Murray Selman
Vice President

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July 20, 1987

Re: Indian Point Unit No. 2
Docket No. 50-247

Document Control Desk
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Subject: Steam Generator Inservice Inspection Program

Attachment A to this letter presents the Steam Generator Examination Program planned for the upcoming 1987 refueling outage for Indian Point Unit No. 2. This submittal is being made in compliance with Technical Specification 4.13.C.1

Should you have any questions, please do not hesitate to contact us.

Very truly yours,

Murray Selman

23.190.7.20.2

cc: Ms. Marylee M. Slosson
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Senior Resident Inspector
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Buchanan, NY 10511

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ATTACHMENT A

Proposed Steam Generator Examination Program 1987 Refueling Outage

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.
Indian Point Unit No. 2
Docket No. 50-247
July, 1987

Indian Point 2 - Proposed Steam Generator Examination Program 1987
Refueling Outage

1. Steam Generator Tube Eddy Current Examination

One hundred percent of the tubes in service in the four steam generators will be eddy current examined from the tubesheet to the first tube support plate.

Selected tubes in the hot and cold legs of Steam Generators 21, 22, 23 and 24 will be eddy current examined for both dents and defects. The selection of these tubes was based mainly on the results obtained from inspections during earlier outages. The examination will be performed at 10, 100, 200 and 400 KHz.

A standard 700 mil diameter eddy current probe will be used to perform the eddy current testing. If any tube does not permit passage of this standard 700 mil probe, the tube will be edddy current tested with a 610 mil probe. If any tube does not permit passage of the 610 mil probe, it will be plugged. Furthermore, the tubes immediately adjacent to any tube that does not pass the 610 mil probe will be subjected to eddy current examination.

Identification of the hot and cold leg tubes in Steam Generators 21, 22, 23 and 24 that will be eddy current examined for dents and defects is given in Tables 1, 2, 3 and 4. In Steam Generators 21, 735 tubes, or 23.8 percent of the active tubes in that steam generator, will be examined. In Steam Generator 22, 743 tubes, or 24.7 percent of the active tubes, will be examined. In Steam Generator 23, 607 tubes, or 19.5 percent of the active tubes, will be examined. In Steam Generator 24, 655 tubes, or 21.5 percent of the active tubes, will be examined.

In addition, Table 5 shows the selected tubes in both hot and cold legs which will be eddy current examined for wall thinning in the crevice between the tubes and the tubesheet. Although we do not anticipate any thinning, the experience of others has shown that these tubes are the most susceptible.

Examination will be conducted from the hot leg side of the channel head. Tubes identified as "hot legs" will be examined from the tube sheet, around the U-bend, to the uppermost support plate on the cold leg side. Tubes identified as "cold legs" will be examined full length from tubesheet to tubesheet.

In each steam generator, the eddy current examination will include tubes in the patch plate and peripheral "hard spot" areas, tubes in rows two and three, and a sample of tubes in the interior section of the bundle.

The tubes to be examined in rows two and three were selected from areas of suspected higher stress concentrations near the flow slots. Tubes in row one will not be examined because the tubes in this row in the four steam generators were plugged during plant construction.

2. Flow Slot and Lower Support Plate Inspections

Using the hand holes above the tubesheet on the four steam generators, a visual and photographic examination of the flow slots in the lower tube support plates will be made. Where feasible, higher support plates also will be photographed through the flow slots in the lower support plates.

Using the "hillside" inspection ports in Steam Generators 22 and 23, a visual and photographic examination will be made of the flow slots in the uppermost support plates.

3. Secondary Side Examination

A video camera or a borescope will be passed around the annulus between the tube bundle and the shell and down the tube lane between the hot and cold legs to search for foreign objects in the steam geberators.

4. Steam Generator Sludge Analysis

The sludge that will be removed from the steam generator tube sheets during lancing operations will be sampled and chemically analyzed.

5. J-Tube Examination

Ultrasonic examination of selected J tubes from Steam Generator 22 will be performed to determine whether any unusual wear patterns or metal loss has occurred.

