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

REGION I

Report Nos. 50-272/81-27
50-311/81-27

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: October 20 - November 23, 1981

Inspectors: L. J. Norrholm, Senior Resident Inspector — 12/3/81 date

W. M. Hill, Jr., Resident Reactor Inspector — 12/4/81 date

Approved By: E. G. Greenman, Chief, Reactor Projects Section No. 2A, Projects Branch No. 2, DRPI — 12/8/81 date

Inspection Summary:
Inspections on October 20 - November 23, 1981 (Combined Report Numbers 50-272/81-27 and 50-311/81-27)
Unit 1 Areas Inspected: Routine inspections by the resident inspectors of plant operations including tours of the facility; conformance with Technical Specifications and operating parameters; log and record review; reviews of licensee events; and followup on previous inspection items. The inspection involved 89 inspector-hours by the resident NRC inspectors.
Results: No items of noncompliance were identified.
Unit 2 Areas Inspected: Routine inspections by the resident inspectors of plant operations including tours of the facility; conformance with Technical Specifications and operating parameters; log and record review; review of licensee events; and followup on previous inspection items. The inspection involved 88 inspector-hours by the resident NRC inspectors.
Results: One item of noncompliance was identified (Failure to submit a report as required by the license - paragraph 5).

DETAILS

1. Persons Contacted

J. Driscoll, Chief Engineer
L. Fry, Station Operating Engineer
J. Gallagher, Assistant Maintenance Engineer
S. LaBruna, Maintenance Engineer
H. Midura, Manager - Salem Generating Station
L. Miller, Station Performance Engineer
J. O'Connor, Radiation Protection Engineer
F. Schnarr, Reactor Engineer
R. Silverio, Assistant to the Manager
J. Stillman, Station QA Engineer

The inspector also interviewed other licensee personnel during the course of the inspections including management, clerical, maintenance, operations, performance and quality assurance personnel.

2. Status of Previous Inspection Items

(Closed) Open Item (311/79-04-20) Format requirements for Performance Department procedures. The inspector reviewed Revision 10, dated March 25, 1981, to Performance procedure II-3.5, Procedures, which is part of the revised Performance Department Manual. The procedure requires that all applicable sections described in ANSI 18.7-1976 be included in Performance Department procedures. This requirement is being implemented during the current revision process. The inspector had no further questions on this item.

(Closed) Noncompliance (311/80-16-01) Failures to follow procedures with respect to logkeeping and tagging. The inspector confirmed that corrective actions for these items have been taken. The periodic review of tagging requests has been observed and increased operator awareness to decreasing tank levels has been noted. With respect to low tank level alarms, the licensee has committed to installation of such alarms at the next refueling outage. This aspect of corrective actions will be followed in resolution of inspection item 50-311/81-01-01.

(Closed) Unresolved Item (272/81-12-02) Program to periodically blow down Boric Acid Storage Tank level sensing lines. The inspector reviewed Inspection Orders 406131 and 406134 to confirm that the periodic blowdown program has been established and is continuing on a quarterly basis to prevent recurrence of the indication loss documented in LER 81-21. The program is in effect on both units, and was last conducted on September 16, 1981. The inspector had no further questions.

(Closed) Unresolved Item (272/81-04-04) Information feedback to operators. The inspector reviewed procedure EPDN 16.8, Review of Significant Licensee Event Reports or Operating Incident Reports, Revision 1, dated July 14, 1981. The procedure details a systematic method of reviewing operating information and disseminating it to operations and training personnel. Through discussions with the recipients, the inspector confirmed that the system is functioning and that operators receive the information in requalification training and through the use of OMT's (Temporary Operating Memoranda) which are maintained in a required reading file in the control room. The inspector had no further questions.

(Closed) Unresolved Item (272/80-32-05) Inspection and cleaning program for electrical cabinets. The inspector reviewed completed Inspection Orders 200806 and 200807 and Maintenance Department procedure M4D, Relay Room Electrical Panels' Inspection and Cleaning, Revision 0, dated October 8, 1981. A program of annual inspection and cleaning as necessary has been established and is functional. The licensee stated that expansion of the program to areas outside the relay room is being evaluated. The inspector had no further questions on this item.

