

U.S. NUCLEAR REGULATORY COMMISSION

REGION I

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Priority --

Category C

Licensee: Power Authority of the State of New York
10 Columbus Circle
New York, New York 10019

Facility Name: Indian Point Nuclear Generating Station, Unit 3

Inspection at: Buchanan, New York

Inspection conducted: June 16, 1984 to July 31, 1984

Inspectors:

T. J. Kenny
for T. J. Kenny, Senior Resident Inspector

8/1/84
date

L. W. Rossbach
L. W. Rossbach, Resident Inspector

8/1/84
date

Approved by:

Leif Norrholm
Leif Norrholm, Chief, Reactor Project Section
2B, DPRP

8/7/84
date

Inspection Summary:

Inspection on June 16, 1984 to July 31, 1984 (Inspection Report 50-286/84-14)

Areas Inspected: Routine onsite regular and backshift inspection of plant operations including shift logs and records; operational safety verification; assessment of licensee's maintenance program; surveillance; review of monthly report; ESF system walkdown; unreviewed safety questions; and, licensee event reports. The inspection involved 137 inspector hours by the resident inspectors.

Results: Two unreviewed safety questions were identified and evaluated by the licensee. Two unit trips occurred. No violations were identified.

DETAILS

1. Persons Contacted

Within this report period, interviews and discussions were conducted with members of the licensee management and staff to obtain the necessary information pertinent to the subjects being inspected.

2. Operational Safety Verification

A. Documents Reviewed:

- Selected Operators' Logs
- Shift Supervisors Log
- Selected Shift Turnover Checklists
- Jumper Log
- Radioactive Waste Release Permits (liquid & gaseous)
- Selected Radiation Exposure Authorizations (REA's)
- Selected Chemistry Logs
- Selected Tagouts
- Health Physics Watch Log

B. The inspector(s) conducted routine entries into the protected area of the plant, including the control room, PAB, fuel building, and containment (when access is possible.) During the inspection activities, discussions were held with operators, technicians (HP & I&C), mechanics, foremen, supervisors, and plant management. The purpose of the inspection was to affirm the licensee's commitments and compliance with 10 CFR, Technical Specifications, and Administrative Procedures.

1. On a daily basis, particular attention was directed in the following areas:

- Instrumentation and recorder traces for abnormalities;
- Adherence to LCO's directly observable from the control room;
- Proper control room and shift manning and access control;
- Verification of the status of control room annunciators that are in alarm;
- Proper use of procedures;
- Review of logs to obtain plant conditions; and,
- Verification of surveillance testing for timely completion.

2. On a weekly basis, the inspector(s) confirmed the operability of a selected ESF train by:
- Verifying that accessible valves in the flow path were in the correct positions;
 - Verifying that power supplies and breakers were in the correct positions;
 - Verifying that de-energized portions of these systems were de-energized as identified by Technical Specifications;
 - Visually inspecting major components for leakage, lubrication, vibration, cooling water supply, and general operable condition; and,
 - Visually inspecting instrumentation, where possible, for proper operability.

Systems Inspected:

- Emergency Boration
- Emergency Power
- Service Water
- Auxiliary Feedwater

3. On a biweekly basis, the inspector(s):
- Verified the correct application of a tagout to a safety related system;
 - Observed a shift turnover;
 - Reviewed the sampling program including the liquid and gaseous effluents;
 - Verified that radiation protection and controls were properly established;
 - Verified that the physical security plan was being implemented;
 - Reviewed licensee-identified problem areas; and,
 - Verified selected portions of containment isolation lineup.

C. Inspector Comments/Findings:

The unit operated at 100% power, except as delineated below, during this inspection period. The inspector monitored selected phases of the unit's operation, and determined that the areas inspected did not constitute a health and safety hazard to the public or plant personnel.

June 18. At 2:21 a.m., the unit tripped due to a 10 10 level in #33 steam generator. (See Section 7 for details)

June 18. At 8:46 p.m., the unit was returned to service.

