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J.E. Pollock
Site Vice President
Indian Point Energy Center

February 5, 2008

Re: Indian Point Unit 3
Docket Nos. 50-286

NL-08-030

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

SUBJECT: **Response to Request for Additional Information Regarding The 2007 Steam Generator Tube Inspections (TAC MD 6216)**

REFERENCES:
1) Entergy letter NL-07-083 dated July 19, 2007 regarding 3R14 Steam Generator Tube Inspection Report per TS 5.6.8
2) NRC Letter dated December 7, 2007 Request for Additional Information Regarding Steam Generator Tube Inspections (TAC No. MD6216)

Dear Sir or Madam:

Entergy Nuclear Operations, Inc (Entergy) submitted a report on the 3R14 Steam Generator Tube Inspection in accordance with Technical Specification 5.6.8 (Reference 1). The NRC indicated that additional information was needed to complete the NRC review (Reference 2). The purpose of this letter is to provide that information. Attachment 1 contains the requests for additional information and the Entergy response.

There are no new regulatory commitments made in this submittal. If you should have any questions regarding this submittal, please contact Mr. Robert W. Walpole, Manager, Licensing at (914) 734-6710.

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NRR

I declare under penalty of perjury that the foregoing is true and correct. Executed on 2/5/08, 2008.

Sincerely,

J. E. Pollock
Site Vice President
Indian Point Energy Center

Attachments: 1. Response to Request for Additional Information Regarding the 2007 Steam Generator Tube Inspections (TAC MD 6216)

cc: Mr. John P. Boska, Senior Project Manager, NRC NRR DORL
Mr. Samuel J. Collins, Regional Administrator, NRC Region 1
NRC Resident Inspector, IP3
Mr. Paul D. Tonko, President, NYSERDA
Mr. Paul Eddy, New York State Public Service Commission

ATTACHMENT 1 TO NL-08-030

Response to Request for Additional Information Regarding the 2007 Steam Generator Tube Inspections (TAC MD 6216)

ENTERGY NUCLEAR OPERATIONS, INC.
INDIAN POINT NUCLEAR GENERATING UNIT NO. 3
DOCKET NO. 50-286

Response to Request for Additional Information Regarding
the 2007 Steam Generator Tube Inspections (TAC MD 6216)

In a letter dated July 19, 2007, Entergy Nuclear Operations, Inc. (Entergy), submitted information pertaining to their 2007 steam generator (SG) tube inspections at the Indian Point Nuclear Generating Unit No. 3. These inspections were performed during the Unit 3 refueling outage fourteen (RFO14). The Nuclear Regulatory Commission staff reviewed the information Entergy provided and requested, in a letter dated December 7, 2007, that additional information be provided in order to complete the NRC evaluation. Requests and responses with additional information are as follows:

1. In Section 6.0, you indicated that a loose part was detected during a secondary side visual exam. Please provide the scope and results of any other secondary side inspections (including foreign object search and retrieval) performed during the 2007 outage.

Response:

The tubesheets of all 4 steam generators were visually inspected following sludge lancing in the following areas: annulus, peripheral tubes up to 3 in from the annulus, tube lane and approximately every fifth column in-bundle from the annulus to the tube lane of both hot and cold legs. In addition, the steam drum areas of 31 and 32 steam generators were visually inspected focusing on general condition, primary separators, secondary separators, J-nozzles and the feed ring. A list of both the foreign objects retrieved and those remaining is provided in Tables 1 and 2. Those objects remaining are considered to have no potential impact on tube integrity except for the irretrievable object in SG 31 wedged between tube Row 29 Column 79 and Row 29 Column 80. Those two tubes were administratively plugged to preclude any possible leakage that might occur should the part wear into either tube.

2. +Point™ inspections were performed at the top of the tubesheet (TTS) in both the hot leg and cold leg to detect possible loose parts (PLPs). Please discuss whether there were any PLPs found by rotating probe that were not detected by the bobbin probe. In addition, discuss whether these PLPs were confirmed as loose parts via visual inspection. Please discuss whether PLPs were detected at any other locations (i.e., other than the TTS) and discuss how these were dispositioned.