(Closed) Follow Item (311/79-10-A) In service inspection for three pipe welds with questionable postweld heat treatment. The inspector reviewed the Unit 2 Pre-Service Inspection report and confirmed that the three welds (2MS-14-5, 2MS-14-1, and 2MS-12-1) were included in the UT program which will form the basis for the ISI program. The inspector had no further questions on this item.

(Closed) Noncompliance (311/80-12-01) Entry into Mode 3 contrary to Technical Specification 3.0.4 with No. 23 Auxiliary Feedwater Pump and Containment Spray System inoperable. The inspector reviewed station procedures and subsequent practices to confirm that corrective actions taken were effective in preventing recurrence of this item. Mode change checklists now include a specific requirement to review outstanding tagging requests. This action will ensure that no new maintenance action just prior to mode change will have rendered a system inoperable. Operating Memorandum OMP-19 was changed on June 23, 1981 to specifically prohibit on-the-spot changes to post-surveillance "as left" valve lineups. These procedural steps, in addition to increased operator awareness through Night Order entries, should be effective in preventing recurrence of this item. The inspector had no further questions.

(Closed) Noncompliance (272/81-01-01) Failure to verify safety injection throttle valve position following maintenance. Immediately following identification of this item, the valves were verified to be in the correct position. Further details were provided in Licensee Event Report 81-07. The inspector also verified that a new surveillance procedure, SP(O) 4.5.2.G, ECCS - Throttle Valves, has been issued for both units to document the position verification following maintenance. The inspector had no further questions on this item.

(Closed) Noncompliance (272/81-05-01) Failure to establish certain procedures required by Regulatory Guide 1.33. The inspector reviewed console alarm procedures and Operating Instructions in each unit to confirm that the changes indicated in licensee's response had been made through the on-the-spot change procedure. All stated changes were in place. With respect to tagging of redundant air supply valves, the inspector confirmed that the design change to accomplish this tagging was on site and was in progress. The work has not yet been completed. This action will be verified during the resolution of related unresolved item 311/80-12-02. The licensee stated that the work is expected to be complete by January 1, 1982. The inspector had no further questions on this item.

(Closed) Noncompliance (272/80-06-04) Failure to maintain feedwater flow instrument calibration. The inspector reviewed documentation and inspection orders and examined the feedwater flow transmitters in each unit to confirm that the instruments were being calibrated monthly and that an effective program to preserve this interval was in place. The inspector had no further questions on this item.

(Closed) Unresolved Items (311/81-11-01 and 311/81-11-02) Fire protection interaction analysis verification and completion of cable wrap program. Status of these items was reviewed in NRC Inspection Reports 50-311/81-21 and 81-26. The program has been completed on Unit 2. The inspector had no further questions on these items.

(Closed) Unresolved Item (272/81-25-02) Containment pressure transmitter spiking due to steam impingement. The inspector reviewed digital voltmeter output data taken from the transmitters which confirmed that they were responding to containment pressure changes. The inspector had no further questions.

(Closed) Follow Item (272/80-10-01) Operator training in use of portable vibration monitor during ASME XI pump testing. Through discussions with personnel, the inspector confirmed that training in the use of the IRD 320 for vibration measurements during pump testing is being provided during the current requalification training cycle.

(Closed) Follow Item (311/81-21-07) Review of Auxiliary Feedwater Pump Test report. The report was submitted to NRR on November 3, 1981 and will be reviewed by the staff. Lateness of the report is identified as an item of noncompliance in report detail paragraph 5.

SITE

3. Shift Logs and Operating Records

a. The inspector reviewed the following plant procedures to determine the licensee established requirements in this area in preparation for a review of selected logs and records.

