U. S. NUCLEAR REGULATORY COMMISSION

REGION I

050311-850510

Report Nos.	50-272/85-13 50-311/85-15	
Docket Nos.	50-272 50-311	
License Nos.	DPR-70 DPR-75	
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: <u>June 1, 1985 - June 30, 1985</u>		
Inspectors: T. J. Kenny, Senior Resident Inspector R. W. Borghandt, Resident Inspector		
Reviewed by	F. Limboth, Project Engineer date date	
Approved by: E S	J. Morrholm, Chief, Reactor Projects ection No. 2B, Projects Branch No. 2, DRP	
Inspection Summary:		

Inspections on June 1, 1985 - June 30, 1985 (Combined Report Numbers 50-272/85-13 and 50-311/85-15)

<u>Areas Inspected:</u> Routine inspections of plant operations including: followup on outstanding inspection items, operational safety verification, maintenance observations, surveillance observations, review of special reports, licensee event followup, and regional request. The inspection involved 147 inspector hours by the resident NRC inspectors.

<u>Results:</u> There were no violations identified in this report.

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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. Followup on Outstanding Inspection Items

(Closed) Unresolved Item (272/80-21-01): Change Battery Room Fire Detector Test In Accordance with LER 80-30

The inspector verified that a caution had been added to surveillance procedure SP(0)4.3.3.6.1 titled "Smoke and Thermal Detectors Channel Functional Test" to warn the operator that application of the heat gun to the detector for greater than five seconds could damage the detector. If the detector was damaged, the annunciator for that detector would alarm and the detector would have to be replaced prior to clearing the alarm. The inspector has no further questions.

(Closed) IE Circular (50-272/80-CI-10) This circular will be closed out when Bulletin 79-01 is addressed.

(Closed) Unresolved Item (50-272/81-25-01) This item identified that in a monthly report, certain design change modifications had not been reported after completion. A recent review of performed design changes revealed no deviations between design change completion and reporting. However, some of the reports were sketchy as to; (1) the reasons for the change and (2) the safety evaluation. A further review by the inspector indicated that all of the design change information was not included within the report but that the design changes were properly implemented. The inspector had discussions with licensee management with regard to the need to be explicit in their reporting. This item is considered closed.

(Closed) Violation (50-272/82-01-03) This violation was issued when personnel were observed in the controlled area and not in adherence to the Radiation Exposure Permits. The licensee has taken corrective measures as indicated in their response to the violation dated April 2, 1982. Based on controlled area entries by the resident inspectors, no further violations have been identified. This item is considered closed.

(Closed) Violation (50-272/82-17-01; 311/82-17-01) This violation was issued because operators did not have the necessary "as-built" drawings to operate the plant when design changes were being implemented. The licensee responded to this violation in a letter dated August 28, 1982. The inspector has verified that the commitments have been implemented and has done random checks of the controlled drawings with no findings. This item is considered closed.

(Closed) Violation (50-272/83-02-02) This violation was issued because Catalytic Inc. (a contractor) did not have qualified personnel performing NDE. The licensee responded to this violation in a letter dated March 25, 1983. The inspector verified that the commitments have been implemented. This item is considered closed.

(Closed) Licensee Identified Item (272/83-06-01; 311/83-05-01): Safety Tagging Program

> The licensee has initiated a color coding program that is intended to enhance equipment and unit identification. Under this program all Unit 1 areas (floors, switchboards etc) are painted blue, while all Unit 2 areas are painted yellow. This should significantly reduce the likelihood that equipment in one unit would be mistaken for the similar piece of equipment in the other unit. This item is considered closed.

(Closed) Follow Item (272/83-12-01): Non-Seismic Modification to Diesel Generators

As described in LER 83-006/03L the modification was reworked in order to meet seismic specifications immediately after the non-seismic condition was identified. The design verification process has also been reviewed on numerous occassions and most recently during the Unit 2 inspection 311/85-08. The design verification process has been found to be acceptable and this item is closed.

(Closed) Violation (272/83-12-02; 311/83-13-02): Late Submission of LERs.

This violation resulted from the late submission of a number of reports required by Technical Specifications. Increased licensee attention in this area has resulted in improved performance. Based upon the licensee's recent performance, this item is closed.

