ATTACHMENT A

Fourth Refueling Outage
Inservice Inspection Examination Summary

(October, 1980-May, 1981)

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.
Indian Point Unit No. 2
Docket No. 50-247
August, 1981

Indian Point Unit No. 2
Fourth Refueling Outage
Inservice Inspection
Examination Summary

An inservice examination of Class I and II components and piping systems, including reactor vessel and internals, was conducted at the Indian Point Unit No. 2 nuclear power plant during the fourth refueling outage (October 1980-May 1981). This examination completed the second 40-month period for Class I and the first for Class II components.

The program utilized surface, visual and volumetric nondestructive testing methods in accordance with the requirements of:

a. ASME Section XI 1974 with addenda through Summer 1975
b. Technical Specifications, Section 4.2.

The areas and extent to which plant components and piping systems were examined, indications noted as a result of these inspections and their disposition as well as the equipment used are identified in tables one through three of this attachment, respectively.

Eight (8) indications were identified by inspection personnel as requiring further evaluation to determine their acceptability. A detailed listing of each of these indications is presented in Table 2.

Four examinations were not performed due to design access and/or radiation field restrictions. These are as follows:

- reactor vessel nozzle-to-safe end, visual and surface
- reactor vessel closure head clad, visual and surface
- regenerative heat exchanger, surface and volumetric
- residual heat exchanger, surface and volumetric

Documentation detailing the specific access restrictions for each of the above required examinations is available in the plant records.

Inservice Inspection examination personnel were qualified in accordance with SNT-TC-1A as required by ASME B&PV Code Section XI.

Table I

Areas Examined

All items listed below were examined, as indicated, in accordance with the requirements of the Plant Technical Specification Docket No. 50-247 and to the requirements of Section XI 1974 Edition of the ASME Boiler and Pressure Vessel Code up to and including Summer 1975 Addenda and to the extent practical with the access provided and the limitations of component geometry.

IWB-2600 REFERENCE	AREA AND EXTENT OF EXAMINATION	EXAMINATION PROCEDURE *		
		U/T	SURF	V/T
B1.3	Flange to vessel weld #1. Examined from 0° clockwise to 16.7°, 106.7° CW to 136.7°, 213.4° CW to 253.3° and 303.3° CW to 326.7° (110.0° total)	X	-	-
B1.4	Loop 22 outlet nozzle to vessel. Examined weld 23 at 158°.	X	-	-
B1.4	Loop 24 outlet nozzle to vessel. Examined weld 27 at 22°.	X	-	-
B1.6	Loop 22 outlet nozzle to safe end. Examined weld 31(DM).	X	(6)	-
B1.6	Loop 24 outlet nozzle to safe end. Examined weld 35 (DM).	X	(6)	-
B1.9	Vessel flange ligaments. Examined around stud holes 8, 9, 15, 16, 31 thru 35, 39, 40, 41 and 47 thru 52. (18 total)	X	-	-
B1.10	Closure head washers. Examined washers 1,3,5,7,15, 17,24,25, 28,29,32,33,34 and 35.	-	-	X
B1.11	Conoseal bolting. Examined assemblies 72,91,92,93,95, 96 and 97.	-	-	X
B1.12	Integrally welded vessel supports.	Done in conjunction with B1.4.		
B1.14	Reactor vessel clad patches. Examined CP#1 (40°) and CP#4 (320°) each 6"x6" square area.	-	-	X

*U/T-ultrasonic examination
SURF-surface examination
V/T-visual examination

IWB-2600 REFERENCE	AREA AND EXTENT OF EXAMINATION	EXAMINATION PROCEDURE U/T	SURF	V/T
B1.15	Reactor vessel internals. Examined areas referenced in Appendix E of ISI-83.	-	-	X
	PRESSURIZER			
B2.1	Circumferential weld 1. Examined from 4" counterclockwise to 9" from centerline of instrument tap to Valve 952.	X	-	X
B2.1	Circumferential weld 3. Examined from 0" clockwise to 5" from 0 reference (adjacent weld 4)	X	-	X
B2.1	Longitudinal weld 2. Examined from 102" to 108" from 0 reference (bottom of pressurizer)	X	-	X
B2.1	Longitudinal weld 4. Examined from 0" to 7" from 0 reference (adjacent weld 3)	X	-	X
B2.4	4" pressurizer spray nozzle to safe end. Examined weld 1(DM)	X	(1)	X
	STEAM GENERATOR 21			
B3.1	Channel head to tube sheet weld weld 21-1. Examined shell inclusion area from 368" CW to 379" from 0 reference (centerline of long range level top nozzle)	X	-	X
B3.1	Channel head to tubesheet weld 21-1. Examined shell inclusion area from 167.5" to 169.5" from 0 reference (centerline of long range level level top nozzle)	X	-	X
	STEAM GENERATOR 23			
B3.3	Nozzle to safe end welds. Examined 4(DM) and 5(DM)	X	X	X

