

U.S. NUCLEAR REGULATORY COMMISSION
OFFICE OF INSPECTION AND ENFORCEMENT

Region I

Report 82-18

Docket No. 50-247

License No. DPR-26 Priority -- Category C

Licensee: Consolidated Edison Company of New York, Inc.
4 Irving Place
New York, New York 10003

Facility Name: Indian Point Nuclear Generating Station, Unit 2

Inspection at: Buchanan, New York

Inspection conducted: August 1-31, 1982

Inspectors:

T. Rebetowski

T. Rebetowski, Senior Resident Inspector

9/7/82

date

P. Koltay

P. Koltay, Resident Inspector

9/7/82

date

Approved by:

H. Kister

H. Kister, Acting Chief, Indian Point
Resident Section, Division of Project
and Resident Programs

9/16/82

date

Inspection Summary:

Inspection on August 1-31, 1982 (Inspection Report 50-247/82-18)

Areas Inspected: Routine onsite, regular and backshift inspection including licensee action on previously identified inspection findings; operational safety verification; plant tours; facility maintenance; surveillance observations; operability of engineered safeguard features; sampling program review; independent limiting condition for operation verification; minor seismic disturbance; preparation for refueling; containment isolation lineup; safety system challenges; review of monthly and periodic reports; licensee event reports followup; onsite licensee event followup; radioactive waste system controls; physical security; and, radiation protection controls.

The inspection involved 164 hours by the resident inspectors.

Results: Of the 18 areas inspected, no violations were identified in 17 areas. One apparent violation was identified in one area. (Failure to maintain containment integrity, paragraph 3).

DETAILS

1. Persons Contacted

D. Army, Maintenance Engineer
J. Basile, General Manager Nuclear Power Generation
A. Brescia, I&C Supervisor
K. Burke, Director Regulatory Affairs
J. Cullen, Radiation Protection Manager
J. Curry, Chief Operations Engineer
W. Ferreira, Radiation Protection Administrator
J. Higgins, Chemistry Manager
C. Jackson, Vice President Nuclear Power
J. Mooney, Electrical Engineer
H. Morrison, Operations Superintendent
A. Nespoli, Major Projects Manager
M. O'Kelley, Rad Waste, General Supervisor
J. Quirk, Test and Performance Engineer
D. Rosh, General Manager Technical Support
M. Skotzko, Security Administrator
M. Smith, Chief Technical Engineer
L. Volpe, Test Supervisor
T. Walsh, Instrument and Control Engineer
S. Wisla, General Manager, Environmental Health and Safety

The inspectors also interviewed other licensee employees including members of the operations, health physics, technical support, maintenance, construction, corporate engineering staff, and security personnel.

2. Licensee Action on Previously Identified Inspection Findings

(Closed) NC5 (50-247/82-03-03) Boric acid transfer pump failed to meet operability criteria. Boric acid pump surveillance test results indicated a degradation of pump performance in excess of the 10% allowed by the operability criteria. The licensee prepared an engineering evaluation which states that with a 39% pump degradation, the required shutdown margin would still be met. A temporary procedure change was issued by the licensee to reflect the engineering evaluation.

(Closed) Unresolved Item (50-247/82-03-04) Licensee to submit an engineering evaluation to the NRC on the operability criteria of the boric acid transfer pumps. An engineering evaluation was completed by the licensee on February 11, 1982, and was, subsequently, submitted to the NRC for review.

(Closed) Unresolved Item (50-247/81-03-05) The mechanism that resulted in the shearing of the labyrinth seal ring of #24 reactor coolant pump was not determined. The licensee has postulated that the failure mechanism which could result in cyclic stress displacements, suggests that a piece of foreign material was transported by flow into the small annulus between the labyrinth ring and the RCP impeller. This piece is then jammed so that rotation of the impeller causes eccentric rotational forces upon the ID of the labyrinth ring, until cyclic fatigue failure of the bolts occurs. The ring then falls on to the impeller and rotates at some intermediate velocity inducing frictional wear upon the ring ID and the upper impeller OD. Wear continues until the bolts are freed and cause further jamming and eventual disintegration of the labyrinth ring. It is also possible that a foreign piece could jam in such a way that transferred rotational forces from the impeller cause a shear type failure of the bolts. Once the ring has disintegrated, pieces are introduced into the primary system during pump seal maintenance when the impeller is lowered approximately one inch.

