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Site Vice President

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NL-15-001

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Mail Stop O-P1-17
Washington, DC 20555-0001

Subject: Response to Request for Additional Information (RAI) for the Steam Generator Examination Program Results 2014 Refueling Outage (2R21)
Indian Point Unit No. 2
Docket No. 50-247
License No. DPR-26

Reference:
1. NRC letter, "Indian Point Nuclear Generating Unit No. 2-Request for Additional Information Regarding Spring 2014 Steam Generator Tube Inspection Results (TAC No. MF4866), dated December 17, 2014
2. Entergy letter NL-14-113, "Steam Generator Examination Program Results 2014 Refueling Outage (2R21)," dated September 8, 2014

Dear Sir or Madam:

Enclosed as Attachment 1 are responses to Request for Additional Information (RAIs) provided by Reference 1, on the results of the Indian Point Unit 2 Steam Generator Examination Program provided by Reference 2.

No new regulatory commitments are being made by Entergy in this correspondence.

A001
NRR

Should you or your staff have any questions regarding this matter, please contact Mr. Robert Walpole, Manager, Regulatory Assurance at (914) 254-6710.

Sincerely,

LC/cbr

Attachment 1: Steam Generator Examination Program Results 2014 Refueling Outage (2R21) RAI Responses

cc: Mr. William M. Dean, Regional Administrator, NRC Region I
Mr. Douglas Pickett, Senior Project Manager, NRC NRR DORL
NRC Resident Inspectors Office, Indian Point Energy Center
Mrs. Bridget Frymire, New York State Public Service Commission

ATTACHMENT 1 TO NL-15-001

Steam Generator Examination Program Results
2014 Refueling Outage (2R21)
RAI Responses

Entergy Nuclear Operations, Inc.
Indian Point Unit No. 2
Docket No. 50-247

Indian Point Unit 2
Steam Generator Examination Program Results
2014 Refueling Outage (2R21)
RAI Responses

The Indian Point Unit 2 Technical Specification (TS) 5.6.7 Steam Generator Tube Inspection Report required Entergy Nuclear Northeast to submit a report to the NRC within 180 days after initial entry into Mode 4 following a steam generator inspection performed in accordance with Technical Specification 5.5.7, Steam Generator (SG) Program. Entergy provided this report by Reference 2. NRC review of the submittal determined additional information was needed to complete its review and issued a letter dated December 17, 2014 (Reference 1) providing specific questions as Requests for Additional Information (RAIs). The responses to the RAIs are as follows:

RAI 1: It is indicated on page 2 that the number of effective full power months (EFPM) for the current inspection period is 22.4. Since the second inspection period begins after 120 EFPM of operation following the first inservice inspection, it would appear that as of the 2014 outage, only 6.3 EFPM had been accumulated in the second inspection period. Please verify the values in the table on page 2.

RAI 1 Response: Only 6.3 EFPM have been accumulated in the second inspection period. All values in the table on page 2 have been verified. The table below has been changed to show the second inspection period value of 6.3 EFPM and replaces the table on page 2 of the 180 day report.

Indian Point 2 Steam Generator Primary Inspection Plan

Outage	Year	Cycle EFPM	SG Cumulative EFPM	Inspection Period EFPM	Sequential Inspection Period	Notes
2R15	2002	20.6	20.6	N/A	N/A	First ISI
2R16	2004	22	42.6	22	First	No Inspection
2R17	2006	16.6	59.2	38.6	First	
2R18	2008	21.8	81	60.4	First	No Inspection
2R19	2010	22.2	103.2	82.6	First	
2R20	2012	21.3	124.5	103.9	First	No Inspection
2R21	2014	22.4	146.9	6.3	Second	
2R22	2016	22 est.	169 (est)	28 (est)	Second	No Inspection
2R23	2018	22 est.	191 (est)	50 (est)	Second	
2R24	2020	22 est.	213 (est)	72 (est)	Second	No Inspection

RAI 2: The bobbin coil was used to inspect 50% of the tubes in all four steam generators. Please confirm that these inspections included the U-bend region of the tubes in rows 1 and 2.