IWB-2600 REFERENCE	AREA AND EXTENT OF EXAMINATION	EXAMINATION PROCEDURE U/T	SURF	V/T
	PIPE TO SAFE END WELDS			
B4.1	Loop 22 reactor coolant pipe. Examined weld 1 (DM)	X	(6)	-
B4.1	Loop 24 reactor coolant pipe. Examined weld 1 (DM)	X	(6)	-
	AUXILIARY PIPING			
B4.5	10" accumulator discharge line 353. Examined welds 2 and 3.	X	-	X
B4.5	10" accumulator discharge line 350. Examined welds 6 and 7.	X	X(4)	X
B4.5	4" Pressurizer safety line 344. Examined welds 2 and 3.	X	-	X
B4.5	3" Pressurizer spray line 62. Examined weld 12.	X	-	X
	BRANCH CONNECTIONS			
B4.6	10" accumulator discharge line 353. Examined 1(BC)	-	X(2)	X
	BRANCH CONNECTIONS			
B4.7	3" pressurizer spray line 61. Examined 1(BC)	-	X	X
B4.7	2" SIS line 56. Examined 1(BC)	-	X	X
	SOCKET WELDS			
B4.8	2" and 1-½" seal injection line 42. Examined welds 6, 7, 8, 9 and 10.	-	X	X
B4.8	2" SIS line 56. Examined welds 2 and 3.	-	X	X
	INTEGRALLY WELDED SUPPORTS			
B4.9	3" letdown line 79. Examined H3.	X	(1)	X
B4.9	3" charging line 96. Examined H1.	X	(1)	X
	SUPPORT COMPONENTS			
B4.10	2" seal injection line 41. Examined H1 thru H14.	-	-	X
B4.10	2" seal injection line 42. Examined H1 thru H12.	-	-	X

IWB-2600 REFERENCE	AREA AND EXTENT OF EXAMINATION	EXAMINATION PROCEDURE U/T	SURF	V/T
	PRESSURE RETAINING BOLTING			
B4.12	4" pressurizer safety line 342. Examined flange 3: 8 studs and 16 nuts.	-	-	X
B4.12	4" pressurizer safety line 343. Examined flange 2: 8 studs and 16 nuts.	-	-	X
B4.12	4" pressurizer safety line 344. Examined flange 1: 8 studs and 16 nuts.	-	-	X
	REACTOR COOLANT PUMP 21			
B5.3	Main flange bolting. Examined bolts 21-B1 thru 21-B24.	-	-	X(5)
	REACTOR COOLANT PUMP 21 (DISASSEMBLED)			
B5.2	Main flange bolting. Examined studs 21-B1 thru 21-B24 and nuts 21-B1 thru 21-B19, 21-B21 and 21-B22.	X	X	-
B5.2	Main flange bolting. Examined in place nuts 21-B20, 21-B23 and 21-B24	X	-	-
B5.3	Main flange bolting. Examined studs, nuts and threaded holes in base metal 21-B1 thru 21 B24.	-	-	X
B5.9	Seal housing bolts. Examined bolts 21-B1 thru 21-B18.	-	-	X
	REACTOR COOLANT PUMP 22			
B5.3	Main flange bolting. Examined bolts 22-B1 thru 22-B24.	-	-	X(5)
B5.5	Support components. Examined supports 22-1SC and 22-3SC.	-	-	X
	REACTOR COOLANT PUMP 23			
B5.1	Main flange bolting. Examined bolts 23-B1 thru 23-B24.	X	-	-
B5.3	Main flange bolting. Examined bolts 23-B1 thru 23-B24.	-	-	X(5)