(Closed) Unresolved Item (50-272/83-13-01) This item was identified because operators were performing evolutions in the wrong unit. The licensee has color coded the two units and is currently painting the diesel generators, primary auxiliary building and turbine building components with the appropriate colors to conform with the color code. This item is considered closed.

3

(Closed) Unresolved Item (311/85-12-02): Delays in Gaining Site Access for Inspectors

The licensee has made an effort to streamline the training and badging process for NRC inspectors. The relocation of the security photobadging facility to the main security building has helped to speed up the badging process. The licensee has displayed the ability to complete the badging process for NRC inspectors in one hour and all recent visiting inspectors have been granted site access without delay.

(Closed) IE Bulletin 81-01: Surveillance of Mechanical Snubbers

A region-based inspector specialist has evaluated the licensee's responses and has determined they are technically adequate and satisfy the IE Bulletin action requirements. Verification has been made by the resident inspector that the licensee's responses were enacted. This item is closed for Units 1 and 2.

3. Operational Safety Verification

- a. Documents Reviewed
 - Selected Operators' Logs
 - Senior Shift Supervisor's (SSS) Log
 - Jumper Log
 - Radioactive Waste Release Permits (liquid & gaseous)
 - Selected Radiation Exposure Permits (REP)
 - Selected Chemistry Logs
 - Selected Tagouts
 - Health Physics Watch Log
- b. The inspectors conducted routine entries into the protected areas of the plants, including the control rooms, Auxiliary Building, fuel buildings, and containments (when access is possible). During the inspection activities, discussions were held with operators, technicians (HP & I&C), mechanics, 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 to the following areas:
 - Instrumentation and recorder traces for abnormalities;
 - Adherence to LCO's directly observable from the control room;
 - Proper control room 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 inspectors confirmed the operability of selected ESF trains 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 operating conditions; and,
 - Visually inspecting instrumentation, where possible, for proper operability.

Systems Inspected:

- Auxiliary Feedwater (Unit 1)
- Safety Injection (Unit 1)
- Chemical and Volume Control (Unit 2)
- Containment Spray (Unit 2)
- (3) On a biweekly basis, the inspectors:
 - 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;

- Reviewed licensee-identified problem areas; and,
- Verified selected portions of containment isolation lineup.

c. Inspector Comments/Findings:

The inspectors selected phases of the units operation to determine compliance with the NRC's regulations. The inspectors determined that the areas inspected and the licensee's actions did not constitute a health and safety hazard to the public or plant personnel. The following are noteworthy areas the inspector researched in depth:

1. Unit 1

Unit 1 operated at 100% power throughout this report period with the exception of minor power reductions to perform surveillance testing.

2. Unit 2

Unit 2 operated at 100% power from June 1-27 with the exception of a 30 hour period to repair a condenser leak and minor power reductions to perform surveillance testing. On June 28, 1985 Unit 2 was shutdown to make repairs to Pressurizer Safety valve PR-4 and remained shutdown for the remainder of the report period.

2.1 On June 12, 1985, the Unit 2 control room operator observed that the steam generator number 24 narrow range level indication did not meet the channel check acceptance criteria of OD-23. Operations Directive OD-23, "Operations Log 3 Control Console Reading Sheets Modes 1-4" requires that each of the 3 narrow range level channels for each steam generator be within 3% agreement with the redundant channels. Because channel III was approximately 5% lower than the other narrow range channels, it was placed in a tripped condition as required by Technical Specification 3.3.1. Continued operation is allowed in this condition until performance of the next required channel functional test.

The inspector reviewed Deficiency Report Number SIC 85-0219 and Safety Evaluation No. S-2-R100-CSE-0320 which documented the licensee's evaluation of the channel III narrow range level indication error. The error was assumed to be caused by entrapped air in the instrument sensing lines which is supported by the fact that the transmitted level is less than the actual steam generator level. Required corrective actions include venting and purging of the instrument sensing lines; however, ALARA considerations make this approach impractical while the unit was in Modes 1 or 2. Until the unit was shutdown and the sensing lines could be vented, the licensee took the following actions.

- An on-the-spot change was made to OD-23 to allow channel III narrow range level indication operation with up to a 6% difference when compared to redundant channels.
- The channel III High High level trip setpoint was reduced from 67% to 61% to compensate for the fact that actual level is higher than indicated level on channel III.

These temporary actions are applicable to Nos. 21, 23, and 24 steam generators since channel III is used in each of these level instrument loops.