RAI 2 Response: The U-bend region of the tubes in rows 1 and 2 were not inspected with bobbin coil because the bobbin probe does not have an appropriate fill factor for this diameter tube. A single coil +Pt rotating probe was used to complete the 100% coverage of the tubes in rows 1 and 2. 50% of rows 1 and 2 u-bends were inspected with the single coil +Pt rotating probe.

RAI 3: Please clarify the extent and pattern of the array probe inspections in the 1st span. For example, was the array probe used to inspect 60% of the tubes from the hot-leg tube end to the first support on the hot-leg side of the steam generator (or was the examination from the top of the hot-leg tubesheet to the first hot-leg tube support)? Was the pattern random or did it include all peripheral tubes with some random sampling?

RAI 3 Response: The array probe was used to inspect 60% of the tubes in the first span on the hot leg side of the steam generator. This examination was sub-divided into two separate exams, from the hot leg tube end to the baffle plate for tubes intersecting the baffle plate and from the hot leg tube end to the first support plate for those tubes that do not intersect the baffle plate. Data was acquired from the tube end to the first structure (either the baffle plate or the first support plate). Data was analyzed from 3" below the Top of Tubesheet (TTS) to the first structure. The pattern was all peripheral tubes, all previous Possible Loose Part (PLP) indications, and the remainder random sampling.

The array probe was used to inspect 22% of the tubes in the first span on the cold leg side of the steam generator. This examination was sub-divided into two separate exams, from the cold leg tube end to the baffle plate for tube intersecting the baffle plate and from the cold leg tube end to the first support plate for those tubes that do not intersect the baffle plate. Data was acquired from the tube end to the first structure (either the baffle plate or the first support plate). Data was analyzed from 3" below the TTS to the first structure. The pattern was all peripheral tubes, and all previous PLP indications.

RAI 4: An anti-vibration bar (AVB) position verification study was performed during this outage. The conclusion of the study was that the insertion depths had not changed since the baseline examination. Please clarify the purpose of the position verification study. Was the purpose simply to address in-service movement of the AVBs or was it also to address the possibility that the AVBs were not in their correct position per design specification (NRC Information Notice 2005-29 and other foreign operating experience)?

RAI 4 Response: The purpose of the AVB position verification study was both to determine if the AVB's had experienced any in-service movement and to determine whether the AVB's were in their correct position per the design specification. The findings of the AVB position verification study have been entered into the IPEC corrective action program.

RAI 5: It appears that 165 indications of wear at the AVBs were detected in 92 tubes during the 2014 inspections. This is less than what was observed during the 2010 inspections. Since the 2014 inspections included all tubes with prior indications, please discuss any insights on this trend. Please discuss whether the data quality was similar between the two inspections.

RAI 5 Response: The detection threshold/reporting criteria for wear is that all wear 10% or greater gets reported. Due to minor variations in NDE it is possible for a tube that was reported having 10% wear in 2010 could have 9% wear in 2014 and therefore not be reported. All prior reported (10% or greater) wear indications were inspected during the 2014 inspections. The data quality was excellent during both the 2010 and 2014 inspections.

RAI 6: Please discuss whether any dents or dings were inspected with a rotating or array probe.

RAI 6 Response: 100% of all dents or dings that were 5 volts and greater were inspected with a rotating probe. 20% of all dents or dings that were 2 volts and greater but less than 5 volts were inspected with a rotating probe. All new dent or ding indications 2 volts or greater were inspected with a rotating probe.

RAI 7: For the tubes that were plugged to bound a foreign object that could not be removed, please discuss how it was determined that a foreign object was present (e.g., eddy current inspection, visual, or both). Please discuss the location of the object (top of tubesheet, 1st tube support plate, etc.).

RAI 7 Response: In Steam Generator 21 the foreign object was detected by visual inspection only, the object was not detected by eddy current testing. The foreign object was located approximately 1" above the coldleg Top of Tubesheet (TTS). From the visual inspection, the object appears to be fixed.

In Steam Generator 23 the foreign object was detected with both eddy current and visual inspection. The object was located on the hotleg TTS. From the visual inspection, the object appears to be very small and fixed.