IWB-2600 REFERENCE	AREA AND EXTENT OF EXAMINATION	EXAMINATION PROCEDURE U/T	SURF	V/T
	REACTOR COOLANT PUMP 24			
B5.3	Main flange bolting. Examined bolts 24-B1 thru 24-B24.	-	-	X (5)
-	Flywheels. Examined pump motor flywheel.	X	-	X
	REACTOR COOLANT PUMP 24 (DISASSEMBLED)			
B5.2	Main flange bolting. Examined studs and nuts 24-B1 thru 24-B24.	X	X	-
B5.3	Main flange bolting. Examined studs, nuts and threaded holes in base metal 24-B1 thru 24-B24.	-	-	X
B5.9	Seal housing bolts. Examined bolts 24-B1 thru 24-B18.	-	-	X
	VALVE BONNET SUPPORTS (7)			
-	2" - 200A. Examined support.	-	-	X
-	2" - 200B. Examined support.	-	-	X
-	2" - 200C. Examined support.	-	-	X
-	3" - 455A. Examined support.	-	-	X
-	3" - 455B. Examined support.	-	-	X
-	3" - LCV 459. Examined support.	-	-	X
	VALVE BONNET BOLTING			
B6.9	2" - 200A. Examined 6 bolts.	-	-	X
B6.9	2" - 200B. Examined 6 bolts.	-	-	X
B6.9	2" - 200C. Examined 6 bolts.	-	-	X
B6.9	3" - 455A. Examined 6 bolts.	-	-	X
B6.9	3" - 455B. Examined 6 bolts.	-	-	X
B6.9	3" - LCV 459. Examined 6 bolts.	-	-	X
B6.9	3" - 204A. Examined 6 bolts.	-	-	X
B6.9	3" - 204B. Examined 6 bolts.	-	-	X

IWC 2600 REFERENCE	AREA AND EXTENT OF EXAMINATION	EXAMINATION PROCEDURE U/T	SURF	V/T
	STEAM GENERATOR 21			
C1.1	Stub barrel to tubesheet weld 21-2. Examined from 129" clockwise to 138" from 0 reference.	X	-	X
C1.1	Lower shell to stub barrel weld 21-3. Examined from 129" clock wise to 138" from 0 reference.	X	-	X
C1.1	Transition come to lower shell weld 21-5. Examined from 391" clockwise to 400" from 0 reference.	X	-	X
C1.1	Upper shell to transition cone weld 21-6. Examined from 585" clockwise to 596" from 0 reference.	X	-	X
C1.1	Upper head to shell weld 21-8. Examined from 578" clockwise to 589" from 0 rererence.	X	-	X
C1.2	Feedwater nozzle to vessel. Examined weld 21-9.	X	-	X
C1.2	Mainsteam nozzle to vessel. Examined weld 21-10.	X	-	X
C1.4	Manway bolting. Examined bolts 21-B1, 21 B2, 21-B3 and 21-B4 on Manway A.	X	-	-
C1.4	Manway bolting. Examined bolts 21-B1 thru 21-B20 on Manway A.	-	-	X
	SEAL WATER HEAT EXCHANGER			
C1.1	Circumferential weld 1. Examined from 0" clockwise to 4" from 0 reference.	-	X(2)	X
C1.1	Circumferential weld 2. Examined from 0" clockwise to 4" from 0 reference.	-	X(2)	X
	NON-REGENERATIVE LETDOWN HEAT EXCHANGER			
C1.1	Circumferential weld 1. Examined from 0" clockwise to 5" from 0 reference.	X	-	X
C1.1	Circumferential weld 2. Examined from 0" clockwise to 5" from 0 reference.	X	-	X

IWC-2600 REFERENCE	AREA AND EXTENT OF EXAMINATION	EXAMINATION PROCEDURE U/T	SURF	V/T
	SEAL WATER INJECTION FILTER 22			
C1.1	Circumferential weld 22-1. Examined from 10" clockwise to 13" from 0 reference.	X	-	X
C1.1	Circumferential weld 22-2. Examined from 10" clockwise to 13" from 0 reference.	X	-	X
C1.3	Integrally welded support. Examined 22-2WS.	-	X	X
C1.4	Tubesheet flange bolting. Examined bolts 22-B1 and 22-B2.	X	-	-
C1.4	Tubesheet flange bolting. Examined bolts 22-B1 thru 22-B6.	-	-	X
	REACTOR COOLANT FILTER			
C1.1	Circumferential weld 1. Examined from 22" clockwise to 25" from 0 reference.	X	-	X
C1.1	Circumferential weld 2. Examined from 22' clockwise to 25" from 0 reference.	X	-	X
C1.1	Circumferential weld 3. Examined from 22" clockwise to 25" from 0 reference.	X	-	X
C1.3	Integrally welded supports. Examined 3WS.	-	X	X
	SEAL WATER RETURN FILTER			
C1.1	Circumferential weld 1. Examined from 40" clockwise to 41" from 0 reference.	-	X(2)	X
C1.1	Circumferential weld 2. Examined from 40" clockwise to 41" from 0 reference.	-	X(2)	X
C1.1	Circumferential weld 3. Examined from 40" clockwise to 41" from 0 reference.	-	X(2)	X

