicable to License Renewal. The closest properties listed on the National or New York Registers of Historic Places are more than a mile from the perimeter of the IPEC site. Any future on-site land disturbance at IPEC would adhere to procedures that assure the protection, enhancement, and restoration of the State's historic and culturally significant resources. License Renewal is therefore fully consistent with Policy 23 if and to the extent Policy 23 is deemed applicable.</p>
<p><u>24 and 25 – Scenic, Natural and Manmade Resources</u></p> <p><u>24: Prevent impairment of scenic resources of statewide significance.</u></p> <p><u>25: Protect, restore, or enhance natural and man-made resources which are not identified as being of statewide significance, but which contribute to the overall scenic quality of the coastal area.</u></p>	<p>Policies 24 and 25 are not applicable to existing facilities. IPEC License Renewal includes no change of the aesthetic environment that would impair or lead to the degradation of scenic resources. If and to the extent Policies 24 and 25 are deemed applicable, IPEC License Renewal is fully consistent with Policies 24 and 25.</p>
AGRICULTURAL LANDS	
<p><u>26: Agricultural Lands</u></p> <p>Conserve and protect agricultural lands in the state's coastal area.</p>	<p>Policy 26 does not apply to IPEC License Renewal. IPEC is and will remain an industrial site. The New York State Department of State has decided to exclude highly developed areas of the state, such as Westchester County, from its effort to map important farmlands in the coastal area of New York State.</p>
ENERGY AND ICE MANAGEMENT	
<p><u>27: Siting and Construction of Major Energy Facilities</u></p> <p>Encourage energy conservation and the use of alternative sources such as solar and wind power in order to assist in meeting the energy needs of the State.</p>	<p>Policy 27 does not apply to IPEC License Renewal since IPEC License Renewal does not involve the siting or construction of a major new energy facility; IPEC is already sited and constructed. IPEC supplies energy in an area of high demand and at a location on the transmission grid that relies on IPEC to supply the high voltage necessary to maintain grid stability. The production of electricity at IPEC does not result in emissions of criteria air pollutants, GHG, or acid rain precursors. IPEC requires a shorefront location to withdraw the necessary water for cooling purposes and to</p>

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	receive barge shipments of large equipment necessary for the production and transmission of electricity. If and to the extent Policy 27 is deemed applicable, IPEC License Renewal is fully consistent with this policy because continued operation of IPEC can serve as a reliable energy bridge to alternative energy sources.
<p><u>28: Ice Management</u> Ice management practices shall not interfere with the production of hydroelectric power, damage significant fish and wildlife and their habitats, or increase shoreline erosion or flooding.</p>	Policy 28 is inapplicable to License Renewal. IPEC has not experienced any issues associated with blockage of the intakes due to ice. The use of ice curtain walls will not interfere with the production of hydroelectric power, damage significant fish and wildlife and their habitats, or increase shoreline erosion or flooding. If and to the extent Policy 28 is deemed applicable, IPEC License Renewal is fully consistent with Policy 28.
<p><u>29: Development of New, Indigenous Energy Resources</u> Encourage the development of energy resources on the outer continental shelf, in Lake Erie and in other water bodies, and ensure the environmental safety of such activities.</p>	IPEC already exists next to the Hudson River. Policy 29 applies to newly-proposed energy facilities within coastal waters and is not applicable to IPEC License Renewal.
WATER AND AIR RESOURCES	
<p><u>30: Industrial Discharge of Pollutants</u> Municipal, industrial, and commercial discharge of pollutants, including but not limited to, toxic and hazardous substances, into coastal waters will conform to state and national water quality standards.</p>	No change of existing operations is proposed as part of IPEC License Renewal. IPEC's discharges are subject to the limits set by its SPDES permit; those limits are established to ensure conformance with water quality standards ("WQS"). If and to the extent Policy 30 is deemed applicable, IPEC License Renewal is fully consistent with Policy 30.
<p><u>31: Triennial Reviews of WQS</u> State coastal area policies and management objectives of approved local waterfront revitalization programs will be considered while reviewing coastal water classifications and while modifying water quality standards; however those waters already overburdened with contaminants will be recognized as being a development constraint.</p>	Policy 31 applies to NYSDEC's triennial review of WQS and, therefore, is not applicable to IPEC License Renewal. Policy 31 relates to NYSDEC's obligations to comply with the federal Clean Water Act ("CWA") and to consider Local Waterfront Revitalization Programs and the New York State Coastal Management Program in doing so.
<p><u>32: Innovative Sanitary Waste Systems</u> Encourage the use of alternative or innovative sanitary waste systems in small communities</p>	Policy 32 is directed toward municipalities and/or sewer districts. Entergy is not responsible for regulating the treatment and

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where the costs of conventional facilities are unreasonably high, given the size of the existing tax base of these communities.	disposal of sanitary wastes within Buchanan. Therefore, Policy 32 does not apply to IPEC License Renewal.
<p><u>33 and 37 – Best Management Practices (“BMP”) for Stormwater, Combined Sewer Overflows, and Non-Point Source Discharges</u></p> <p>33: Best management practices will be used to ensure the control of stormwater runoff and combined sewer overflows draining into coastal waters.</p> <p>37: Best management practices will be utilized to minimize the non-point discharge of excess nutrients, organics, and eroded soils into coastal waters.</p>	No significant change of existing operations or BMPs is proposed as part of IPEC License Renewal. IPEC operates subject to applicable regulatory requirements pertaining to stormwater runoff and non-point discharge of nutrients, organics, and eroded soils into coastal waters. If and to the extent Policies 33 and 37 are deemed applicable, IPEC License Renewal is fully consistent with Policy 33 and Policy 37.
<p><u>34: Vessel Wastes</u></p> <p>Discharge of waste materials into coastal waters from vessels subject to state jurisdictions will be limited so as to protect significant fish and wildlife habitats, recreational areas and water supply areas.</p>	No change in operations is proposed as part of IPEC License Renewal. Entergy does not operate vessels at IPEC that discharge waste materials into coastal waters. Therefore, Policy 34 is not applicable to IPEC License Renewal.
<p><u>35: Dredge and Fill Activities</u></p> <p>Dredging and filling coastal waters and disposal of dredged material will be undertaken in a manner that meets existing state permit requirements, and protects significant fish and wildlife habitats, scenic resources, natural protective features, important agricultural lands and wetlands.</p>	No dredging or filling is proposed as part of License Renewal. If needed, any additional dredging and filling during License Renewal would be undertaken pursuant to federal and State permits that impose the requisite conditions to ensure consistency with Policy 35 and its objectives. Therefore, if and to the extent deemed applicable, IPEC License Renewal is fully consistent with Policy 35.
<p><u>36: Spill Response and Hazardous Material Management</u></p> <p>Activities related to the shipment and storage of petroleum and other hazardous materials will be conducted in a manner that will prevent or at least minimize spills into coastal waters; all practicable efforts will be undertaken to expedite the cleanup of such discharges; and restitution for damages will be required when these spills occur.</p>	No change of existing activities at IPEC is proposed as part of License Renewal. The transportation and storage of petroleum products and hazardous materials on-site at IPEC are subject to comprehensive federal and State regulations. These laws and regulations were in the event a spill occurs, to mitigate its effects in a timely and appropriate manner. If and to the extent Policy 36 is deemed applicable, IPEC License Renewal is fully consistent with Policy 36.
<p><u>38: Protection of Surface Water and Groundwater Supplies</u></p> <p>The quality and quantity of surface water and groundwater supplies will be conserved and protected particularly where such waters</p>	No change of IPEC’s operations is proposed as part of License Renewal. The Hudson River and groundwater in the vicinity of IPEC are not used as a source of drinking water. IPEC’s discharges to surface water are subject to

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constitute the primary or sole source of water supply.	applicable State and federal requirements which require compliance with WQS. Therefore, if and to the extent Policy 38 is deemed applicable, IPEC License Renewal is fully consistent with Policy 38.
<p><u>39: Solid Wastes and Hazardous Wastes</u> The transport, storage, treatment, and disposal of solid wastes, particularly hazardous wastes, within coastal areas will be conducted in such a manner so as to protect groundwater and surface water supplies, significant fish and wildlife habitats, recreation areas, important agricultural land, and scenic resources.</p>	No change in operations is proposed as part of IPEC License Renewal. Entergy's solid waste management practices associated with the generation, transportation and storage of solid wastes, including hazardous and mixed wastes, are being and will continue to be conducted pursuant to applicable federal and State regulatory requirements, thereby ensuring the protection of the State's resources, including ground and surface waters, and fish and wildlife habitat. Therefore, if and to the extent Policy 39 is deemed applicable, IPEC License Renewal is fully consistent with Policy 39.
<p><u>40: Steam Electric Generating Effluents in Conformance with WQS</u> Effluent discharged from major steam electric generating and industrial facilities into coastal waters will not be unduly injurious to fish and wildlife and shall conform to state water quality standards.</p>	No change of IPEC's operations is proposed as part of License Renewal. Effluent discharges from IPEC are governed by a SPDES permit issued by NYSDEC which requires that discharges satisfy applicable water quality standards. If and to the extent Policy 40 is deemed applicable to License Renewal, IPEC License Renewal is fully consistent with Policy 40.
<p><u>41: Achieving National Ambient Air Quality Standards ("NAAQS") and State Ambient Air Quality Standards ("SAAQS")</u> Land use or development in the coastal area will not cause national or state air quality standards to be violated.</p>	IPEC's virtually emission-free energy production plays an important role in attaining NAAQS and SAAQS and thereby protects the public health and environment. Without IPEC, other forms of electric generation would increase, which would result in increased emissions. Therefore, IPEC License Renewal substantially advances the goals of Policy 41. If and to the extent that Policy 41 is deemed applicable, IPEC License Renewal is fully consistent with Policy 41.
<p><u>42: Reclassifying Prevention of Significant Deterioration ("PSD") Designations</u> Coastal management policies will be considered if the state reclassifies land areas pursuant to the prevention of significant deterioration regulations of the federal Clean Air Act.</p>	Policy 42 is directed at NYSDEC rulemakings regarding air attainment classifications. IPEC is not a "major source" and IPEC License Renewal will not entail a "major modification at a major source" and does not trigger PSD requirements. Therefore, Policy 42 is inapplicable to License Renewal.

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<p style="text-align: center;"><u>43: Acid Rain</u></p> <p>Land use or development in the coastal areas must not cause the generation of significant amounts of acid rain precursors: nitrates and sulfates.</p>	<p>IPEC plays a key role in meeting the power generation and energy needs of the State without contributing to the production of acid rain precursors. Without IPEC, it would be more difficult for New York to fulfill its commitment under Policy 43 to limit the causes of acid rain. If and to the extent that Policy 43 is deemed applicable, IPEC License Renewal is fully consistent with Policy 43.</p>
WETLANDS	
<p style="text-align: center;"><u>44: Tidal and Freshwater Wetlands</u></p> <p>Preserve and protect tidal and freshwater wetlands and preserve the benefits derived from these areas.</p>	<p>Policy 44 is inapplicable to License Renewal. No filling or alteration of wetlands is proposed as part of IPEC License Renewal. Operation of IPEC does not adversely affect NYSDEC-mapped tidal and freshwater wetlands or submerged aquatic vegetation beds within the Hudson River. No change to existing operations is proposed as part of IPEC License Renewal. Therefore, if and to the extent Policy 44 is deemed applicable, IPEC License Renewal is fully consistent with Policy 44.</p>

Attachment 4

NL-17-020

**Entergy Updated IPEC RVI Aging Management Plan (NL-17-020)
dated February 6, 2017**



Entergy Nuclear Northeast
Indian Point Energy Center
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Anthony J Vitale
Site Vice President

NL-17-020

February 6, 2017

U.S. Nuclear Regulatory Commission
Document Control Desk
11545 Rockville Pike, TWFN-2 F1
Rockville, MD 20852-2738

SUBJECT: License Renewal Application – Revisions to Reactor Vessel Internals
Aging Management Program and Inspection Plan
Indian Point Nuclear Generating Unit Nos. 2 and 3
Docket Nos. 50-247 and 50-286 (License Nos. DPR-26 and DPR-64)

REFERENCES:

- 1) Entergy Letter NL-07-039, "Indian Point Energy Center License Renewal Application" (Apr. 23, 2007) (ML071210507)
- 2) Entergy Letter NL-10-063, "Amendment 9 to License Renewal Application (LRA) – Reactor Vessel Internals Program" (July 14, 2010) (ML102010102)
- 3) Entergy Letter NL-11-107, "License Renewal Application – Completion of Commitment # 30 Regarding the Reactor Vessel Internals Inspection Plan" (Sept. 28, 2011) (ML11280A121)
- 4) Electric Power Research Institute, MRP-227-A, "Materials Reliability Program: Pressurized Water Reactor Internals Inspection and Evaluation Guidelines" (Dec. 2011) (ML120170453)
- 5) Entergy Letter NL-12-037, "License Renewal Application – Revised Reactor Vessel Internals Program and Inspection Plan Compliant with MRP-227-A" (Feb. 17, 2012) (ML12060A312)
- 6) NUREG-1930, Supp. 2, "Safety Evaluation Report Related to the License Renewal of Indian Point Nuclear Generating Unit Nos. 2 and 3" (Nov. 2014) (ML15188A383)
- 7) Entergy Letter NL-16-053, "License Event Report # 2016-004-00, Unanalyzed Condition Due to Degraded Reactor Baffle-Former Bolts" (May 31, 2016) (ML16159A219)

Dear Sir or Madam:

By letter dated April 23, 2007 (Reference 1), Entergy Nuclear Operations, Inc. (Entergy) submitted an application pursuant to 10 CFR Part 54 and 10 CFR Part 51, to renew the operating licenses for Indian Point Nuclear Generating Unit Nos. 2 and 3 (IP2 and IP3), for review by the U.S. Nuclear Regulatory Commission (NRC). Entergy provided a description of the Indian Point Energy Center (IPEC) Reactor Vessel Internals (RVI) aging management program (AMP) in Amendment 9 to the License Renewal Application (LRA) (Reference 2).

Consistent with License Renewal Commitment 30, Entergy submitted its Reactor Vessel Internals (RVI) Inspection Plan on September 28, 2011, two years prior to entering the period of extended operation (PEO) for IP2 (Reference 3). Although only IP2 was within two years of entering the PEO at that time, the RVI Inspection Plan covered both units.

Entergy submitted the RVI Inspection Plan based on the new aging management program (AMP) in NUREG-1801, Revision 2. After the Electric Power Research Institute (EPRI) issued the NRC-approved generic industry aging management guidance for RVIs in MRP-227-A (Reference 4), Entergy submitted a revised RVI AMP and Inspection Plan for both IP2 and IP3 based on MRP-227-A on February 17, 2012 (Reference 5). Following Entergy's submission of additional technical information in response to Staff requests for additional information, the Staff approved Entergy's revised RVI AMP and Inspection Plan, as documented in Safety Evaluation Report Supplement 2 issued in November 2014 (Reference 6).

During the Spring 2016 IP2 refueling outage (2R22), Entergy performed ultrasonic (UT) examinations and/or visual inspections of all 832 baffle-former bolts (bolts) in accordance with the MRP-227-A guidelines. As a result of the inspection findings, Entergy replaced all 227 bolts with actual and assumed indications. It also replaced an additional 51 bolts to reduce the probability of future failures as well as minimize the probability of clusters of failed bolts, resulting in a total of 278 replaced bolts. See Reference 7.

As a result of the IP2 inspection findings and other industry operating experience (OE) indicating a significant number of failed bolts at other similarly-designed PWR plants, Entergy recently revised portions of the Indian Point Energy Center (IPEC) PWR Vessel Internals Program (SEP-PVI-IPEC-001, Rev. 1). The revisions included the addition of new Section 6.2 to incorporate discussion of the recent Unit 2 OE described above, including Entergy's related decision to arrange for offsite fractographic examination of eight baffle-former bolts removed from the IP2 baffle structure during the Spring 2016 outage. The revisions also reflect changes to Entergy's schedule and plans for conducting future UT and visual inspections as well as replacement of baffle-former bolts at IP2 and IP3.

The purpose of this submittal is to make corresponding revisions to the IPEC RVI AMP and IPEC Reactor Vessel Internals Plan, as submitted to the NRC on February 17, 2012. The revisions include: (1) an updated discussion of IPEC and industry operating experience involving baffle-former bolts in Section B.1.42 (Reactor Vessel Internals Program) of the LRA; (2) the addition of new Section 6.0 (Operation Experience and Additional Considerations), which coincides with current Section 6.0 of SEP-PVI-IPEC-001, to the IPEC Reactor Vessel Internals Plan; and (3) a related revision to Table 5-2 (Primary Components at IPEC Units 2 and 3) of the IPEC Reactor Vessel Internals Plan to cross-reference newly-added Section 6.2 (Spring 2016 Operating Experience) and the IPEC-specific baffle-former bolt examination/inspection plans discussed therein.

There are no new commitments identified in this submittal. If you have any questions, or require additional information, please contact Mr. Robert Walpole at 914-254-6710.

I declare under penalty of perjury that the foregoing is true and correct. Executed on
2/6, 2017.

Sincerely,

A handwritten signature in black ink, appearing to read "Andrew J. Vito". The signature is fluid and cursive, with the first name "Andrew" and last name "Vito" being the most prominent parts.

AJV/rl

Attachments: 1. Indian Point Energy Center Revised Reactor Vessel Internals Program
 2. Indian Point Energy Center Revised Reactor Vessel Internals Inspection
 Plan

cc: Mr. Daniel H. Dorman, Regional Administrator, NRC Region I
 Mr. Sherwin E. Turk, NRC Office of General Counsel, Special Counsel
 Mr. William Burton, NRC Senior Project Manager, Division of License Renewal
 Mr. Douglas Pickett, NRR Senior Project Manager
 Ms. Bridget Frymire, New York State Department of Public Service
 Mr. John B. Rhodes, President and CEO NYSERDA
 NRC Resident Inspector's Office

ATTACHMENT 1 TO NL-17-020

INDIAN POINT ENERGY CENTER

REVISED REACTOR VESSEL INTERNALS PROGRAM

Additions Underlined
Deletions Lined Out

ENTERGY NUCLEAR OPERATIONS, INC.
INDIAN POINT NUCLEAR GENERATING UNIT NOS. 2 AND 3
DOCKET NOS. 50-247 AND 50-286

A.2.1.41 Reactor Vessel Internals Aging Management Activities

The Reactor Vessel Internals (RVI) Program is a new plant specific program to manage aging effects of reactor vessel internals using the guidance from the Electric Power Research Institute (EPRI) Materials Reliability Program (MRP). The MRP inspection and evaluation (I&E) guidelines for managing the effects of aging on pressurized water reactor vessel internals are presented in MRP-227-A, "Materials Reliability Program: Pressurized Water Reactor Internals Inspection and Evaluation Guidelines." The MRP also developed inspection requirements specific to the inspection methods delineated in MRP-227-A, as well as requirements for qualification of the nondestructive examination (NDE) systems used to perform those inspections. These inspection requirements are presented in MRP-228, "Materials Reliability Program: Inspection Standard for PWR Internals."

MRP-227-A and MRP-228 provide the basis of the IPEC Reactor Vessel Internals (RVI) Program. The RVI Program will monitor the effects of aging degradation mechanisms on the intended functions of the internals through periodic and conditional examinations. The RVI Program will detect and evaluate cracking, loss of material, reduction of fracture toughness, loss of preload and dimensional changes of vessel internals components in accordance with MRP-227-A inspection requirements and evaluation acceptance criteria.

The IPEC RVI Program will be implemented and maintained in accordance with the guidance in NEI 03-08 [Addenda], Addendum A, "RCS Materials Degradation Management Program Guidelines." Any deviations from mandatory, needed, or good practice implementation requirements established in MRP-227-A or MRP-228, will be resolved in accordance with the NEI 03-08 implementation protocol. The RVI Program will be implemented prior to the period of extended operation.

A.3.1.41 Reactor Vessel Internals Aging Management Activities

The Reactor Vessel Internals (RVI) Program is a new plant specific program to manage aging effects of reactor vessel internals using the guidance from the Electric Power Research Institute (EPRI) Materials Reliability Program (MRP). The MRP inspection and evaluation (I&E) guidelines for managing the effects of aging on pressurized water reactor vessel internals are presented in MRP-227-A, "Materials Reliability Program: Pressurized Water Reactor Internals Inspection and Evaluation Guidelines." The MRP also developed inspection requirements specific to the inspection methods delineated in MRP-227-A, as well as requirements for qualification of the nondestructive examination (NDE) systems used to perform those inspections. These inspection requirements are presented in MRP-228, "Materials Reliability Program: Inspection Standard for PWR Internals."

MRP-227-A and MRP-228 provide the basis of the IPEC Reactor Vessel Internals (RVI) Program. The RVI Program will monitor the effects of aging degradation mechanisms on the intended function of the internals through periodic and conditional examinations. The RVI Program will detect and evaluate cracking, loss of material, reduction of fracture toughness, loss of preload and dimensional changes of vessel internals components in accordance with MRP-227-A inspection requirements and evaluation acceptance criteria.

The IPEC RVI Program will be implemented and maintained in accordance with the guidance in NEI 03-08 [Addenda], Addendum A, "RCS Materials Degradation Management Program Guidelines." Any deviations from mandatory, needed, or good practice implementation requirements established in MRP-227-A or MRP-228, will be resolved in accordance with the NEI 03-08 implementation protocol. The RVI Program will be implemented prior to the period of extended operation.

B.1.42 Reactor Vessel Internals Program

Program Description

The Reactor Vessel Internals (RVI) Program is a new plant-specific program. Revision 1 of NUREG-1801 (Reference B.2-1) includes no aging management program description for PWR reactor vessel internals. NUREG-1801, Section XI.M16, PWR Vessel Internals, instead defers to the guidance provided in Chapter IV line items as appropriate. The Chapter IV line item guidance recommends actions to:

“... (1) participate in the industry programs for investigating and managing aging effects on reactor internals; (2) evaluate and implement the results of the industry programs as applicable to the reactor internals; and (3) upon completion of these programs, but not less than 24 months before entering the period of extended operation, submit an inspection plan for reactor internals to the NRC for review and approval.”

The industry programs for investigating and managing aging effects on reactor internals are part of the Electric Power Research Institute (EPRI) Materials Reliability Program (MRP). The MRP developed inspection and evaluation (I&E) guidelines for managing the effects of aging on pressurized water reactor vessel internals. These guidelines, as reviewed and accepted by the NRC (Reference B.2-2), are presented in MRP-227-A, “Materials Reliability Program: Pressurized Water Reactor Internals Inspection and Evaluation Guidelines.” The I&E guidelines include:

- summary descriptions of PWR internals and functions;
- summary of the categorization and aging management strategy development of potentially susceptible locations, based on the safety and economic consequences of aging degradation;
- direction for methods, extent, and frequency of one-time, periodic, and conditional examinations and other aging management methodologies;
- acceptance criteria for the one-time, periodic, and conditional examinations and other aging management methodologies; and
- methods for evaluation of conditions that fail to meet the examination acceptance criteria.

