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Report Nos. 50-272/84-47
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Docket Nos. 50-272
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License Nos. DPR-70
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Licensee: Public Service Electric and Gas Company

80 Park Plaza

Newark, New Jersey 07101

Facility Name: Salem Nuclear Generating Station - Units 1 and 2

Inspection At: Hancocks Bridge, New Jersey

Inspection Conducted: December 15, 1984 - January 22, 1985

Inspectors: James C Linville Jr 2/5/85
J. C. Linville, Senior Resident Inspector date

James C Linville Jr 2/5/85
for R. J. Summers, Resident Reactor Inspector date

Approved By: D Holmstrom 2.5.85
for L. J. Norrholm, Chief, Reactor Projects date
Section No. 2B, Projects Branch No. 2, DRP

Inspection Summary:
Inspections on December 15, 1984 - January 22, 1985 (Combined Report Numbers 50-272/84-47 and 50-311/84-47)
Areas Inspected: Routine inspections of plant operations including: review of periodic and special reports, licensee event report review, operational safety verification, surveillance observations, maintenance observations, allegation followup, operating events, and refueling operations. The inspection involved 198 inspector hours by the resident NRC inspectors.

Results: There were two violations involving failure to follow radiation protection procedures for documenting personnel contamination surveys (paragraph 7) and failure to follow the Administrative Procedure for control of maintenance activities (paragraph 6). Other concerns discussed requiring licensee action include: an unresolved item pertaining to the operability requirements of valve 11MS18 (paragraph 3), reporting 2 unit 1 reactor trips (paragraph 8), and control of temporary services which could adversely affect equipment required to be operable (paragraph 4c).

DETAILS

1. Persons Contacted

Within this report period, interviews and discussions were conducted with members of licensee management and staff as necessary to support inspection activity.

2. Review of Periodic and Special Reports

Upon receipt, the inspectors reviewed periodic and special reports. The review included the following: inclusion of information required by the NRC; test results and/or supporting information consistent with design predictions and performance specifications; planned corrective action for resolution of problems, and reportability and validity of report information. The following periodic reports were reviewed.

-- Unit 1 Monthly Operating Report - December 1984

-- Unit 2 Monthly Operating Report - December 1984

3. Licensee Event Report (LER) Review

The inspectors reviewed LER's to verify that the details of the events were clearly reported. The inspectors determined that reporting requirements had been met, the report was adequate to assess the event, the cause appeared accurate and was supported by details, corrective actions appeared appropriate to correct the cause, the form was complete and generic applicability to other plants was not in question. Details of onsite followup are included, if applicable.

Unit 1

84-26: Containment Isolation Valve 11MS18 - Inoperable

This report detailed an event on November 7, 1984, which occurred while operating in the hot standby mode, when the operators failed to strictly comply with Technical Specification Limiting Conditions for Operation (LCO). The operators declared main steam bypass valve, 11MS18, inoperable as a containment isolation valve due to excessive leakage. The operators entered the Action Statements required by Technical Specification 3.6.3.1 and returned the valve to an operable status about 16 hours later. Subsequently, the licensee determined that the valve still would not seat properly and additional repairs were made.

However, the licensee determined on November 21, 1984, that since there was no redundant containment isolation valve in this penetration, the operators should have taken the actions required by Technical Specification 3.0.3 to place the unit in a mode where the LCO specification does

not apply. The licensee stated that this requirement is too restrictive, since no credit is given for the steam generator tube pressure boundary. A review of the requirements and their bases will be made and if so determined, a change to the license will be requested.

Since valve 11MS18 did stroke properly, as required by LCO 3.6.3.1 and also, since this valve is specifically exempted from the leak rate testing requirements of 10 CFR 50 Appendix J, it is not clear that the valve was inoperable. This matter is considered unresolved pending completion of the licensee's investigation into the bases for main steam bypass valve operability requirements (272/84-47-01).