Response:

During the SG eddy current inspections performed in 3R14, there were a total of 25 PLP indications. Twenty-four were made with the +Point™ probes and one with a bobbin probe. The PLP indication called with the bobbin probe was in the same location as a call made with a +Point™ probe. Eight PLP indications found with the +Point™ probes were in tubes that were not inspected with a bobbin probe. This leaves 16 PLP indications made with the +Point™ probe that were not identified with the bobbin inspection. Of those 16 PLP indications, only 2 indications in adjacent tubes were confirmed visually to be the result of a significant foreign object. This object appeared to be a piece of a washer which could not be retrieved so the two

tubes were preventatively plugged although no tube wear was detected. It should also be noted that this object was first discovered by visual examination and not with eddy current. The majority of the PLP indications were in SG 31 in areas where small piles of sludge mixed with very small pieces of wire (0.010" diameter by about ½" long) from the demister pads of the moisture separator reheaters that were replaced during RFO13. This material was not removed by sludge lancing, impractical to retrieve, and evaluated as having no impact on tube integrity. This material could explain why the bobbin probe inspections did not result in PLP indications made by the +Point™ probe. All PLP indications except 4 were located at or just above the TTS. Three indications (two at the same location reported with different probes) were approximately 2 inches above the hot leg TTS in two adjacent tubes that were reported in prior inspections and showed not signs of wear. This information was used to disposition the PLP indications in the absence of direct visual inspection. The fourth indication was approximately one inch above the cold leg TTS where a visual inspection in the area identified no foreign objects.

3. During the 2003 outage, the U-bend region of three tubes in SG 3 could not be inspected with a 0.700-inch diameter bobbin probe. Please discuss whether these three tubes were inspected this outage. In addition, please discuss whether any other tubes were found that would not pass the nominal sized probe, and whether the "restrictions" are becoming more severe with time.

Response:

The three tubes inspected in 2003 that could not pass a 0.700-inch diameter bobbin probe were all in row 3 columns 49, 50 and 57 in SG 34. None of those tubes were inspected again during RFO14 in 2007. Of the tubes inspected during RFO14, none were found that could not pass the nominal sized probe so there are no indications that any "restrictions" are developing or becoming more severe with time.

4. During the 1997 outage, possible indications of erosion-corrosion were identified in two J-tube welds in SG 4. If the steam generator internals in SG 4 were inspected in the 2007 outage, please discuss the inspection results including the results, if any, from the inspection of the two J-tube welds that had possible indications of erosion-corrosion in 1997.

Response:

The steam generator internals in SG 34 were not inspected during the RFO14 refueling outage in 2007. This inspection is currently scheduled for RFO17 in 2013. However, during the RFO14 in 2007 the upper internals of SGs 31 and 32 were inspected including selected J-nozzles. No anomalies or evidence of erosion corrosion was seen in either SG.

5. During the 2003 outage, inspections revealed one tube that was classified by the licensee as having a "trackable anomaly." This tube was not considered to be flaw-like, but was added to the sample population for the next inspection of that SG. In addition to the trackable anomaly, a free span bobbin indication was identified in one tube in 1997 in SG 4 (Row 8 Column 21). During the 1997 outage, a rotating probe inspection of this location revealed the presence of a small ding. No inspections were required to be performed on this tube and the licensee did not consider it necessary to inspect this tube as part of the sample inspection performed during RFO 12 in 2003 (i.e., the licensee did

not consider it necessary to inspect this tube until its regularly scheduled inspection during RFO 14). Please discuss whether these indications (i.e., the trackable anomaly and the freespan indication) were inspected in the 2007 outage, and if so, include the inspection results.

Response:

The tube identified with a "trackable anomaly" in 2003 was in Row 5 Column 37 in SG 32 and was not inspected during RFO14 in 2007. The tube in SG 34 at Row 8 Column 21 identified with a small ding during the 1997 outage was also not inspected during RFO14 in 2007. There was no reason to suspect that any degradation existed at those locations and they were not part of the base inspection scope of 50% of the tubes.

6. Since the 2003 inspection, there was at least one chemical excursion that exceeded Action Level 1 of the Electric Power Research Institute's Secondary Buffer Chemistry Guidelines. Please discuss whether any deleterious affects were discovered as a result of this chemical excursion (or other chemical excursions) including any abnormal deposit buildup.