TABLE 1-A
HOT LEG TUBES TO BE EDDY CURRENT EXAMINED
STEAM GENERATOR NO. 21

ROW	COLUMN	NO. OF TUBES
2	2-7,9-46, 48-77,78,79-84,87-90,92	86
3	1,2,11-20, 27-35, 43-49, 56-66, 73-76, 79-82,85,86,91,92	51
4	1,2,23,27,28,45,50,77,78,91,92	11
5	1,2,22,24-26,29,44,46,49,51,91,92	13
6	1,2,24,26,28,45,50,51,63,64,67,91,92	13
7	1-5,24,25,28,30,34,44,46,56,62,63,67, 88,90,91,92	20
8	1-5,23,25-27,29,33,35,44,47,49-51,55, 57,88-92	24
9	2-5,32,34,43,47,52,56,63,64,67,88, 90,91	16
10	2-5,29,33,39,41,44,46,49-51,56,87, 89,90,91	18
11	2-5,28,30,39,42,44,46,87,88,89,90,91	15
12	2-5,29,35,37,40-42,45,47,51,86,88, 90,91	17
13	3-5,34,36,38,41,43,45,47,87,88,89,90	14
14	3,5,35,37,38,42,46,87,88,90	10
15	6-8,37,39,46,51,88,89	9
16	6-8,36,39,45,47,88,89	9
17	4,5,24,39,41,43,46,88,89	9
18	5,6,23,25,31,40,42,44,51,81,88	11
19	5,6,31,87,88	5
20	5,6,39,87,88	5
21	6, 7, 15, 18, 21, 24, 27, 30, 33, 39, 42, 45, 48, 51,86,87	16
22	7,8,31,33,38,40,85,86	8
23	7,8,32,39,44,46,85,86	8
24	8,9,84,85	4
25	8,9,32,60,84,85	6
26	9,10,31,33,36,41,59,61,83,84	10
27	10,11,32,35,37,40,42,51,82,83	10
28	11-17,36,76-81,82	15
29	11-17,76-82	14
30	12-17, 51,76-81	13
31	15-17, 76-78	6
32	15-18,39-54,76-78	23
33	15-17,19,39,54,76-78	9
34	16, 18, 39, 40, 53, 54, 76,77	8
35	18, 39, 40, 53, 54,75,76	7

TABLE 1-A (continued)

36	19, 20, 24, 25, 27-54,73,74	34
37	20, 21, 23-54,72,73	36
38	21,22,24, 26-54,71,72	34
39	23, 24, 39, 40, 53, 54,69,70	8
40	25-27, 39, 40, 53,67,68	8
41	27,28, 39, 40, 53, 54, 62-66	11
42	29-50, 53-64	34
43	32-37,39-42,53-61	19
44	35-40, 42-58	23
45	40-54	15
	Total Number of Hot Leg Tubes	735

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TABLE 1-B
COLD TUBES EDDY CURRENT EXAMINED
STEAM GENERATOR NO. 21

ROW	COLUMN	NO. OF TUBES
7	1-5, 88, 90, 91, 92	9
8	5, 88, 91, 92	4
9	5, 88	2
10	2, 3, 5, 90, 91	5
11	2, 3, 5, 89, 90, 91	6
12	90, 91	2
18	6	1
29	13	1
31	16	1
33	16, 39	2
36	24, 25, 27, 28, 29, 30, 31, 35, 36, 37, 38, 39, 42, 43, 44, 45, 48, 49, 50, 51, 52	20
37	24-27, 30, 32, 34-44, 46, 48-52	23
38	24, 26-30, 36-46, 49-52	21
39	23, 40, 53, 54	4
40	27, 39, 40, 53	4
41	27, 40, 53	3
42	32-35, 39, 40, 53, 54, 57-61, 64	14
43	32, 34, 36,37, 39, 40,56-60	11
44	35, 36, 54, 57, 58	5
45	50, 54	2
	Total Number of Cold Leg Tubes	140

