

ATTACHMENT I

IPN-87-057

Final Weld and Component Examination
Inservice Inspection Report
for the
2nd Outage; 3rd Period; 1st Interval

NEW YORK POWER AUTHORITY
INDIAN POINT 3 NUCLEAR POWER PLANT
DOCKET NO. 50-286
DPR-64

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PDR ADOCK 05000286
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FORM NIS-1 OWNERS' DATA REPORT FOR INSERVICE INSPECTIONS

As required by the Provisions of the ASME Code Rules

1. Owner New York Power Authority, 123 Main Street, White Plains, New York 10601
(Name and Address of Owner)

2. Plant Indian Point, P.O. Box 215, Buchanan, New York 10511
(Name and Address of Plant)

3. Plant Unit No. 3 4. Owner Certificate of Authorization (if required) N/A

5. Commercial Service Date 8/30/86 6. National Board Number for Unit N/A

7. Components Inspected

Component or Appurtenance	Manufacturer or Installer	Manufacturer or Installer Serial No.	State or Province No.	National Board No.
Reactor Vessel	Combustion Engineering	66102	--	20758
St. Gen. 31	Westinghouse	8003	--	68-35
St. Gen. 32	Westinghouse	8004	--	68-36
St. Gen. 33	Westinghouse	8005	--	68-37
St. Gen. 34	Westinghouse	8006	--	68-38
Pressurizer	Westinghouse	0011	--	68-42
R.C. Pump 31	Westinghouse	RCPCPC-01	--	--
R.C. Pump 32	Westinghouse	RCPCPC-02	--	--
R.C. Pump 33	Westinghouse	RCPCPC-03	--	--
R.C. Pump 34	Westinghouse	RCPCPC-04	--	--
Class 1 Piping	Cameron Iron Works	--	--	--
Class 2 Piping	--	--	--	--
RHR Ht. Ex. 31	Atlas Industrial	807	--	660
RHR Ht. Ex. 32	Atlas Industrial	808	--	661
Acc. Tank 32	Delta Southern	41046-69-2	--	2400
Boron Inj. Tk.	Joseph Oats & Sons	1941	--	454

Note: Supplemental sheets in form of lists, sketches, or drawings may be used provided (1) size is 8 1/2 in. x 11 in., (2) information in items 1 through 6 on this data report is included on each sheet, and (3) each sheet is numbered and the number of sheets is recorded at the top of this form.

FORM NIS-1 (back)

8. Examination Dates 5-21-87 to 9-3-87 9. Inspection Interval from 8-30-76 to 8-30-86

10. Abstract of Examinations. Include a list of examinations and a statement concerning status of work required for current interval. Reference Tab C

11. Abstract of Conditions Noted Reference Tab B and Tab F

12. Abstract of Corrective Measures Recommended and Taken Reference Tab B and Tab F

We certify that the statements made in this report are correct and the examinations and corrective measures taken conform to the rules of the ASME Code, Section XI.

Date Dec 2 19 87 Signed [Signature] By NYPA
Owner

Certificate of Authorization No. (if applicable) _____ Expiration Date _____

CERTIFICATE OF INSERVICE INSPECTION

I, the undersigned, holding a valid commission issued by the National Board of Boiler and Pressure Vessel Inspectors and/or the State or Province of NEW YORK and employed by NYPA of ROCKY MOUNTAIN have inspected the components described in this Owners' Data Report during the period 5-21-87 to 9-3-87, and state that to the best of my knowledge and belief, the Owner has performed examinations and taken corrective measures described in this Owners' Data Report in accordance with the requirements of the ASME Code, Section XI.

By signing this certificate neither the Inspector nor his employer makes any warranty, expressed or implied, concerning the examinations and corrective measures described in this Owners' Data Report. Furthermore, neither the Inspector nor his employer shall be liable in any manner for any personal injury or property damage or a loss of any kind arising from or connected with this inspection.

Date DECEMBER 2 19 87

[Signature] Commissions NY 7759 NY 2710
Inspector's Signature National Board, State, Province and No.

NEW YORK POWER AUTHORITY
INDIAN POINT UNIT NO. 3 NUCLEAR POWER PLANT
REFUELING OUTAGE CORE V-VI
2ND OUTAGE: 3RD PERIOD; 1ST INTERVAL
EXAMINATION SUMMARY
1987

INTRODUCTION

The following items were examined by Westinghouse Nuclear Services Integration Division -- Inspection Services at the Indian Point Unit No. 3 Nuclear Power Plant from May 21, 1987 thru July 1, 1987.

1. Reactor Vessel
2. Reactor Vessel Lower Internals
3. Class 1 and Class 2 Piping
4. Reactor Coolant Pumps
5. Class 1 Valves
6. Class 2 Components
7. Reactor Vessel Examinations to Westinghouse NSID Position on USNRC Regulatory Guide 1.150 Rev. 1
8. Reactor Coolant Pump Flywheel, per USNRC Regulatory Guide 1.14

The following items were examined by New York Power Authority -- Indian Point Unit No. 3 Site Personnel during Refueling Outage Core V-VI.