-- AP-5, Operating Practices, Revision 11, August 13, 1981;

-- AP-6, Operational Incidents, Revision 7, October 8, 1981;

-- AP-13, Control of Lifted Leads and Jumpers, Revision 4, February 11, 1980;

-- Operations Directive Manual; and,

-- AP-15, Safety Tagging Program, Revision 1, November 21, 1980.

b. Shift logs and operating records were reviewed to verify that:

-- Control room log sheet entries are filled out and initialled;

-- Auxiliary log sheets are filled out and initialled;

-- Log entries involving abnormal conditions provide sufficient detail to communicate equipment status, lockout status, correction and restoration;

-- Log book reviews are being conducted by the staff;

-- Operating orders do not conflict with Technical Specification requirements;

-- Incident reports detail no violation of Technical Specification LCO or reporting requirement; and,

-- Logs and records were maintained in accordance with Technical Specifications and the procedures in 3.a above.

c. The review included examination of the following plant shift logs and operating records and discussions with licensee personnel:

-- Log No. 1 - Control Room Daily Log, October 20 - November 23, 1981

-- Log No. 6 - Primary Plant Log, October 20 - November 23, 1981

-- Log No. 7 - Secondary Plant Log, October 20 - November 23, 1981

-- Log No. 8 - Unavailable Equipment Status Log, October 20 - November 23, 1981

-- Night Orders, October 20 - November 20, 1981

-- Lifted Lead and Jumper Log - All active

-- Tagging Requests - All active (Unit 2)

-- Nonconformance Reports for October 1981

-- Incident Reports 81-369, 370, 372, 375, 376, 379-384, 387-392, 394, 402, 403, 406-410, 412, 413, 416, 418, 422.

The inspector had no questions relative to logs reviewed during this inspection period.

4. Plant Tour

a. During the course of the inspections, the inspector made observations and conducted multiple tours of plant areas, including the following;

(1) Control Room (daily)

(2) Relay Rooms

(3) Auxiliary Building

(4) Vital Switchgear Rooms

(5) Turbine Building

(6) Yard Areas

(7) Radwaste Building

(8) Penetration Areas

(9) Control Point

(10) Site Perimeter

(11) Fuel Handling Building

(12) Containment

(13) Guard House

b. The following determinations were made:

-- Monitoring instrumentation. The inspector verified that selected instruments were functional and demonstrated parameters within Technical Specification limits.

-- Valve positions. The inspector verified that selected valves were in the position or condition required by Technical Specifications for the applicable plant mode. This verification included examination of control board indication and field observation of selected valves in safety related systems.

-- Radiation Controls. The inspector verified by observation that control point procedures and posting requirements were being followed.

-- Plant housekeeping conditions. The inspector observed that housekeeping was generally acceptable. Any cluttered or littered area for which maintenance was not in progress, was brought to the attention of the plant management or operating staff.

-- Fluid leaks. The inspector confirmed that corrective action had been initiated for any leaks identified by station personnel. No leaks were observed that had not previously been identified by station personnel.

-- Piping vibration. No excessive piping vibrations were observed and no adverse conditions were noted.

-- Selected pipe hangers and seismic restraints were observed and no adverse conditions were noted.

-- Equipment tagging. The inspector selected plant components for which valid tagging requests were in effect and verified that the tags were in place and the equipment in the condition specified.

-- By frequent observation through the inspection, the inspector verified that control room manning requirements of 10 CFR 50.54 (k) and the Technical Specifications were being met. In addition, the inspector observed shift turnovers to verify that continuity of system status was maintained. The inspector periodically questioned shift personnel relative to plant conditions and their knowledge of emergency procedures.

-- Releases. On a sampling basis, the inspector verified that appropriate documentation, sampling, authorization, and monitoring instrumentation were provided for effluent releases.

-- Fire protection. The inspector verified that selected fire extinguishers were accessible and inspected on schedule, that fire alarm stations were inspected on schedule, that fire alarm stations were unobstructed and that cardox systems were operable. Paragraph 2 details observations relative to the fire protection interaction analysis and completion of the cable wrapping.

-- Technical Specifications. Through log review and direct observations during tours, the inspector verified compliance with Technical Specifications including Limiting Conditions for Operation (LCO's). The following parameters were sampled frequently: RWST level, BAST level and temperature, containment temperature, boration flow path, shutdown margin, offsite power. In addition, the inspector conducted periodic visual checks of protective instrumentation and inspection of electrical switchboards to confirm availability of safeguards equipment.