(Closed) Unresolved Item (50-247/81-03-06) The time of labyrinth break-up was not determined. The occurrence has been determined to have taken place prior to the removal of RCP No. 24 seal maintenance, thus enabling sheared ring and bolts to enter reactor coolant system.

(Closed) Unresolved Item (50-247/81-03-07) Unidentified parts in reactor coolant system. The licensee has identified the unretrieved parts of the reactor coolant pump labyrinth failure, and has performed a safety evaluation as required by 10 CFR 50.59, and has determined that no unreviewed safety question exists. Considerations in the licensee's analysis included the missing bolts positioning in space between energy absorber and the vessel, flow blockage, and material reaching upper portion of vessel grids and nozzle.

3. Operational Safety Verification

Using a unit specific daily and biweekly checklist, the inspector verified:

- Proper control room manning and access control;
- Operators adhering to approved procedures for ongoing activities;
- Adherence to limiting conditions for operations observable from the control room;
- No abnormalities on instrumentation and recorder traces;
- Operators understood the reasons for annunciators which were lit, and that timely corrective action was being taken;

- Nuclear instrumentation and other reactor protection systems are operable;
- Control rod insertion limits are in conformance with technical specification requirements;
- Containment temperature and pressure indications were in conformance with technical specification requirements;
- No abnormalities indicated on radiation monitor recorder traces; and,
- Onsite and offsite emergency power sources available for automatic operation.

The inspector reviewed the control room log, shift supervisor's log, tagout log, operating orders, significant occurrence reports, daily leakrate calculations, shift turnover check sheet, and diesel operability log to obtain information concerning operating trends and activities, and to note any out-of-service safety systems.

During routine entry and egress from the protected (PA), the inspectors verified:

- Access controls are in conformance with security plan requirements for personnel, packages and vehicles;
- The required number of guards are present and alert;
- Gates in the PA barriers are closed and locked if not attended;
- Isolation zones are free of visual obstructions and objects that could aid an intruder in penetrating the PA; and,
- Personnel radiation monitoring equipment is operable, and that equipment and materials are being monitored prior to release for unrestricted use.

Findings:

On August 17, 1982, the licensee informed the inspector of a containment isolation valve failure. Valve No. 1215A on the No. 22 steam generator blowdown line failed in the closed position at 3:00 AM on August 17, 1982. The automatic isolation of the blowdown line raised the licensee's concern for chloride buildup in the No. 22 steam generator. The licensee's concern was based on a tube leak in the 22B section of the condenser. Procedure A-29 requires the licensee to increase blowdown from the affected steam generator following a condenser leak. In order to facilitate chemistry control for No. 22 steam generator, the licensee manually reopened the valve from 4:15 AM to 5:45 AM and from 11:35 AM to 1:15 PM. Procedure A-26, Loss of Containment Integrity, allows the licensee to periodically reopen a failed automatic containment/isolation valve, as long as a man is stationed at the valve to close it manually, if necessary.

Prior to the reopening of the failed isolation valve, the licensee took the following precautions:

- The inner containment isolation valve was tested;
- The affected Valve No. 1215A was manually cycled to verify that an operator can reclose the valve, if necessary; and,
- Communication was established with the operator stationed at the valve, through the plant page system, and the two-way Gai-Tronic phone system.

In Technical Specification, Section 1.7(d), containment integrity is defined to exist when all automatic containment isolation valves are either operable, or in the closed position. The licensee discussed the intent of the technical specification section with the inspector and other NRC representatives, and subsequently terminated blowdown by manually closing the valve.

In ensuing discussions with the licensee regarding the content and use of procedure A-26, the licensee referred to a previous NRC position regarding voluntary entry into a limiting condition for operation (76-35 and 77-38) and considered this a similar situation. NRC Region I disagreed and stated that the procedure was incorrect in permitting failed automatic containment isolation to be opened and was in conflict with the Technical Specifications, Section 1.7(d), and 3.6.A.1. Once the failed valve was properly diagnosed and verified to be in the closed position no further openings are permitted while the reactor is above cold shutdown.