The MRP also developed inspection procedure requirements specific to the inspection methods delineated in MRP-227-A, as well as requirements for qualification of the nondestructive examination (NDE) systems used to perform those inspections. These inspection procedure requirements are presented in MRP-228, “Materials Reliability Program: Inspection Standard for PWR Internals.”

Revision 2 of NUREG-1801 (Reference B.2-3) contains a new aging management program (XI.M16A) addressing PWR RVIs. This new aging management program relies on the implementation of EPRI report MRP-227, and applies the guidance in that document. In 2013, the NRC Staff issued Final License Renewal Interim Staff Guidance LR-ISG-2011-04, Updated Aging Management Criteria for Reactor Vessel Internal Components for Pressurized Water Reactors (Reference B.2-4), which revised the recommendations in NUREG-1801, Revision 2

and the NRC Staff's acceptance criteria and review procedures to ensure consistency with MRP-227-A and provide a framework to adequately address age-related degradation and aging management of RVI components during the period of extended operation.

MRP-227-A and MRP-228 provide the basis of the IPEC Reactor Vessel Internals (RVI) Program. Revisions to MRP-227-A and MRP-228 will be incorporated into the IPEC RVI Program.

The RVI Program will monitor the effects of aging on the intended function of the reactor vessel internals through periodic and conditional examinations. The RVI Program will detect and evaluate cracking, loss of material, reduction of fracture toughness, loss of preload and dimensional changes of vessel internals components in accordance with MRP-227-A inspection recommendations and evaluation acceptance criteria.

IPEC will implement and maintain the RVI Program in accordance with the guidance in NEI 03-08 [Addenda], Addendum A, "RCS Materials Degradation Management Program Guidelines." Any deviations from mandatory, needed, or good practice implementation activities established in MRP-227-A or MRP-228, will be managed in accordance with the NEI 03-08 implementation protocol.

The Reactor Vessel Internals Program is implemented through the Indian Point Energy Center Reactor Vessel Internals Inspection Plan (Reference B.2-53). The inspection plan provides additional details, including:

- Identification of items for inspection,
- Specification of the type of examination appropriate for each degradation mechanism,
- Specification of the required level of examination qualification,
- Schedule of initial inspection, schedule and frequency of subsequent inspections,
- Criteria for sampling and coverage,
- Criteria for expansion of scope if unacceptable indications are found,
- Inspection acceptance criteria,
- Methods for evaluating examination results not meeting the acceptance criteria,
- Provisions for updating the program based on industry-wide results, and
- Contingency measures to repair, replace or mitigate unacceptable examination results.

The Indian Point Energy Center Reactor Vessel Internals Inspection Plan also includes responses to applicable license renewal applicant action items identified in the NRC's safety evaluation of MRP-227 (incorporated in MRP-227-A).

Evaluation

1. Scope of Program

MRP-227-A guidelines are applicable to reactor internal structural components. The scope does not include consumable items such as fuel assemblies and reactivity control

assemblies which are periodically replaced based on neutron flux exposure. The scope does not include welded attachments to the reactor vessel which are considered part of the vessel, or nuclear instrumentation (flux thimble tubes) which forms part of the reactor coolant pressure boundary. Other programs manage the effects of aging on these components.

MRP-227-A separates PWR internals components into four groups depending on (1) their susceptibility to and tolerance of aging effects, and (2) the existence of programs that manage the effects of aging. These groupings include:

- Primary – those internals components that are highly susceptible to the effects of at least one aging mechanism (identified in Table 4-3 of MRP-227-A);
- Expansion – those internals components that are highly or moderately susceptible to the effects of at least one aging mechanism, but for which functionality assessment has shown a degree of tolerance to those effects (identified in Table 4-6 of MRP-227-A);
- Existing Programs – those internals components that are susceptible to the effects of at least one aging mechanism and for which generic and plant-specific existing AMP elements are capable of managing those effects (identified in Table 4-9 of MRP-227-A); and
- No Additional Measures – those internals components for which the effects of aging mechanisms are below the MRP-227-A screening criteria (internals components not included in Tables 4-3, 4-6 or 4-9 of MRP-227-A).

The categorization of internals components for Westinghouse PWRs, as presented in MRP-227-A, applies to IPEC Unit 2 and Unit 3 vessel internals. The component inspections identified in MRP-227-A, Tables 4-3 and 4-6 for primary and expansion group components, define the scope of the IPEC RVI Program inspections. Those components subject to aging management by existing programs, as delineated in MRP-227-A, Table 4-9, are included in the scope of those programs, and are not part of the RVI Program inspections. Components that are not included in Tables 4-3, 4-6 or 4-9 are considered to be within the scope of the program, but require no specific inspections.

2. Preventive Actions

The Reactor Vessel Internals Program is a condition monitoring program that does not include preventive actions. However, primary water chemistry is maintained in accordance with EPRI guidelines by the Water Chemistry Control – Primary and Secondary Program, which minimizes the potential for loss of material, stress corrosion cracking (SCC), primary water stress corrosion cracking (PWSCC), and irradiation assisted stress corrosion cracking (IASCC).

Plant operations also influence aging of the vessel internals. The general assumptions about plant operations used in the development of the MRP-227-A guidelines are applicable to the IPEC units. Both units are base loaded and both implemented low leakage core loading patterns within the first 30 years of operation. IPEC has implemented no design changes to reactor vessel internals beyond those identified in general industry guidance or recommended by Westinghouse.

3. Parameters Monitored or Inspected

The RVI Program will monitor the effects of aging on the intended function of the internals through periodic and conditional examinations and other aging management methods, as required. As described in MRP-227-A, the program contains elements that will monitor and inspect for the parameters that indicate the progress of each of these effects. The component inspections identified in MRP-227-A, Tables 4-3 and 4-6 for primary and expansion group components respectively, set forth the parameters monitored by the IPEC RVI Program inspections.

The program will use NDE techniques to detect loss of material through wear, identify changes in dimension due to void swelling and irradiation growth, distortion, or deflection, and locate cracks induced by SCC, PWSCC, IASCC, or fatigue/cyclical loading. Loss of preload, caused by thermal and irradiation-enhanced stress relaxation or creep, is indirectly monitored by inspecting for gross surface conditions that may be indicative of loosening in applicable bolted, fastened, keyed, or pinned connections. The reduction of fracture toughness, induced by either thermal aging or neutron irradiation embrittlement, is indirectly monitored by using visual or volumetric examination techniques to monitor for cracking in the components and by applying applicable reduced fracture toughness properties in flaw evaluations where warranted.

Visual examinations (VT-3) will be used to detect wear. Visual examinations (VT-3) will also detect distortion or cracking through indications such as gaps or displacement along component joints and broken or damaged bolt locking systems. Direct measurements of spring height will be used to detect distortion of the internals hold down spring. Visual examinations (EVT-1) will be used to detect broken components and crack-like surface flaws of components and welds. Volumetric (ultrasonic) examinations will be used to locate cracking of bolting.

4. Detection of Aging Effects

The RVI Program will detect cracking, loss of material, reduction of fracture toughness, loss of preload and dimensional changes (distortion) of vessel internals components in accordance with the specific provisions of MRP-227-A. The NDE systems (i.e., the combinations of equipment, procedure, and personnel) used to detect these aging effects will be qualified in accordance with MRP-228. The RVI Program will conduct inspections of primary group components as delineated in MRP-227-A, Table 4-3. Indications from EVT-1 or UT inspections may result in additional inspections of expansion group components, as determined by expansion criteria delineated in MRP-227-A, Table 5-3. The relationships between primary group component inspection findings and additional inspections of expansion group components are as follows described in MRP-227A, Table 4-6.

5. Monitoring and Trending

The RVI Program uses the inspection guidelines for PWR internals in MRP-227-A. Inspections in accordance with these guidelines will provide timely detection of aging effects. In addition to the inspections of primary group components, expansion group components have been defined should the scope of examination and re-examination require

expansion beyond the primary group. Records of inspection results are maintained allowing for comparison with subsequent inspection results.

In accordance with MRP-227-A, IPEC will provide a summary report of all inspections and monitoring, items requiring evaluation, and new repairs to the MRP Program Manager. The IPEC-specific results will be incorporated into an overall industry report that will track industry progress and will aid in evaluation of potentially significant issues, identification of fleet trends, and determination of any needed revisions to the MRP-227-A guidelines.

6. Acceptance Criteria

The RVI Program acceptance criteria are from provided in Section 5 of MRP-227-A. Table 5-3 and Sections 5.1 through 5.3 of MRP-227-A provide the acceptance criteria for inspections of the IPEC primary and expansion group components. The criteria for expanding the examinations from the primary group components to include the expansion group components are also delineated in MRP-227-A, Table 5-3. The examination acceptance criteria include: (i) specific, descriptive relevant conditions for the visual (VT-3) examinations; (ii) requirements for recording and dispositioning surface breaking indications that are detected and sized for length by the visual (EVT-1) examinations; (iii) requirements for system-level assessment of bolted assemblies with unacceptable volumetric (UT) examination indications that exceed specified limits and (iv) requirements for fit up limits on physical measurements of the hold down springs.

7. Corrective Action

Conditions adverse to quality, such as failures, malfunctions, deviations, defective material or equipment, and nonconformances, are promptly identified and corrected. In the case of significant conditions adverse to quality, measures are implemented to ensure that the cause of the nonconformance is determined and that corrective action is taken to preclude recurrence. In addition, the cause of the significant condition adverse to quality and the corrective action implemented is documented and reported to appropriate levels of management. The Entergy (10 CFR Part 50, Appendix B) Quality Assurance Program, including relevant corrective action controls, applies to the RVI Program.

Any detected condition that fails to meet the examination acceptance criteria must be processed through the corrective action program. Example methods for analytical disposition of unacceptable conditions are discussed or referenced in Section 6 of MRP-227-A. The evaluation methods include recommendations for flaw depth sizing and for crack growth determinations as well for performing applicable limit load, linear elastic and elastic-plastic fracture analyses of relevant flaw indications. These methods or other NRC-approved evaluation methods may be used. The alternative of component repair and replacement of PWR vessel internals is subject to the applicable requirements of the ASME Code Section XI.

8. Confirmation Process

This attribute is discussed in Section B.0.3.

9. Administrative Controls

This attribute is discussed in Section B.0.3.

10. Operating Experience

From an overall fleet-wide perspective, relatively few incidents of PWR internals aging degradation have been reported in operating U.S. commercial PWR plants. However, PWR internals aging degradation has been observed in European PWRs, (and, more recently, in certain U.S. PWRs) specifically with regard to cracking of baffle-former bolting. For this reason, the U.S. PWR owners and operators created a program to inspect the baffle-former bolting to determine whether similar aging degradation might be expected to occur in U.S. plants. A benefit of this decision was the experience gained with the UT examination techniques used in the inspections.

Since the Spring of 2016, baffle-former bolt degradation has been detected at some operating plants in the United States. As a result of the baffle-former bolt inspection findings, Westinghouse issued Nuclear Safety Advisory Letter NSAL-16-1, which contains a description of the issue, a technical evaluation, and recommended actions for utilities to follow. This NSAL recommended that tier 1a plants (i.e. Westinghouse, 4-loop, downflow plants with 347 stainless steel bolting) similar to the IPEC Units should perform volumetric examinations of the baffle-former bolts at the next refueling outage. As a result, IP3 moved the inspections from the 2019 outage to the 2017 outage to comply with the NSAL recommendations as well as the Interim Guidance issued by the EPRI MRP Program in MRP 2016-022, *Transmittal of NEI-03-08 "Needed" Interim Guidance Regarding Baffle Former Bolt inspections for Tier 1 plants as Defined in Westinghouse NSAL 16-01.*

In the spring of 2016, during IP2 outage 2R22, ultrasonic (UT) and/or visual inspections of all 832 baffle-former bolts (bolts) were performed in accordance with the NRC approved guidelines in MRP-227-A. Visual inspection of the baffle plates and bolts identified 31 degraded bolts. The UT inspections identified indications on 182 bolts and also determined that 14 bolt locations were not testable. The locations that were not testable were conservatively assumed to possess bolts that failed to meet the acceptance criteria. As a result of the inspection findings, all 227 bolts (31+182+14) with actual and assumed indications were replaced. An additional 51 bolts were replaced to reduce the probability of future failures as well as minimize the probability of clusters of failed bolts. Therefore, during 2R22, a total of 278 bolts (227+51) were replaced.

As a result of the IP2 inspection findings and other industry Operating Experience (OE) indicating a significant number of failed bolts at other similarly-designed PWR plants, the IPEC PWR Vessel Internals Program, SEP-PVI-IPEC-001 was revised. In view of the 2R22 inspection findings, Entergy arranged for the fractographic examination of eight baffle-former bolts removed from the IP2 baffle structure during the Spring 2016 outage at Westinghouse Electric Company's hot cell laboratory in Churchill, PA. The results of those fractographic examinations are documented in Westinghouse Report MCOE-TR-16-18, Revision 0, "Fractography of Indian Point Unit 2 Baffle Former Bolts" (Nov. 30, 2016). Industry-sponsored metallurgical analysis and materials property testing of additional baffle former bolt specimens from IP2 and other PWRs is still in progress.

In addition, the industry undertook laboratory testing projects to gather the materials data necessary to support future inspections and evaluations. Other confirmed or suspected material degradation concerns that the industry has identified for PWR components are wear in thimble tubes, potential wear in control rod guide tube guide plates, and cracking in some high-strength

bolting. The industry has addressed the last concern primarily through replacement of high-strength bolting with bolt material that is less susceptible to cracking and by improved control of pre-load.

The RVI Program established in accordance with the MRP-227-A guidelines is a new program. Accordingly, there is no direct programmatic history for IPEC. However, program inspections will use qualified techniques similar to those successfully used at IPEC and throughout the industry for ASME Section XI Code inspections. Internals inspections (VT-3) have been conducted at IPEC in accordance with ASME Section XI Code requirements, with no indications of component degradation. IPEC has appropriately responded to industry operating experience for reactor vessel internals. For example, guide tube support pins (split pins) have been replaced in both units on the basis of industry experience. As with other U.S. commercial PWR plants, cracking of baffle former bolts is recognized as a potential issue for the IPEC units. As a result, IPEC has monitored industry developments and recommendations regarding these components.

Development of the MRP-227-A guidelines is based upon industry operating experience, research data, and vendor evaluations. Reactor vessels internals aging degradation incidents in both U.S. and foreign plants were considered in the development of the MRP- 227-A guidelines. As implemented, this program will account for applicable future operating experience during the period of extended operation.

Conclusion

The RVI Program will be effective at managing aging effects since it will incorporate proven monitoring techniques, acceptance criteria, corrective actions, and administrative controls in accordance with MRP-227-A and MRP-228 guidelines and current IPEC programs. The RVI Program will provide reasonable assurance that the effects of aging are managed such that applicable components will continue to perform their intended functions consistent with the current licensing basis through the period of extended operation.

B.2 REFERENCES

- ~~B.2-1 NUREG-1800, Standard Review Plan for Review of License Renewal Applications for Nuclear Power Plants, U.S. Nuclear Regulatory Commission, September 2005.~~
- B.2-~~1~~2 NUREG-1801, Revision 1, Generic Aging Lessons Learned (GALL) Report, U.S. Nuclear Regulatory Commission, September 2005.
- B.2-2 Letter from R. Nelson, U.S. Nuclear Regulatory Commission, to N. Wilmschurst, Electric Power Research Institute, Final Safety Evolution of EPRI Report, Materials Reliability Program Report 1016596 (MRP-227), Revision 0, Pressurized Water Reactor (PWR) Internals Inspection and Evaluation Guidelines (TAC No. ME0680), June 2011
- B.2-3 NUREG-1801, Revision 2 Generic Aging Lessons Learned (GALL) Report, U.S. Nuclear Regulatory Commission, December 2010
- B.2-4 Final Interim Staff Guidance LR-ISG-2011-04; Updated Aging Management Criteria for Reactor Vessel Internal Components for Pressurized Water Reactors, 78 Fed. Reg. 33,120 (June 3, 2013)
- B.2-~~5~~3 Indian Point Energy Center Reactor Vessel Internals Inspection Plan.

ATTACHMENT 2 TO NL-17-020

INDIAN POINT ENERGY CENTER

REVISED REACTOR VESSEL INTERNALS INSPECTION PLAN

Additions Underlined
Deletions Lined Out

ENTERGY NUCLEAR OPERATIONS, INC.
INDIAN POINT NUCLEAR GENERATING UNIT NOS. 2 AND 3
DOCKET NOS. 50-247 AND 50-286

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1

INTRODUCTION

1.1 Aging Management Program Inspection Plan

The EPRI MRP guidelines define a supplemental inspection program for managing aging effects on the reactor vessel internals and were used to develop this inspection plan for IPEC Units 2 and 3. The EPRI MRP Reactor Internals Focus Group developed the MRP-227-A guidelines to support the demonstration of continued functionality, with requirements for inspections to detect the effects of aging along with requirements for the evaluation of detected aging effects, if any. The development of MRP-227-A combined the results of component functionality assessments with component accessibility, operating experience, existing evaluations and prior examination results to determine the appropriate aging management methods, initial examination timing and the need and timing for subsequent inspections and identified the components and locations for supplemental examination.

This inspection plan includes:

- Identification of items for inspection,
- Specification of the type of examination appropriate for each degradation mechanism,
- Specification of the required level of examination qualification,
- Schedule of initial inspection schedule and frequency of subsequent inspections,
- Criteria for sampling and coverage,
- Criteria for expansion of scope if unacceptable indications are found,
- Inspection acceptance criteria,
- Methods for evaluating examination results not meeting the acceptance criteria,
- Provisions for updating the program based on industry-wide results; and
- Contingency measures to repair, replace or mitigate unacceptable examination results.

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2

BACKGROUND OF IPEC REACTOR VESSEL INTERNALS DESIGN

This section provides a summary of the design characteristics for the IPEC Westinghouse PWR internals.

2.1 Westinghouse Internals Design Characteristics

A schematic view of a typical set of Westinghouse-designed PWR internals is Figure 2-1. More detailed views of selected internals components are Figures 2-2 through 2-16 at the end of this section. These figures are typical and are not an exact representation of the IPEC internals.

To help in the categorization of IPEC internals design characteristics as discussed in MRP-227-A Section 3.1.3, the following information is provided. IPEC Units 2 and 3 are Westinghouse four loop plants with a downflow baffle-barrel region flow design, and a top hat design upper support plate. Unit 2 had an original thermal output rating of 2758 MWth and Unit 3 had an original thermal output rating of 3025 MWth. Unit 2 has a current thermal output rating of 3216 MWth and Unit 3 has a current thermal output rating of 3188 MWth.

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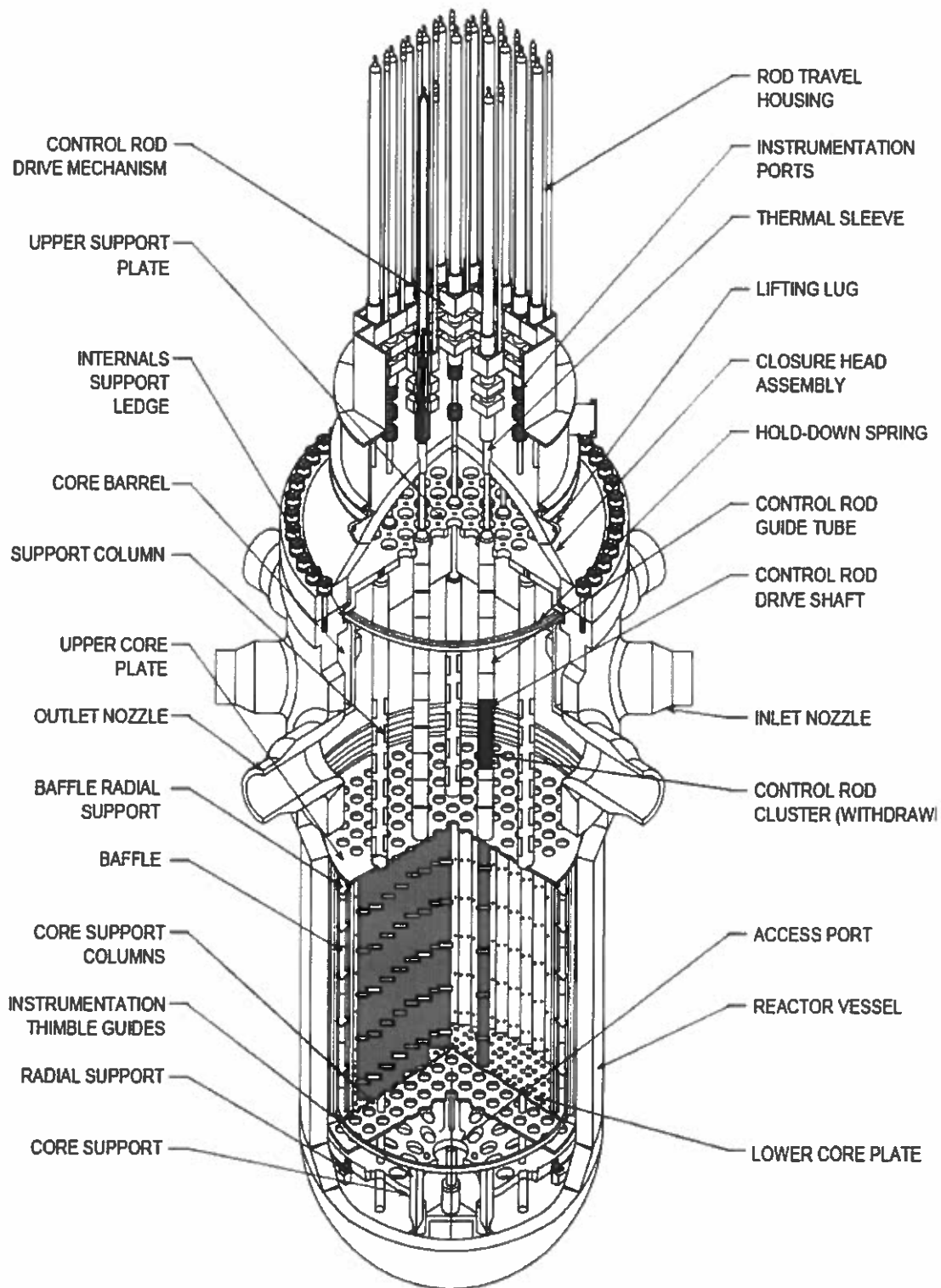


Figure 2-1
Overview of typical Westinghouse internals

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Westinghouse internals consist of two basic assemblies: an upper internals assembly that is removed during each refueling operation to obtain access to the reactor core and a lower internals assembly that can be removed following a complete core off-load.