Unit 2

84-24: Reactor Trip From 100% Due to Turbine Generator Failure

This report detailed the reactor trip on October 4, 1984 that resulted from a main generator fault. Initial inspector review of this event is documented in paragraph 8B of Inspection Report 50-311/84-35 and paragraph 10B of Inspection Report 50-311/84-42. The generator is currently being replaced with one of a General Electric design. Investigation into the root cause of the failure continues and will be documented in a supplemental report. The inspectors will review the results of this investigation when the supplemental report is issued (311/84-47-01).

84-25: Weekly Plant Vent Particulate Sample Not Analyzed Within Time Requirements

This report detailed a failure to conduct an Environmental Technical Specification required surveillance on September 27, 1984. The apparent cause was personnel error, compounded by inadequate supervisor review. The licensee stated that the cause probably was the result of the increased workload in the responsible department due to a Steam Generator tube leak that had also occurred. The licensee reviewed available redundant instrumentation and determined that no unusual release of particulate radioactivity occurred during the affected time frame. In addition, the licensee has implemented a new Chemistry Department procedure to preclude recurrence. This failure was determined by the QA department during an audit on November 26, 1984.

4. Operational Safety Verification

a. Control Room Observations

Daily, the inspectors verified selected plant parameters and equipment availability to ensure compliance with limiting conditions for operation of the plant Technical Specifications. Selected lit annunciators were discussed with control room operators to verify that the

reasons for them were understood and corrective action, if required, was being taken. The inspectors observed shift turnovers biweekly to ensure proper control room and shift manning. The inspectors directly observed operations to ensure adherence to approved procedures.

b. Shift Logs and Operating Records

Selected shift logs and operating records were reviewed to obtain information on plant problems and operations, detect changes and trends in performance, detect possible conflicts with Technical Specifications or regulatory requirements, determine that records are being maintained and reviewed as required, and assess the effectiveness of the communications provided by the logs.

c. Plant Tours

During the inspection period, the inspectors made observations and conducted tours of the plant. During the plant tours, the inspectors conducted a visual inspection of selected piping between containment and the isolation valves for leakage or leakage paths. This included verification that manual valves were shut, capped and locked when required and that motor operated valves were not mechanically blocked. The inspectors also checked fire protection, housekeeping/cleanliness, radiation protection, and physical security conditions to ensure compliance with plant procedures and regulatory requirements.

On January 7, 1984 during a tour of the auxiliary building the inspector noted that the fire barrier wall between the unit 1 and unit 2 component cooling heat exchanger (CCHX) rooms and the doors to the rooms had been removed to retube number 21 CCHX while unit 1 was operating at power. In addition, combustible wooden boxes containing the new tubes and debris from broken down empty boxes were piled in the corridor and there were hot work permits for work in the area near the degraded fire barriers. A fire watch who was unaware of the pile of combustible material in the unit 1 corridor was posted in the unit 2 corridor. The inspector expressed concern to licensee management about the potential hazard posed to the operating unit by the compounding effect of these conditions. In addition, the inspector was concerned about the potential hazard to safety related equipment required to be operable associated with a temporary steel frame attached to the doorway of No. 11 CCHX room by C clamps. The licensee acknowledged the inspector's concern by removing the debris. The licensee further indicated that both interim and permanent controls

will be developed to assure that preplanning of work activities will include a review to make sure that unacceptable temporary hazards are not created in areas where safety related equipment is required to be operable by work activities associated with other equipment which is not required to be operable. The inspector will review these controls during a subsequent inspection (272/84-47-02).

d. Tagout Verification

The inspectors verified that selected safety-related tagging requests were proper by observing the positions of breakers, switches and/or valves.

No violations were observed.