The licensee's procedure and its use in this situation is considered a violation of 10 CFR 50, Appendix B, Criterion V and the licensee Quality Assurance Program CI-240-I Section X (50-247/82-18-01)

The licensee maintained the valve in the closed position until the valve was made operational. (See Section 5 of this report.)

The licensee issued temporary procedure change TPC 82-101, dated August 17, 1982, to procedure A-26, Loss of Containment Integrity. While A-26 previously allowed certain failed automatic isolation valves to be reopened, the TPC states that the requirement of TS 1.7(d) must be met for all automatic isolation valves.

4. Plant Tours

During the course of the inspection, the inspector made observations and conducted tours of the following areas during regular and backshifts:

- Turbine Building
- Control Room
- Diesel Generator Rooms
- Primary Auxiliary Building
- Security Control Building
- Auxiliary Feed Pump Building
- Cable Spreading Room
- Maintenance and Operations Building
- Perimeter Fence
- Transformer Yard
- Intake Structure
- Spent Fuel Handling Building
- Containment Building

The following items were observed or verified:

- General plant/equipment conditions including operability and verification of standby equipment;
- Inspected plant areas for fire hazards, fire alarms, extinguishing equipment, actuating controls, fire fighting equipment, and emergency equipment for operability;
- Ignition sources and flammable materials are being controlled;
- Combustible material and debris are promptly removed from the facility;
- Plant housekeeping and cleanliness practices are in conformance with approved programs;
- Excess equipment and material is returned to storage areas;
- Critical clean areas are controlled in accordance with procedures, when required;
- Activities in progress are being conducted in accordance with administrative controls and approved procedures. Verified these activities do not interfere or have the potential to interfere with the safe operation of the facility; and,
- Reviewed a sample of equipment tagouts to verify compliance with Technical Specifications limiting conditions for operation regarding removal of equipment from service.

Findings:

During the tour of the Auxiliary Boiler Feed Pump Building, the inspector noted that the bearing protection casings have been removed from auxiliary feed pumps 21 and 23. This has been brought to the attention of the licensee. The licensee is reviewing the need for the removal of the casings.

5. Facility Maintenance

The inspector reviewed portions of safety-related corrective and preventive maintenance, and determined through observations and reviews of records that:

- The maintenance activity did not violate limiting conditions for operation;
- Redundant components are operable, if required;

- Required administrative approvals, and tagouts were obtained prior to initiating the work, if required;
- Approved procedures were being used, where required;
- The procedures used were adequate to control the activity;
- The activities were being accomplished by qualified personnel;
- Replacement parts and materials being used are properly certified;
- Preventive Maintenance Program is functioning in accordance with approved procedures;
- Radiological controls are proper, and that they are being properly implemented;
- Ignition/fire prevention controls were appropriate, and were implemented, where required;
- QC hold points were observed, and provided independent verification of specific points, if required; and,
- Equipment was properly tested prior to return to service.

Portions of the following maintenance activities were observed and reviewed:

Containment Fan Coolers. The licensee identified multiple leaks in the flexible hoses of the fan cooler motors in fan cooler units 25 and 23. The leak rate did not exceed 0.3 gpm. Upon examination of the affected hoses, the licensee decided to replace all flexible hose connections associated with each of the five fan cooler unit's motor coolers. MWR's 4178 through 4182 were issued by the licensee to complete the task.

Solenoid Coil Failure. Solenoid 1315A failed causing containment isolation valve PCV 1215A on No. 22 steam generator blowdown line to close. The licensee replaced the solenoid coil. The inspector reviewed the Post Maintenance Test Inspection, and verified that SOV 1315A was tested as per SOP 7.1, and PCV 1215A was operational.

Containment Fan Cooler 21, MWR 4369. The licensee identified a leak in the U bend of coil No. 8 of the fan cooler. The licensee isolated the leak by blanking off input and output service water connections to the coil. The inspector reviewed the licensee's maintenance procedure, 2CM-14.46, Rev. 0, Isolation of a Leaking Fan Coil Unit from Service.

