

U. S. NUCLEAR REGULATORY COMMISSION

REGION I

Report No. 50-286/82-13

Docket No. 50-286

License No. DPR-64 Priority _____ Category C

Licensee: Power Authority of the State of New York
Indian Point 3 Nuclear Power Plant
P. O. Box 215
Buchanan, New York 10511

Facility Name: Indian Point Nuclear Generating Station, Unit 3

Inspection At: Buchanan, New York

Inspection Conducted: July 19 - 23, 28 - 31, August 3 - 5, 1982

Inspector: H. H. Nicholas for 8/17/82
S. V. Pullani, Reactor Inspector date signed

Approved by: L. H. Bettenhausen for 8/18/82
L. H. Bettenhausen, Chief, Test Program date signed
Section, Engineering Inspection Branch

Inspection Summary: Inspection on July 19 - 23, 28 - 31, and August 3 - 5, 1982 (Report No. 50-286/82-13)

Areas Inspected: Routine, unannounced inspection of licensee action on previous inspection findings, review of Local Leak Rate Test (LLRT) and Integrated Leak Rate Test (ILRT) procedures, LLRT and ILRT witnessing, LLRT and ILRT results evaluation, and tours of the facility. The inspection involved 16 inspector hours in office and 104 inspector hours onsite by one region based NRC inspector.

Results: No violations or deviations were identified.

DETAILS

1. Personnel Contacted

1.1 Power Authority of the State of New York (PASNY)

- +* L. Auterino, Performance and Reliability Supervisor
- J. Brons, Resident Manager
- +* D. Halama, QA Superintendent
- +* W. Hamlin, Assistant to Resident Manager
- + W. Josiger, Superintendent of Power
- * S. Munoz, Technical Services Superintendent
- * T. Orlando, Performance Engineer
- + S. Smith, Plant Engineer
- * T. Tanner, Performance Engineer
- B. Vangor, Shift Technical Advisor
- * J. Vignola, Maintenance Superintendent

1.2 Ebasco Services

- + P. Dillon, Project Operations Manager
- + J. Grass, Senior Engineer
- A. Musto, Principal Engineer
- P. Shell, Senior Engineer

1.3 Volumetrics

S. Greenwood, Field Calibration Consultant

1.4 Nuclear Regulatory Commission

- T. Foley, Senior Resident Inspector
- +* T. Kenny, Resident Inspector

The inspector also interviewed other licensee and contractor employees during the course of inspection.

*Denotes those present at the exit interview on July 23, 1982.

+Denotes those present at the exit interview on August 5, 1982.

2. Licensee Action on Previous Inspection Findings

(Closed) Unresolved Item (50-286/78-33-01) ILRT Analysis Method

The licensee confirmed the selection of Mass Point Analysis Technique for the analysis of ILRT data for the current and all future tests to be in conformance with the NRC practice. This item is resolved.

(Closed) Unresolved Item (50-286/78-33-03) LLRT Format

The licensee resubmitted the Summary Analysis of the Periodic Type B and C Test Report in the desired format as attachment to PASNY letter IPN-79-11, March 19, 1979, addressed to the Director of Nuclear Reactor Regulation, NRC. This item is resolved.

3. Local Leakage Rate Testing

3.1 References

- 10 CFR 50, Appendix J, Primary Reactor Containment Leakage Testing for Water-Cooled Power Reactors.
- Indian Point 3 Technical Specifications, Section 4.4, Containment Tests.
- FSAR, Section 5, Containment Systems.
- ANSI/ANS56.8-1981, Containment System Leakage Testing Requirements.
- AP-3, Administrative Procedure for Procedure Preparation, Review and Approval.
- AP-17, Administrative Procedure for Calibration of Measuring and Test Equipment.

3.2 Documents Reviewed

- 3PT-R9, Containment Penetration and Weld Channel Pressurization System, Revision 2.
- 3PT-SA9, Containment Air Lock Test, Revision 2.
- 3PT-R10(A), Residual Heat Removal System Leakage Test, Revision 2.
- 3PT-R25, Isolation Valve Seal Water System Test, Revision 1.
- 3PT-R35, Containment Isolation Valve Leakage Test, Revision 2.
- Record of LLRT's performed as of the date of inspection.
- Selected LLRT instrument calibration records.
- Selected Piping and Instrumentation Diagrams (P&ID's).

3.3 Scope of Review

The inspector reviewed the above documents to ascertain that the licensee's LLRT programs was conducted in compliance with the regulatory requirements and licensee commitments referenced in Section 3.1. The inspector also witnessed selected LLRT activities. Further details and inspection findings are described below.

3.4 Test Witnessing

On July 22, 1982, the inspector witnessed a Type C LLRT for Containment Personal Air Lock Valve CB-3. The test was being conducted in accordance with approved Procedure 3PT-SA9, Containment Air Lock Test, Revision 2, Data Sheet 34. Instrument air was used for pressurizing; the test pressure was 50 psig. The leakage rate for the valve, as indicated on the flow measuring panel, was zero.