The reactor core is positioned and supported by the upper internals and lower internals assemblies. The individual fuel assemblies are positioned by fuel alignment pins in the upper core plate and the lower core plate. These pins control the orientation of the core with respect to the upper and lower internals assemblies. The lower internals are aligned with the upper internals by the upper core plate alignment pins and secondarily by the head/vessel alignment pins. The lower internals are aligned to the vessel by the lower radial support/clevis assemblies and by the head/vessel alignment pins. Thus, the core is aligned with the vessel by a number of interfacing components.

The lower internals assembly is supported in the vessel by clamping to a ledge below the vessel-head mating surface and is closely guided at the bottom by radial support/clevis assemblies. The upper internals assembly is clamped at this same ledge by the reactor vessel head. The bottom of the upper internals assembly is closely guided by the core barrel alignment pins of the lower internals assembly.

Upper Internals Assembly

The major sub-assemblies that constitute the upper internals assembly are the: (1) upper core plate (UCP); (2) upper support column assemblies; (3) control rod guide tube assemblies; and (4) upper support plate (USP).

During reactor operation, the upper internals assembly is preloaded against the fuel assembly springs and the internals hold down spring by the reactor vessel head pressing down on the outside edge of the USP. The USP acts as the divider between the upper plenum and the reactor vessel head and as a relatively stiff base for the rest of the upper internals. The upper support columns and the control rod guide tubes are attached to the USP. The UCP, in turn, is attached to the upper support columns. The USP design at IPEC is designated as a top hat design.

The UCP is perforated to permit coolant to pass from the core below into the upper plenum between the USP and the UCP. The coolant then exits through the outlet nozzles in the core barrel. The UCP positions and laterally supports the core by fuel alignment pins extending below the plate. The UCP contacts and preloads the fuel assembly springs and thus maintains contact of the fuel assemblies with the lower core plate (LCP) during reactor operation.

The upper support columns vertically position the UCP and are designed to take the uplifting hydraulic flow loads and fuel spring loads on the UCP. The control rod guide tubes are bolted to the USP and pinned at the UCP so they can be easily removed if replacement is desired. The control rod guide tubes are designed to guide the control rods in and out of the fuel assemblies to

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control power generation. Guide tube cards are located within each control rod guide tube to guide the absorber rods. The control rod guide tubes are also slotted in their lower sections to allow coolant exiting the core to flow into the upper plenum.

The upper instrumentation columns are bolted to the USP. These columns support the thermocouple guide tubes that lead the thermocouples from the reactor head through the upper plenum to just above the UCP.

The UCP alignment pins locate the UCP laterally with respect to the lower internals assembly. The pins must laterally support the UCP so that the plate is free to expand radially and move axially during differential thermal expansion between the upper internals and the core barrel. The UCP alignment pins are the interfacing components between the UCP and the core barrel.

Lower Internals Assembly

The fuel assemblies are supported inside the lower internals assembly on top of the LCP. The functions of the LCP are to position and support the core and provide a metered control of reactor coolant flow into each fuel assembly. The LCP is elevated above the lower support casting by support columns and bolted to a ring support attached to the inside diameter of the core barrel. The support columns transmit vertical fuel assembly loads from the LCP to the much thicker lower support casting. The function of the lower support casting is to provide support for the core. The lower support casting is welded to and supported by the core barrel, which transmits vertical loads to the vessel through the core barrel flange.

The primary function of the core barrel is to support the core. A large number of components are attached to the core barrel, including the baffle/former assembly, the core barrel outlet nozzles, the thermal shields, the alignment pins that engage the UCP, the lower support casting, and the LCP. The lower radial support/clevis assemblies restrain large transverse motions of the core barrel but at the same time allow unrestricted radial and axial thermal expansion.

The baffle and former assembly consists of vertical plates called baffles and horizontal support plates called formers. The baffle plates are bolted to the formers by the baffle/former bolts, and the formers are attached to the core barrel inside diameter by the barrel/former bolts. Baffle plates are secured to each other at selected corners by edge bolts. In addition, at IPEC, corner brackets are installed behind and bolted to the baffle plates. The baffle/former assembly forms the interface between the core and the core barrel. The baffles provide a barrier between the core and the former region so that a high concentration of flow in the core region can be maintained. A secondary benefit is to reduce the neutron flux on the vessel.

The function of the core barrel outlet nozzles is to direct the reactor coolant, after it leaves the core, radially outward through the reactor vessel outlet nozzles. The core barrel outlet nozzles are located in the upper portion of the core barrel directly below the flange and are attached to the core barrel, each in line with a vessel outlet nozzle.

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Additional neutron shielding of the reactor vessel is provided in the active core region by thermal shields attached to the outside of the core barrel.

A flux thimble is a long, slender stainless steel tube that passes from an external seal table, through a bottom mounted nozzle penetration, through the lower internals assembly, and finally extends to the top of a fuel assembly. The flux thimble provides a path for a neutron flux detector into the core and is subjected to reactor coolant pressure and temperature on the outside surface and to atmospheric conditions on the inside. The flux thimble path from the seal table to the bottom mounted nozzles is defined by flux thimble guide tubes, which are part of the primary pressure boundary and not part of the internals. The bottom-mounted instrumentation (BMI) columns provide a path for the flux thimbles from the bottom of the vessel into the core. The BMI columns align the flux thimble paths with instrumentation thimbles in the fuel assembly.

In the upper internals assembly, the upper support plate, the upper support columns, and the upper core plate are considered core support structures. In the lower internals assembly the lower core plate, the lower support casting, the lower support columns, the core barrel including the core barrel flange, the radial support/clevis assemblies, the baffle plates, and the former plates are classified as core support structures.

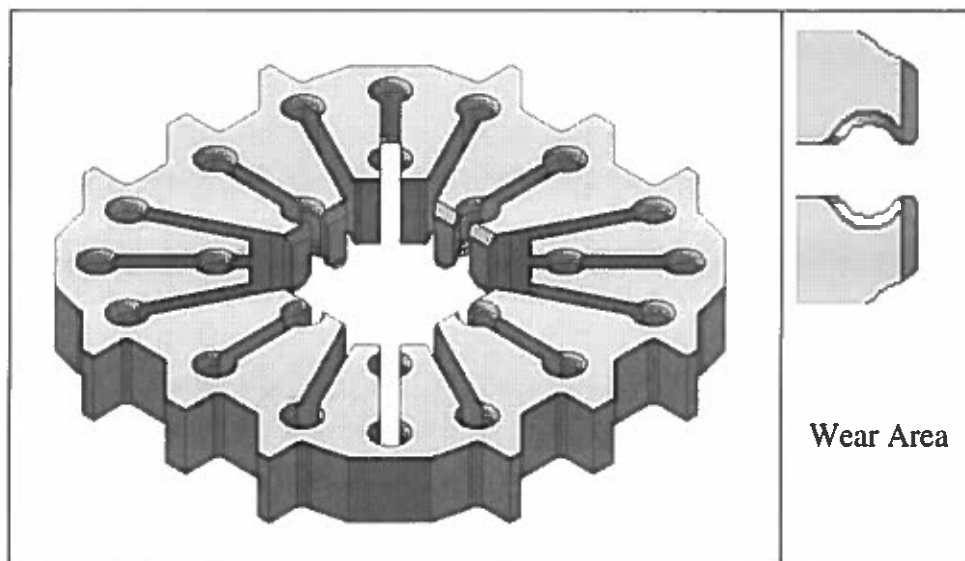


Figure 2-2
Typical Westinghouse control rod guide card (17x17 fuel assembly)

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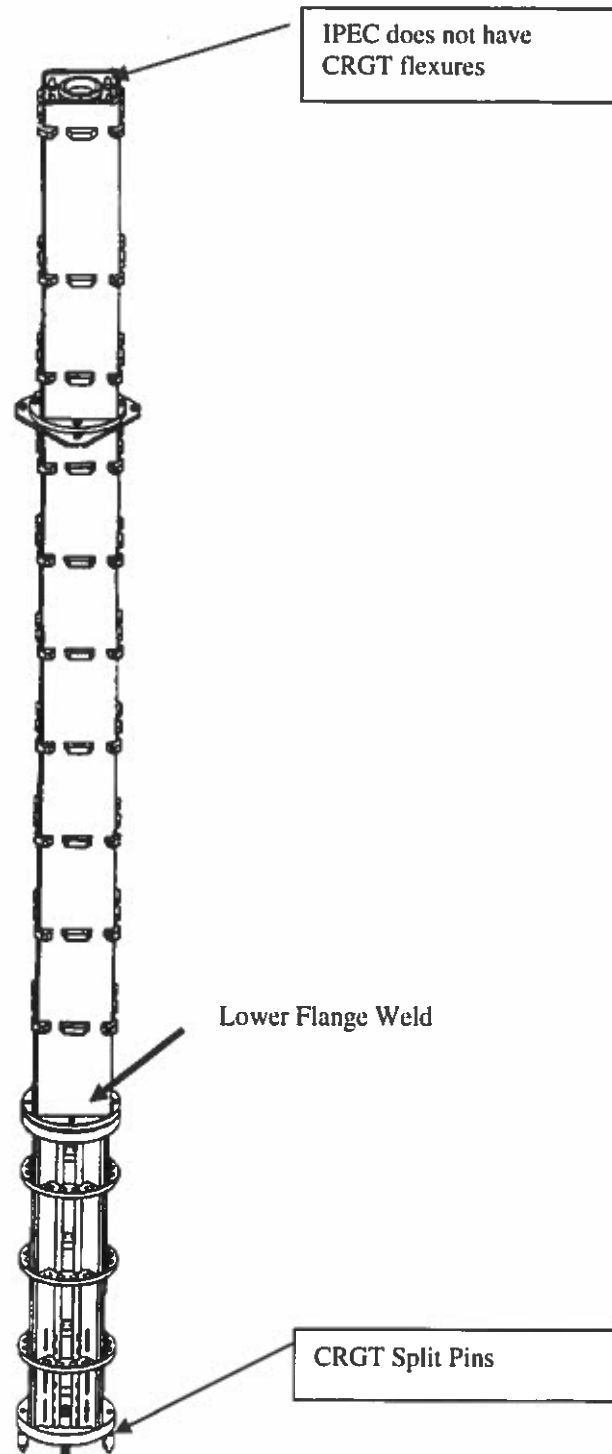


Figure 2-3
Typical Westinghouse control rod guide tube assembly

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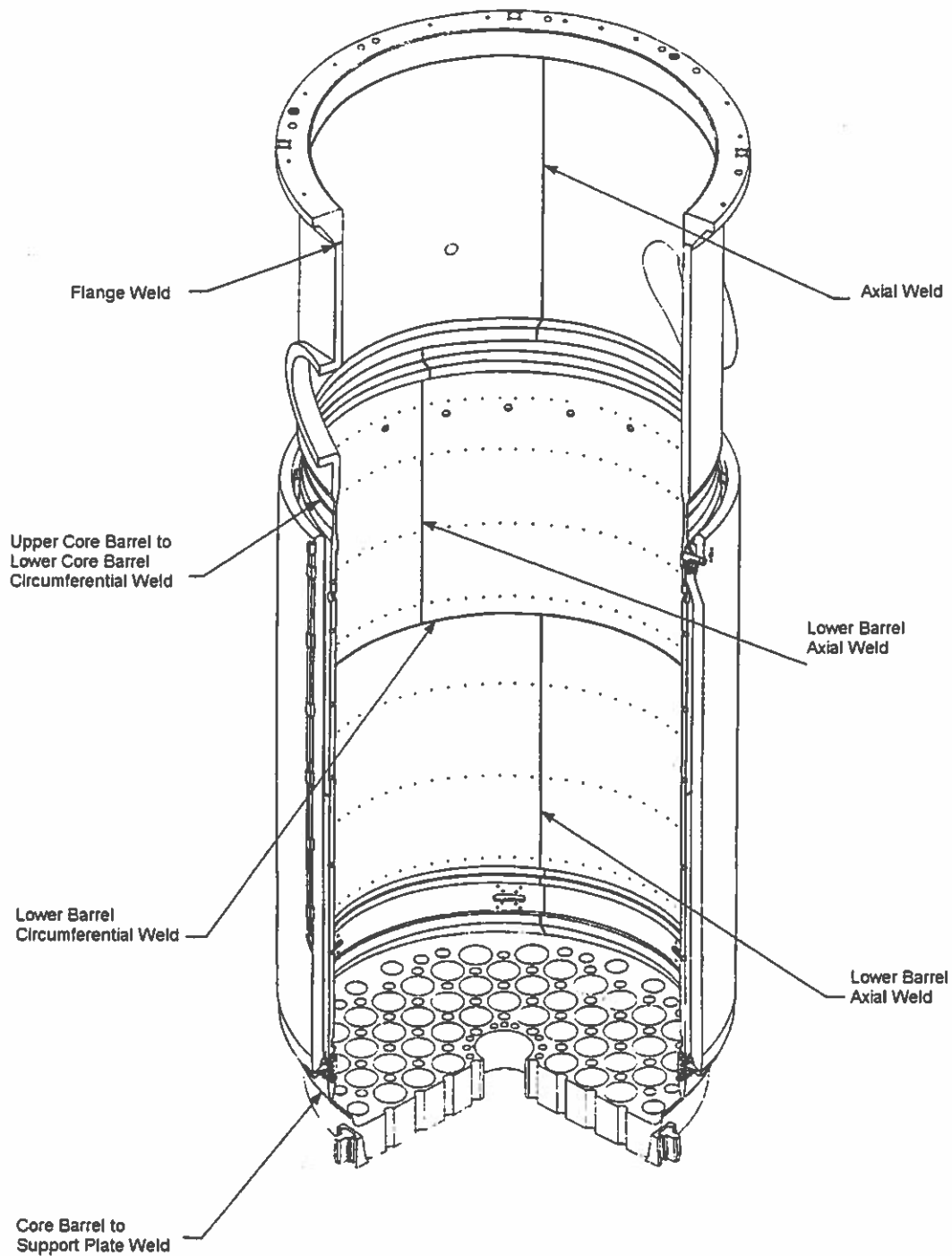


Figure 2-4
Major fabrication welds in typical Westinghouse core barrel

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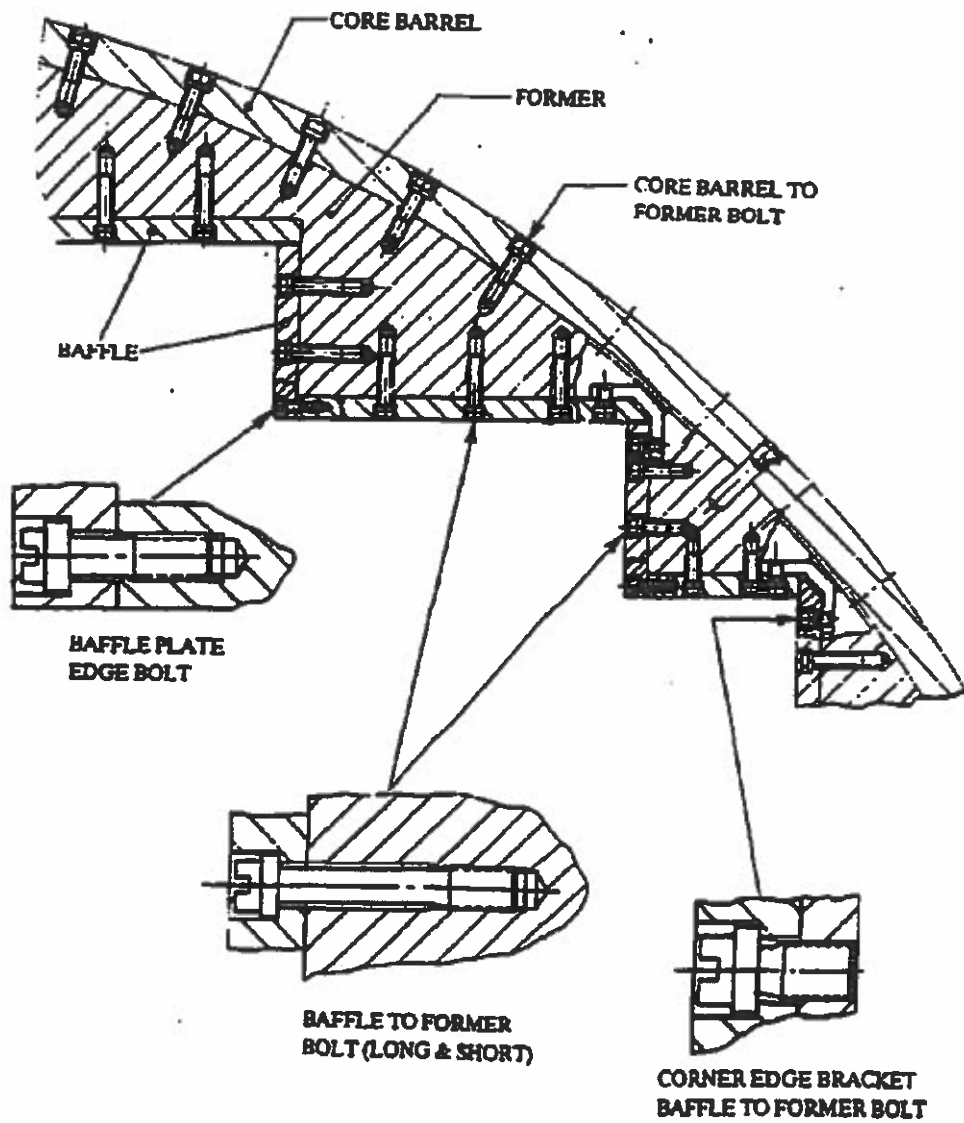


Figure 2-5
Bolt locations in typical Westinghouse baffle-former-barrel structure.

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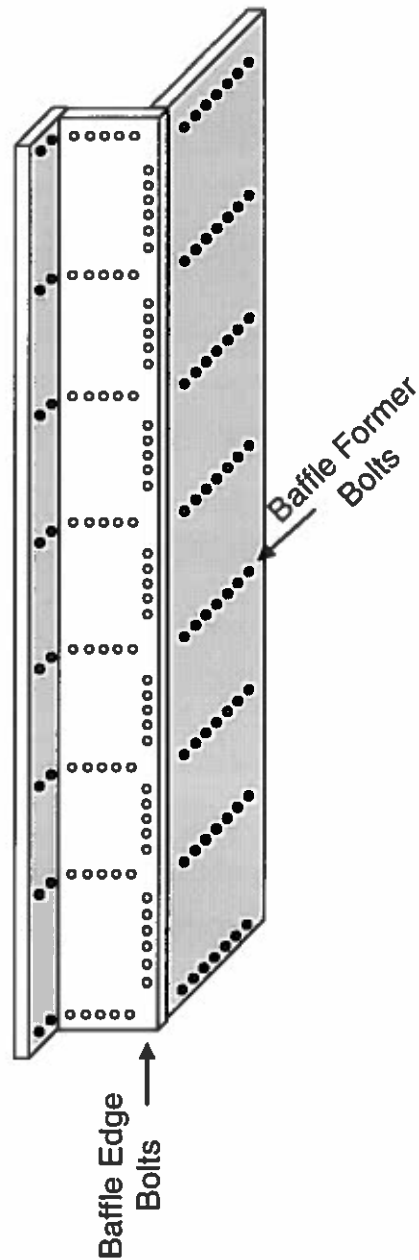


Figure 2-6
Baffle-edge bolt and baffle-former bolt locations at high fluence seams in bolted baffle-former assembly

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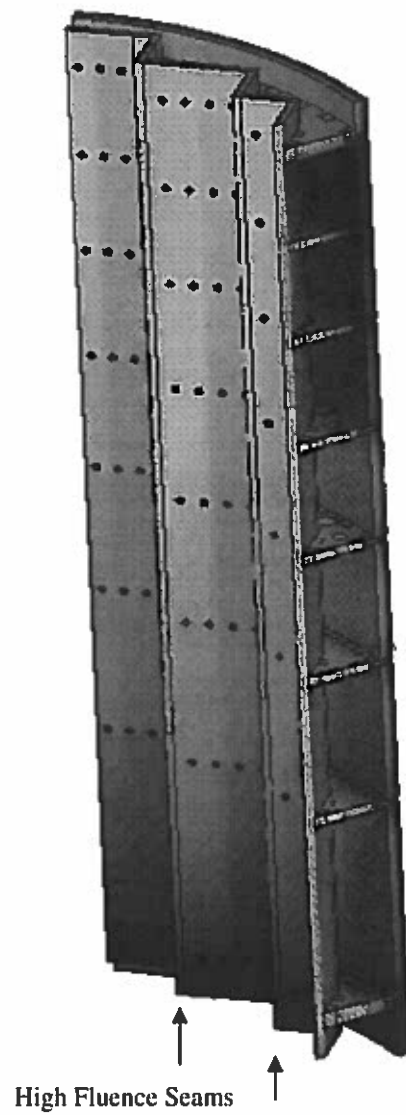


Figure 2-7
High fluence seam locations in Westinghouse baffle-former assembly

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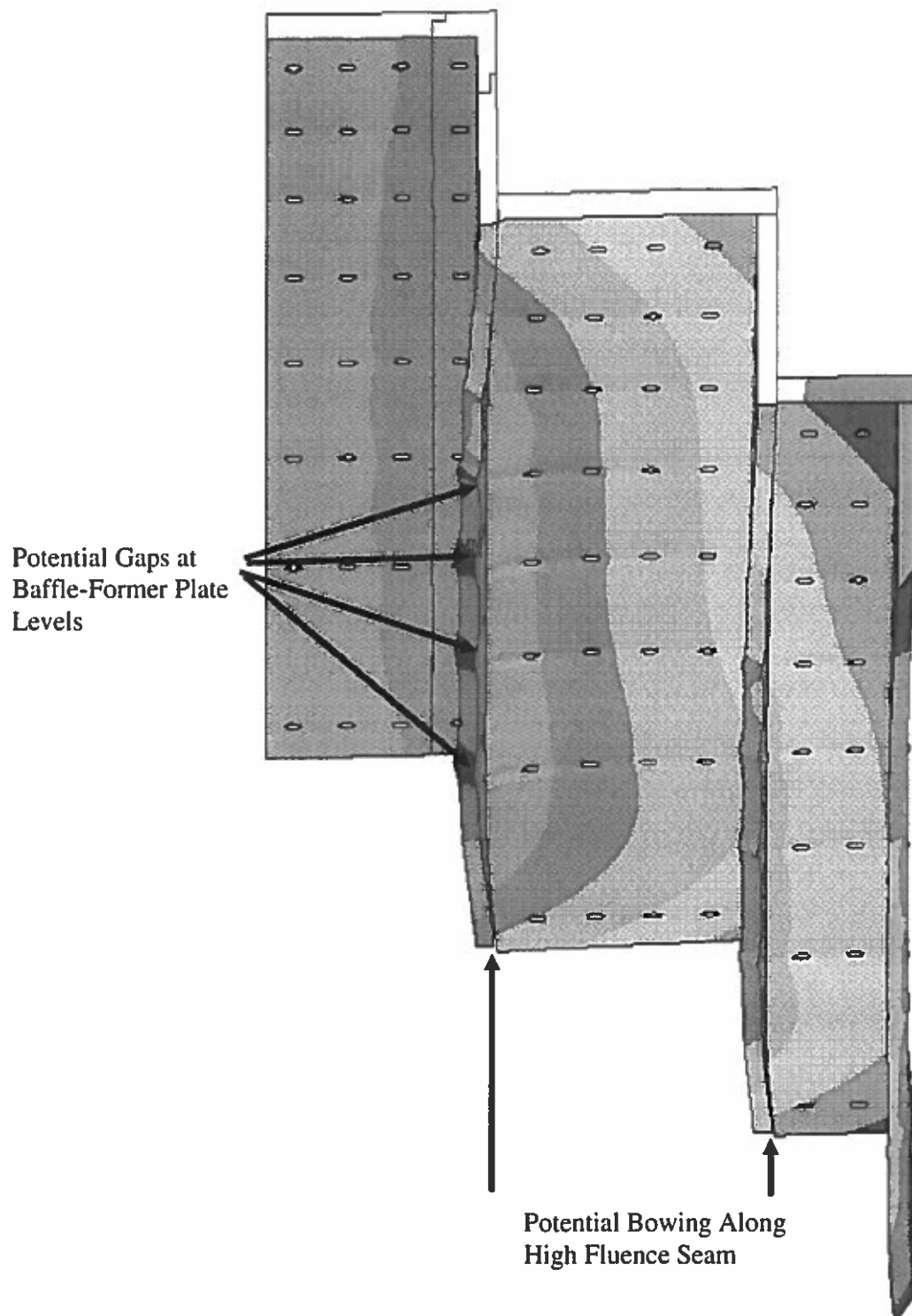


Figure 2-8
Exaggerated view of void swelling induced distortion in Westinghouse baffle-former assembly.