6. Surveillance Observations

- A. The licensee's surveillance equipment and program provides assurance that required pumps, fans, valves, and other instrumentation will perform their required functions.

The inspector's verification of the licensee's surveillance program includes:

- Review of surveillance procedure for conformance to technical specification requirements, and verify proper licensee review/approval;
- Verification of test instrumentation calibration;
- Observations of portions of system removal from service. Confirmation that LCO's are met when operational mode requirements are specified;
- Observation of portions of the conducted surveillance test;
- Observation of portions of the system's restoration to service;
- Review test data for accuracy and completeness. Independently calculated selected test results to verify accuracy;
- Confirmation that surveillance test documentation is reviewed and test discrepancies are rectified;
- Verification that test results meet technical specification requirements;
- Verification that testing was done by qualified personnel; and,
- Verification that surveillance schedule for this test was met.

The following surveillance test was witnessed:

- PT-BWI Reactor Vessel and Containment Building Inspection for Anomalous Conditions, Revision 1. The inspection was conducted on August 10, 1982.

Findings:

Prior to containment entry, the licensee suspected service water leakage at the No. 24 fan cooler unit. In order to improve detection capability, the licensee increased flow to the No. 24 fan cooler unit. Upon examination of the area, the inspection party noted a leak of several gallons per minute onto the floor area at elevation 46 ft. The party could not identify the point of origin for the leak. Subsequently, the licensee identified a 0.3 gpm leak in the flexible hose connection of the No. 25 FCU motor cooler. Further examination identified additional leaks in the same area of No. 23 FCU. The licensee initiated immediate corrective action. (See section 5 of this report).

B. Additional Surveillance Test Verification

Portions of the following surveillance tests were witnessed, by the inspector. The tests were:

- Scheduled in accordance with the TS, where applicable;
- Procedures were being followed;
- Testing was performed by qualified personnel;
- LCO's were met, when applicable; and,
- Restoration of systems was correctly accomplished.

The tests witnessed were:

- PT-M22, Station Battery Surveillance, Revision 7, conducted on August 10, 1982;
- PT-Q1, Station Battery Surveillance and Charging, Revision 13, conducted on August 25, 1982; and,
- PT-D1, Emergency Diesel Generators, Revision 7, conducted on August 25, 1982.

No violations were identified.

7. Operability of Engineered Safeguard Features

- A. The inspector verified through direct observation, and procedural review, the operability of a selected ESF system.

The inspection criteria included:

- A walkdown of the accessible portions of selected system;
- System lineups checked against plant drawings;
- Verified hangers and supports were operable;
- Cleanliness of breakers, instrumentation cabinets;
- Instrumentation is properly valved and calibrated;
- Valves in proper position, power available, locked and sealed, as required by checkoff lists; and,
- Local and remote control positions correctly established.

The accessible valve lineups and flow paths for the auxiliary boiler feed water system were inspected and verified against Checkoff List COL 33.

No violations were identified.

B. Additional ESF system operability was determined by observation of:

- Valves in the system flow paths in the correct position;
- Power supplies and breakers are aligned for components that must activate upon initiation signals;
- Major component leakage, lubrication, cooling water supply, and general conditions which might prevent fulfillment of their functional requirements; and,
- Instrumentation essential to system activation or performance operable.

ESF systems inspected included portions of:

- Boric acid storage and transfer system;
- Liquid waste disposal system; and,
- Main boiler feed water system.

No violations were identified.

8. Sampling Program Review

The inspector reviewed sampling results for the following tests to verify conformance with regulatory requirements;

- Accumulators boron concentration performed during the months of July and August;
- Refueling water storage tank boron concentration; two tests performed during the month of August;
- Spent fuel pool boron concentration; and,
- Boric acid storage tanks boron concentration. Seven tests performed during the month of August.

No violations were identified.