The High - High level trip is used to trip the main turbine in order to prevent possible damage from moisture carryover and is not required by Technical Specifications (TS). The Low - Low steam generator water level trips required by TS do not require adjustment since the induced error is conservative in that the indicated water level is lower than the actual water level.

When Unit 2 was placed into Mode 3 the licensee planned to complete the following:

- Vent channel III instrument loop
- Calibrate channel III instruments
- Return High High level setpoints to original value
- Return OD-23 to original format

The licensee's actions to date have been adequate and the inspector has no further questions at this time. This item remains open pending completion of the Mode 3 corrective actions discussed in Safety Evaluation S-2-R100-CSE-0320 (50-311/85-15-01).

2.2 On June 13, 1985 at approximately 7:05 a.m., the licensee detected a high conductivity condition in the Unit 2 steam generators along with a decrease in condenser vacuum. The licensee began to reduce power at 7:40 a.m. to clean up the condensate using the full flow condensate polishing system. Power was reduced to 53% which allowed portions of the condensers to be taken out of service and inspected for possible leaks. After the 23B waterbox was isolated and drained, a previously plugged tube sheet hole was discovered to be unplugged. This allowed circulating water to mix with

the condensate and thereby cause conductivity to increase to a peak value of 17 Micro-MHOS. The tube sheet plug was originally installed when a condenser tube had been removed from the

installed when a condenser tube had been removed from the condenser. A new plug was installed in the outlet side of the waterbox and the condenser was returned to service. A power increase was commenced after steam generator conductivity was reduced to normal values of less than 1 Micro-MHO. The unit was at 100% power by 2:00 p.m. on June 14, 1985.

2.3 On June 28, 1985, the Unit 2 Reactor Coolant System-Water Inventory Balance (SP(0)4.4.7.2d) indicated an unidentified leak rate of 0.995 GPM as compared to the Technical Specification limit of 1.0 GPM. The previous leak rate determination performed on June 27 indicated an unidentified leak rate of 0.72 GPM. A containment entry was made and steam was observed leaking from the inlet flange of Pressurizer Safety Valve -PR-4. Because of the valve's physical location in relation to interference, and the extreme temperatures in the immediate area the licensee decided to make repairs in Mode 5 (cold shutdown). The inspector witnessed the plant shutdown and will monitor the licensee's activities throughout the outage period.

No violations were identified.

4. Maintenance Observations

a. The inspectors observed portions of various safety-related maintenance activities to verify 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.

During this inspection period the following activities were observed:

- ITT Grinnel Diaphragm Valve Preventative Maintenance (Maintenance Procedure MP 7.2 Rev. 0) per work orders 85-06-03-053-6 and 85-06-03-054-4.
- Replacement of the Component Cooling Heat Exchanger number 11 drain line and service water valve 11 SW 124 per work order 85-06-18-119-4.
- Lubrication of Unit 2 Reactor Trip Breaker 2A (S/N 02YN219-1) per work order 85-06-10-081-0 (see paragraph 5)
- b. The licensee submitted a response to Bulletin 83-06 "Nonconforming Materials Supplied by Tube-Line Corporation" and stated that further nondestructive examination (NDE) would be performed. Additional NDE

9

was performed on February 26, 1985 and rejectable indications were found in the construction welds of previously identified Tube Line fittings. The licensee replaced all nine of the fittings that were installed in the chill water systems with new fittings. The inspector reviewed Work Orders 85-02-22-082-9 and 85-03-08-061-3 and verified that all the work was done in accordance with station procedures.

The inspector reviewed the test results of Special Test "#22 Auxiliary Feed Pump Endurance Run" which was conducted on April 10, 11, and 12, 1985 after installation of a new Ingersoll-Rand Auxiliary Feedwater Pump. Engineering evaluation S-2-F400-MEE-0060 dated June 5, 1985 determined that the new pump ran satisfactorily and met all acceptance criteria. This test was required by item II.E.1.1 of supplement 5 to the SER and consisted of a 48 hour pump run followed by an 8 hour cooldown. After the cooldown, a cold pump start and a one hour run was conducted. The inspectors review of the test results verified that the pump vibration and temperature measurements met all acceptance criteria.

No violations were identified.