June 23-24. The unit was reduced approximately 25 MWe to remove water-box #35 to repair leaks. The unit was returned to full power on June 24. The inspector verified secondary chemistry was within specifications following return to full power.

July 5. A lightning strike (voltage disturbance) on the 345KV system, off site, caused #11 bearing on the exciter to increase to 12 mils vibration. Subsequent investigation by the licensee and Westinghouse resulted in the conclusion that the exciter is probably out of alignment slightly. Westinghouse recommended continued operation with new trip limits imposed. Normal turbine trip due to high vibration is 14 mils. The limit has been raised to 18 mils.

July 10. The licensee identified an unreviewed safety question concerning the loss of two vital busses. (See Section 8 for details)

July 13. At 3:17 p.m., the unit tripped due to a flashover on the "B" phase insulator of the 345KV feeder. (See Section 7 for details)

July 16. At 3:32 p.m., the unit was returned to service.

July 20. The licensee reduced power to correct an unreviewed safety question concerning overpressurization and possible loss of component cooling system. The reduction of power lasted 10 minutes. (See Section 8 for details)

No violations were identified.

3. Assessment of Licensee's Maintenance Program

Documents Reviewed:

Machinery history for the following systems:

- Service Water
- Diesel Generators
- Component Cooling
- Chemical and Volume Control System
- Radiation Monitoring System

- Nuclear Instrumentation System
- Reactor Trip Breakers
- Accumulator Level and Pressure Monitoring System
- Pressurizer Level Control System

Administrative Procedure 9

Maintenance Directives

- 3-MD-2 Work Requests and Machinery History
- 3-MD-3 Preventative Maintenance

Nuclear Plant Reliability Data System (NPRDS) Procedure PFM-6

Plant Modifications including:

- 82-03-095-EL Reactor Trip Breaker Improvements
- 81-03-042-RP Shim Plate Modifications to Reactor Trip Breakers

LER's

Bulletins

Generic Issues - NRC and Westinghouse

Inspector Findings:

The inspector performed an inspection to ascertain that the following are being performed:

- Equipment failures are being evaluated for frequency and root cause;
- Maintenance errors are detected, evaluated, and corrected, including root cause; and,
- Licensee record systems are organized to support the above evaluations.

During the inspection of licensee records, the inspector noted the following repetitive equipment failures in which the licensee acted as delineated below.

Service Water Pumps

Problem: Service water pump shaft break with two occurring within one month.

Licensee Evaluation: The licensee utilized the NPRDS to check the industry for similar problems, then performed their own evaluation. The results were: the bearing begins to wear causing the vibration to increase, thus causing the long shaft to wobble and break in an area of surface pitting.

Licensee Actions: Rebuild the pumps more frequently, every two years instead of every three, monitor and plot vibration readings on the bearings more closely than in the past, and conduct a metallurgical analysis of the pitting problem on the shaft.

Reactor Trip Breakers

Problem: Repeated trips of the reactor while performing on line testing of the reactor trip breakers.

Licensee Evaluation: While racking the breakers in after the test, the contactor cell switches were not making up properly due to the support rail sagging slightly.

Licensee Actions: Two modifications were installed. Shim plates were added under the rails to give better support to the breakers. A key interlock system was added to allow the on-line testing of the breakers without the repeated opening and closing of the breakers.

Pressurizer Pressure Transmitters

Problem: Instrument drift identified during refueling shutdown surveillance testing.

Licensee Evaluation: After bench testing and manufacturer's correspondence the licensee determined that the capsules installed were being deflected when the pressure was reduced below the instrument range lower setting of 1600#. The deflection straightened out when the instrument was heated up and allowed to soak above 1600#.

Licensee Action: The licensee purchased and installed new capsules in the transmitters that have been modified not to deflect below the 1600# setting.

Accumulator Pressure and Level Transmitters

Problem: Due to the narrow band of operation for these parameters, the licensee was experiencing difficulty maintaining level and pressure during operation.

Licensee Evaluation: Containment entries indicated leakage of both water and nitrogen past the packing on instrument stop valves.