9. Independent Limiting Condition for Operation Verification

The inspector independently verified equipment status to determine that Technical Specification limiting conditions for operation requirements were being met for the following:

- Fuel oil - A minimum of 54,200 gallons of fuel is maintained in the two fuel storage tanks which supply the gas turbine generator GT-1;
- Static Inverters - The four static inverters were verified to be operable;

- Diesel generator starting air pressure of 250 psig was maintained in the three air receiver tanks.

No violations were identified.

10. Minor Seismic Disturbance

During this report period, a seismic event was reported to the licensee by their consultant. The seismic disturbance occurred on August 18, 1982 at 12:30 PM, and registered 1.2 on the Coda scale. The center of the disturbance was located near Suffern, New York at latitude 41^o, 48' and longitude 74^o, 15'. No indication was noted on the site's seismic instruments.

No violations were identified.

11. Preparation for Refueling

The inspector verified, that prior to receipt of new fuel, technically adequate, approved procedures were available covering the receipt, inspection and storage of new fuel.

The inspector reviewed the following procedures:

- Health Physics, Temporary Procedure for Techniques for Receipt of New Fuel Elements, dated August 2, 1982;
- Maintenance Procedure, Unloading, Storing and Handling of New Fuel Assemblies, 2CM-2.14, Revision 3, July 14, 1982; and
- Nuclear Fuel Receipt Inspection Check List.

The inspector verified that selected portions of these activities, including inspection unloading and opening of containers, inspection and storing of fuel assemblies, were performed in accordance with the licensee's procedures.

No violations were identified.

12. Containment Isolation Lineup

To ensure licensee's ability to maintain and exercise containment isolation, the inspector verified by observation:

- That manual valves required to be shut, capped and/or locked met operating mode; and,
- That motor or air-operated valves were not mechanically blocked and power was available, where required.

The inspector conducted:

- Visual inspection of piping between containment and isolation valves for leakage; and,

- Inspection of selected electrical penetrations.

The following valves and penetrations were included in this inspection:

- | | |
|------------------|---------------------------------|
| - Valve No. 43-1 | Service Water |
| - Valve No. 43-2 | Service Water |
| - Valve No. 250A | Reactor Coolant Pump Seal Water |
| - Valve No. 250B | Reactor Coolant Pump Seal Water |
| - Valve No. 250C | Reactor Coolant Pump Seal Water |
| - Valve No. 250D | Reactor Coolant Pump Seal Water |

Also electrical penetrations 23, 24, 35, 48, and 50 were inspected in the electrical penetrations area. All penetrations were verified to be pressurized to at least 60 psig.

No violations were identified.

13. Safety System Challenges

On August 12, 1982 at 10:30 p.m., the reactor operator noticed that the No. 22 reactor coolant pump seal return flow was pegged high, and simultaneously a stand pipe high level alarm was received, all indicative of a No. 1 seal failure of No. 22 reactor coolant pump. The operators reduced load and manually tripped the reactor at 10:37 p.m. A containment entry did not identify reactor coolant pump leakage. On August 13, 1982, the licensee restarted No. 22 pump, and continued to monitor the pump while the reactor was maintained in hot shutdown. No abnormal indications were noted. The Station Nuclear Facility Committee review of the trip, noted a possible pass through of foreign material in the seal which indicated a momentary high seal flow, which was cleared during the RCP stop and restart. The licensee returned to power operation on August 14, 1982.

No violations were identified.

14. Review of Monthly and Periodic Reports

Monthly Operating Reports

The Monthly Operating Reports for June and July, 1982 were reviewed. The review included an examination of selected Maintenance Work Requests, and an examination of significant occurrence reports to ascertain that the summary of operating experience was properly documented.

Findings:

The inspector verified through record reviews and observations of maintenance in progress that:

- The corrective action was adequate for resolution of the identified items;

- The information in the reports was identified as licensee event reports, where required, per TS 6.9.1.7; and,
- The Operating Report included the requirements of TS 6.9.1.6.

No violations were identified.

15. Licensee Event Reports Followup

Through direct observations, discussions with licensee personnel, and review of records, the following event reports were reviewed to determine that reportability requirements were fulfilled, immediate corrective action was accomplished, and corrective action to prevent recurrence had been accomplished in accordance with Technical Specifications.