IWC-2600 REFERENCE	AREA AND EXTENT OF EXAMINATION	EXAMINATION PROCEDURE U/T	SURF	V/T
	CIRCUMFERENTIAL BUTT WELDS			
C2.1	12" auxiliary coolant line 9. Examined welds 20, 21, 22, 23 and 48.	X	-	X
C2.1	10" SIS line 361. Examined welds 6, 8 and 9.	X	-	X
C2.1	8" SIS line 60. Examined welds 3 and 5.	X	-	X
C2.1	8" auxiliary coolant line 9.	X(3)	-	X
	LONGITUDINAL WELDS			
C2.2	14" RHR line 10. Examined weld 20L	X	-	X
	BRANCH CONNECTIONS			
C2.3	12" mainsteam line 1. Examined welds 3(BC) and 18(BC).	-	X(2)	X
C2.3	10" feedwater line 5. Examined weld 18(BC).	-	X(2)	X
	INTEGRALLY WELDED SUPPORTS			
C2.5	28" mainsteam line 1. Examined H3, H13, H15, and H17.	-	X	X
C2.5	28" mainsteam line 1. Examined H2 and H8.	-	X	X
C2.5	18" feedwater line 5. Examined H9, H11, H13 and H19	-	X	X
C2.5	14" RHR line 10. Examined H2	-	X	X
C2.5	12" auxiliary coolant line 9. Examined H1 and H14.	-	X	X
C2.5	12" auxiliary coolant line 9. Examined H3 and H8.	-	X	X
C2.5	8" SIS line 60. Examined H7.	-	X	X
	SUPPORTS AND HANGERS			
C2.6	28" mainsteam line 1. Examined H3, H7, H13, H15 and H17.	-	-	X
C2.6	28" mainsteam line 1. Examined H2 and H8.	-	-	X
C2.6	18" feedwater line 5. Examined H9, H11, H13, and H19.	-	-	X
C2.6	14" RHR line 10. Examined H2.	-	-	X
C2.6	12" auxiliary coolant line 9. Examined H1 and H14.	-	-	X

IWC-2600 REFERENCE	AREA AND EXTENT OF EXAMINATION	EXAMINATION PROCEDURE U/T	SURF	V/T
	SUPPORTS AND HANGERS (Cont.)			
C2.6	8" SIS line 60. Examined H7.	-	--	X
	RESIDUAL HEAT REMOVAL PUMP 22			
C3.4	Supports. Examined 100%	-	-	X
	REACTOR COOLANT PUMP 21 (DISASSEMBLED)			
C3.2	No. 2 seal housing bolts. Examined bolts 21-B1 thru 21-B12.	X	-	X
C3.2	No. 2 seal housing bolts. Examined threaded holes in base metal 21-B1 thru 21-B12.	-	-	X
	REACTOR COOLANT PUMP 24 (DISASSEMBLED)			
C3.2	No. 2 seal housing bolts. Examined bolts 24-B1 thru 24-B12.	X	-	X
C3.2	No. 2 seal housing bolts. Examined threaded holes in base metal 24-B1 thru 24-B12.	-	-	X
	VALVE BONNET BOLTING			
C4.2	28"-MS2SB - Examined 20 bolts	X	-	X
C4.2	28"-MS1-22 - Examined 20 bolts.	X	-	X
C4.2	8" - 747 - Examined 16 bolts.	X	-	X
C4.2	8" - 803 - Examined 16 bolts.	X	-	X
C4.2	6" - PCV 1135. Examined 8 bolts.	X	-	X
C4.2	8" - MS49B. Examined 6 bolts.	X	-	X

NOTES

1. Surface examination performed during Outage Core 1II-IV.
2. Surface examination done as substitute for Volumetric.
3. Baseline examination.
4. Surface examination done as supplement to Volumetric.
5. Examined per NRC Information Notice 80-27.
6. Surface examination deleted due to inaccessibility.
7. Examination is in excess of code requirements. Valve bonnet supports are installed for the purpose of retaining the valve stem in the event of a failure that could otherwise result in missile generation. Provided for information only.