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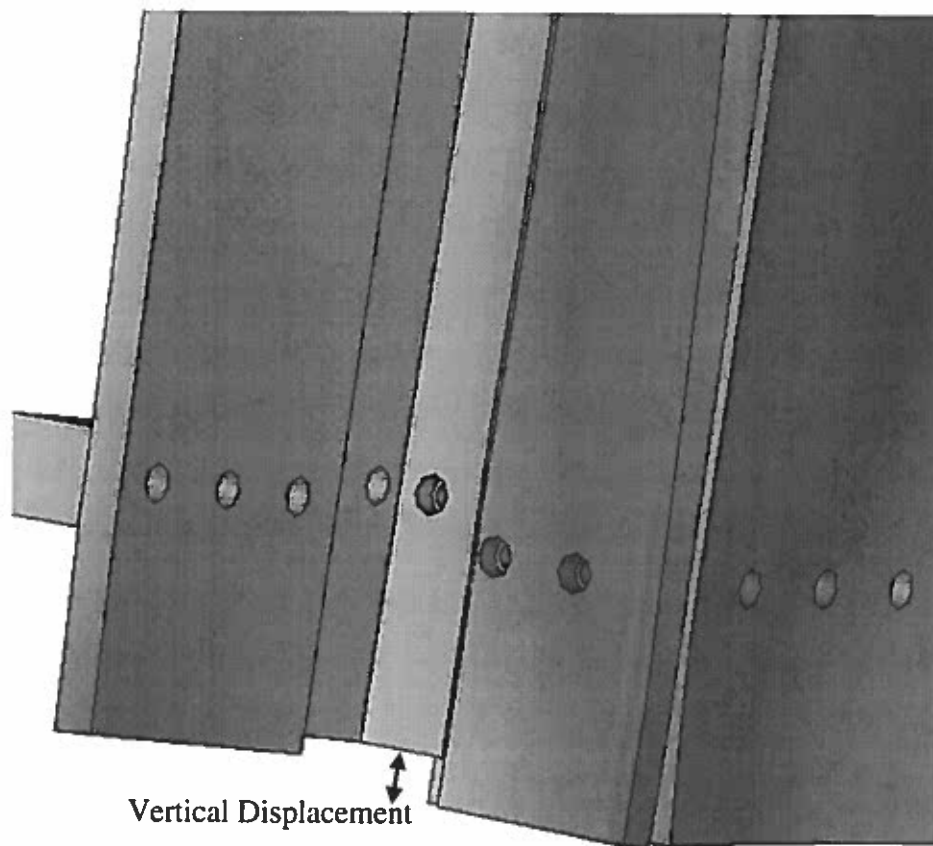


Figure 2-9
Vertical displacement of Westinghouse baffle plates caused by void swelling.

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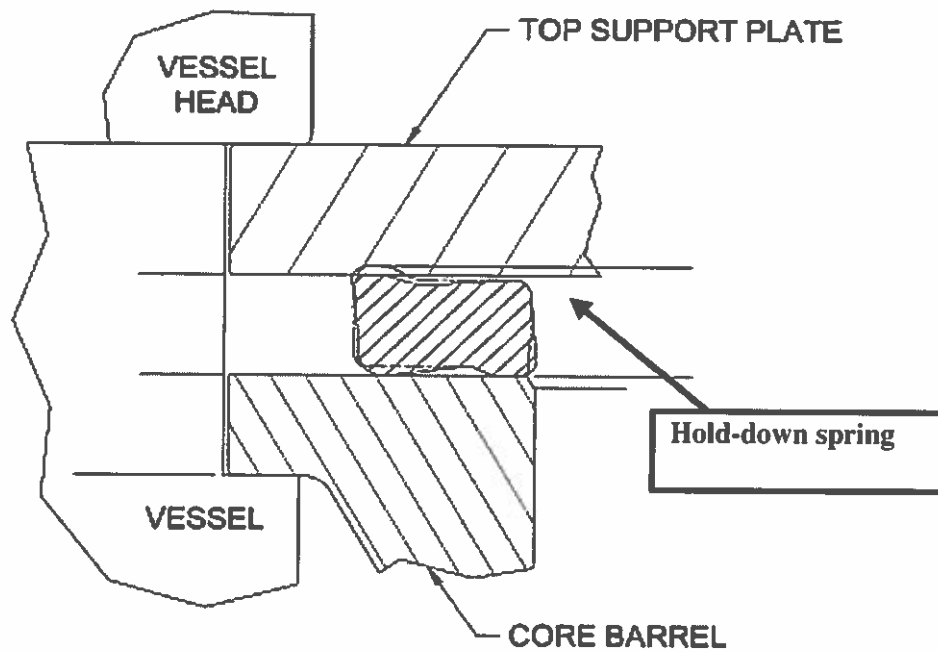


Figure 2-10
Schematic cross-sections of the Westinghouse hold-down springs

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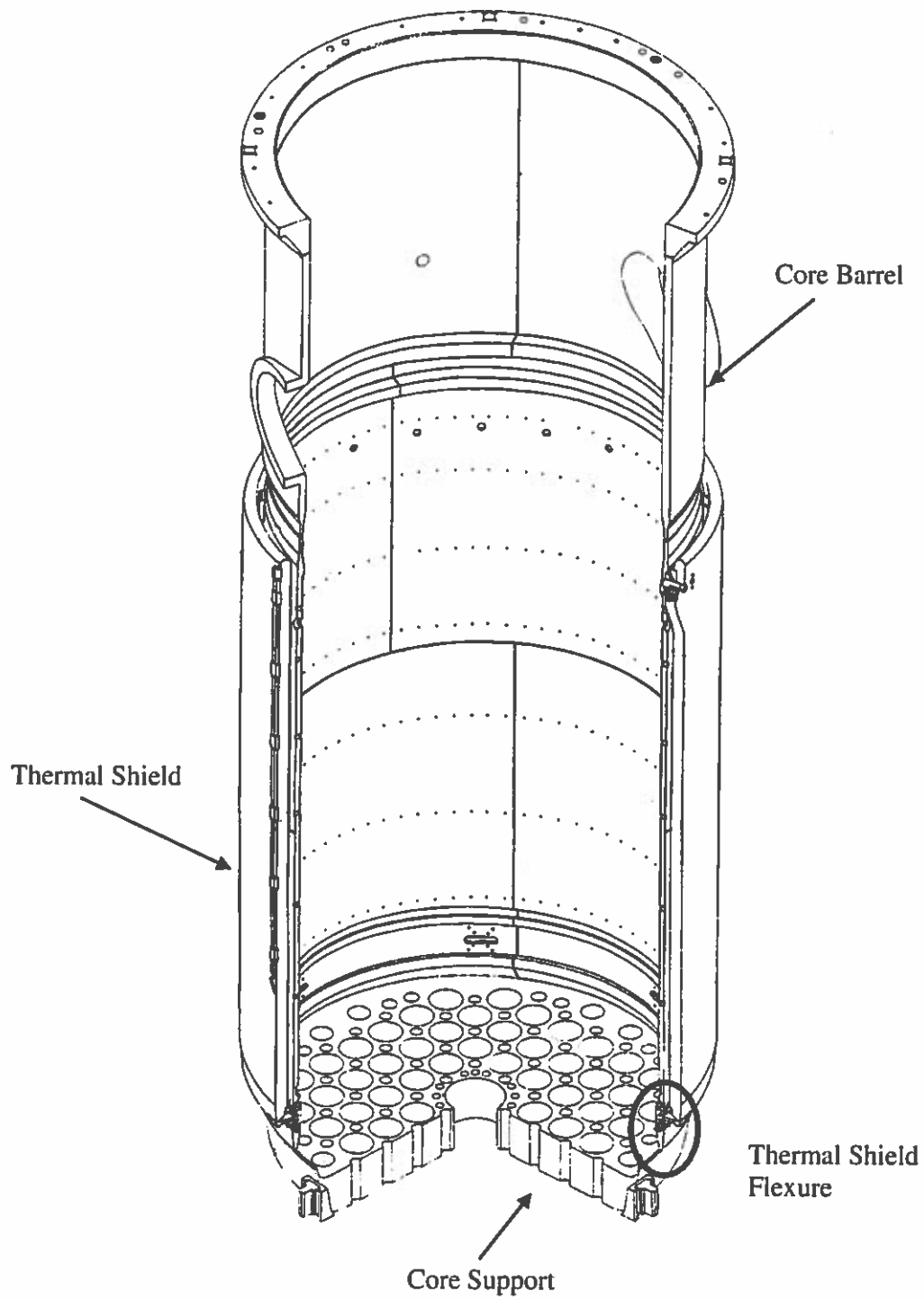


Figure 2-11
Location of Westinghouse thermal shield flexures

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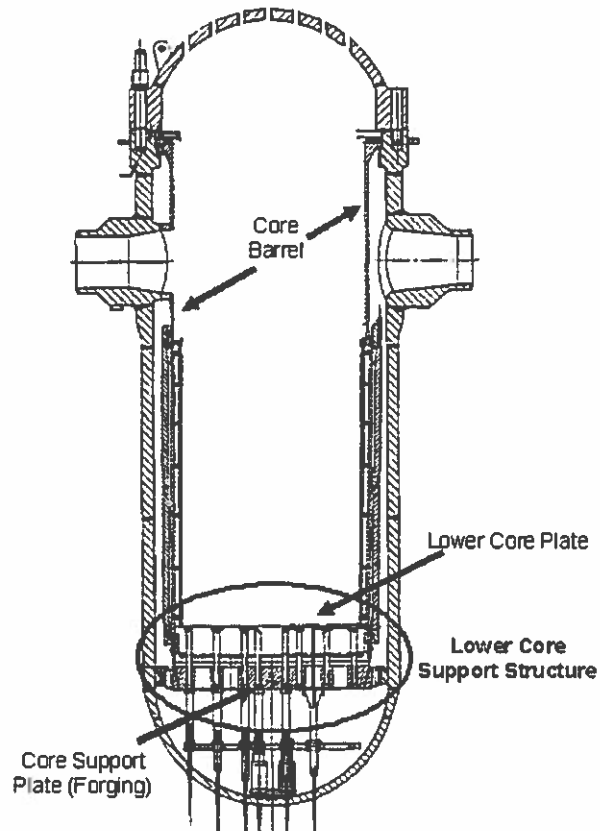


Figure 2-12
Schematic indicating location of Westinghouse lower core support structure. Additional details shown in Figure 2-13

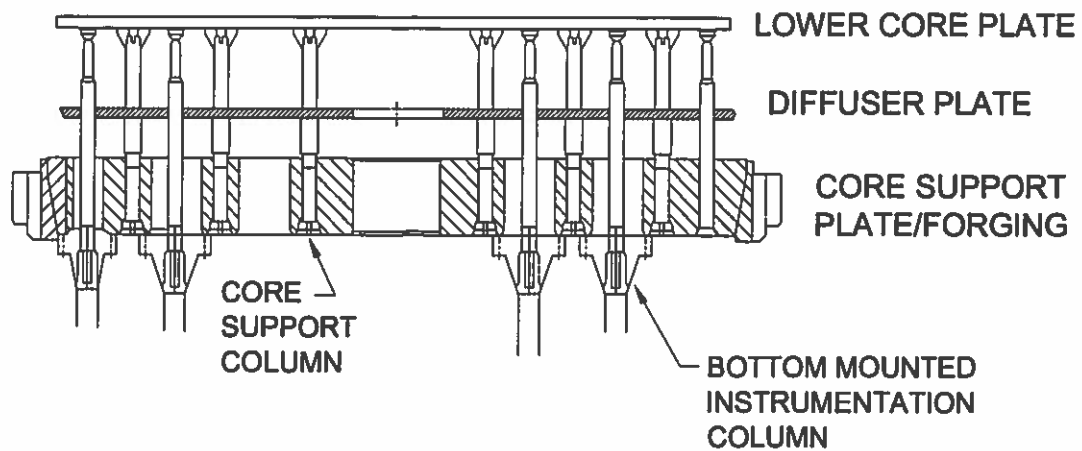


Figure 2-13
Westinghouse lower core support structure and bottom mounted instrumentation columns. Core support column bolts fasten the core support columns to the lower core plate

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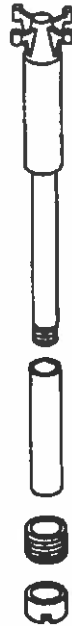


Figure 2-14
Typical Westinghouse core support column. Core support column bolts fasten the top of the support column to the lower core plate

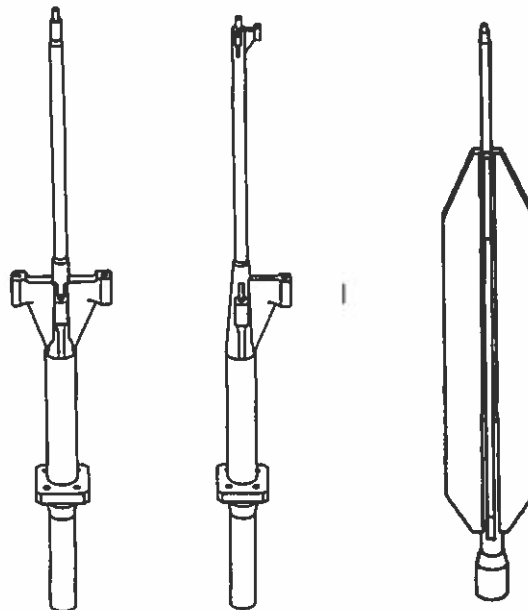


Figure 2-15
Examples of Westinghouse bottom mounted instrumentation column designs

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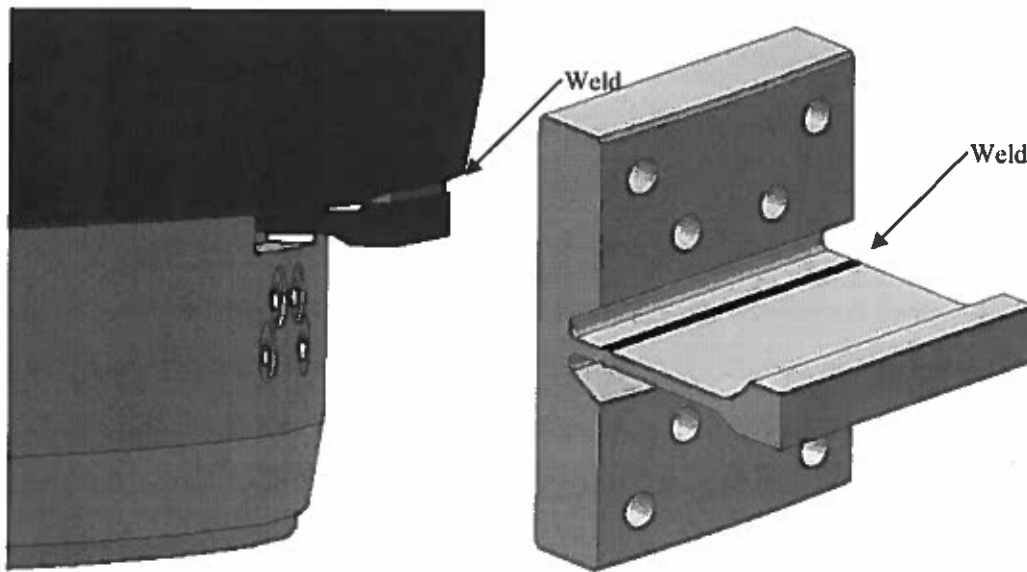


Figure 2-16
Typical Westinghouse thermal shield flexure

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3

INSPECTION PLAN SUMMARY

Management of component aging effects includes actions to prevent or control aging effects, review of operating experience to better understand the potential for aging effects to occur, inspections to detect the onset of aging effects in susceptible components, and protocols for evaluation and remediation of the effects of aging.

3.1 Component Inspection and Evaluation Overview

This discussion summarizes the guidance of the MRP Inspection & Evaluation (I&E) guidelines necessary to understand implementation but does not duplicate the full discussion of the technical bases. MRP-227-A and its supporting documents provide further information on the technical bases of the program.

MRP-227-A establishes four groups of reactor internals components with respect to inspections: Primary, Expansion, Existing Programs and No Additional Measures, as summarized below.

- **Primary:** Those PWR internals that are highly susceptible to the effects of at least one of the eight aging mechanisms were placed in the Primary group. The aging management requirements that are needed to ensure functionality of Primary components are described in the I&E guidelines. The Primary group also includes components which have shown a degree of tolerance to a specific aging degradation effect, but for which no highly susceptible component exists or for which no highly susceptible component is accessible.
- **Expansion:** Those PWR internals that are highly or moderately susceptible to the effects of at least one of the eight aging mechanisms, but for which a functionality assessment has shown a degree of tolerance to those effects, were placed in the Expansion group. The schedule for implementation of aging management requirements for Expansion components will depend on the findings from the examinations of the Primary components.
- **Existing Programs:** Those PWR internals that are susceptible to the effects of at least one of the eight aging mechanisms and for which generic and plant-specific existing AMP elements are capable of managing those effects, were placed in the Existing Programs group.

No Additional Measures: Those PWR internals for which the effects of all eight aging mechanisms are below the screening criteria were placed in the No Additional Measures group. Items categorized as Category A in MRP-191 are those for which aging effects are below the screening criteria, so that aging degradation significance is minimal. Primary, expansion, and existing examinations verify that the chemical control program has been effective at controlling stress corrosion cracking and loss of material due to corrosion for Category A components.

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Additional components were placed in the No Additional Measures group as a result of Failure Modes, Effects and Criticality Analysis (FMECA) and the functionality assessment. No further action is required for managing the effects of aging of the No Additional Measures components. However, any core support structures subject to ASME Section XI Examination Category B-N-3 requirements continue to be subject to those ASME Code requirements throughout the period of extended operation.

The inspection methods required for Primary and Expansion components were selected from visual, surface and volumetric examination methods that are applicable and appropriate for the expected degradation effect (e.g. cracking caused by particular mechanisms, loss of material caused by wear). The inspection methods include: Visual examinations (VT-3, VT-1, EVT-1), surface examinations, volumetric examinations (specifically UT) and physical measurements. MRP-227-A provides detailed justification for the components selected for inspection and the specific examination methods selected for each. The MRP-228 report, PWR Internals Inspection Standards, provides detailed examination standards and any inspection technical justification or inspection personnel training requirements.

3.2 Inspection and Evaluation Requirements for Primary Components

The inspection requirements for Primary Components at IPEC Units 2 and 3 from MRP-227-A are provided in Table 5-2.

3.3 Inspection and Evaluation Requirements for Expansion Components

The inspection requirements for Expansion Components at IPEC Units 2 and 3 from MRP-227-A are provided in Table 5-3.

3.4 Inspections of Existing Program Components

The list of Existing Program Components at IPEC Units 2 and 3 from MRP-227-A are provided in Table 5-4. This includes components in the Section XI ISI Program categories B-N-2 and B-N-3 for IPEC Units 2 and 3.

The Reactor Vessel Component Inspections conducted as part of the ISI Program for IPEC Units 2 and 3 are listed in Table 5-6. The ISI Program inspections are implemented in accordance with ASME Section XI schedule requirements.

3.5 Examination Systems

Equipment, techniques, procedures and personnel used to perform examinations required under this program will be consistent with the requirements of MRP-228. Indications detected during

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these examinations will be characterized and reported in accordance with the requirements of MRP-228.

3.6 Information Supplied in Response to the NRC Safety Evaluation of MRP-227-A

As part of the NRC Revision 1 to the Final Safety Evaluation of MRP-227, a number of action items and conditions were specified by the staff. Table 5-8 summarizes the IPEC response to the NRC Final Safety Evaluation of MRP-227. Topical Report Conditions from the NRC Final Safety Evaluation of MRP-227 have been addressed in MRP-227-A. These items have been addressed in the appropriate sections of this document. Applicant/Licensee Action Items from the NRC Final Safety Evaluation of MRP-227 are discussed in this section.