TABLE 2-A
HOT LEG TUBES TO BE EDDY CURRENT EXAMINED
STEAM GENERATOR NO. 22

ROW	COLUMN	NO. OF TUBES
2	4, 6, 8, 11-13, 18, 21, 22, 24-28, 34-41,48, 52-57, 62-74, 76,77, 78, 80-92	58
3	1,2,3, 5,6,8,9,11-14, 17-22,24-26, 28-30, 34-37,38,39,40,41,42-45,48, 52, 54,55,56,57,59-60,62-92	76
4	1,2,7,9,10,15,16,23,24,31,32,33,46, 47,52-54,56,58-60,63,87,91,92	26
5	1,2,8,23,25,32,33,47,51,55,58,61,62, 64,67,86,88,91,92	19
6	1,2,24,31,34,39,46,48,51,52,60,62,63, 66,68,87,91,92	18
7	1,2,32,33,38,46,48,51,53,58,60,62,67, 90,91,92	16
8	1,2-5,30,31,33,37,39,44,45,47,52,59, 61,63,88,89,91,92	21
9	2,3-5,29,31,32,38,43,46,60,62,88,89,91,	15
10	2-5,30,31,33,45,47,88-91	13
11	2-5,32,46,70,88,90,91	10
12	2,3-5,51,69,71,88-91	11
13	3,4-6,70,88-90	8
14	3,4-6,24,37,87,90	8
15	3,4,5,23,25,36,38,51,88 90	10
16	4,5,24,25,37,88,89	7
17	4,5,22,23,26,88,89	7
18	5,6,21,23,25,51,69,87	8
19	5,6,22,24,28,68,70,86,87,88	10
20	6,27,29,67,69,79,85,87,88	9
21	6,7,13,15,18,21,27,29,30,36, 39,42, 45,48,51,65,68,78,80,86	20
22	8,28,62,64,66,67,79,85	8
23	8,49,50,61,63,65,66,68,85,86	10
24	8,9,41,48,51,53-55,61,63,67,84,85	13
25	8,9,40,42,49,51,52,59,62,84,85	12
26	9,10,41,50,57,58,60,83,84	9
27	10,11,50,53-56,58,60,81-83	12
28	11,12-18, 77-81	13
29	11,12-17, 77-82	13
30	12,13-17, 51, 78-81	11
31	15-20, 74,75,77,78	10
32	16-18, 20, 39-54, 73,76,77,78	24
33	15-17, 19, 39-54, 74,76,77,78	24
34	18, 19, 39, 40, 49,53, 54,75, 77	10
35	17, 18, 39, 40, 48,53, 54,74	8

TABLE 2-A (continued)

36	19, 20, 39, 40, 49,51,53,54,73,74	10
37	20, 21, 23-54,73,74	36
38	21-54,71,72	36
39	23,24,39,40,53,54,69,70	8
40	25, 26, 27, 39, 40, 41, 53, 54,67,68	10
41	27,28-40, 54-66	27
42	29,30,33,34-41,53-64	23
43	33-37, 40-41, 52-61	17
44	36-39, 41-53	17
45	39-50	12
	Total Number of Hot Leg Tubes	743

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TABLE 2-B
COLD LEG TUBES EDDY CURRENT EXAMINED
STEAM GENERATOR NO. 22

ROW	COLUMN	NO. OF TUBES
3	58, 59, 60, 63	4
8	2-5, 88, 89	6
9	3, 4, 5, 51, 88, 91	6
10	2-5, 88, 90, 91	7
11	2-5, 90, 91	6
12	3, 4, 5, 51, 89, 90, 91	7
13	51	1
18	51	1
21	15, 18	2
35	17	1
36	19	1
37	23-52	30
38	23-52	30
39	23, 39, 40, 53	4
40	27, 39, 40, 41, 54	5
41	29, 30, 32-40, 55, 56, 59-66	21
42	30-32, 34-41, 53, 55-64	22
43	33-35, 37, 40, 55-61	12
44	37-39, 43, 47-50	8
45	44, 47, 48, 50	4
	Total Number of Cold Leg Tubes	178