TABLE 2
Examination Results
Class I

IWB 2600	Area and Extent of Examination	Exam. PT	Proc. VT
	Reactor Vessel		
B1.10	Closure Washers, Bushings closure head washers item 1,3,5,7,15,17, 24,25,28,29,32,33,34 and 35. Remark: light rust and one with small nicks: evaluated by Engineering and requires no further action.		X
B1.11	Pressure Retaining Bolting Conoseal bolting item 72,91,92,93,95,96 and 97. Remark: 2 bolts with worn heads;others with light rust. All bolts replaced as regular maintenance.		X
	Pump Pressure Boundary		
B5.1	Pressure retaining bolts and studs[1] loop 23 item B1-B24 RCP main flange studs Remarks: rust and boric acid, thread deterioration: evaluated by Engineering and replaced.		X
	Valve Pressure Boundary		
B6.9	Valve Bonnet Bolting[2] line 79 item 459[3] Remark: rust and boric acid: deterioration: evaluated by Engineering; bolting replaced.		X
B6.9	line 350 item 895D Remark: Rust + boric acid: Evaluated by Engineering, replace valve cover at future outage.		X
B6.9	line 361 item 830D Remark: Rust + boric acid: thread deterioration: Evaluated by Engineering studs replaced.		X

TABLE 2
Examination Results
Class II

IWC 2600	Area and Extent of Examination	Exam. PT	Proc. VT
	Piping		
	Supports and Hangers[4]		
C2.6	line 9 item H-1 Remark: Weld spatter: Evaluated by Engineering, reworked and accepted		X
C2.6	line 60 item H-7 Remark: Weld spatter and undercut: Evaluated by Engineering and requires no further action.	X	

1) These examinations were performed as required by the ISI program and as suggested by NRC Information Notice 80-27. All studs in the remaining three pumps were subsequently examined and found acceptable.

2) The remaining valves in Class I and II systems containing boron, were visually examined as required by ASME B&PV Code Section XI.

3) Indications noted were found on cap screws mounting the valve actuator. These cap screws are not pressure retaining and are therefore not required to be examined per Section XI. Provided for information only.

4) These indications were determined not to be service related but rather the result of the original fabrication process.

Table 3
Equipment Used

ULTRASONIC EQUIPMENT

Manufacturer	Model	S/N
Krautkramer Branson	KBI	604003
Sonic	Mark I	00712E
Sonic	Mark I	780603
Sonic	Mark I	791302
Sonic	Mark I	755109
Sonic	Mark I	00869E
Sonic	Mark I	781304

TRANSDUCERS

Manufacturer	Frequency	Size	S/N
Automation	2.25 MHZ	.75"	45552
Automation	2.25 MHZ	.75"	48145
Automation	2.25 MHZ	.75"	56013
Automation	2.25 MHZ	.75"	45562
Automation	2.25 MHZ	.75"	48141
Automation	2.25 MHZ	1.5"	48147
Automation	2.25 MHZ	1.5"	48163
Automation	2.25 MHZ	1.5"	56033
Automation	2.25 MHZ	1.5"	56039
Automation	2.25 MHZ	1.5"	56037
Automation	2.25 MHZ	1.5"	45628
Automation	2.25 MHZ	1.5"	56031
Automation	2.25 MHZ	1.5"	48157
Automation	2.25 MHZ	.75"	48140
Automation	2.25 MHZ	1.5"	48150
Automation	2.25 MHZ	1.5"	56040
Automation	2.25 MHZ	1.5"	48161
Automation	2.25 MHZ	1.5"	56038
Nelson Ross	2.25 MHZ	.5"x1"	14508
Aerotech	5.0 MHZ	.25"	J25986
Aerotech	2.25 MHZ	.50"	F08929
Panametrics	1.0 MHZ	1.0"	26226
Aerotech	1.0 MHZ	1.0"	G17033
Panametrics	5.0 MHZ	.375"	24144
Aerotech	2.25 MHZ	.25"	H31809
Aerotech	5.0 MHZ	.50"	E21970
Aerotech	2.25 MHZ	.375"	A15036
Aerotech	2.25 MHZ	.50"	L07955
Aerotech	2.25 MHZ	.75"	A25938
Aerotech	2.25 MHZ	.5"x1"	24600
Aerotech	2.25 MHZ	1.0"	D17923
Aerotech	2.25 MHZ	.5"x1"	00836T
Aerotech	2.25 MHZ	.5"x1"	00833T
Aerotech	5.0 MHZ	.25"	K15965
Aerotech	5.0 MHZ	.375"	J05710
Aerotech	2.25 MHZ	.5"x1"	S790338
Panametrics	5.0 MHZ	.375"	35346

029228

Aug 19 2 11 PM '81