SER Section 4.2.1, Applicant/Licensee Action Item 1

IPEC has assessed its plant design and operating history and has determined that MRP-227-A is applicable to the facility. The assumptions regarding plant design and operating history made in MRP-191 are appropriate for IPEC and there are no differences in component inspection categories at IPEC. IPEC Unit 2 (IP2) had the first 8 years of operation with a high leakage core loading pattern. IPEC Unit 3 (IP3) had the first 10 years of operation with a high leakage core loading pattern. The FMECA and functionality analyses were based on the assumption of 30 years of operation with high leakage core loading patterns; therefore, IPEC is bounded by the assumptions in MRP-191. IPEC has always operated as a base-load plant which operates at fixed power levels and does not vary power on a calendar or load demand schedule.

SER Section 4.2.2, Applicant/Licensee Action Item 2

IPEC reviewed the information in Table 4-4 of MRP-191 and determined that this table contains all of the RVI components that are within the scope of license renewal. This is shown in Table 5-7.

SER Section 4.2.3, Applicant/Licensee Action Item 3

At IP2, the original X750 guide tube support pins (split pins) were replaced in 1995 (after 21 years in service) with an improved X750 Revision B material made from more selective material with more continuous carbide coverage grain boundaries and tighter quality controls, to provide greater resistance to stress corrosion cracking. IP2 plans to begin preliminary split pin replacement engineering and walkdowns in 2014 and replace the split pins in 2016.

SER Section 4.2.4, Applicant/Licensee Action Item 4

This action item does not apply to Westinghouse designed units.

SER Section 4.2.5, Applicant/Licensee Action Item 5

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The IPEC plant specific acceptance criteria for hold down springs and an explanation of how the proposed acceptance criteria are consistent with the IPEC licensing basis and the need to maintain the functionality of the hold down springs under all licensing basis conditions will be developed prior to the first required physical measurement. The acceptance criteria will ensure the remaining compressible height of the spring shall provide hold down forces within the IPEC design tolerance. If a plant specific acceptance criterion is not developed for the hold down spring, IPEC will replace the spring in lieu of performing the first required physical measurement.

SER Section 4.2.6, Applicant/Licensee Action Item 6

This action item does not apply to Westinghouse designed units.

SER Section 4.2.7, Applicant/Licensee Action Item 7

The IPEC plant specific analyses to demonstrate the lower support column bodies will maintain their functionality during the period of extended operation will consider the possible loss of fracture toughness in these components due to thermal and irradiation embrittlement. The analyses will be consistent with the IPEC licensing basis and the need to maintain the functionality of the lower support column bodies under all licensing basis conditions of operation. IPEC will submit this information to the NRC prior to the period of extended operation.

SER Section 4.2.8, Applicant/Licensee Action Item 8

A Reactor Vessel Internals AMP description for IPEC was included in Amendment 9 to the License Renewal Application (NL-10-063, July 14, 2010). The AMP description has been revised to be consistent with MRP-227-A. The revised AMP description has been submitted under letter NL-12-037.

This document comprises an inspection plan which addresses the identified plant-specific action items contained in the NRC Revision 1 to the Final Safety Evaluation for MRP-227. IPEC is not requesting any deviations from the guidance provided in MRP-227-A.

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4

EXAMINATION ACCEPTANCE AND EXPANSION CRITERIA AND IMPLEMENTATION REQUIREMENTS

4.1 Examination Acceptance Criteria

4.1.1 Visual (VT-3) Examination

Visual (VT-3) examination is an appropriate NDE method for the detection of general degradation conditions in many of the susceptible components. The ASME Code Section XI, Examination Category B-N-3, provides a set of relevant conditions for the visual (VT-3) examination of removable core support structures in Section IWB. These are:

1. structural distortion or displacement of parts to the extent that component function may be impaired;
2. loose, missing, cracked, or fractured parts, bolting, or fasteners;
3. corrosion or erosion that reduces the nominal section thickness by more than 5%;
4. wear of mating surfaces that may lead to loss of function; and
5. structural degradation of interior attachments such that the original cross-sectional area is reduced more than 5%.

For components in the Existing Programs group, these general relevant conditions are sufficient. However, for components where visual (VT-3) is specified in the Primary or the Expansion group, more specific descriptions of the relevant conditions are provided in Table 5-5 for the benefit of the examiners. One or more of these specific relevant condition descriptions may be applicable to the Primary and Expansion components listed in Tables 5-2 and 5-3.

The examination acceptance criteria for components requiring visual (VT-3) examination is thus the absence of any of the relevant condition(s) specified in Table 5-5.

The disposition can include a supplementary examination to further characterize the relevant condition, an engineering evaluation to show that the component is capable of continued operation with a known relevant condition, or repair/replacement to remediate the relevant condition.

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4.1.2 Visual (VT-1) Examination

Visual (VT-1) examination is defined in the ASME Code Section XI as an examination “conducted to detect discontinuities and imperfections on the surface of components, including such conditions as cracks, wear, corrosion, or erosion.” The acceptance criterion for any visual (VT-1) examinations is the absence of any relevant conditions defined by the ASME Code, as supplemented by more specific plant inservice inspection requirements.

4.1.3 Enhanced Visual (EVT-1) Examination

Enhanced visual (EVT-1) examination has the same requirements as the ASME Code Section XI visual (VT-1) examination, with additional requirements given in the Inspection Standard, MRP-228. These enhancements are intended to improve the detection and characterization of discontinuities taking into account the remote visual aspect of reactor internals examinations. As a result, EVT-1 examinations are capable of detecting small surface breaking cracks and sizing surface crack length when used in conjunction with sizing aids (e.g. landmarks, ruler, and tape measure). EVT-1 examination is the appropriate NDE method for detection of cracking in plates or their welded joints. Thus the relevant condition applied for EVT-1 examination is the same as for cracking in Section XI which is crack-like surface breaking indications.

Therefore, until such time as engineering studies provide a basis by which a quantitative amount of degradation can be shown acceptable for the specific component, any observed relevant condition must be dispositioned. In the interim, the examination acceptance criterion is the absence of any detectable surface breaking indication.

4.1.4 Surface Examination

Surface ET (eddy current testing) examination is specified as an alternative or as a supplement to visual examinations. No specific acceptance criteria for surface (ET) examination of PWR internals locations are provided in the ASME Code Section XI. Since surface ET is employed as a signal-based examination, a technical justification per the Inspection Standard, MRP-228 provides the basis for detection and length sizing of surface-breaking or near-surface cracks. The signal-based relevant indication for surface (ET) is thus the same as the relevant condition for enhanced visual (EVT-1) examination. The acceptance criteria for enhanced visual (EVT-1) examinations in 4.1.3 (and accompanying entries in Table 5-5) are therefore applied when this method is used as an alternative or supplement to visual examination.

4.1.5 Volumetric Examination

The intent of volumetric examinations specified for bolts and pins is to detect planar defects. No flaw sizing measurements are recorded or assumed in the acceptance or rejection of individual

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bolts or pins. Individual bolts or pins are accepted based on the absence of relevant indications established as part of the examination technical justification. When a relevant indication is detected in the cross-sectional area of the bolt or pin, it is assumed to be non-functional and the indication is recorded. A bolt or pin that passes the criterion of the examination is considered functional.

Because of this pass/fail acceptance of individual bolts or pins, the examination acceptance criterion for volumetric (UT) examination of bolts and pins is based on a reliable detection of indications as established by the individual technical justification for the proposed examination. This is in keeping with current industry practice. For example, planar flaws on the order of 30% of the cross-sectional area have been determined reliably detectable in previous bolt NDE technical justifications for baffle-former bolting.

Bolted and pinned assemblies are evaluated for acceptance based on a plant specific evaluation.

4.2 Physical Measurements Examination Acceptance Criteria

Continued functionality can be confirmed by physical measurements where, for example, loss of material caused by wear, loss of pre-load of clamping force caused by various degradation mechanisms, or distortion/deflection caused by void swelling may occur. For Westinghouse designs, tolerances are available on a design or plant-specific basis. Specific acceptance criteria will be developed as required, and thus are not provided generically in this plan.

4.3 Expansion Criteria

The criterion for expanding the scope of examination from the Primary components to their linked Expansion components is contained in Table 5-5 for IPEC.

4.4 Implementation Requirements

- 4.2.1 Consistent with the requirements of NEI 03-08, if the guidance contained in Tables 5-2, 5-3, 5-4, and 5-5 cannot, need not, or will not be implemented as written, a technical justification must be prepared that clearly states what requirement cannot, need not, or will not be met and why; what alternative action is being taken to satisfy the objective or intent of the guidance; and why the alternative action is acceptable. Since the Expansion components are also “needed” requirements, the technical justification for not fully implementing a Primary component examination or not implementing it in a manner consistent with its intent, would be expected to include disposition of the associated Expansion components.

When submittal of a deviation from work products or elements is required, the justification shall be reviewed and approved in accordance with the applicable plant procedures with the additional responsibility for deviation from a “Needed” element that

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an internal independent review is performed and that concurrence is obtained from the responsible utility executive.

- 4.2.2 Examinations contained in this inspection plan shall be conducted in accordance with MRP-228.
- 4.2.3 Examination results that do not meet the examination acceptance criteria shall be recorded and entered in the IPEC corrective action program and dispositioned.
- 4.2.4 If an engineering evaluation is used to disposition an examination result that does not meet the examination acceptance criteria, this engineering evaluation shall be conducted in accordance with a NRC-approved evaluation methodology.
- 4.2.5 A summary report of all inspections and monitoring, items requiring evaluation, and new repairs shall be provided to the MRP Program Manager within 120 days of the completion of an outage during which PWR internals within the scope of MRP-227-A are examined.

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5

TABLES

Table 5-1	Indian Point 2 & 3 Component Cross Reference
Table 5-2	Primary Components at IPEC Units 2 and 3
Table 5-3	Expansion Components at IPEC Units 2 and 3
Table 5-4	Existing Program Components at IPEC Units 2 and 3
Table 5-5	Examination Acceptance and Expansion Criteria at IPEC Units 2 and 3
Table 5-6	Reactor Vessel Component ISI Program Inspection Plan for IPEC Units 2 and 3
Table 5-7	List of IPEC Reactor Vessel Interior Components and Materials Based on MRP-191 – Table 4-4
Table 5-8	IPEC Response to the NRC Revision 1 to the Final Safety Evaluation of MRP-227

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**Table 5-1
Indian Point 2 & 3 Component Cross Reference**

Item	Letter NL-10-063 Component	MRP-191 Table 4-4	MRP-227-A
1	Core Baffle/Former Assembly – Bolts	Lower Internals Assembly – Baffle and Former Assembly Baffle-Edge Bolts Baffle-Former Bolts	Baffle-Former Assembly – Baffle-Edge Bolts (Tables 3-3, 4-3 and 5-3) Baffle-Former Assembly – Baffle-Former Bolts (Tables 3-3, 4-3 and 5-3)
2	Core Baffle/Former Assembly – Plates	Lower Internals Assembly – Baffle and Former Assembly Baffle Plates Former Plates	Baffle-Former Assembly – Assembly (Tables 3-3, 4-3 and 5-3)
3	Core Barrel Assembly – Bolts and Screws	Lower Internals Assembly – Baffle and Former Assembly Barrel-Former Bolts	Core Barrel Assembly – Barrel-Former Bolts (Tables 3-3 and 4-6)
4	Core Barrel Assembly – Axial Flexure Plates (Thermal Shield Flexures)	Lower Internals Assembly – Neutron Panels/Thermal Shield Thermal Shield Flexures	Thermal Shield Assembly – Thermal Shield Flexures (Tables 3-3, 4-3 and 5-3)
5	Core Barrel Assembly – Flange	Lower Internals Assembly – Core Barrel Core Barrel Flange	Core Barrel Assembly – Core Barrel Flange (Tables 3-3 and 4-9)

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**Table 5-1
Indian Point 2 & 3 Component Cross Reference**

Item	Letter NL-10-063 Component	MRP-191 Table 4-4	MRP-227-A
6	Core Barrel Assembly – Ring Core Barrel Assembly – Shell Core Barrel Assembly – Thermal Shield	Lower Internals Assembly – Core Barrel Upper Core Barrel Lower Core Barrel Lower Internals Assembly – Neutron panels/thermal shield Thermal shield	Core Barrel Assembly – Upper and Lower Core Barrel Cylinder Girth Welds (Tables 3-3, 4-3 and 2 places in 5-3) Core Barrel Assembly – Upper and Lower Core Barrel Cylinder Axial Welds (Tables 3-3, 4-6 and 2 places in 5-3)
7	Core Barrel Assembly – Lower Core Barrel Flange Weld Core Barrel Assembly – Upper Core Barrel Flange Weld	Lower Internals Assembly – Core Barrel Core Barrel Flange	Core Barrel Assembly – Lower Core Barrel Flange Weld (Tables 3-3, 4-3 and 5-3) Core Barrel Assembly – Upper Core Barrel Flange Weld (Tables 3-3, 4-3 and 5-3)
8	Core Barrel Assembly – Outlet Nozzles	Lower Internals Assembly – Core Barrel Core Barrel Outlet Nozzles	Core Barrel Assembly – Core Barrel Outlet Nozzle Welds (Tables 3-3 and 4-6)
9	Lower Internals Assembly – Clevis Insert Bolt	Interfacing Components – Interfacing Components Clevis Insert Bolts	Alignment and Interfacing Components – Clevis Insert Bolts (Tables 3-3 and 4-9)

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**Table 5-1
Indian Point 2 & 3 Component Cross Reference**

Item	Letter NL-10-063 Component	MRP-191 Table 4-4	MRP-227-A
10	Lower Internals Assembly – Clevis Insert	Interfacing Components – Interfacing Components Clevis Inserts	No additional measures
11	Lower Internals Assembly – Intermediate Diffuser Plate	Lower Internals Assembly – Diffuser Plate Diffuser Plate	No additional measures
12	Lower Internals Assembly – Fuel Alignment Pin	Lower Internals Assembly – Lower Core Plate and Fuel Alignment Pins Fuel Alignment Pins	No additional measures
13	Lower Internals Assembly – Lower Core Plate	Lower Internals Assembly – Lower Core Plate and Fuel Alignment Pins Lower Core Plate	Lower Internals Assembly – Lower Core Plate (Tables 3-3, and 2 places in 4-9)

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**Table 5-1
Indian Point 2 & 3 Component Cross Reference**

Item	Letter NL-10-063 Component	MRP-191 Table 4-4	MRP-227-A
14	Lower Internals Assembly – • Lower Core Support Castings • Column Cap • Lower Core Support Column Bodies	Lower Internals Assembly – Lower Support Casting or Forging Lower Support Casting Lower Internals Assembly – Lower Support Column Assembly Lower Support Column Nuts Lower Support Column Bodies	Lower Internals Assembly – Lower Support Casting (Tables 3-3, and 4-6) No additional measures Lower Support Assembly – Lower Support Column Bodies (Cast) (Tables 3-3 and 4-6)
15	Lower Internals Assembly – Lower Core Support Plate Column Bolt	Lower Internals Assembly – Lower Support Column Assembly Lower Support Column Bolts	Lower Support Assembly – Lower Support Column Bolts (Tables 3-3 and 4-6)
16	Lower Internals Assembly – Lower Core Support Plate Column Sleeves	Lower Internals Assembly – Lower Support Column Assembly Lower Support Column Sleeves	No additional measures

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**Table 5-1
Indian Point 2 & 3 Component Cross Reference**

Item	Letter NL-10-063 Component	MRP-191 Table 4-4	MRP-227-A
17	Lower Internals Assembly – Radial Key	Lower Internals Assembly – Radial Support Keys Radial Support Keys	No additional measures
18	Lower Internals Assembly – Secondary Core Support	Lower Internals Assembly – Secondary Core Support (SCS) Assembly SCS Base Plate	No additional measures
19	RCCA Guide Tube Assembly – Bolt	Upper Internals Assembly – Control Rod Guide Tube Assemblies and Flow Downcomers Bolts	No additional measures
20	RCCA Guide Tube Assembly – Guide Tube (including Lower Flange Welds)	Upper Internals Assembly – Control Rod Guide Tube Assemblies and Flow Downcomers Flanges – lower	Control Rod Guide Tube Assembly – Lower Flange Welds (Tables 3-3, 4-3 and 5-3)
21	RCCA Guide Tube Assembly – Guide Plates	Upper Internals Assembly – Control Rod Guide Tube Assemblies and Flow Downcomers Guide Plates/Cards	Control Rod Guide Tube Assembly – Guide Plates (Cards) (Tables 3-3, 4-3 and 5-3)

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**Table 5-1
Indian Point 2 & 3 Component Cross Reference**

Item	Letter NL-10-063 Component	MRP-191 Table 4-4	MRP-227-A
22	RCCA Guide Tube Assembly – Support Pin	Upper Internals Assembly – Control Rod Guide Tube Assemblies and Flow Downcomers Guide Tube Support Pins	No additional measures
23	Core Plate Alignment Pin	Interfacing Components – Interfacing Components Upper Core Plate Alignment Pins	Alignment and Interfacing Components – Upper Core Plate Alignment Pins (Tables 3-3 and 4-9)
24	Head/Vessel Alignment Pin	Interfacing Components – Interfacing Components Head and Vessel Alignment Pins	No additional measures
25	Hold-down Spring	Interfacing Components – Interfacing Components Internals Hold Down Spring	Alignment and Interfacing Components – Internals Hold Down Spring (Tables 3-3, 4-3 and 5-3)
26	Mixing Devices - Support Column Orifice Base - Support Column Mixer	Upper Internals Assembly – Mixing Devices Mixing devices	No additional measures

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**Table 5-1
Indian Point 2 & 3 Component Cross Reference**

Item	Letter NL-10-063 Component	MRP-191 Table 4-4	MRP-227-A
27	Support Column	Upper Internals Assembly – Upper Support Column Assemblies Column Bodies	No additional measures
28	Upper Core Plate, Fuel Alignment Pin	Upper Internals Assembly – Upper Core Plate and Fuel Alignment Pins Fuel Alignment Pins	No additional measures
29	Upper Support Plate, Support Assembly (Including Ring)	Upper Internals Assembly – Upper Support Plate Assembly Upper Support Plate Upper Support Ring or Skirt	No additional measures for the upper support plate Upper Internals Assembly – Upper Support Ring or Skirt (Tables 3-3 and 4-9)
30	Upper Support Column Bolt	Upper Internals Assembly – Upper Support Column Assemblies Bolts	No additional measures
31	Bottom Mounted Instrumentation Column	Lower Internals Assembly – Bottom-Mounted Instrumentation (BMI) Column Assemblies BMI Column Bodies	Bottom Mounted Instrumentation System – Bottom Mounted Instrumentation (BMI) Column Bodies (Tables 3-3 and 4-6)

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**Table 5-1
Indian Point 2 & 3 Component Cross Reference**

Item	Letter NL-10-063 Component	MRP-191 Table 4-4	MRP-227-A
32	Flux Thimble Guide Tube	Lower Internals Assembly – Flux Thimbles (Tubes) Flux Thimbles (Tubes)	Bottom Mounted Instrumentation System – Flux Thimble Tubes (Tables 3-3 and 4-9)
33	Thermocouple Conduit	Upper Internals Assembly – Upper Instrumentation Conduit and Support Conduits	No additional measures

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**Table 5-2
Primary Components at IPEC Units 2 and 3**

Item	Applicability	Effect (Mechanism)	Expansion Link	Examination Method/Frequency	Examination Coverage
Control Rod Guide Tube Assembly Guide plates (cards)	IPEC Units 2 and 3	Loss of Material (Wear)	None	Visual (VT-3) examination no later than 2 refueling outages from the beginning of the license renewal period. Subsequent examinations are required on a ten-year interval.	20% examination of the number of CRGT assemblies, with all guide cards within each selected CRGT assembly examined. See Figure 2-2
Control Rod Guide Tube Assembly Lower flange welds	IPEC Units 2 and 3	Cracking (SCC, Fatigue) Aging Management (IE and TE)	Bottom-mounted instrumentation (BMI) column bodies, Lower support column bodies (cast) Upper core plate Lower support casting	Enhanced visual (EVT-1) examination to determine the presence of crack-like surface flaws in flange welds no later than 2 refueling outages from the beginning of the license renewal period and subsequent examination on a ten-year interval.	100% of outer (accessible) CRGT lower flange weld surfaces and adjacent base metal on the individual periphery CRGT assemblies. A minimum of 75% of the total identified sample population must be examined. See Figure 2-3

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**Table 5-2
Primary Components at IPEC Units 2 and 3**

Item	Applicability	Effect (Mechanism)	Expansion Link	Examination Method/Frequency	Examination Coverage
Core Barrel Assembly Upper core barrel flange weld	IPEC Units 2 and 3	Cracking (SCC)	Core barrel outlet nozzle welds	Periodic enhanced visual (EVT- 1) examination, no later than 2 beginning of the license renewal period and subsequent examination on a ten-year interval.	100% of one side of the accessible surfaces of the selected weld and adjacent base metal. A minimum of 75% of the total weld length (examined + unexamined), including coverage consistent with the Expansion criteria in Table 5-5, must be examined from either the inner or outer diameter for inspection credit. See Figure 2-4
Core Barrel Assembly Upper and lower core barrel cylinder girth welds	IPEC Units 2 and 3	Cracking (SCC, IASCC, Fatigue)	Upper and lower core barrel cylinder axial welds	Periodic enhanced visual (EVT- 1) examination, no later than 2 beginning of the license renewal period and subsequent examination on a ten-year interval.	100% of one side of the accessible surfaces of the selected weld and adjacent base metal. A minimum of 75% of the total weld length (examined + unexamined), including coverage consistent with the Expansion criteria in Table 5-5, must be examined from either the inner or outer diameter for inspection credit. See Figure 2-4

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**Table 5-2
Primary Components at IPEC Units 2 and 3**

Item	Applicability	Effect (Mechanism)	Expansion Link	Examination Method/Frequency	Examination Coverage
Core Barrel Assembly Lower core barrel flange weld (At IPEC this weld is the lower core barrel to lower support casting weld. IPEC does not have a lower core barrel flange)	IPEC Units 2 and 3	Cracking (SCC, Fatigue)	None	Periodic enhanced visual (EVT-1) examination, no later than 2 refueling outages from the beginning of the license renewal period and subsequent examination on a ten-year interval.	100% of one side of the accessible surfaces of the selected weld and adjacent base metal. A minimum of 75% of the total weld length (examined + unexamined), including coverage consistent with the Expansion criteria in Table 5-5, must be examined from either the inner or outer diameter for inspection credit. See Figure 2-4 (Core Barrel to Support Plate Weld)

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**Table 5-2
Primary Components at IPEC Units 2 and 3**

Item	Applicability	Effect (Mechanism)	Expansion Link	Examination Method/Frequency	Examination Coverage
Baffle-Former Assembly Baffle-edge bolts	IPEC Units 2 and 3	Cracking (IASCC, Fatigue) that results in <ul style="list-style-type: none"> • Lost or broken locking devices • Failed or missing bolts • Protrusion of bolt heads Aging Management (IE and ISR) Void swelling effects on this component is managed through management of void swelling on the entire baffle-former assembly.	None	Visual (VT-3) examination between 20 and 40 EFPY and subsequent examinations on a ten-year interval.	Bolts and locking devices on high fluence seams. 100% of components accessible from core side. A minimum of 75% of the total population (examined + unexamined), including coverage consistent with the Expansion criteria in Table 5-5, must be examined for inspection credit. See Figure 2-5

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**Table 5-2
Primary Components at IPEC Units 2 and 3**

Item	Applicability	Effect (Mechanism)	Expansion Link	Examination Method/Frequency	Examination Coverage
Baffle-Former Assembly Baffle-former bolts	IPEC Units 2 and 3	Cracking (IASCC, Fatigue) Aging management (IE and ISR) Void swelling effects on this component is managed through management of void swelling on the entire baffle- former assembly.	Lower support column bolts, Barrel-former bolts	Baseline volumetric (UT) examination between 25 and 35 EFYP, with subsequent examination on a ten-year interval. <u>See additional IPEC specific examination requirements in Section 6.2.</u>	100% of accessible bolts. A minimum of 75% of the total population (examined + unexamined), including coverage consistent with the Expansion criteria in Table 5-5, must be examined for inspection credit. Heads accessible from the core side. UT accessibility may be affected by complexity of head and locking device designs. See Figures 2-5 and 2-6.