The inspector observed the performance of the test to ascertain that prerequisites were met, proper precautions were taken, measuring and test equipment was properly calibrated, test was conducted in accordance with the procedure, test crew actions were correct and timely, and the required data was recorded.

The inspector noted flow measuring panel TE-737-1 used for the above test contained three flow indicators calibrated as below:

<u>Flow Indicator</u>	<u>Serial Number</u>	<u>Calibration Date</u>
FI-1 (Low Range)	7908H05-79-2	11/16/81
FI-2 (Medium Range)	7908H05-80-2	11/14/81
FI-3 (High Range)	7908H05-81-2	11/13/81

However, the instrument calibration due dates were neither marked on the calibration stickers, nor suitably identified by alternate means, as required by Administrative Procedure AP-17, Calibration of Measuring and Test Equipment, Revision 3, Paragraph III.E. The licensee explained these instruments were calibrated at a standard interval of one year and were, therefore, in calibration. The inspector stated that the calibration stickers should also contain the calibration due dates, or a suitable alternate method should be used to make the user of the instrument readily notice its calibration status. The licensee promptly applied additional calibration stickers to the instruments showing calibration due dates which showed that the instruments were in calibration. The inspector did not have any further questions at this time.

3.5 Test Results Evaluation

The inspector reviewed preliminary LLRT results of the current surveillance testing cycle to verify conformance with the requirements of 10 CFR 50, Appendix J, and Technical Specifications. The inspector did not identify any unacceptable conditions, except as described below.

3.5.1 Corrections to Preliminary LLRT Results

The inspector stated, and the licensee agreed, that the following corrections should be applied to preliminary LLRT results before they are reported:

(a) A correction for the differences in actual versus calibrated fluid temperature and pressure in Flow Rate Method should be applied. The correction factor in ANSI Standard 56.8-1981, Paragraph E5, should be used, rather than the factor in Procedure 3PT-R35, Revision 2, Paragraph 5.7, which does not appear to have any basis.

(b) The test results which fall below the calibrated range of the flow instruments used for the test should be reported as the minimum of the calibrated range, rather than the apparent indicated value.

(c) The test results when reported to the NRC should be segregated to show how each Acceptance Criteria in Technical Specifications were met. The previous report to the NRC did not segregate the results in this manner.

This is an Inspector Followup Item (50-286/82-13-01).

3.5.2 Repairs and Adjustments to Containment Boundary

The inspector discussed with the licensee the relationship between the improvements made to the containment boundary as a result of repairs and adjustments (RA's) and Type A test failures. If RA's, as a result of the Type B and C testing program or other reasons, are made prior to Type A test sequence, the difference between AS FOUND and AS LEFT Type B and C results of the affected leakage paths should be added to the Type A test results to arrive at the AS FOUND Type A test results. A periodic Type A test should be called a "failure" if the AS FOUND Type A test results exceed 0.75 La.

A review of preliminary, uncorrected results indicated RA's were made to the following containment boundaries during Type B and C testing programs conducted prior to the current Type A test sequence.

<u>Containment Boundary</u>	<u>Uncorrected Results, SCCM</u>		
	<u>AS FOUND</u>	<u>AS LEFT</u>	<u>Difference</u>
RCDT N ₂ Supply Valve 1616	402	72	330
Accumulation N ₂ Supply Valve 863	1,464	0	1,464
Valve Container, Penetration '00', Valve 885A	5,885	0	5,885
PCV-1190 and 1191	2,451	208	2,243
PCV-1191 and 1192	742	235	507
			<u>10,449</u>

The licensee stated that the AS FOUND and AS LEFT results would be reported to the NRC, but did not agree with the NRC position that the difference should be added to the Type A test results. This is an unresolved item (50-286/82-13-02).

4. Integrated Leak Rate Testing

4.1 General

During July 23 through August 4, 1982, Indian Point, Unit 3 performed a periodic ILRT as required by 10 CFR 50, Appendix J. The test was performed in accordance with Procedure 3PT-3Y1, Integrated Leak Rate Test, Revision 2, approved July 27, 1982. The inspector reviewed the test procedure and witnessed preparations and various portions of the test. Details and inspection findings are described below.

4.2 Procedure Review

The inspector reviewed ILRT Procedure 3PT-3Y1, Revision 2, for technical adequacy and compliance with the references in Section 3.1. The inspector had previously reviewed a draft version of Revision 2 of the procedure. The inspector noted that all his review comments on the draft were resolved in a final approved issue of Revision 2, and the procedure is, generally, in compliance with industry standard ANSI/ANS-56.8-1981.

4.3 Computer Program Review

Ebasco representative stated that the computer program used for test results analysis is in accordance with ANSI/ANS-56.8-1981. The inspector reviewed portions of the program on a sampling basis to ascertain that mathematical formulae used in the programs are in accordance with the standard. The inspector noted that the program uses the approximate formula in Appendix B of the standard, rather than the exact formula, for calculation of 95 percent Upper Confidence Limit (UCL) for the leak rate. The Ebasco representative stated that the approximation is entirely adequate, in accordance with the standard, and is on the conservative side.