5. Surveillance Observations

The inspectors observed portions of the surveillance procedures listed below to verify that the test instrumentation was properly calibrated, approved procedures were used, the work was performed by qualified personnel, limiting conditions for operation were met, and the system was correctly restored following the testing:

-- SP(O) 4.8.1.1.2 "Electrical Power Systems - Emergency Diesels" operability test of Nos. 1A and 1B diesel generators

-- 1 IC 2.6.029 Channel Functional Test, 1FT-513, No. 11 Steam Generator Steam Flow Protection Channel

-- M3T Vital Bus Undervoltage Trip Check and Response Test per IO #200921 and Work Order (WO) 84-12-10-016-6

-- 1 IC 2.6.046 Channel Functional Test, 1FT-530, No. 13 Steam Generator Feedwater Flow Protection Channel I

-- 1 IC 18.1.010 SSPS Train A - Reactor Trip Breaker - UV Coil Functional Test, Revision 2

6. Maintenance Observations

a. The inspectors observed portions of various safety-related maintenance activities to determine that redundant components were operable, these activities did not violate the limiting conditions for operation, required administrative approvals and tagouts were obtained prior to initiating the work, approved procedures were used or the

activity was within the "skills of the trade," appropriate radiological controls were properly implemented, ignition/fire prevention controls were properly implemented, and equipment was properly tested prior to returning it to service.

b. During this inspection period, the following activities were observed:

-- 1C Vital Bus primary fuse replacement per WO #009900417-8 and Electrical Troubleshooting and Repair Procedure M3Z

-- 1C Emergency Diesel Generator pre-lube pump leak repair per WO #84-10-28-038-8

-- 2b Emergency Diesel Generator Preventative Maintenance per procedure M-15A, Enclosure 3, Crank Shaft Measurements and WO #84-11-01-098-8

-- Partial retubing of No. 21 Component Cooling Heat Exchanger per WO #84-12-10-060-3

-- Troubleshooting and repair of Nos. 11 and 12 Boric Acid Transfer Pumps Vital Heat Tracing per WOs #009911031-5, 009911032-3, and 009911030-7

With respect to the maintenance associated with the Boric Acid Transfer (BAT) pumps vital heat tracing, it appears that adequate controls were not effected for this repair. At the time that the WO's were approved to start work, the No. 11 BAT pump was not yet declared operable due to another maintenance activity to replace a failed pump seal. This left only the No. 12 BAT pump to assure Boron Injection Tank recirculation flow per Technical Specification LCO 3.5.4.1 and also to meet boration flow path requirements for reactivity control per LCO 3.1.2.2. When the inspector observed that the work on No. 12 BAT pump was in progress, which included removal of the pump insulation and one of two heat trace circuits, it was then noted that the indicated temperature in the Control Room for the pump was slightly below the 145 degree F limit specified in Technical Specifications 4.1.2.2a and 4.5.4.2b. The operators entered the action statements for reactivity control at that time. However, since BIT recirculation flow was maintained throughout, that LCO action statement was not entered. Administrative Procedure (AP) 9, Maintenance Program requires that maintenance be scheduled and planned so as not to jeopardize the safety of any personnel or equipment. Planning personnel should consider the possible safety consequences of concurrent maintenance activities. Failure to recognize the potential safety consequences of initiating maintenance on the No. 12 BAT pump heat tracing while the No. 11 BAT pump was already inoperable due to replacing a failed pump seal is a violation of Technical Specification 6.8.1 and Administrative Procedure 9 (272/84-47-03).