1. Class 1 System Hydrostatic Tests
2. Class 2 System Hydrostatic Tests
3. Class 3 System Hydrostatic Tests

The above listed items were examined in accordance with an approved Program Plan located under Tab C of the Final Report.

Examinations this outage were conducted to:

1. Complete Reactor Vessel for 3rd - 3 1/3 year and thus the 1st Ten-Year Interval requirements per ASME Boiler and Pressure Vessel Code 1974 Edition of Section XI up to and including Summer 1975 Addenda and to Westinghouse NSID Position on USNRC Regulatory Guide 1.150 Rev. 1.
2. Perform Balance of Plant Operations for completing the 3rd 3 1/3 Year Period and thus the 1st Ten-year Interval requirements per ASME Boiler and Pressure Vessel Code 1974 Edition of Section XI up to and including Summer 1975 Addenda.
3. Perform examination, per Indian Point Unit No. 3 Plant Technical Specification of Reactor Vessel Internals during each Refueling Outage.
4. Perform examination, per Indian Point Unit No. 3 Plant Technical Specification of one Reactor Coolant Pump Flywheel during each Refueling Outage.

Examination Procedures were approved prior to the start of examinations and certification documents relative to personnel, equipment and materials were reviewed and determined to be satisfactory. Inspection, witnessing and surveillance of the examinations and related activities were conducted by personnel from: United States Nuclear Regulatory Commission, Hartford Steam Boiler Inspection and Insurance Company and New York Power Authority Quality Assurance Department.

BALANCE OF PLANT RESULTS

Examinations resulted in a total of fourteen (14) recordable indications being noted on the basis of procedure recording criteria which are generally more critical than specified ASME Boiler and Pressure Vessel Code Acceptance Standards.

A summary of the indication items are as follows:

- A. Two (2) indications were noted during ultrasonic examinations of Class 2 Piping and were accepted by New York Power Authority per ASME Boiler and Pressure Vessel Code 1974 Edition of Section XI thru Summer 1975 Addenda acceptance criteria.
- B. Six (6) indications were noted during Liquid Penetrant Examinations of Class 1 and Class 2 piping and components. Four (4) indications were accepted by New York Power Authority per ASME Boiler and Pressure Vessel Code 1974 Edition thru Summer 1975 Addenda Acceptance Criteria. Two (2) indications were reworked, reexamined and accepted by New York Power Authority personnel.
- C. Four (4) Reactor Vessel Closure Head Studs revealed a total of Five (5) separate indications noted during Magnetic Particle Examinations. Two (2) studs were reworked, reexamined and accepted by Procedure Recording Criteria. One (1) stud with two (2) indications was reworked and reexamined with one indication accepted by Procedure

recording criteria and one indication accepted by New York Power Authority per ASME Boiler and Pressure Vessel Code 1974 Edition of Section XI thru Summer 1975 Addenda Acceptance Criteria.

One stud was accepted by New York Power Authority per ASME Boiler and Pressure Vessel Code 1974 Edition of Section XI thru Summer 1975 Addenda Acceptance Criteria.

D. Two (2) indications were noted during Visual Examinations.

1. Loose part on the Reactor Vessel Core Barrel Lower Core Plate was removed during FOSAR operations.
2. Gauge on Class 1 Valve 895D was accepted by New York Power Authority per ASME Boiler and Pressure Vessel Code 1974 Edition of Section XI thru Summer 1975 Addenda Acceptance Criteria.

Specific data relative to the above indications are located under Tab D and Tab F of the Final Report.

EXAMINATIONS

Examinations include as much of the examination area as practical within geometric, physical, and metallurgical limitations. Whenever an item could not be examined to 100 percent of its required examination volume, the examination was considered partial (PAR) and so noted by the examiner. Generally, PAR's are noted as fitting-to-fitting assemblies or where integrally welded supports preclude access to the examination area.

LIMITATIONS

The arrangements and details of the piping systems and components were designed and fabricated before the examination access requirements of ASME Boiler and Pressure Vessel Code Section XI (Summer 1975 Addenda) could be applied: therefore, some examinations are limited or not practical due to accessibility or configuration. These limitations exist at elbow to tee, elbow to valve, reducer to valve, etc., where geometry and sometimes surface conditions preclude ultrasonic coupling or access for the required scan length.

These limitations exist to a somewhat lesser degree in pipe-to-fitting assemblies, where the weld joint is not ground flush with the O.D. Examinations can be conducted from the pipe side only, with limitations from the weld crown and fitting. When the weld is ground flat, a calibrated straight beam examination of the weld is used to replace angle beam examination from the fitting side. In all cases involving limitations, examinations are performed as a best-effort attempt to provide a meaningful examination and scan the code required volume to the greatest extent practical.

Specific limitations and restrictions for all examinations are as indicated on the raw data sheets located under Tab D of the Final Report.