- LER 82-028/03L-0 Containment Gas & Particulate Monitors Inoperable
- LER 82-029/03L-0 Binding of Isolation Valve in the Primary Makeup Water System
- LER 82-030/03L-0 Bypass Valve No. 267A was Found Leaking

LER 82-029/03L-0 - Failed valve actuator has been closed and secured. Corrective action has not been completed at time of issuance of this report. The licensee's report of repairs is required. (50-247/82-18-02)

No violations were identified.

16. Onsite Licensee Event Followup

The following LER was selected for onsite followup. This review was conducted to verify that the reporting requirements of Technical Specifications and Station Administrative Orders had been met, that appropriate corrective action had been taken, that the events were reviewed as required, and that continued operation of the facility conformed to Technical Specification limits.

Information concerning the selected LER and records reviewed by the inspector with comments are described below:

LER 82-030/03L-0 - The review of the LER by the inspector indicated that corrective action was made by changeover of diaphragm. Since two diaphragms have failed within three months, further licensee investigation as to corrective action has been requested. Pending licensee's response for corrective action, this item is unresolved. (50-247/82-18-03)

No violations were identified.

17. Radioactive Waste System Controls

The inspector verified through observation and calculations, the liquid and gaseous release programs at the site.

The inspection parameter for liquid and gaseous releases included:

- Releases were in accordance with approved procedures;
- Release approvals were documented;
- Samples were taken and analyzed; and,
- Release control instrumentation was operable during release.

The inspector reviewed the liquid radioactive waste releases associated with the following permits:

- Permit No. 17, released on August 5, 1982;
- Permit No. 19, released on August 22, 1982; and,
- Permit No. 22, released on August 27, 1982.

The inspector also reviewed the airborne radioactive releases associated with the following permits:

- Permit No. 1766, released on August 8, 1982;
- Permit No. 1774, released on August 16, 1982;
- Permit No. 1778, released on August 18, 1982; and,
- Permit No. 1785, released on August 24, 1982.

No violations were identified.

18. Physical Security

During the course of the inspection, the inspectors observed the implementation of the security plan by noting:

- The security organization is properly manned and that security personnel are capable of performing their assigned functions;
- Persons and packages are checked prior to allowing entry into the protected area;
- Selected vital area barriers are not degraded;
- Vehicles are properly authorized, searched, and escorted or controlled within the protected area;
- Persons within the protected area display photo identification badges, persons in vital areas are properly authorized, and persons requiring escort are properly escorted;
- Compensatory measures are employed when required by security equipment failure or impairment; and,

- Response to threats or alarms or discovery of a condition that appears to require additional security precaution is consistent with procedures and the security plan.

No violations were identified.

19. Radiation Protection Controls

During routine facility tours, the inspectors verified radiation protection controls were properly established by:

- Observing that licensee's HP policies/procedures are being followed;
- Observing portions of area surveys performed by licensee's personnel, and confirming licensee's survey results by independent measurement;
- Verifying by observation and review that the requirements of current RWP's are appropriate, and are being followed;
- Observing proper completion and use of selected RWP's;
- Observing proper use of protective clothing and respirators;
- Observing proper personnel monitoring practices; and,
- Examining randomly selected radiation protection instruments that were in use to verify operability and adherence to calibration frequency.

Findings:

During the month of August, the licensee transferred 75 cubic feet with an activity of 2903 Ci, of spent resin to a shield cask containing a solidification liner. During the solidification phase of the process, after adding 25% of the required 4000 lbs. of cement to the cask, the shaft of the mixer broke. The mixture was allowed to set up for six days. Physical probing and visual inspection did not identify free-standing water. Laboratory test of a similar mixture showed complete solidification. The licensee, in consultation with the Barnwell facility, was permitted to ship the cask on August 19, 1982. Readings at the time of shipping met the Department of Transportation requirements.

No violations were identified.

20. Unresolved Items

An item about which more information is required to determine whether it is acceptable, or an item of noncompliance, is considered unresolved. Paragraphs 15 and 16 contain unresolved items.

21. Exit Interview

At periodic intervals during the course of the inspection, meetings were held with senior facility management to discuss the inspection scope and findings.