5. Surveillance Observations

During this inspection period, the inspector reviewed in-progress surveillance testing as well as completed surveillance packages. The inspector verified that the surveillances were performed in accordance with licensee approved procedures and NRC regulations. The inspector also verified that the instruments used were within calibration tolerances and that qualified technicians performed the surveillances.

The following surveillances were reviewed in depth with portions of the procedures witnessed by the inspector.

SP(0)4.5.4.2(A) Unit 1	Vital Heat Tracing
Procedure M3M Unit 1	Periodic Battery Inspection (Quarterly)
2 PD 16.2.013	Intermediate Range Nuclear Instrument
Unit 2	functional check
2 PD 16.2.014	Intermediate Range Nuclear Instrument
Unit 2	functional check
SP(0)4.8.1.1.2 Unit 2	Electrical Power Systems - Emergency Diesels
Procedure M3Q-2	Reactor Trip and Reactor Trip Bypass Air
Unit 2	Circuit Breaker Semi-Annual Inspection





The inspector witnessed portions of maintenance procedure M3Q-2, "Reactor Trip and Reactor Trip Bypass Air Circuit Breaker Semi-Annual Inspection Lubrication and Testing". During the performance of this test, the Westinghouse DB-50 reactor trip breaker (RTB) 2A (serial number 02YN219-1) failed to meet the trip bar force acceptance criteria of step 9.4.2d. The maximum acceptable trip bar force is 885 grams and RTB 2A required a trip bar force ranging from 650 - 950 grams. The surveillance test was immediately stopped and NRC notifications made per the Event Implementation Classification Guide section 17, 10 CFR 50.72, and Technical Specification 3.3.1. Bypass breaker "B" which had just successfully completed its six month surveillance test was installed into the Reactor Trip Breaker A position and the reactor protection system was returned to normal.

On June 26, 1985 a Westinghouse technical representative inspected the breaker and determined that no maintenance was required other than lubrication. The trip mechanism pins, bearing points, and latch surfaces were lubricated with 53701 GW Molybdenum Disulfide. The breaker was then retested and the trip bar force measurement varied from 460 - 490 grams over five separate trips. The licensee completed the surveillance test and returned RTB 2A to service on June 28, 1985.

No violations were identified.

6. 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 May 1985
- Unit 2 Monthly Operating Report May 1985
- 7. Licensee Event Report Followup

The inspector reviewed the following LER to determine that reportability requirements were fulfilled, immediate corrective action was taken, and corrective action to prevent recurrence had been accomplished in accordance with Technical Specifications. Unit 2

LER 85-009 Reactor Trip from 100% - Dropped Control Rod

This event was discussed in detail in Inspection Report 50-272/85-12 and 50-311/85-13. The root cause of the reactor trip was a high resistance connection in Rod 2C4 Control Rod Drive Mechanism (CRDM) cable connector which caused the rod to drop while attempting to move the rod for surveillance testing. The high resistance was a result of the male and

female connectors not being properly made up during cable reassembly following the refueling outage. The licensee disassembled and inspected all of the CRDM connectors and found that four additional connectors required rework, one connector contained pins that were not fully seated, and two connectors had pins that required replacement.

The licensee's immediate corrective actions were adequate; however, LER 85-009 does not describe the licensee's plans to prevent this problem from recurring again other than stating that "the obsolete connectors will eventually be replaced with an improved design". The inspector questioned the licensee concerning the changes to the connector reassembly procedures as discussed in Inspection Report 50-272/85-12 and 50-311/85-13. He was informed that no procedure changes had been made nor had any formal process been started to initiate a change. The inspector informed the licensee that the long term corrective actions for the dropped control rod as discussed in LER 85-009 do not appear to be adequate. This item is unresolved (50-311/85-15-02).

8. Regional Request

The Resident Inspector received a request from the Region to verify that the spent fuel pool could not be siphoned out with certain valve line-ups. The potential for this occurrence had been identified at Turkey Point Power Station. The inspector verified that no valve line-up at Salem could siphon out the spent pool due to the design of the cooling system. In no case could water be drained from the spent fuel pool to a level below 20' above the top of the fuel because of piping configurations and installed anti-siphon breakers (drilled holes in the cooling water return piping).

9. Unresolved Item

An area for which more information is required to determine acceptability is considered unresolved. An unresolved item is contained in paragraph 7.

10. 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 with licensee management at the end of the reporting period. The licensee did not identify 2.790 material.