Summary of the 10th Year Reactor Vessel Examination

The 10th Year Inservice Examination of the Indian Point Unit 3 Reactor Vessel was conducted from June 4, 1987 through June 17, 1987. The examinations were performed in accordance with the 1974 Edition of Section XI of the ASME Boiler and Pressure Vessel Code up to and including Summer 1975 Addenda and were supplemented by all applicable recommendations of U.S.N.R.C. Regulatory Guide 1.150 Rev. 1. The Reactor Vessel Examination Program is located under Tab I of the Final Report.

Examinations

Examinations of the Reactor Vessel were conducted to interrogate as much of the required examination volume as was practical, within geometric, metallurgical and physical limitations. Procedure ISI 154 Rev. 3 specified the following:

- a. Straight beam interrogation of all base material through which angle beams must pass to reach the weld and specified adjacent base metal was performed. Areas where indications equal or exceed the amplitude of the remaining back reflection and areas producing a continuous total loss of back reflection accompanied by a continuous indication in a singular plane were considered recordable.
- b. Four directional angle beam interrogation of each shell weld plus one half the wall thickness adjacent to each side of the weld prep was performed. Valid indications which equalled or exceeded 50% of the distance amplitude curve, detected at transit times greater than 25% of the vessel through-wall thickness were recorded.

Indications which meet or exceed 20% of the distance amplitude curve, detected at transit times which represented the inner 25% of the vessel through-wall thickness were recorded.

- c. All Sec. XI angle beam examinations of the reactor vessel beltline welds were supplemented with an additional "near surface" examination utilizing 60°L focused pitch catch search units. Recording criteria for this examination was 50% DAC. (Based on 1/8" sdm.)
- d. Straight beam interrogation of the vessel flange-to-upper shell weld and the outlet nozzle safe ends for a distance of one-half the weld thickness on both sides of the welds. Indications which equal or exceed 50% of the distance-amplitude-curve and are interpreted to be valid were recorded.
- e. Examinations of the vessel flange-to-upper shell circumferential weld were performed from the flange seal surface and from the vessel interior. Beam angles for this examination were selected to provide near-normal incidence to the plane of the weld and to provide coverage of the weld and adjacent based material on the flange and shell side for a distance equal to one-half the weld thickness. Indications detected at transit times which represented the inner 25% of the vessel through-wall thickness measured from the inner surface which equal or exceed 20% of the distance-amplitude-curve and were

interpreted to be valid were recorded. Indications detected at transit times greater than 25% of the vessel through-wall thickness measured from the inner surface which equal or exceed 50% of the distance-amplitude-curve and were interpreted to be valid were recorded.

- f. Examinations of outlet nozzle-to-shell welds were performed from the nozzle bores. Beam angles for these examinations are selected to provide near-normal incidence to the plane of the weld and to provide coverage of the nozzle, weld, and adjacent base material on the shell side for a distance equal to one-half the weld thickness. The indication recording criteria was the same as for item c above.

Nozzle inside radius examinations were conducted using transverse beams in both circumferential directions from the nozzle bores. Indications which equal or exceed 50% of the distance-amplitude-curve and were interpreted to be valid were considered recordable.

- g. Examinations of the outlet nozzle-to-safe end welds are performed from the nozzle bores using a straight beam and nominal 41° refracted longitudinal beams in both the axial and circumferential directions. Indications which equal or exceed 50% of the distance-amplitude-curve and are interpreted to be valid are considered recordable.
- h. Examinations of the vessel flange stud hole threads are conducted from the top of the flange using a straight beam. Indications which equal or exceed 50% of the distance-amplitude-curve and are interpreted to be valid are recorded.

All ultrasonic indications during the examinations were identified as valid or not valid and are traceable by an indication numbering system to the data printout. Valid indications having peak amplitudes less than the appropriate interpretation and investigation level needed only have their peak amplitude noted.

Results

Based on the aforementioned criteria, ultrasonic examinations of the reactor vessel resulted in 45 indications being recorded. All indications were evaluated in accordance with ASME Sec. XI - 1974 Edition through Summer 1975 Addenda.

42 of 45 indications were found to have bounding measurements which were within the allowable limits of Sec. XI. These indications, having bounding 50% dac measurements which were in excess of the allowable limits of Sec. XI, were noted in weld 10.

Additional investigations proved that the three indications initially recorded in weld 10 were actually the result of a singular, prior existing volumetric -type reflector at a depth of 7.8 inches from the inner diameter surface, with no evidence of extension to the vessel outer diameter surface. The reflector thru-wall (2a) dimension was ultimately determined based on time of flight measurements from the straight beam data, and was calculated conservatively at .24". Combined with a conventional length measurement of 4.48", the resulting aspect ratio of .026 with a/t of 1.7% is within the allowable limits of IWB-3000.

Additional investigation summaries are presented as Appendix 1 of this summary.

ADDITIONAL INVESTIGATIONS

WELD 10

APPENDIX 1

ULTRASONIC INVESTIGATION OF THE INDIAN POINT
UNIT 3 INTERMEDIATE SHELL LONGITUDINAL WELD 10