Response:

No anomalies were discovered in any of the four SGs during SG inspections performed in RFO14. Based on both eddy current results and visual inspections, deposit buildup appeared consistent with previous inspection results. In addition, preliminary [no final report completed] deposit analysis results of samples taken during sludge lancing operations were also consistent with prior results. It can be concluded that any chemistry excursions that may have occurred since the 2003 inspection did not have any deleterious effects on the steam generators.

7. For future reference, please provide the cumulative effective full power months of operation for each refueling outage, or SG tube inspection outage, since the steam generators were installed.

Response:

Indian Point Unit 3 Refueling Outage Information since Steam Generator Replacement is as follows:

RFO No.	Year	Cycle EFPD	Cycle EFPM	Replacement SG Cumulative EFPM	1st Inspection Period Cumulative EFPM	Notes
6	1989	436	14.33	0.00	n/a	SG Replacement
7	1990	394	12.96	12.96	0.00	1st ISI, all 4 SGs
8	1992	414	13.61	26.57	13.61	Inspect all 4 SGs
9	1997	565	18.57	45.14	32.18	Inspect 33/34 SGs
10	1999	654	21.51	66.65	53.69	Inspect 31/32 SGs
11	2001	541	17.79	84.44	71.48	No SG inspections
12	2003	661	21.74	106.18	93.22	Inspect all 4 SGs
13	2005	669	21.98	128.16	115.20	No SG inspections

RFO No.	Year	Cycle EFPD	Cycle EFPM	Replacement SG Cumulative EFPM	1st Inspection Period Cumulative EFPM	Notes
14	2007	686	22.55	150.72	137.75	Last SG inspection in first period

8. Please confirm that the straight sections of 100 percent of the row one and row two tubes have been inspected since the first in-service inspection of your SGs.

Response:

Entergy has performed eddy current inspections of the straight section of 100 percent of the row one and row two tubes since the first in-service inspection of the replacement SGs. As of the completion of the steam generator inspections performed in RFO14 in 2007 all in-service tubes have been eddy current inspected over their full length at least once since the first in-service inspection performed in RFO7 in 1990.

Table 1 Foreign Objects Retrieved from the Steam Generators during 3R14

SG	ROW	COL	PART DESCRIPTION	AXIAL LOC	LEG	DEPTH inches	WIDTH inches	LEN inches	QTY
34	39	66	weld slag	TTS	COLD	0.25	0.25	0.36	1
34	21	87	weld slag	TTS	HOT	0.36	0.36	0.36	1
34	35	21	gasket	TTS	HOT	0.125	0.125	1	1
34	40	60	machine remnant	TTS	HOT	0.2	0.2	0.3	1
34	30	79	machine remnant	TTS	HOT	0.35	0.35	0.35	1
34	27	80	machine remnant	TTS	HOT	0.25	0.25	0.25	1
34	2	49	gasket	TTS	HOT	0.25	0.125	3	1
34	8	45	wire	TTS	HOT	0.06	0.06	4	1
34	39	60	wire	TTS	COLD	0.06	0.06	0.6	1
32	34	21	gasket	TTS	HOT	0.25	0.125	1	1
32	44	37	gasket	TTS	HOT	0.25	0.125	1	1
32	43	55	wire	TTS	HOT	0.06	0.06	0.75	1
32	40	52	gasket and wire machining	TTS	HOT	0.25	0.125	0.75	1
32	43	57	remnant	TTS	HOT	0.25	0.06	0.55	1
32	33	74	spherical object	TTS	HOT	0.33	0.33	0.33	1
32	43	50	weld slag	TTS	COLD	0.125	0.4	0.4	1
32	3	50	scale	TTS	COLD	0.125	0.3	0.75	1
31	36	20	gasket	TTS	HOT	0.125	0.062	0.5	1
31	41	67	rod	TTS	HOT	0.062	0.062	0.312	1
31	31	13	metal object	TTS	COLD	0.125	0.125	0.5	1
31	30	14	gasket	TTS	COLD	0.125	0.125	2	1
31	33	15	MSR wire pile	TTS	COLD	0.125	0.125	2	6
31	35	18	wire	TTS	COLD	0.125	0.125	1	1
31	37	20	2 wires & MSR wire / rock pile	TTS	COLD	0.125	0.125	3	6
31	37	21	gasket	TTS	COLD	0.125	0.125	0.25	1
31	39	24	machine remnant	TTS	COLD	0.125	0.375	0.5	1
31	39	24	gasket	TTS	COLD	0.125	0.125	0.375	1
31	39	25	gasket	TTS	COLD	0.125	0.125	0.375	1
31	38	26	metal object	TTS	COLD	0.125	0.125	0.36	1
31	40	26	gasket	TTS	COLD	0.125	0.125	0.5	1
31	42	31	machine remnant	TTS	COLD	0.25	0.25	0.36	1
31	42	32	wire	TTS	COLD	0.05	0.05	2.5	1
31	43	33	MSR wire	TTS	COLD	0.016	0.016	2	1
31	42	31	machine remnant	TTS	COLD	0.25	0.25	0.36	1
31	42	31	machine remnant	TTS	COLD	0.25	0.25	0.36	1
31	42	32	wire	TTS	COLD	0.05	0.05	2.5	1
31	43	33	MSR wire	TTS	COLD	0.016	0.016	2	1
31	43	61	weld slag	TTS	COLD	0.25	0.25	0.36	1
31	35	80	flat metal object	TTS	COLD	0.125	0.125	0.75	1
31	29	15	gasket	TTS	COLD	0.125	0.125	0.359	1
31	30	15	gasket	TTS	COLD	0.125	0.125	1	1
31	5	70	gasket	TTS	HOT	0.125	0.125	0.359	1
31	27	80	gasket	TTS	COLD	0.125	0.125	0.6	1