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**Table 5-2
Primary Components at IPEC Units 2 and 3**

Item	Applicability	Effect (Mechanism)	Expansion Link	Examination Method/Frequency	Examination Coverage
Baffle-Former Assembly (Includes: Baffle plates, baffle edge bolts and indirect effects of void swelling in former plates)	IPEC Units 2 and 3	Distortion (Void Swelling), or Cracking (IASCC) that results in <ul style="list-style-type: none"> • Abnormal interaction with fuel assemblies • Gaps along high fluence baffle joint • Vertical displacement of baffle plates near high fluence joint • Broken or damaged edge bolt locking systems along high fluence baffle joint 	None	Visual (VT-3) examination to check for evidence of distortion, with baseline examination between 20 and 40 EFPY and subsequent examinations on a ten-year interval.	Core side surface as indicated. See Figures 2-6, 2-7, 2-8 and 2-9.
Alignment and Interfacing Components Internals hold down spring	IPEC Units 2 and 3	Distortion (Loss of Load) Note: This mechanism was not strictly identified in the original list of age-related degradation mechanisms.	None	Direct measurement of spring height within three cycles of the beginning of the license renewal period. If the first set of measurements is not sufficient to determine life, spring height measurements must be taken during the next two outages, in order to extrapolate the expected spring height to 60 years.	Measurements should be taken at several points around the circumference of the spring, with a statistically adequate number of measurements at each point to minimize uncertainty. See Figure 2-10

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**Table 5-2
Primary Components at IPEC Units 2 and 3**

Item	Applicability	Effect (Mechanism)	Expansion Link	Examination Method/Frequency	Examination Coverage
Thermal Shield Assembly Thermal shield flexures	IPEC Units 2 and 3	Cracking (Fatigue) or Loss of Materials (Wear) that results in thermal shield flexures excessive wear, fracture or complete separation	None	Visual (VT-3) no later than 2 refueling outages from the beginning of the license renewal period. Subsequent examinations on a ten year interval.	100% of thermal shield flexures See Figures 2-11 and 2-16

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**Table 5-3
Expansion Components at IPEC Units 2 and 3**

Item	Applicability	Effect (Mechanism)	Primary Link	Examination Method	Examination Coverage
Upper Internals Assembly Upper core plate	IPEC Units 2 and 3	Cracking (Fatigue, Wear)	Control rod guide tube (CRGT) lower flange weld	Enhanced visual (EVT-1) examination. Re-inspection every 10 years following initial inspection.	100% of accessible surfaces. A minimum of 75% coverage of the entire examination area or volume, or a minimum sample size of 75% of the total population of like components of the examination is required (including both the accessible and inaccessible portions). See Figure 2-1
Lower Internals Assembly Lower support casting	IPEC Units 2 and 3	Cracking Aging Management (TE in Casting)	Control rod guide tube (CRGT) lower flange weld	Enhanced visual (EVT-1) examination. Re-inspection every 10 years following initial inspection.	100% of accessible surfaces. A minimum of 75% coverage of the entire examination area or volume, or a minimum sample size of 75% of the total population of like components of the examination is required (including both the accessible and inaccessible portions). See Figure 2-1 (Core Support)

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**Table 5-3
Expansion Components at IPEC Units 2 and 3**

Item	Applicability	Effect (Mechanism)	Primary Link	Examination Method	Examination Coverage
Core Barrel Assembly Barrel-former bolts	IPEC Units 2 and 3	Cracking (IASCC, Fatigue) Aging Management (IE, Void Swelling and ISR)	Baffle-former bolts	Volumetric (UT) examination. Re-inspection every 10 years following initial inspection.	100% of accessible bolts. Accessibility may be limited by presence of thermal shields. A minimum of 75% coverage of the entire examination area or volume, or a minimum sample size of 75% of the total population of like components of the examination is required (including both the accessible and inaccessible portions). See Figure 2-5

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**Table 5-3
Expansion Components at IPEC Units 2 and 3**

Item	Applicability	Effect (Mechanism)	Primary Link	Examination Method	Examination Coverage
Lower Support Assembly Lower support column bolts	IPEC Units 2 and 3	Cracking (IASCC, Fatigue) Aging Management (IE, and ISR)	Baffle-former bolts	Volumetric (UT) examination. Re-inspection every 10 years following initial inspection.	100% of accessible bolts or as supported by plant- specific justification. A minimum of 75% coverage of the entire examination area or volume, or a minimum sample size of 75% of the total population of like components of the examination is required (including both the accessible and inaccessible portions) See Figures 2-12 and 2-13
Core Barrel Assembly Core barrel outlet nozzle welds	IPEC Units 2 and 3	Cracking (SCC, Fatigue) Aging Management (IE of lower sections)	Upper core barrel flange weld	Enhanced visual (EVT-1) examination. Re-inspection every 10 years following initial inspection.	100% of one side of the accessible surfaces of the selected weld and adjacent base metal. A minimum of 75% coverage of the entire examination area or volume, or a minimum sample size of 75% of the total population of like components of the examination is required (including both the accessible and inaccessible portions) See Figure 2-4

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**Table 5-3
Expansion Components at IPEC Units 2 and 3**

Item	Applicability	Effect (Mechanism)	Primary Link	Examination Method	Examination Coverage
Core Barrel Assembly Upper and lower core barrel cylinder axial welds	IPEC Units 2 and 3	Cracking (SCC, IASCC) Aging Management (IE)	Upper and lower core barrel cylinder girth welds	Enhanced visual (EVT-1) examination. Re-inspection every 10 years following initial inspection.	100% of one side of the accessible surfaces of the selected weld and adjacent base metal. A minimum of 75% coverage of the entire examination area or volume, or a minimum sample size of 75% of the total population of like components of the examination is required (including both the accessible and inaccessible portions) See Figure 2-4
Lower Support Assembly Lower support column bodies (non cast)	IPEC lower support column bodies are cast. They are captured in the next item of this table.				

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**Table 5-3
Expansion Components at IPEC Units 2 and 3**

Item	Applicability	Effect (Mechanism)	Primary Link	Examination Method	Examination Coverage
Lower Support Assembly Lower support column bodies (cast)	IPEC Units 2 and 3	Cracking (IASCC) including the detection of fractured support columns Aging Management (IE)	Control rod guide tube (CRGT) lower flanges	Enhanced visual (EVT-1) examination. Re-inspection every 10 years following initial inspection.	100% of accessible support columns. A minimum of 75% coverage of the entire examination area or volume, or a minimum sample size of 75% of the total population of like components of the examination is required (including both the accessible and inaccessible portions) See Figure 2-14
Bottom Mounted Instrumentation System Bottom-mounted instrumentation (BMI) column bodies	IPEC Units 2 and 3	Cracking (Fatigue) including the detection of completely fractured column bodies Aging Management (IE)	Control rod guide tube (CRGT) lower flanges	Visual (VT-3) examination of BMI column bodies as indicated by difficulty of insertion/withdrawal of flux thimbles. Re-inspection every 10 years following initial inspection. Flux thimble insertion/withdrawal to be monitored at each inspection interval.	100% of BMI column bodies for which difficulty is detected during flux thimble insertion/withdrawal. See Figure 2-15

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**Table 5-4
Existing Program Components at IPEC Units 2 and 3**

Item	Applicability	Effect (Mechanism)	Reference	Examination Method	Examination Coverage
Core Barrel Assembly Core barrel flange	IPEC Units 2 and 3	Loss of material (Wear)	ASME Code Section XI	Visual (VT-3) examination to determine general condition for excessive wear.	All accessible surfaces at specified frequency.
Upper Internals Assembly Upper support ring or skirt IPEC has a tophat design, therefore there is no support ring or skirt, however the vertical sections of the tophat will be inspected	IPEC Units 2 and 3	Cracking (SCC, Fatigue)	ASME Code Section XI	Visual (VT-3) examination.	All accessible surfaces at specified frequency.
Lower Internals Assembly Lower core plate	IPEC Units 2 and 3	Cracking (IASCC, Fatigue) Aging Management (IE)	ASME Code Section XI	Visual (VT-3) examination of the lower core plates to detect evidence of distortion and/or loss of bolt integrity.	All accessible surfaces at specified frequency.
Lower Internals Assembly Lower core plate	IPEC Units 2 and 3	Loss of material (Wear)	ASME Code Section XI	Visual (VT-3) examination.	All accessible surfaces at specified frequency.
Bottom Mounted Instrumentation System Flux thimble tubes	IPEC Units 2 and 3	Loss of material (Wear)	NUREG-1801 Rev. 1	Surface (ET) examination.	Eddy current surface examination as defined in plant response to IEB 88-09
Alignment and Interfacing Components Clevis insert bolts	IPEC Units 2 and 3	Loss of material (Wear)	ASME Code Section XI	Visual (VT-3) examination.	All accessible surfaces at specified frequency.
Alignment and Interfacing Components Upper core plate alignment pins	IPEC Units 2 and 3	Loss of material (Wear)	ASME Code Section XI	Visual (VT-3) examination.	All accessible surfaces at specified frequency.

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Table 5-5

Examination Acceptance and Expansion Criteria at IPEC Units 2 and 3

Item	Applicability	Examination Acceptance Criteria (Note 1)	Expansion Link(s)	Expansion Criteria	Additional Examination Acceptance Criteria
Control Rod Guide Tube Assembly Guide plates (cards)	IPEC Units 2 and 3	Visual (VT-3) examination. The specific relevant condition is wear that could lead to loss of control rod alignment and impede control assembly insertion.	None	N/A	N/A
Control Rod Guide Tube Assembly Lower flange welds	IPEC Units 2 and 3	Enhanced visual (EVT-1) examination. The specific relevant condition is a detectable crack-like surface indication.	a. Bottom-mounted instrumentation (BMI) column bodies b. Lower support column bodies (cast), upper core plate and lower support casting	a. Confirmation of surface-breaking indications in two or more CRGT lower flange welds, combined with flux thimble insertion/withdrawal difficulty, shall require visual (VT-3) examination of BMI column bodies by the completion of the next refueling outage. b. Confirmation of surface-breaking indications in two or more CRGT lower flange welds shall require EVT-1 examination of cast lower support column bodies, upper core plate and lower support casting within three fuel cycles following the initial observation.	a. For BMI column bodies, the specific relevant condition for the VT-3 examination is completely fractured column bodies. b. For cast lower support column bodies, upper core plate and lower support casing, the specific relevant condition is a detectable crack-like surface indication.

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Table 5-5

Examination Acceptance and Expansion Criteria at IPEC Units 2 and 3

Item	Applicability	Examination Acceptance Criteria (Note 1)	Expansion Link(s)	Expansion Criteria	Additional Examination Acceptance Criteria
Core Barrel Assembly Upper core barrel flange weld	IPEC Units 2 and 3	Periodic enhanced visual (EVT-1) examination. The specific relevant condition is a detectable crack-like surface indication.	a. Core barrel outlet nozzle welds b. Lower support column bodies (non cast) IPEC lower support column bodies are cast	a. The confirmed detection and sizing of a surface-breaking indication with a length greater than two inches in the upper core barrel flange weld shall require that the EVT-1 examination be expanded to include the core barrel outlet nozzle welds by the completion of the next refueling outage. b. N/A	a. The specific relevant condition for the expansion core barrel outlet nozzle weld examination is a detectable crack-like surface indication. b. N/A
Core Barrel Assembly Lower core barrel flange weld (At IPEC this weld is the lower core barrel to lower support casting weld. IPEC does not have a lower core barrel flange.)	IPEC Units 2 and 3	Periodic enhanced visual (EVT-1) examination. The specific relevant condition is a detectable crack-like surface indication.	None	None	None

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Table 5-5

Examination Acceptance and Expansion Criteria at IPEC Units 2 and 3

Item	Applicability	Examination Acceptance Criteria (Note 1)	Expansion Link(s)	Expansion Criteria	Additional Examination Acceptance Criteria
Core Barrel Assembly Upper core barrel cylinder girth welds	IPEC Units 2 and 3	Periodic enhanced visual (EVT-1) examination. The specific relevant condition is a detectable crack-like surface indication.	Upper core barrel cylinder axial welds	The confirmed detection and sizing of a surface-breaking indication with a length greater than two inches in the upper core barrel cylinder girth welds shall require that the EVT-1 examination be expanded to include the upper core barrel cylinder axial welds by the completion of the next refueling outage.	The specific relevant condition for the expansion upper core barrel cylinder axial weld examination is a detectable crack-like surface indication.
Core Barrel Assembly Lower core barrel cylinder girth welds	IPEC Units 2 and 3	Periodic enhanced visual (EVT-1) examination. The specific relevant condition is a detectable crack-like surface indication.	Lower core barrel cylinder axial welds	The confirmed detection and sizing of a surface-breaking indication with a length greater than two inches in the lower core barrel cylinder girth welds shall require that the EVT-1 examination be expanded to include the lower core barrel cylinder axial welds by the completion of the next refueling outage.	The specific relevant condition for the expansion lower core barrel cylinder axial weld examination is a detectable crack-like surface indication.
Baffle-Former Assembly Baffle-edge bolts	IPEC Units 2 and 3	Visual (VT-3) examination. The specific relevant conditions are missing or broken locking devices, failed or missing bolts, and protrusion of bolt heads.	None	N/A	N/A

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Table 5-5

Examination Acceptance and Expansion Criteria at IPEC Units 2 and 3

Item	Applicability	Examination Acceptance Criteria (Note 1)	Expansion Link(s)	Expansion Criteria	Additional Examination Acceptance Criteria
Baffle-Former Assembly Baffle-former bolts	IPEC Units 2 and 3	Volumetric (UT) examination. The examination acceptance criteria for the UT of the baffle-former bolts shall be established as part of the examination technical justification.	a. Lower support column bolts b. Barrel-former bolts	a. Confirmation that more than 5% of the baffle-former bolts actually examined on the four baffle plates at the largest distance from the core (presumed to be the lowest dose locations) contain unacceptable indications shall require UT examination of the lower support column bolts within the next three fuel cycles. b. Confirmation that more than 5% of the lower support column bolts actually examined contain unacceptable indications shall require UT examination of the barrel-former bolts.	a and b. The examination acceptance criteria for the UT of the lower support column bolts and the barrel-former bolts shall be established as part of the examination technical justification.

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Table 5-5

Examination Acceptance and Expansion Criteria at IPEC Units 2 and 3

Item	Applicability	Examination Acceptance Criteria (Note 1)	Expansion Link(s)	Expansion Criteria	Additional Examination Acceptance Criteria
Baffle-Former Assembly Assembly	IPEC Units 2 and 3	Visual (VT-3) examination. The specific relevant conditions are evidence of abnormal interaction with fuel assemblies, gaps along high fluence shroud plate joints, vertical displacement of shroud plates near high fluence joints, and broken or damaged edge bolt locking systems along high fluence baffle plate joints.	None	N/A	N/A
Alignment and Interfacing Components Internals hold down spring	IPEC Units 2 and 3	Direct physical measurement of spring height. The examination acceptance criterion for this measurement is that the remaining compressible height of the spring shall provide hold-down forces within the plant-specific design tolerance.	None	N/A	N/A

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Table 5-5

Examination Acceptance and Expansion Criteria at IPEC Units 2 and 3

Item	Applicability	Examination Acceptance Criteria (Note 1)	Expansion Link(s)	Expansion Criteria	Additional Examination Acceptance Criteria
Thermal Shield Assembly Thermal shield flexures	IPEC Units 2 and 3	Visual (VT-3) examination. The specific relevant conditions for thermal shield flexures are excessive wear, fracture, or complete separation.	None	N/A	N/A

Notes:

1. The examination acceptance criterion for visual examination is the absence of the specified relevant condition

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**Table 5-6
Reactor Vessel Component ISI Program Inspection Plan for IPEC Units 2 and 3**

Component	Code Category	Examination Method	Extent of Exam
Lower Internals - Exterior Core barrel surface	B-N-3	VT-3	Components and areas as accessible
Lower Internals - Exterior Thermal Shield	B-N-3	VT-3	Components and areas as accessible
Lower Internals - Exterior Irradiation specimen tubes and guides	B-N-3	VT-3	Components and areas as accessible
Lower Internals - Exterior Flexures	B-N-3	VT-3	Components and areas as accessible
Lower Internals - Exterior Fasteners and locking devices	B-N-3	VT-3	Components and areas as accessible
Lower Internals - Exterior Outlet nozzles at 22 deg, 158 deg, 202 deg, and 338 deg	B-N-3	VT-3	Components and areas as accessible
Lower Internals – Exterior Bottom Lower core support plate	B-N-3	VT-3	Components and areas as accessible
Lower Internals – Exterior Bottom Flow distribution plate	B-N-3	VT-3	Components and areas as accessible
Lower Internals – Exterior Bottom Lower support casting	B-N-3	VT-3	Components and areas as accessible

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**Table 5-6
Reactor Vessel Component ISI Program Inspection Plan for IPEC Units 2 and 3**

Component	Code Category	Examination Method	Extent of Exam
Lower Internals – Exterior Bottom Core support column	B-N-3	VT-3	Components and areas as accessible
Lower Internals – Exterior Bottom Secondary core support	B-N-3	VT-3	Components and areas as accessible
Lower Internals – Exterior Bottom Instrumentation guides	B-N-3	VT-3	Components and areas as accessible
Lower Internals – Exterior Bottom Radial support keys	B-N-3	VT-3	Components and areas as accessible
Lower Internals – Interior Bottom Outlet nozzles at 22 deg, 158 deg, 202 deg, and 338 deg	B-N-3	VT-3	Components and areas as accessible
Lower Internals – Interior Bottom Core barrel alignment pin	B-N-3	VT-3	Components and areas as accessible
Lower Internals – Interior Bottom Lower core plate	B-N-3	VT-3	Components and areas as accessible
Lower Internals – Interior Bottom Fuel alignment pins	B-N-3	VT-3	Components and areas as accessible
Upper Internals Assembly Vertical sections of tophat	B-N-3	VT-3	Components and areas as accessible

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**Table 5-6
Reactor Vessel Component ISI Program Inspection Plan for IPEC Units 2 and 3**

Component	Code Category	Examination Method	Extent of Exam
Core Barrel Assembly Core barrel flange	B-N-3	VT-3	Components and areas as accessible
Alignment and Interfacing Components Clevis insert bolts	B-N-3	VT-3	Components and areas as accessible
Alignment and Interfacing Components Upper core plate alignment pins	B-N-3	VT-3	Components and areas as accessible

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**Table 5-7
List of IPEC Reactor Vessel Interior Components and Materials Based on MRP-191 – Table 4-4**

UPPER INTERNALS ASSEMBLY			
Sub Assembly	Component	Material	Category from MRP-191 Table 7-2
Control rod guide tube assemblies and flow downcomers	Anti-rotation studs and nuts	Stainless steel	A
	Bolts	Stainless steel	A
	C-tubes	Stainless steel	C
	Enclosure pins	Stainless steel	A
	Upper guide tube enclosures	Stainless steel	A
	Flanges intermediate	Stainless steel	A
	Flanges lower	Stainless steel	A
	Flexureless inserts	Stainless steel	A
	Guide plates/cards	Stainless steel	C
	Guide tube support pins (split pins)	A X-750 (IP2 only)	C
	Guide tube support pins (split pins)	Stainless steel (IP3 only)	A
	Housing plates	Stainless steel	A
	Inserts	Stainless steel	A
	Lock bars	Stainless steel	A
	Sheaths	Stainless steel	C
	Support pin cover plate	Stainless steel	A
	Support pin cover plate cap screws	Stainless steel	A
	Support pin cover plate locking caps and tie straps	Stainless steel	A
	Support pin nuts	Alloy X-750 (IP2 only)	A
	Support pin nuts	Stainless steel (IP3 only)	A
	Water flow slot ligaments	Stainless steel	A
Mixing Devices	Mixing devices	CASS	A
Upper core plate and fuel alignment pins	Fuel alignment pins	Stainless steel	A
	Upper core plate	Stainless steel	A
Upper instrumentation conduit and supports	Bolting	Stainless steel	A
	Brackets,clamps,terminal blocks, and conduit straps	Stainless steel	A
	Conduit seal assembly-body, tubesheets	Stainless steel	A
	Conduit seal assembly-tubes	Stainless steel	A
	Conduits	Stainless steel	A
	Flange base	Stainless steel	A
	Locking caps	Stainless steel	A
	Support tubes	Stainless steel	A
Upper plenum	UHI flow column bases	CASS	A
	UHI flow columns	Stainless steel	A

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**Table 5-7
List of IPEC Reactor Vessel Interior Components and Materials Based on MRP-191 – Table 4-4**