Licensee Action: Installation of new stop valves that have a special seal on the packing to stop the leakage.

None of the above problems have been repeated since the licensee modifications have been incorporated. The service water pump shaft problem will require a longer time to evaluate.

The inspector noted the following systems which are in effect or planned to identify and track equipment failures:

- The license's use of the NPRDS;
- Assigned engineers to perform evaluations of equipment failures;
- The proposed use of a computer system to store machinery history; and,
- A new work request form that documents more history and delineated more attention for evaluation by upper management.

The inspector also noted that in the year 1983 the testing and retest program identified five cases where retesting was necessary. These retests were due to events like hydro-leakage that needed adjusting. No instances could be identified by the inspector that a test failed because of improper maintenance activities.

The inspector noted that in the I&C area, although evaluations are being conducted on repetitive problems, the procedures do not clearly delineate the responsible person for conducting the evaluation. Discussions with management indicates that the responsible person will be delineated in the procedure.

The inspector concluded that equipment failures are identified, analyzed and tracked, and that in specific instances, modifications have been performed to correct deficiencies. The inspector also concluded that root causes are identified and corrected as necessary.

No violations were identified.

4. Surveillance

A. Documents Reviewed:

- 3-PT-M2 OT Delta T and OP Delta T
- 3-PT-M57 Leading Edge Flow Measurement System Test
- 3-PT-M16 Surveillance and Inservice Inspection Test
- 3-PT-M14A SI Logic Channel Functional Test

B. Inspector Findings:

The inspector(s) directly observed the performance of portions of the above-listed tests, or reviewed completed surveillance procedures to ascertain the following:

- That the instrumentation used was properly calibrated;
- That the redundant system or component was operable, where required;
- That properly approved procedures were used by qualified personnel;
- That the acceptance criteria were met;
- That the test data were accurate and complete;
- That proper reviews, by the licensee, had been conducted; and,
- That the results of the tests met Technical Specification requirements.

The inspector(s) also verified that the systems were properly returned to service following the above-listed tests, by observing actual valve and switch positions or position indication in the control room.

No violations were identified.

5. Review of Monthly Report

A. Monthly Operating Report

The Monthly Operating Reports for May and June, 1984 were reviewed. The review included an examination of significant occurrence reports to ascertain that the summary of operating experience was properly documented.

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

- The corrective action was adequate for resolution of the identified item; and
- The operating report included the requirements of TS 6.9.1.5.

The inspector(s) have no further questions relating to the reports.

6. ESF System Walkdown

A. Documents Reviewed:

- Applicable Checkoff List for the System Inspected
- Applicable Prints for the System Inspected
- Technical Specifications

B. The inspector(s) independently verified the below-listed system(s) for operability and safety. In his inspection, the inspector:

- Confirmed that the lineup was in accordance with current checkoff lists and plant drawings;
- Identified equipment conditions, to the licensee, that might degrade performance of the system;
- Inspected interiors of cabinets, breakers and other equipment for loose material, jumpers, debris, etc. (performed with an assigned licensee operator); and,
- Verified that the system was capable of performing its intended function in accordance with Technical Specifications.

C. System Inspected and Inspectors' Comments

The inspectors found that the Emergency Diesel Generator was lined up in accordance with the current checkoff list and that the system was capable of performing its intended function.

No violations were identified.

7. Licensee Event Reports

A. In-Office Review of Licensee Event Reports

The inspectors reviewed LER's submitted to the NRC:RI office to verify that details of the event were clearly reported, including the accuracy of the description of cause and adequacy of corrective action. The inspector determined whether further information was required from the licensee, whether generic implications were involved, and whether the event warranted onsite followup.

The following LER's were reviewed:

- 84-008 Unit Trip on Closure of #33 Main Steam Isolation Valve
- 84-009 Unit Trip on Failure of #33 Main Feedwater Reg Valve
- 84-010 Unreviewed Safety Question
- 84-011 Unit Trip Due to 345KV Insulator Failure

The LER's listed above were reviewed to verify that the reporting requirements of Technical Specifications and Station Administrative Procedures had been met, that appropriate corrective action had been taken, that the event was reviewed by the PORC (Plant Operating Review Committee), and that continued operation of the facility was in conformance with the Technical Specification limits.