The inspector also verified that the program contained a suitable data rejection criteria for "bad" data. The inspector did not have any further questions at this time.

4.4 Test Instrument System

The inspector reviewed the calibration records for the instrument system used for the ILRT to ascertain that the accuracy requirements were met and the calibration was traceable to the National Bureau of Standards. The inspector also verified that the instrument system satisfied Instrument Selection Guide (ISG) of ANSI/ANS-56.8-1981. The inspector also observed the operations of the automatic data collection system during conduct of the test. The inspector had no further questions regarding the instrument system.

4.5 Containment Liner Weld Channels

The inspector inquired why the containment liner weld channels were not vented to expose the welds to the test pressure during ILRT. The licensee explained that the liner weld channels are designed to the same quality standards as of the liner and the integrity of the weld channels and liner welds is continuously monitored during normal plant operation by pressurizing the space between them at a pressure above peak accident pressure from the Weld Channel and Penetration Pressurization System (WCPPS). Furthermore, the WCPPS will be in operation during an accident to further reduce the leakage through this potential leakage paths. Therefore, the weld channels were not vented during ILRT.

4.6 Containment Inspection and Test Boundary Verification

The inspector conducted several tours independently and with licensee personnel both before and during ILRT. During these tours, the containment was inspected for existence of artificial boundaries; the valve lineups were verified on a sampling basis to be in accordance with the test procedure, and the test boundaries were surveyed for evidence of leakage.

4.7 ILRT Chronology

July 23-2330	Completed final containment inspection.
July 30-0242	Started pressurization of containment.
0400	Stopped pressurization.
0415	Resumed pressurization.
1835	Containment pressure = 60.61 psia; stopped pressuriza-

tion.

- 1935 Conducted leak surveys; observed a few minor leak and a major leak through the main steam line from the SG-32.
- July 31 - August 1 Depressurized containment for investigation of source of the major leak. The source was identified as a manway on SG-32 and the temporary handhole installed during current outage. Repairs completed.
- August 2-0400 Containment closed up.
- 0600 Resumed containment pressurization.
- 1230 Pressure = 20.3 psig.
- 1308 Stopped pressurization due to lack of fuel oil for compressors.
- 1630 Resumed pressurization.
- August 3-0038 Containment pressure is approximately 60 psia; stopped pressurization.
- 0045 Deleted humidity instrument Channel-7 due to unacceptable noise.
- 0330 Completed leak inspection; observed a few minor leaks.
- 0515 Reached temperature stabilization criteria per ANSI 56.8; started 24 hour ILRT data recording containment pressure = 59.63 psia.
- 1145 Noted temporary small rise in apparent leak rate, concurrently with a drop in pressurizer level, rise in sump level, and a rise in vapor pressure; suspects leak of the temporary hose used to vent RCOT.
- 1945 Deleted humidity instrument channel-1 due to unacceptable noise.
- August 4-0515 End of 24 hour ILRT data recording.
- 0700 Started Controlled Leak Rate Test (CLRT), i.e., Verification Test.

1115 CLRT Acceptance Criteria met.

1130 End of CLRT.

1400 Started depressurization of the containment.

4.8 Preliminary ILRT Results Evaluation

The licensee evaluated the preliminary ILRT results for the 24 hour period starting 0515 hours on August 3, 1982, and ending 0515 hours on August 4, 1982. The calculated leakage rate at the 95% UCL was 0.035 weight percent per day. The test acceptance criterion is 0.075 weight percent per day.

The inspector noted that the above calculated leakage rate of 0.035 is not corrected for any change in the containment free volume due to changes in pressurizer and sump levels. Additionally, this value represents the containment system AS LEFT overall leakage. The leakage improvements resulting from the repairs and adjustments performed prior to the ILRT should be added to this value to arrive at the AS FOUND overall leakage as explained in paragraph 3.5.2. Both values are expected to be reported in the Summary Technical Report.

The inspector independently calculated several mass values, and the leakage rate by the mass point analysis technique using the raw data from the test. The results were identical to, and verified, the accuracy of the licensee's leak rate calculations.

5. Unresolved Items

Unresolved items are matters about which more information is required to ascertain whether they are acceptable, or whether they are violations or deviations. Paragraph 3.5.2 contains an unresolved item.

6. Plant Tours

The inspector made several tours of the plant, including Containment, Turbine Building, Auxiliary Building, and Control Room. During these tours, the inspector observed operations and activities in progress, general condition of the safety-related equipment, component tagging, and system operations to support ILRT.

7. Exit Interview

The inspector met with licensee management representatives (see Section 1 for attendees) on July 23, 1982, and at the conclusion of inspection on August 5, 1982. The inspector summarized the scope and findings of the inspections at these times.