UPPER INTERNALS ASSEMBLY			
Sub Assembly	Component	Material	Category from MRP-191 Table 7-2
Upper support column assemblies	Adapters	Stainless steel	A
	Bolts	Stainless steel	A
	Column bases	CASS	A
	Column bodies	Stainless steel	A
	Extension tubes	Stainless steel	A
	Flanges	Stainless steel	A
	Lock keys	Stainless steel	A
	Nuts	Stainless steel	A
Upper support plate assembly	Bolts	Stainless steel	A
	Deep beam ribs	Stainless steel	A
	Deep beam stiffeners	Stainless steel	A
	Flange	Stainless steel	A
	Inverted top hat flange	Stainless steel	A
	Inverted top hat upper support plate	Stainless steel	A
	Lock keys	Stainless steel	A
	Ribs	Stainless steel	A
	Upper support plate	Stainless steel	A
	Upper support ring or skirt	Stainless steel	B
LOWER INTERNALS ASSEMBLY			
Sub Assembly	Component	Material	Category from MRP-191 Table 7-2
Baffle and former assembly	Baffle bolting locking bar	Stainless steel	A
	Baffle edge bolts	Stainless steel	C
	Baffle plates	Stainless steel	B
	Baffle former bolts	Stainless steel	C
	Barrel former bolts	Stainless steel	C
	Former plates	Stainless steel	B
Bottom mounted instrumentation (BMI) column assemblies	BMI column bodies	Stainless steel	B
	BMI column bolts	Stainless steel	A
	BMI column collars	Stainless steel	B
	BMI column cruciforms	CASS	B
	BMI column extension bars	Stainless steel	A
	BMI column extension tubes	Stainless steel	B
	BMI column lock caps	Stainless steel	A
	BMI column nuts	Stainless steel	A
Core barrel	Core barrel flange	Stainless steel	B
	Core barrel outlet nozzles	Stainless steel	B
	Upper core barrel	Stainless steel	C
	Lower core barrel	Stainless steel	C
Diffuser plate	Diffuser plate	Stainless steel	A

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**Table 5-7
List of IPEC Reactor Vessel Interior Components and Materials Based on MRP-191 – Table 4-4**

LOWER INTERNALS ASSEMBLY			
Sub Assembly	Component	Material	Category from MRP-191 Table 7-2
Flux thimbles (tubes)	Flux thimble tube plugs - IPEC does not use tube plugs	Stainless steel	B
	Flux thimbles (tubes)	Stainless steel	C
Irradiation specimen guides	Irradiation specimen guide	Stainless steel	A
	Irradiation specimen guide bolts	Stainless steel	A
	Irradiation specimen lock caps	Stainless steel	A
	Specimen plugs	Stainless steel	A
Lower core plate (LCP) and fuel alignment pins	Fuel alignment pins	Stainless steel	A
	LCP fuel alignment pin bolts	Stainless steel	A
	LCP fuel alignment pin lock caps	Stainless steel	A
	Lower core plate	Stainless steel	C
Lower support column assemblies	Lower support column bodies	CASS	B
	Lower support column bolts	Stainless steel	B
	Lower support column nuts	Stainless steel	A
	Lower support column sleeves	Stainless steel	A
Lower support casting or forging	Lower support casting	CASS	A
Neutron panels/thermal shield	Thermal shield bolts	Stainless steel	A
	Thermal shield dowels	Stainless steel	A
	Thermal shield flexures	Stainless steel	B
	Thermal shield	Stainless steel	A
Radial support keys	Radial support key bolts	Stainless steel	A
	Radial support key lock keys	Stainless steel	A
	Radial support keys	Stainless steel	A
Secondary core support (SCS) assembly	SCS base plate	Stainless steel	A
	SCS bolts	Stainless steel	A
	SCS energy absorber	Stainless steel	A
	SCS guide posts	Stainless steel	A
	SCS housing	Stainless steel	A
	SCS lock keys	Stainless steel	A
Interfacing Components	Clevis insert bolts	A X-750	B
	Clevis insert lock keys	Stainless steel	A
	Clevis inserts	Alloy 600	A
	Head and vessel alignment pin bolts	Stainless steel	A
	Head and vessel alignment pin lock caps	Stainless steel	A
	Head and vessel alignment pins	Stainless steel	A
	Internals hold down spring	304 Stainless steel	B
	Upper core plate alignment pins	Stainless steel	B

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**Table 5-8
IPEC Response to the NRC Revision 1 to the Final Safety Evaluation of MRP-227**

MRP-227-A SER Item	IPEC Response
SER Section 4.1.1, Topical Report Condition 1 Moving components to "Expansion" category from "No additional measures" category.	In accordance with SER Section 4.1.1, the upper core plate and the lower support casting have been added to the IPEC "Expansion" inspection category and are contained in Table 5-3. The components are linked to the "Primary" component CRGT lower flange weld. The examination method is consistent with the examinations performed on the CRGT lower flange weld.
SER Section 4.1.2, Topical Report Condition 2 Inspection of components subject to irradiation-assisted stress corrosion cracking	In accordance with SER Section 4.1.2, the upper and lower core barrel cylinder girth welds and lower core barrel to lower support casting weld have been added to the IPEC "Primary" inspection category and are contained in Table 5-2. The examination method is consistent with the MRP recommendations for these components, the examination coverage conforms to the criteria described in Section 3.3.1 of the NRC SE, and the re-examination frequency is on a 10-year interval consistent with other "Primary" inspection category components. The inspection shall be expanded to axial welds (expansion component) in the event that degradation is observed in the girth welds.
SER Section 4.1.3, Topical Report Condition 3 Inspection of high consequence components subject to multiple degradation mechanisms	No action required. This item does not apply to components in Westinghouse designed reactors.
SER Section 4.1.4, Topical Report Condition 4 Minimum examination coverage criteria for "expansion" inspection category components	In accordance with SER Section 4.1.4, IPEC will meet the minimum inspection coverage specified in the SER. The appropriate wording has been added to Table 5-3 examination coverage.
SER Section 4.1.5, Topical Report Condition 5 Examination frequencies for baffle-former bolts	In accordance with SER Section 4.1.5, the examination frequency for baffle-former bolts specifies a 10-year inspection frequency following the baseline inspection in Table 5-2.
SER Section 4.1.6, Topical Report Condition 6 Periodicity of the re-examination of "expansion" inspection category components	In accordance with SER Section 4.1.6, Table 5-3 requires a 10-year re-examination interval for all Expansion inspection category components once degradation is identified in the associated Primary inspection category component and examination of the expansion category component commences.
SER Section 4.1.7, Topical Report Condition 7 Updating of industry guideline	No plant-specific action required.
SER Section 4.2.1, Applicant/Licensee Action Item 1	The evaluation of design and operating history demonstrating that MRP-227-A is applicable to IPEC is contained in Section 3.6.
SER Section 4.2.2, Applicant/Licensee Action Item 2	The IPEC review of components within the scope of license renewal against the information contained in MRP-191 Table 4-4 is discussed in Section 3.6.
SER Section 4.2.3, Applicant/Licensee Action Item 3	The IPEC discussion regarding guide tube support pins (split pins) is contained in Section 3.6.
SER Section 4.2.4, Applicant/Licensee Action Item 4	No action required. This item does not apply to Westinghouse designed units.
SER Section 4.2.5, Applicant/Licensee Action Item 5	The IPEC discussion regarding hold down springs is contained in Section 3.6.
SER Section 4.2.6, Applicant/Licensee Action Item 6	No action required. This item does not apply to Westinghouse designed units.
SER Section 4.2.7, Applicant/Licensee Action Item 7	The IPEC discussion regarding lower support column bodies is contained in Section 3.6.
SER Section 4.2.8, Applicant/Licensee Action Item 8	The submittal of information for staff review and approval is discussed in Section 3.6.

*Indian Point Energy Center
Reactor Vessel Internals Inspection Plan*

6.0 OPERATING EXPERIENCE AND ADDITIONAL CONSIDERATIONS

6.1 Internal and External Operating Experience

Operating experience related to degradation of reactor internal components covered in this program will be reviewed on a periodic basis. This review will include both domestic and international experience and will be documented in accordance with the Entergy operating experience process. Results of reactor internal components inspected in accordance with MRP-227-A will be collected and summarized in accordance with NEI 03-08 guidelines.

6.2 Spring 2016 Operating Experience

In the spring of 2016, during IP2 outage 2R22, ultrasonic (UT) and/or visual inspections of all 832 baffle former bolts (bolts) were performed in accordance with the NRC approved guidelines in MRP-227-A. Visual inspection of the baffle plates and bolts identified 31 degraded bolts. The UT inspections identified indications on 182 bolts and also determined that 14 bolt locations were not testable. The locations that were not testable were conservatively assumed to possess bolts that failed to meet the acceptance criteria. As a result of the inspection findings, all 227 bolts (31+182+14) with actual and assumed indications were replaced. An additional 51 bolts were replaced to reduce the probability of future failures as well as minimize the probability of clusters of failed bolts. Therefore, during 2R22, a total of 278 bolts (227+51) were replaced.

As a result of the IP2 inspection findings and other industry Operating Experience (OE) indicating a significant number of failed bolts at other similarly-designed PWR plants, the IPEC PWR Vessel Internals Program was revised. In view of the 2R22 inspection findings, Entergy arranged for the fractographic examination of eight baffle former bolts removed from the IP2 baffle structure during the Spring 2016 outage at Westinghouse Electric Company's hot cell laboratory in Churchill, PA. The results of those fractographic examinations are documented in Westinghouse Report MCOE-TR-16-18, Revision 0, "Fractography of Indian Point Unit 2 Baffle Former Bolts" (Nov. 30, 2016). Industry-sponsored metallurgical analysis and materials property testing of additional baffle former bolt specimens from IP2 and other PWRs are still in progress.

Based on as-found conditions and current industry knowledge, including the results of the fractographic examinations of the eight IP2 baffle former bolts discussed in Westinghouse Report MCOE-TR-16-18, IPEC concludes that performing a volumetric examination (i.e., UT) of the required original bolts during each refueling outage, and replacing those bolts found to be degraded until none of the remaining original bolts are required to be credited for the baffle structure to be capable of performing its intended safety function, is a reasonable and acceptable approach. Accordingly, IPEC plans to take the actions specified in paragraphs 1-5 below. These actions are subject to possible revision per the OE program based on the results of ongoing and

*Indian Point Energy Center
Reactor Vessel Internals Inspection Plan*

planned future inspection and testing of baffle former bolts from IP2 and other PWR plants. Any findings that result from the following actions will be input to the Corrective Action Program.

1. The IP3 baffle bolt inspections that were previously scheduled to be performed in 3R20 (Spring 2019) will be performed in 3R19 (Spring 2017). Visual and UT inspections on 100% of all accessible baffle former bolts, and a visual inspection of the baffle-edge bolts and baffle former assembly, will be performed in 3R19.

2. Entergy will perform a UT inspection of 100% of the original bolts at IP2 and IP3 during each of the subsequent refueling outages if any of the original bolts are required to remain structurally capable of carrying their design load to ensure structural integrity of the baffle structure during all design conditions.

3. Entergy will also perform a general visual inspection to identify anomalies in the baffle structure at IP2 and IP3 during each subsequent refueling outage.

4. Entergy will perform a UT inspection of inservice replaced (new) bolts if the general visual inspections performed in accordance with paragraph 3. above identify degraded new bolts.

5. Entergy will replace all bolts with indications that are needed to remain structurally capable of carrying their design load to ensure structural integrity of the baffle structure during all design conditions. Additional "good" or anti-cluster bolts will also be replaced to ensure that sufficient margin is maintained to accommodate the same failure rate until the next inspection as the failure rate identified during the current refueling outage. This margin will ensure compliance with the intent of the guidelines provided in WCAP-17096, Revision 2, "Reactor Internals Acceptance Criteria Methodology and Data Requirements."

Attachment 5

NL-17-021

**Entergy Notice of Permanent Cessation of Power Operations Pursuant to 10 C.F.R. 50.82(a)
dated February 8, 2017**



Entergy Nuclear Northeast
Indian Point Energy Center
450 Broadway, GSB
P.O. Box 249
Buchanan, NY 10511-0249
Tel (914) 254-6700

Anthony J Vitale
Site Vice President

NL-17-021

February 8, 2017

U.S. Nuclear Regulatory Commission
ATTN : Document Control Desk
Washington, DC 20555-0001

SUBJECT: Notification of Permanent Cessation of Power Operations
Indian Point Nuclear Generating Unit Nos. 2 and 3
Docket Nos. 50-247 and 50-286
License Nos. DPR-26 and DPR-64

Dear Sir or Madam:

On January 9, 2017, Entergy Nuclear Operations, Inc., Entergy Nuclear Indian Point 2, LLC, and Entergy Nuclear Indian Point 3, LLC (collectively, "Entergy"), the State of New York (among other related New York governmental entities), and Riverkeeper, Inc. entered into an agreement regarding the continued operation of Indian Point Units 2 and 3 ("IP2" and "IP3"). Under the agreement, IP2 will shut down by April 30, 2020, and IP3 will shut down by April 30, 2021, subject to operating extensions through, but not beyond, 2024 and 2025, respectively, under circumstances specified in the agreement. As part of the settlement agreement, Entergy further agreed to file, by February 8, 2017, a notice pursuant to 10 CFR 50.82(a)(1)(i) of the proposed permanent cessation of operations of IP2 and IP3.

In view of the January 9, 2017, agreement and pursuant to 10 CFR 50.82(a)(1)(i) and 10 CFR 50.4(b)(8), Entergy certifies to the Nuclear Regulatory Commission that it has decided to permanently cease power operations at IP2 and IP3 by April 30, 2020 and April 30, 2021, respectively. This certification and agreement to cease permanent operations at IP2 and IP3 by these dates is dependent on successful implementation of the terms of the agreement and issuance of renewal operating licenses for IP2 and IP3.¹

If you have any questions, or require additional information, please contact Mr. Robert Walpole at 914-254-6710.

¹ On this same date, February 8, 2017, Entergy is also submitting an amendment to the IP2 and IP3 license renewal application modifying the proposed terms of the renewed licenses from 20 years for each unit to the periods ending April 30, 2024 for Unit 2 and April 30, 2025 for Unit 3.

I declare under penalty of perjury that the foregoing is true and correct. Executed on
Feb 8, 2017.

Sincerely,

A handwritten signature in black ink, appearing to read "Andrew J. Viteri". The signature is fluid and cursive, with the first name "Andrew" and last name "Viteri" clearly distinguishable.

AJV/rl

cc: Mr. Daniel H. Dorman, Regional Administrator, NRC Region I
Mr. Sherwin E. Turk, NRC Office of General Counsel, Special Counsel
Mr. William Burton, NRC Senior Project Manager, Division of License Renewal
Mr. Douglas Pickett, NRR Senior Project Manager
Ms. Bridget Frymire, New York State Department of Public Service
Mr. John B. Rhodes, President and CEO NYSERDA
NRC Resident Inspector's Office

Attachment 6

NL-17-019

**Indian Point License Renewal Application Amendment
dated February 8, 2017**



Entergy Nuclear Northeast
Indian Point Energy Center
450 Broadway, GSB
P.O. Box 249
Buchanan, NY 10511-0249
Tel (914) 254-6700

Anthony J Vitale
Site Vice President

NL-17-019

February 8, 2017

U.S. Nuclear Regulatory Commission
Document Control Desk
11545 Rockville Pike, TWFN-2 F1
Rockville, MD 20852-2738

SUBJECT: Amendment to License Renewal Application – Reflecting Shortened License
Renewal Terms for Units 2 and 3
Indian Point Nuclear Generating Unit Nos. 2 and 3
Docket Nos. 50-247 and 50-286
License Nos. DPR-26 and DPR-64

REFERENCES: See Attachment 1 to this letter.

Dear Sir or Madam:

By letter dated April 23, 2007, and as later supplemented, Entergy Nuclear Operations, Inc. (Entergy) submitted a license renewal application (LRA) in accordance with 10 CFR Part 54 of the Nuclear Regulatory Commission's (NRC) regulations (Reference 1). The LRA seeks renewal of the facility operating licenses for Indian Point Energy Center (IPEC) Unit 2 (IP2) and Unit 3 (IP3) – License Numbers DPR-26 and DPR-64, respectively – for a period of 20 years beyond the expirations of the initial operating licenses on September 28, 2013, for Unit 2, and on December 12, 2015, for Unit 3.

The NRC Staff's safety and environmental reviews of the IPEC LRA, while still pending, are mostly complete. The Staff published its safety evaluation report (SER) in NUREG-1930 in November 2009 (Reference 2). The SER summarizes the results of its safety review of the LRA for compliance with the requirements of 10 CFR Part 54. The Staff issued Supplements 1 and 2 to the SER in August 2011 and November 2014, respectively, to document the Staff's reviews of supplemental information provided by Entergy subsequent to the issuance of the SER (References 3 and 4). The Staff issued its final supplemental environmental impact statement (FSEIS) for the LRA in December 2010 (Reference 5), and Supplement 1 (Volume 4) to the FSEIS in June 2013 (Reference 6). In December 2015, the Staff issued draft Supplement 2 (Volume 5) to the FSEIS (Reference 7). The final version of that document is forthcoming.

On January 9, 2017, Entergy, the Attorney General of the State of New York, and Riverkeeper, Inc. (among other related corporate and governmental entities) entered into a settlement agreement regarding the continued operation of IP2 and IP3 (Reference 8). Under the agreement, IP2 will shut down by April 30, 2020, and IP3 will shut down by April 30, 2021, subject to operating extensions through, but not beyond, 2024 and 2025, respectively, under circumstances specified in the agreement. As part of the settlement agreement, Entergy further agreed to file, by February 8, 2017, an amendment to the IPEC LRA, modifying the proposed terms of the renewed licenses

from 20 years for each unit to the periods ending April 30, 2024 for Unit 2 and April 30, 2025 for Unit 3.

For the reasons explained below, Entergy views the instant LRA amendment request as a ministerial action that does not require renoticing or re-docketing of the IPEC LRA by the NRC. Entergy filed the IPEC LRA in accordance with 10 CFR 54.19, which states, in part, that “[e]ach application must provide the information specified in 10 CFR 50.33(a) through (e), (h), and (i).” 10 CFR 50.33(e) requires the applicant to identify, among other things, “the period of time for which the [renewed] license is sought.” As reflected in Sections 1.0 and 1.1.5 of the IPEC LRA (Reference 1), Entergy requested that the IP2 and IP3 facility operating licenses (as well as any NRC source materials, special nuclear material, and by-product material licenses that are subsumed in or combined with the facility operating licenses) each be extended for a period of 20 years; i.e., to midnight September 28, 2033 for IP2 and to midnight December 12, 2035 for IP3.

Although Entergy requested that the IP2 and IP3 operating licenses be renewed for additional 20-year terms, there is no requirement that it seek a term of that duration. The text of 10 CFR 54.31(b) states that the requested renewal term is “not to exceed 20 years.” NRC guidance similarly states that “NRC regulations allow the renewal of these licenses for up to an additional 20 years,” and that “[t]he decision whether to seek license renewal rests entirely with nuclear power reactor owners, and typically is based on the plant’s economic viability and whether it can continue to meet NRC safety and environmental requirements.”¹ Thus, implicit in NRC regulations and guidance is the fact an applicant may seek renewal of a facility operating license for a period less than 20 years.

Entergy has reviewed the IPEC LRA, as revised and updated since its initial submittal, and identified those sections of the text that are affected by Entergy’s decision to seek shorter license renewal terms for IP2 and IP3. Attachment 1 contains the necessary conforming revisions to the affected LRA sections.²

Given that the requested LRA amendment will shorten the periods for which IP2 and IP3 will be authorized to operate if license renewal is granted, it will have no material adverse impact on the NRC Staff’s safety and environmental evaluations for IPEC license renewal, including the safety and environmental impact findings made by the Staff to date. Both the Staff’s safety and environmental evaluations of the IPEC LRA have been predicated on the assumption that IP2 and IP3 would operate for another 20 years beyond the 2013 and 2015 expiration dates of their initial operating licenses – i.e., until 2033 and 2035. The Staff’s SER (NUREG-1930) states that it “summarizes the results of the staff’s safety review of the LRA and describes the technical details considered in evaluating the safety aspects of the units’ proposed operation for an additional 20 years beyond the term of the current operating licenses” (Reference 2). Supplements 1 and 2 also reflect the 20-year license renewal term initially sought by Entergy (References 3 and 4). The Staff’s 2010 FSEIS explicitly states that “the NRC staff has assessed and disclosed the impacts of extending the operation of IP2 and IP3 for an additional 20 years beyond their present license terms in accordance with the National Environmental Policy Act (NEPA) and NRC’s regulations”

¹ NUREG-1850, “Frequently Asked Questions on License Renewal of Nuclear Power Reactors,” at 1-1, 1-2 (Mar. 2006) (ML061110022).

² Entergy also has revised certain statements in related sections of the LRA to indicate that IP2 and IP3 continue to operate under their original licenses in accordance with the NRC’s timely renewal regulation at 10 CFR 2.109 pending the NRC’s final determination on the IPEC LRA.

(Reference 5). Accordingly, the Staff's safety and environmental evaluations bound the shortened license renewal terms for IP2 and IP3 that Entergy seeks via the instant LRA amendment.

With regard to the Staff's safety evaluation, the key findings required by 10 CFR 54.21 and 54.29 are unaffected by Entergy's decision to seek shortened renewal terms. Specifically, with regard to 10 CFR 54.21, this LRA amendment has no effect on Entergy's (1) identification of the structures, systems, and components (SSCs) within the scope of the license renewal rule, as defined in 10 CFR 54.4 (i.e., the scoping process); or (2) identification of the in-scope structures and components that are subject to aging management review (AMR) (i.e., the screening process done as part of Entergy's integrated plant assessment, as defined in 10 CFR 54.21).

10 CFR 54.29 states that a renewed license may be issued by the Commission up to the full term authorized by § 54.31 (i.e., 20 additional years) if the Commission finds that:

(a) Actions have been identified and have been or will be taken with respect to the matters identified in Paragraphs (a)(1) and (a)(2) of this section, such that there is reasonable assurance that the activities authorized by the renewed license will continue to be conducted in accordance with the CLB, and that any changes made to the plant's CLB in order to comply with this paragraph are in accord with the Act and the Commission's regulations. These matters are:

(1) managing the effects of aging during the period of extended operation [(PEO)] on the functionality of structures and components that have been identified to require review under § 54.21(a)(1); and

(2) time-limited aging analyses [(TLAAs)] that have been identified to require review under § 54.21(c).

(b) Any applicable requirements of Subpart A of 10 CFR Part 51 have been satisfied.

(c) Any matters raised under § 2.335 have been addressed.³

Amending the LRA to reflect the shorter license renewal terms for IP2 and IP3 does not affect the substantive content of the numerous aging management programs (AMPs) that the Staff has reviewed and approved in accordance with Staff guidance. The Staff's review and approval are documented in its SER and two supplements thereto (and, in some very limited instances, the review is ongoing). It also does not affect the Staff's findings with respect to any TLAAs, namely that: (1) the analyses remain valid for the PEO; (2) the analyses have been projected to the end of the PEO; or (3) the effects of aging on the intended function(s) will be adequately managed for the PEO. As noted above, in making its reasonable assurance findings relative to specific AMPs and TLAAs, the Staff has done so on the basis that IP2 and IP3 would be operating for an additional 20 years beyond their initial license expiration dates of September 28, 2013 and December 12, 2015, respectively. See References 2-4.