Table 2 Foreign Objects Remaining in the Steam Generators following 3R14

SG	ROW	COL	PART DESCRIPTION	AXIAL LOC	LEG	DEPTH inches	WIDTH inches	LEN inches	QTY
32	44	40	scale and MSR wire pile	TTS	COLD	0.33	0.33	0.33	1
32	42	55	MSR wire pile	TTS	HOT	0.2	0.2	0.2	6
31	27	12	MSR wire	TTS	HOT	0.016	0.016	0.25	1
31	28	11	weld slag	TTS	HOT	0.125	0.125	0.25	1
31	34	17	scale pile	TTS	HOT	0.125	0.312	0.36	6
31	36	19	scale pile	TTS	HOT	0.125	0.312	0.36	6
31	37	20	scale pile & MSR wire	TTS	HOT	0.125	0.312	0.36	12
31	36	21	sludge rock pile	TTS	HOT	0.125	0.312	0.36	6
31	38	22	sludge rock pile	TTS	HOT	0.125	0.36	0.36	4
31	38	23	sludge & scale pile	TTS	HOT	0.125	0.36	0.36	12
31	39	24	sludge & scale pile	TTS	HOT	0.125	0.36	0.36	12
31	40	25	sludge & scale pile	TTS	HOT	0.125	0.36	0.36	12
31	40	26	sludge & scale pile	TTS	HOT	0.125	0.36	0.36	12
31	40	28	sludge rock	TTS	HOT	0.125	0.36	0.36	1
31	42	30	sludge rock	TTS	HOT	0.125	0.125	0.36	1
31	42	67	MSR wire	TTS	HOT	0.016	0.016	1	1
31	38	70	sludge rock	TTS	HOT	0.125	0.125	0.36	1
31	38	22	gasket	TTS	COLD	0.125	0.125	0.25	1
31	38	23	metal object	TTS	COLD	0.125	0.125	0.25	1
31	39	27	slag	TTS	COLD	0.125	0.125	0.125	1
31	40	27	slag	TTS	COLD	0.125	0.125	0.375	1
31	44	53	sludge rock	TTS	COLD	0.125	0.125	0.25	1
31	27	15	gasket	TTS	HOT	0.125	0.06	0.25	1
31	36	20	MSR wire pile	TTS	HOT	0.015	0.015	0.12	2
34	13	15	sludge rock	TTS	HOT	0.3	0.3	0.3	1
31	29	79	metal washer	TTS	HOT	0.125	0.125	0.5	1