Event 84-008 was reviewed in Inspection Report 84-13. The inspectors have no further questions on this event.

Event 84-009 occurred due to the yoke failing on the valve operator. A metallurgical evaluation of the yoke found it to be cast iron rather than cast steel. New valve operators with steel yokes have been ordered for all four feedwater regulating valves. The inspectors will follow their installation.

Event 84-010 is discussed in Section 8 of this report.

Event 84-011 occurred due to an electrical fault and failure of an insulator on a 345KV feeder. Deposits found on the insulator likely provided a conducting path. A preventive maintenance program for the insulators is being developed to prevent recurrence. The inspectors have no further questions on this event.

No violations were identified.

8. Unreviewed Safety Questions

A. Loss of Two Safety Related 480V Electrical Busses

On July 11, the licensee informed the NRC that a possible unreviewed safety question existed which was identified during the Systems Interaction Study. A scenario was identified that could lose two safety related 480 volt electrical busses. The licensee had been informed during the previous week, by the NRC Project Manager in conjunction with the NRC vendor, conducting the System Interaction Study, that a postulated event could lose one RHR pump. Through the subsequent week, the licensee and vendor were in communications with relation to the concern. Then on July 11 at 11:20 p.m., the licensee informed the NRC that the possible unreviewed safety question existed.

Details of the Postulated Scenario (See Enclosure 1)

With the loss of #32 battery concurrent with a safety injection #6A bus would strip all loads not required for Safety Injection (SI). This includes the #32 Battery Charger. Results: #32 DC bus becomes de-energized, and breaker closing power is lost to all breakers on #6A bus including 3A-6A tie breaker 3AT6A. Closing power is also lost to selected breakers on the 6.9KV busses, UT3ST6 and UT4ST6, which are part of the transfer of busses that occurs after a reactor trip (caused by SI). Results: The transfer of busses leaves bus 3 and 6 deenergized and station transformers 3 and 6 cannot supply power to 480V busses 3A and 6A. The diesels start and #32 diesel breaker closes onto the dead 6A bus, but Nos. 31 and 33 diesels will not close in because their respective busses remain energized.

The licensee performed a safety evaluation to determine that the installation of a jumper in Emergency Diesel Generator #31 output breaker did not violate the design requirements of the engineered safeguards system. This jumper would allow tie breaker 2AT3A to close automatically on the transfer of busses and energize 3A bus. Thus, if the scenario above was to occur, then only bus 6A would be lost, which is within the design of the unit.

The licensee had been in communication with the design vendor (Westinghouse) after identifying the potential for loss of two busses. The vendor concurred that the scenario had not been analyzed. The vendor also concurred that the installation of the jumper did not degrade the safeguards system, and that it could be used as a possible fix. The licensee is still investigating the incorporation of a more permanent fix.

B. CCW Overpressurization

On July 19, the licensee informed the NRC of a potential unreviewed safety question involving the Component Cooling Water (CCW) system. The postulated accident involves a LOCA at the reactor coolant pump thermal barrier heat exchanger concurrent with failure of the CCW high flow shutoff valves, which results in the CCW suction piping being pressurized.

The interim fix to prevent system overpressurization involved closing the CCW surge tank atmospheric vent valve and removing the internals of the surge tank relief valve. The relief valve provides an unobstructed flow path to the waste holdup tank allowing pressure to be relieved from the CCW system, but also providing for containment of the overflow. The licensee discussed the interim fixes with Westinghouse, who supplied the CCW system and reported the potential unreviewed safety question under 10CFR 21. A safety evaluation was prepared by the licensee. The safety evaluation and interim fix were reviewed by PORC. The licensee is continuing to review this potential safety question.

The inspectors will continue to follow these two safety issues and any additional modifications.

9. 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. An exit interview was held on July 31, 1984 to discuss this report period.

1P-3 ELECTRICAL DISTRIBUTION

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