During the Staff's review of the IPEC LRA, Entergy has made commitments related to AMPs to manage the aging effects for certain structures and components during the PEO. The latest version of the IPEC License Renewal Commitment List (Revision 30) was submitted to the NRC on

³ There are no pending petitions for waiver of an NRC regulation or rule in this proceeding.

January 17, 2017 as Attachment 2 to Entergy Letter NL-17-005 (Reference 9).⁴ As shown in that list, Entergy has implemented the majority of the commitments for IP2 and IP3. Moreover, the Staff has confirmed through applicable inspection processes that Entergy is implementing its license renewal commitments in an acceptable manner.⁵ Specifically, the NRC inspected the implementation of these commitments at IP2 during inspections completed on March 8, 2012; May 23, 2013; and September 12, 2013 (References 10-12). The Staff completed a similar IP3 inspection on October 9, 2015 (Reference 13).

For those license renewal commitments requiring further implementation actions, Entergy is maintaining those commitments in the current form, notwithstanding its decision to cease operations at IP2 and IP3 no later than April 30, 2024 for IP2 and April 30, 2025 for IP3. Thus, insofar as any pending commitments require Entergy to take certain actions by a date certain (e.g., by December 31, 2019) or within a specific timeframe within the PEO (e.g., “[a]pproximately 6 years after entering the PEO”), Entergy plans to complete those actions consistent with the operational status of the plants. To the extent that Entergy finds it appropriate to modify any license renewal commitment subsequent to issuance of the renewed licenses, it will do so in accordance with its established commitment change processes and procedures.

With regard to the Staff’s environmental review of the LRA, none of the findings required by NEPA and the NRC Staff’s environmental review regulations in 10 CFR Part 51 will be rendered invalid or inadequate by Entergy’s decision to amend the LRA to seek shortened renewal terms for IP2 and IP3. The Staff’s FSEIS for IPEC license renewal is a plant-specific supplement to NUREG-1437, the Staff’s Generic Environmental Impact Statement (GEIS) for license renewal, which contains the results of the NRC’s systematic evaluation of the consequences of renewing an operating license and operating a nuclear power plant for an additional 20 years (Reference 14). Therefore, like the GEIS, the FSEIS must – and does – consider the environmental impacts of operating IP2 and IP3 for an additional 20 years beyond the terms of the original licenses.

The 2010 FSEIS documents the Staff’s analysis of the environmental effects of the proposed action (including cumulative impacts), the environmental impacts of alternatives to the proposed action, and mitigation measures available for reducing or avoiding adverse effects. It also includes the Staff’s conclusion regarding the proposed action – renewal of the IP2 and IP3 operating licenses for additional 20-year periods. The Staff concluded that:

Based on (1) the analysis and findings in the [1996] GEIS, (2) the ER and other information submitted by Entergy, (3) consultation with Federal, State, Tribal, and local agencies, (4) the NRC staff’s consideration of public scoping comments received, and comments on the draft SEIS, and (5) the NRC staff’s independent

⁴ In NL-17-005, Entergy notified the Staff that it has determined that the industry analyses referenced in LR-ISG-2016-01, “Changes to Aging Management Guidance for Various Steam Generator Components” (Dec. 2016) are bounding for the IP2 and IP3 steam generator divider plate assemblies and tube-to-tubesheet welds, such that Entergy may manage the aging effect of primary water stress corrosion cracking (PWSCC) in those steam generator components in accordance with the new guidance contained in LR-ISG-2016-01. Accordingly, as explained in NL-17-005, Entergy has eliminated License Renewal Commitment 41 because it is no longer necessary, and has closed License Renewal Commitment 42 by virtue of having satisfied Option 1 (Analysis) of that commitment.

⁵ See NRC Inspection Manual, Temporary Instruction 2516/001 (Mar. 30, 2011) (ML110620255); NRC Inspection Procedure 71013, “Site Inspection for Plants with a Timely Renewal Application” (Sept. 25, 2013) (ML13032A102).

review, the recommendation of the NRC staff is that the Commission determine that the adverse environmental impacts of license renewal for IP2 and IP3 are not so great that preserving the option of license renewal for energy planning decisionmakers would be unreasonable (Reference 5).

The Staff's supplemental analyses in its June 2013 final first supplement to the 2010 FSEIS did not alter its conclusion in the 2010 FSEIS regarding the proposed action (i.e., renewal of the IP2 and IP3 licenses for additional 20-year terms). Similarly, the Staff's December 2015 draft second supplement to the FSEIS reaffirms the Staff's conclusion that the adverse environmental impacts of license renewal for IP2 and IP3 are not so great that preserving the option of license renewal for energy planning decision makers would be unreasonable (Reference 7).

The closure of IP2 and IP3 sooner than originally requested in the LRA will reduce the overall environmental impacts and resource commitments associated with extended plant operation. For example, once both plants cease operations, they will no longer need to withdraw large volumes of water from the Hudson River for cooling water system operation, thereby averting related impacts to aquatic species. The early cessation of plant operations also will reduce radioactive and non-radioactive waste streams associated with plant operation. Additionally, early plant shutdown will reduce the commitment of certain resources related to continued plant operation (e.g., additional fuel procurement, the additional spent fuel storage space needed for a full 20 years of extended operation, the need to replace the reactor vessel heads).

Entergy recognizes that the early shutdown of IP2 and IP3 may reduce certain benefits of plant operation (e.g., socioeconomic benefits and air quality benefits resulting from the plants' low greenhouse gas emissions). Again, Staff analyses documented in the FSEIS and supplements thereto are bounding. In Section 8.2 of the FSEIS, the Staff specifically evaluated the no-action alternative, i.e., analyzed what would be reasonably likely to happen – in terms of both positive and adverse environmental impacts – were the Commission to deny IPEC license renewal. Importantly, to the extent that early plant shutdown (i.e., shutdown before 20 more years of operation) will necessitate replacement power, the Staff considered, in FSEIS Section 8.3, the impacts resulting from replacing the electric generation capacity of both units with alternative electric generation sources or energy conservation, importing electric power from other sources to replace power generated by IP2 and IP3, and combinations of generation and conservation measures to replace power generated by IP2 and IP3 (References 5, 7).

The early shutdown of IP2 and IP3 can also expedite certain post-operation actions and processes. Any associated impacts also are bounded by Staff analyses contained or referenced in the FSEIS and supplements thereto. In the FSEIS (Reference 5), the Staff concluded that environmental impacts associated with decommissioning, following a license renewal period of up to 20 years or following the no-action alternative, would be bounded by the discussion of impacts in Chapter 7 of the GEIS, Chapter 7 of the FSEIS, and NUREG-0586, "Final Environmental Impact Statement on Decommissioning of Nuclear Facilities" (2002) (Reference 15). The environmental impacts associated with spent fuel storage both during and following the shortened license renewal term for IP2 and IP3 also are bounded by NRC generic evaluations of such impacts contained in (1) the NRC's GEIS for license renewal (Reference 14) and (2) the Continued Storage Rule and its supporting GEIS (References 16 and 17), respectively.

In summary, Entergy is amending the IPEC LRA to reflect shortened license renewal terms for IP2 and IP3, consistent with the terms of the above-described settlement agreement. For the reasons explained above, Entergy concludes that the Staff's current safety and environmental evaluations

bound the shortened license renewal terms for IP2 and IP3 requested herein by Entergy. Although Entergy expects that the NRC Staff will reflect the shortened license renewal terms in any planned future supplements to its SER and FSEIS (including the forthcoming final version of Volume 5 of the FSEIS), Entergy views this LRA amendment as administrative in nature and not requiring renoticing or re-docketing of the LRA.

There are no new commitments being made in this submittal.

Should you have any questions concerning this report, please contact Mr. Robert W. Walpole, Licensing Manager, at (914) 254-6710.

I declare under penalty of perjury that the foregoing is true and correct. Executed on
FEB 8, 2017.

Sincerely,



AJV/rl

- Attachments:
1. List of References for Entergy Letter NL-17-019
 2. License Renewal Application Revisions Reflecting Shortened License Renewal Terms for Indian Point Units 2 and 3

cc: Mr. Daniel H. Dorman, Regional Administrator, NRC Region I
Mr. Sherwin E. Turk, NRC Office of General Counsel, Special Counsel
Mr. William Burton, NRC Senior Project Manager, Division of License Renewal
Mr. Douglas Pickett, NRR Senior Project Manager
Ms. Bridget Frymire, New York State Department of Public Service
Mr. John B. Rhodes, President and CEO NYSERDA
NRC Resident Inspector's Office

ATTACHMENT 1 TO NL-17-019

LIST OF REFERENCES FOR ENTERGY LETTER NL-17-019

ENTERGY NUCLEAR OPERATIONS, INC.
INDIAN POINT NUCLEAR GENERATING UNIT NOS. 2 AND 3
DOCKET NOS. 50-247 AND 50-286

LIST OF REFERENCES FOR ENTERGY LETTER NL-17-019

- 1) Entergy Letter NL-07-039, "Indian Point Energy Center License Renewal Application" (Apr. 23, 2007) (ML071210507)
- 2) NUREG-1930, "Safety Evaluation Report Related to the License Renewal of Indian Point Nuclear Generating Unit Nos. 2 and 3," Vols. 1 and 2 (Nov. 2009)
- 3) NUREG-1930, Supp. 1, "Safety Evaluation Report Related to the License Renewal of Indian Point Nuclear Generating Units 2 and 3" (Aug. 2011)
- 4) NUREG-1930, Supp. 2, "Safety Evaluation Report Related to the License Renewal of Indian Point Nuclear Generating Unit Nos. 2 and 3" (Nov. 2014) (ML15188A383)
- 5) NUREG-1437, Supp. 38, Vols. 1-3, "Generic Environmental Impact Statement for License Renewal of Nuclear Plants: Regarding Indian Point Nuclear Generating Unit Nos. 2 and 3 - Final Report" (Dec. 2010)
- 6) NUREG-1437, Supp. 38, Vol. 4, "Generic Environmental Impact Statement for License Renewal of Nuclear Plants: Regarding Indian Point Nuclear Generating Units Nos. 2 and 3, Final Report – Supplemental Report and Comment Responses" (June 2013)
- 7) NUREG-1437, Supp. 38, Vol. 5, "Generic Environmental Impact Statement for License Renewal of Nuclear Plants: Regarding Indian Point Nuclear Generating Unit Nos. 2 and 3 – Draft Report for Comment" (Dec. 2015)
- 8) Settlement Agreement by Entergy Nuclear Operations, Inc, the State of New York, and Riverkeeper, Inc. concerning Indian Point Energy Center (Jan. 9, 2017) (available at <http://www.riverkeeper.org/wp-content/uploads/2017/01/Indian-Point-Closure-Agreement-January-8-2017.pdf>)
- 9) Entergy Letter NL-17-005, "Entergy Actions Concerning License Renewal Commitments 41 and 42 in Response to LR-ISG-2016-01, Changes to Aging Management Guidance for Various Steam Generator Components," Attachment 2 (Indian Point Units 2 and 3 License Renewal Application, List of Regulatory Commitments, Revision 30) (Jan. 17, 2017)
- 10) Letter from J. Conte, NRC, to J. Ventosa, Site Vice President, Indian Point Energy Center, "Indian Point Nuclear Generating Unit 2 – NRC Inspection Report 05000247/2012008" (Apr. 19, 2012) (ML12110A315)
- 11) Letter from J. Trapp, NRC, to J. Ventosa, Site Vice President, Indian Point Energy Center, "Indian Point Nuclear Generating Unit 2 – NRC License Renewal Team Inspection Report 05000247/2013009" (July 5, 2013) (ML13186A179)
- 12) Letter from J. Trapp, NRC, to J. Ventosa, Site Vice President, Indian Point Energy Center, "Indian Point Nuclear Generating Unit 2 – NRC License Renewal Team Inspection Report 05000247/2013010" (Sept. 19, 2013) (ML13263A020).
- 13) Letter from M. Gray, NRC, to L. Coyle, Site Vice President, Indian Point Energy Center,

Indian Point Nuclear Generating Unit 3 – NRC License Renewal Inspection Report
05000286/ 2015011 (Nov. 19, 2015) (ML15323A026)

- 14) NUREG-1437, Rev. 1, "Generic Environmental Impact Statement for License Renewal of Nuclear Plants—Final Report" (June 2013)
- 15) NUREG-0586, "Final Environmental Impact Statement on Decommissioning of Nuclear Facilities" (2002)
- 16) Final Rule, Continued Storage of Spent Nuclear Fuel, 79 Fed. Reg. 56,238 (Sept. 19, 2014)
- 17) NUREG-2157, "Generic Environmental Impact Statement for Continued Storage of Spent Nuclear Fuel, Final Report," Vols. 1 and 2 (Sept. 2014) (ML14196A105 and ML14196A107)

ATTACHMENT 2 TO NL-17-019

**LICENSE RENEWAL APPLICATION REVISIONS REFLECTING SHORTENED
LICENSE RENEWAL TERMS FOR INDIAN POINT UNITS 2 AND 3**

Additions Underlined
Deletions Lined Out

**ENTERGY NUCLEAR OPERATIONS, INC.
INDIAN POINT NUCLEAR GENERATING UNIT NOS. 2 AND 3
DOCKET NOS. 50-247 AND 50-286**

1.0 ADMINISTRATIVE INFORMATION

Pursuant to Part 54 of Title 10 of the Code of Federal Regulations (10 CFR 54), this application seeks renewal for an additional 20-year term of the facility operating licenses (FOL) for Indian Point Energy Center (IPEC), Units 2 and 3, which are operating in accordance with the U.S. Nuclear Regulatory Commission's (NRC) "timely renewal" regulation in 10 CFR 2.109. For Indian Point Energy Center Unit 2 (IP2), the facility operating license (DPR-26) was set to expires at midnight September 28, 2013. For Indian Point Energy Center Unit 3 (IP3), the facility operating license (DPR-64) was set to expires at midnight December 12, 2015. These applications apply to renewal of the source, special nuclear, and by-product materials licenses that are combined in the facility operating licenses.

The application is based on guidance provided by the ~~U.S. Nuclear Regulatory Commission~~ NRC in NUREG-1800, *Standard Review Plan for Review of License Renewal Applications for Nuclear Power Plants*, Revision 1, September 2005, and Regulatory Guide 1.188, "Standard Format and Content for Applications to Renew Nuclear Power Plant Operating Licenses," Revision 1, September 2005, and guidance provided by NEI 95-10, *Industry Guidelines for Implementing the Requirements of 10 CFR 54 - The License Renewal Rule*, Revision 6, June 2005.

The license renewal application is intended to provide sufficient information for the NRC to complete its technical and environmental reviews pursuant to 10 CFR Parts 54 and 51, respectively. The license renewal application is designed to allow the NRC to make the findings required by 10 CFR 54.29 in support of the issuance of renewed facility operating licenses for IPEC.

1.1.5 Class and Period of License Sought

The applicants request renewal of the facility operating licenses for Unit 2 and Unit 3 (DPR-26 and DPR-64, respectively) for a period of less than 20 years. The licenses were issued under Section 104b of the Atomic Energy Act of 1954 as amended. License renewal would extend the facility operating license for Unit 2 from midnight September 28, 2013, to midnight ~~September 28, 2033~~ April 30, 2024, and the facility operating license for Unit 3 from midnight December 12, 2015, to midnight ~~December 12, 2035~~ April 30, 2025.

This application also applies to renewal of those NRC source materials, special nuclear material, and by-product material licenses that are subsumed or combined with the facility operating licenses or provisional operating license.

1.2 PLANT DESCRIPTION

Indian Point Energy Center Units 2 and 3 are located on approximately 239 acres of land on the east bank of the Hudson River at Indian Point, Village of Buchanan in upper Westchester County, New York. The site is about 24 miles north of the New York City boundary line. The nearest city is Peekskill, 2.5 miles northeast of Indian Point. Both units employ a pressurized water reactor (PWR) and nuclear steam supply system (NSSS) furnished by Westinghouse Electric Corporation. The facility operating license for Unit 2 (DPR-26) was set to expires at midnight September 28, 2013. The facility operating license for Unit 3 (DPR-64) was set to expires at midnight December 12, 2015. Units 2 and 3 continue to operate under their original licenses in accordance with the U.S. Nuclear Regulatory Commission's (NRC) "timely renewal" regulation in 10 CFR 2.109 pending the NRC's decision on the license renewal application.

4.7.3 Steam Generator Flow Induced Vibration and Tube Wear

Unit 2

Summary Description

The IPEC Unit 2 steam generators were evaluated with respect to flow induced vibration (tube wear) for the power increase. The analysis of the effects of steam generator flow induced vibration on tube wear assumed 40 years of operation.

Evaluation

The IP2 replacement steam generators went into service in January 2000 and will thus have less than 40 years of service at the end of the period of extended operation. Therefore the analysis of flow induced vibration effects on tube wear will remain valid through the end of the period of extended operation in accordance with 10 CFR 54.21(c)(1)(i).

Unit 3

Summary Description

The IPEC Unit 3 steam generators were evaluated with respect to flow induced vibration (tube wear) for the power increase. The maximum pre-uprate predicted tube wear was 1.3 mils. As a result of the 4.8% uprate, the increase in tube wear is 87%. The post-uprate wear over 40 years is approximately 2.4 mils (~4.9% through-wall wear). This amount of wear will not significantly affect the tube integrity. As the IP3 replacement steam generators went into service in 1989, they will have reached ~~46.5~~ approximately 36 years of service at the end of the period of extended operation, ~~2035~~ April 30, 2025. ~~Therefore these analyses are considered TLAA.~~ This analysis is treated as a TLAA.

Evaluation

~~As the tube wear is a function of time in service, it is appropriate to project the additional wear for the period of extended operation as 46.5/40 times the 40-year wear. Projected wear is 2.8 mils (~5.7% through wall) by the end of the period of extended operation. This is still well below the allowable 40% through-wall wear depth (20 mils). Hence the period of extended operation will not result in unacceptably high tube wear. Thus, the TLAA associated with Unit 3 tube wear has been projected to the end of the period of extended operation in accordance with 10 CFR 54.21(c)(1)(ii).~~

The IP3 replacement steam generators went into service in 1989 and will thus have less than 40 years of service at the end of the period of extended operation (April 30, 2025). Therefore, the analysis of flow induced vibration effects on tube wear will remain valid through the end of the period of extended operation in accordance with 10 CFR 54.21(c)(1)(i).

A.2.0 Supplement for Renewed Operating License

The Indian Point Energy Center license renewal application (Reference A.2-1) and information in subsequent related correspondence provided sufficient basis for the NRC to make the findings required by 10 CFR 54.29 (Final Safety Evaluation Report) (Reference A.2-2). As required by 10 CFR 54.21(d), this UFSAR supplement contains a summary description of the programs and activities for managing the effects of aging (Section A.2.1) and a description of the evaluation of time-limited aging analyses for the period of extended operation (Section A.2.2). The period of extended operation is the 20-years-after from the expiration date of the original operating license (September 28, 2013) to the proposed end of the license renewal term (April 30, 2024).

A.2.2.6 Steam Generator Flow-Induced Vibration and Tube Wear

The steam generators were evaluated with respect to flow-induced vibration (tube wear). The replacement steam generators went into service in January 2000 and will have less than 40 years of service at the end of the period of extended operation (~~September 2033~~ April 30, 2024). Therefore, these TLAA will remain valid through the end of the period of extended operation in accordance with 10 CFR 54.21(c)(1)(i).

A.3.0 Supplement for Renewed Operating License

The Indian Point Energy Center license renewal application (Reference A.3-1) and information in subsequent related correspondence provided sufficient basis for the NRC to make the findings required by 10 CFR 54.29 (Final Safety Evaluation Report) (Reference A.3-2). As required by 10 CFR 54.21(d), this UFSAR supplement contains a summary description of the programs and activities for managing the effects of aging (Section A.3.1) and a description of the evaluation of time-limited aging analyses for the period of extended operation (Section A.3.2). The period of extended operation is the 20-years-after from the expiration date of the original operating license (December 12, 2015) to the proposed end of the license renewal term (April 30, 2025).

A.3.2.6 Steam Generator Flow-Induced Vibration and Tube Wear

The steam generators were evaluated with respect to flow-induced vibration. ~~The projected tube wear is 2.8 mils (~5.7% through wall wear) by the end of the period of extended operation. Therefore, the TLAA associated with tube wear has been projected to the end of the period of extended operation in accordance with 10 CFR 54(21)(c)(1)(ii). The post-uprate wear over 40 years will not significantly affect the tube integrity. The replacement steam generators went into service in 1989 and will have less than 40 years of service at the end of the period of extended operation (April 30, 2025). Therefore, the analysis of flow induced vibration effects on tube wear will remain valid through the end of the period of extended operation in accordance with 10 CFR 54.21(c)(1)(i).~~

Attachment 7

**Clearwater Resolution of Non-Opposition to Intervenor's Motion to Withdraw
dated January 26, 2017**



RESOLUTION FOR ACTION ON INDIAN POINT SETTLEMENT AGREEMENT

The undersigned, Stephen Smith, Secretary of Hudson River Sloop Clearwater, Inc, a New York State 501(c)(3) corporation, (the "Corporation") does hereby certify that the following is a true and complete resolution adopted by action of the Board of Directors of the Corporation as of January 26, 2017, and that such resolution has not been amended or modified and continues to be in full force and effect as of this date.

RESOLVED:

That the Corporation shall not oppose the terms or implementation of the Indian Point Agreement (Jan. 8, 2017), including Appendix I, the Collateral Indian Point Agreement (Jan. 8, 2017), regarding the closing of the Indian Point Nuclear Generating Stations, Unit 2 and Unit 3; nor shall the Corporation oppose the motion by which Riverkeeper, Inc. and the State of New York have agreed to withdraw all remaining contentions before the U.S. Nuclear Regulatory Commission (NRC) concerning the proposed renewal of the Indian Point operating license,

And further RESOLVED:

That the Corporation, via its Interim Executive Director or Environmental Action Director, or such other individuals as may be designated by them, be authorized to execute all documents, petitions, and other filings necessary for the effectuation of such non-opposition, and that they may specifically state that:

"Hudson River Sloop Clearwater, Inc. does not oppose the motion by the State of New York and Riverkeeper, Inc. to withdraw Contentions NYS-25, NYS-26b/RK-TC-1b, and NYS-38/RK-TC-5 from the NRC licensing proceeding, and terminate the proceeding."

IN WITNESS WHEREOF, the undersigned has executed said Resolution on January 26, 2017.

Stephen Smith

SECRETARY

HUDSON RIVER SLOOP CLEARWATER, INC.

Hudson River Sloop Clearwater, Inc.

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Creating the Next Generation of Environmental Leaders