7. Allegation Followup

A Contractor employee assigned security badge number 90-288 alleged that his neck and hair were contaminated as indicated by an offscale frisker reading while working in the only pump room with double doors on the 84 foot elevation of the auxiliary building between 7:00 p.m. and 5:00 a.m. on December 17 and 18, 1984. He further stated that there was no record of the contamination and that there were no respirators in use and no air samples taken and that the licensee would not give him a whole body count. He stated that he quit his job on December 18, 1984 because of a perceived hazard though he did say that licensee radiation protection personnel told him that it was gas with an 18 minute half life and would go away. Inspector experience due to similar contamination on December 7, 1984 and licensee air sample results from ASR 84-37269 dated December 18, 1984 indicate that there was a Rubidium gas leak on the 84 foot elevation of the unit 1 auxiliary building. Inspector review of the written statements of four licensee radiation protection personnel, including the Radiation Protection Engineer who was involved in this incident, indicates that efforts were made to explain to the alleger that this was not a health hazard without much success. The inspector also reviewed a whole body count record performed on the alleger upon termination on December 18, 1984 which indicated no activity. However, there was no record of personnel contamination map no. 86 and no log entry in the shift TN log of these events as required by Radiation Protection procedure 1.006, Decontamination of Personnel. This is a violation of Technical Specification 6.11 which requires that procedures for radiation protection be adhered to for all operations involving personnel radiation exposure (272/84-47-04).

8. Operating Events

A. Unit 1

-- The unit tripped from 77% power on December 23, 1984. The cause was technician error, while adjusting the Reactor Protection System (RPS) overtemperature delta T setpoints. At the time, Nuclear Power Range Channel N-44 was inoperable and had been bypassed to permit the RPS channel adjustments. Placing N-44 in bypass resulted in an Overhead Alarm in the Control Room, which the technician was to verify as "clear" per the setpoint adjustment procedure. Since he was the same technician that placed N-44 in bypass, he knew that that was the cause of the alarm. However, instead of noting the deviation in the setpoint adjustment procedure, he restored the N-44 channel to clear the alarm. This caused the reactor trip. The setpoint adjustments were necessary due to an apparent flux tilt, which in fact was not real, and also the result of personnel error. The senior instrumentation and control supervisor had noted that the required time in which to perform this job was short. As a result, three days prior

to the trip, he made arrangements to have one of the I&C supervisors be called in to assist the technician if this type of problem occurred. The supervisor had been called and was on his way in, when the technician made the error. The technician began the work without the supervisor present due to the scope and restricted time available. The inspectors will review the licensee's report of this event when it is completed (272/84-47-05). The unit remained shutdown to repair the N-44 channel and to inspect the main generator. The unit was restarted at 3:43 p.m. on December 28, 1984.

-- At 9:23 p.m. on December 31, 1984, the reactor tripped from 95% power on No. 11 Steam Generator low water level coincident with steam flow/feedwater flow mismatch. This was caused by a partial closure of the air operated main feedwater regulating valve, 11BF19, due to a failure of one of its control air solenoid isolation valves. The failed solenoid valve was replaced and the unit was restarted at 5:21 p.m. on January 1, 1985. The inspector will review the LER detailing this event when it is submitted.

B. Unit 2

-- The unit remained shutdown for the entire period for the second refueling outage.

9. Refueling Operations

During the inspection period, the licensee totally offloaded the Unit 2 core. Prior to the fuel handling, the revised refueling procedure was reviewed for inclusion of administrative controls established to identify and mitigate the consequences of a refueling water cavity seal failure per the licensee's response to IE Bulletin 84-03. Refueling operations were conducted by Westinghouse. Personnel were interviewed about their response to a sudden refueling water inventory loss and it appeared that the required training and procedural controls were implemented. Portions of the core offload were observed and certain Technical Specification requirements, such as containment integrity, boron concentration, nuclear instrumentation and Spent Fuel Pool level were verified. An increased level of Station QA/QC presence was noted during the review.

10. Unresolved Items

Unresolved items are matters about which more information is required in order to ascertain whether they are acceptable items, violations or deviations. The unresolved item identified during this inspection is discussed in paragraph 3.

11. Exit Interview

At periodic intervals during the course of this inspection, meetings were held with senior facility management to discuss inspection scope and findings. On January 22, 1985, the inspectors met with licensee representatives and summarized the scope and findings of the inspection as they are described in this report. Based on discussion with the licensee, the inspector concluded that none of the issues or findings detailed in this report contain proprietary information.