TABLE 3-A
HOT LEG TUBES TO BE EDDY CURRENT EXAMINED
STEAM GENERATOR NO. 23

ROW	COLUMN	NO. OF TUBES
2	14-17, 19-30, 33-43, 45, 48-52, 54-60, 64-80, 82, 84, 85, 87-92	66
3	1-20, 27-31, 33-35, 43-49, 53,54, 58-63,73-81,83,86,91,92	56
4	1-14,32,55,91,92	18
5	1,2,91,92	4
6	1,2,91,92	4
7	1,2,90-92	5
8	1-4, 6, 70,72,88, 89, 91, 92	11
9	2-6, 46, 47,71,88, 90, 91	11
10	2-6, 46,48,87, 90, 91	10
11	2-6, 47,86, 89-91	10
12	2-7, 46, 48,87,89, 90, 91	12
13	3-6, 47,87,88-90	9
14	3-6, 88-90	7
15	3-6, 46, 87,88-90	9
16	4,5,88,89	4
17	4,5,88,89	4
18	5,6,46,87,88	5
19	5,6,87,88	4
20	5,6,36,87,88	5
21	6,7,16, 19, 22, 25, 28, 31, 34, 37, 40,,43,46,86,87	15
22	7,8,36,85,86	5
23	7,8,47,85,86	5
24	8,9,46,48,84,85	6
25	8,9,47,84,85	5
26	9,10,83,84	4
27	10,11,46,82,83	5
28	11-16, 77-82	12
29	11-13, 15-17, 77-82	12
30	12-17, 46, 77-81	12
31	15-17, 77, 78	5
32	15-17, 39-54, 77, 78	21
33	15-17, 34,39-54, 77, 78	22
34	16, 17, 39, 40, 53, 54,76,77	8
35	18,19,39, 40, 53, 54,75,76	8

TABLE 3-A (continued)

36	19,20,39, 40, 53, 54,73,74	8
37	20,21,23-54,72,73	36
38	21,22,23-54,71,72	36
39	23,24,33, 35, 36, 39, 40, 53,54,69,70	11
40	25,26,31-34, 36, 37, 40, 53, 54,67,68	13
41	27-31, 33-35, 37-40, 53-66	26
42	29-36, 38-40, 53,55-64	22
43	32-37, 39, 40, 53-61	17
44	35-51,52, 53-58	24
45	39-53	15
	Total Number of Hot Leg Tubes	607

Revised 6/16/87

TABLE 3-B
COLD LEG TUBES EDDY CURRENT EXAMINED
STEAM GENERATOR NO. 23

ROW	COLUMN	NO. OF TUBES
8	1,2, 4, 6, 88, 89	6
9	2,3,5, 46, 88, 90, 91	7
10	2-6, 90, 91	7
11	2-6, 90, 91	7
37	23-54	32
38	23-52	30
39	35, 36, 39, 40, 53, 54	6
40	31, 32, 34, 37	4
41	27-30, 35, 38, 64, 65, 66	9
42	29, 32, 34, 35, 36, 40, 53, 57, 58,64	10
43	34-37, 40, 53, 54, 56-60	12
44	41, 43, 46, 57, 58	5
	Total Number of Cold Leg Tubes	135

TABLE 4-A
HOT LEG TUBES TO BE EDDY CURRENT EXAMINED
STEAM GENERATOR NO. 24

ROW	COLUMN	NO. OF TUBES
2	1, 3-7, 10-16, 18-24, 26-33, 43 44, 45, 47-52, 58, 60-67, 69-77, 80-81, 85, 87-92	64
3	2,4,5,6,7,8,9,10-20,26-31,34-49, 52,54, 57-64,66,67,68,69,70,71, 73-84,85,86,87	70
4	4,5,6,7,8,9,15,16,17,18,25,37,38, 39,40,41,51,53,55,56,84,85	22
5	24,26,37,38,39,40,41,52,53,54,56, 57,65,83,86	16
6	25,26,48,63,66,84,85	7
7	1-5,25,27,44,47,49,64,65	12
8	4,5,26,27,43,45,47,48,88,89,90,91,92	13
9	2,3,5,6,26,27,44,46,48,51,55,88,89, 90,91	8 15
10	2, 3, 4, 6, 88, 89, 90, 91	8
11	2-5,7,25,27,29,45,47,49,51,55,88-90	17
12	2-5,7,23,26,28,30,46,50,88-91	16
13	3, 4, 6,22,24,29,88-90	9
14	3, 5, 23,88-90	6
15	4, 5, 25,46, 88-90	7
16	24,26,27	3
17	23,25,28,65	5
18	24,27,44,45,46,64,	6
19	44,46,65	3
20	45	1
21	13, 16, 19, 22, 25, 28, 31, 34, 37, 40, 43,44,45,46,47	15
22	43,44,45,46,47	5
23	43,44,45,46,47	5
24	32,33,43,44,45,46,47	7
25	9,31,33,43,44,45,46,47	8
26	10, 11,12,32,33	5
27	12-17, 46	7
28	14-17, 37,77-82	11
29	12-17, 36,38,39,42,76-82	17
30	12, 13, 16, 17, 37,38,40,41,43,46	16
31	15-17, 39,42,76-78	8
32	15-19, 39-54, 76-78	24
33	15-17, 20, 39-54, 76-78	23
34	16, 19, 20,39, 40, 53, 54, 76, 77	9
35	19, 20,39, 40, 53, 54, 75, 76	8

TABLE 4-A (continued)

36	20,23, 24, 39, 40, 52-54	8
37	23-54	32
38	23-54	32
39	39, 40, 52, 53, 54	5
40	39, 40, 52, 54, 60,65	6
41	27-40, 52, 53, 54, 56-59, 61-64, 66	26
42	29-40, 53-60, 62-63	22
43	32-37, 39-40, 52,53-61	18
44	35, 39-46, 48-52, 57, 58	16
45	41-53,54	14
	Total Number of Hot Leg Tubes	655

Revised 6/16/87

TABLE 4-B
COLD LEG TUBES EDDY CURRENT EXAMINED
STEAM GENERATOR NO. 24

ROW	COLUMN	NO. OF TUBES
7	3-5	3
8	4, 5, 88, 89, 91	5
9	2, 3, 88, 90, 91	5
10	2,3, 4, 88, 90, 91	6
11	2, 3, 4, 89, 90, 91	6
12	2-5, 46, 88-91	9
36	24, 27-34	9
37	26-30, 33, 34, 37-51	22
38	25-28, 30, 31, 38, 40, 42-51	18
39	39, 40, 52, 53, 54	5
40	39, 54	2
41	35, 40, 52-54, 56-58	8
42	29, 30, 34-36, 39, 40, 53-58, 60, 62, 63	16
43	32-37, 39, 53, 54, 56-60	14
44	35, 40, 42-6, 48, 57, 58	10
45	46, 48	2
	Total Number of Cold Leg Tubes	140

Con Edison memorandum

To: Lou Liberatori — Please appoint Jeff's replacement NOW! ① Tell W. Stein ASAP.

July 17, 1987

OPERATIONS SUBCOMMITTEE

W. Monti	643S	MO20
✓J. Del Percio	1300	MO20
P. Szabados	938	MO20
G. Wasilenko	615S	MO20
T. Schmeiser	IP	WO71
S. Quinn	74 St.	M270
A. Nespoli	IP	WO71

③ I cannot participate at all even as a backup.

For your review at the next Subcommittee meeting.

Walter Stein

Walter Stein

fm

WS:fm

W. Stein will have to "find" someone else to back up your appointee

cc: W. Stein (W/o Attch)

Table 5

Tubes to be Examined
for Thinning within Tubesheet

All Steam Generators

Row 10	Columns 21-25, 36-40, 52-56, 67-71
Row 15	Columns 26-35, 57-66
Row 20	Columns 35-57