-- Security. During the course of these inspections, observations relative to protected and vital area security were made, including access controls, boundary integrity, search, escort, and badging.

d. The following acceptance criteria were used for the above items:

-- Technical Specifications

-- Operation Directives Manual

-- Inspector Judgement

e. The inspector had no further questions relative to tours made during this inspection.

5. Full Power License Conditions (Unit 2)

The full power license for Salem Unit 2 was issued on May 20, 1981, and contains several conditions to be met prior to given dates or events. The inspector reviewed a number of these items to determine status of implementation. The following comments apply to the areas reviewed (Numbers refer to paragraph references in the full power license):

-- 2.C.(19) Differential Pressure Baseline Data. The inspector reviewed Startup Procedure SUP 70.5, RCS Flow Measurements, which was completed in July 1980. For all combinations of 1, 2, 3, and 4 Reactor Coolant Pumps in operation, the licensee has recorded elbow tap differential pressure transmitter digital voltmeter readings for operating and non-operating loops. This information provides the baseline data specified in this license condition. The inspector had no further questions on this item.

-- 2.C.(22) Radiation Protection Organization. By correspondence dated October 1, 1980, the licensee outlined plans to reduce the dependence on contractor personnel in the area of health physics staffing. Organizational changes in this area are addressed in NRC Inspection Report 50-272/81-20. The licensee also committed to a complement of 4 Supervisors, 9 Technicians, 16 Assistants, 3 Helpers, and 3 Clerks. All would be PSE&G employees. As of November 1, 1981, the complement of PSE&G employees in the Radiation Protection Department was 1 Senior Supervisor, 1 Lead Engineer, 1 Associate Engineer, 4 Supervisors, 9 Technicians, 11 Assistants, 3 Apprentice Assistants, 6 Helpers, and 1 Clerk. Two additional Clerks were in the process of being hired. The inspector determined that these individuals satisfy the license condition. It was noted that additional contractor personnel remain on site, primarily as a result of preparations for the upcoming Unit 1 outage.

-- 2.C.(24)(c)(ii) Auxiliary Feedwater System Pump endurance testing. Testing of these pumps was completed on August 14, 1981. As documented in NRC Inspection Report 50-311/81-21, preliminary review of data found the results acceptable. The licensee was required by this condition of the license to provide a report within 60 days of completion of the tests. The licensee's report was not transmitted until November 3, 1981. This failure to report within the time period specified constitutes non-compliance with a condition of the operating license (311/81-27-01).

-- 2.C.(24)(b) Short-term accident analysis and procedures revisions. Through specific briefings, copies of procedures, and requalification training, operators have been made aware of changes to emergency operating instructions precipitated by additional reviews of small-breaks and inadequate core cooling. This requirement was met prior to 30 effective full power days of operation. This topic is again included in the current cycle of licensed operator requalification training, a portion of which the inspector attended.

-- 2.C.(24)(e)(ii) Primary Coolant Sources Outside Containment. As documented in NRC Inspection Report 50-311/81-11, the licensee measured leakage in systems outside containment prior to initial startup and submitted the required report. The leak rates were measured with the plant at full system pressure and normal operating temperature. No additional systems were to be measured after startup. Accordingly, no additional report is required. The licensee's continuing program of leakage monitoring and reduction was discussed in NRC Inspection Report 50-272/80-20. The licensee stated that changes in responsibility and procedures for this program are being made, but the program is continuing.

The inspector had no further questions with respect to license conditions reviewed.

6. Lessons Learned (NUREG-0737)

The following item, detailed in NUREG-0737, Clarification of Action Plan requirements, was to be completed by October 1, 1981. The inspector confirmed that all action had been completed in a manner consistent with NRC documented requirements in this area.

II.B.4 - Training for mitigating core damage. All licensed operators have completed the first cycle of this training (Reference NRC Inspection Reports 50-272/80-20, 81-04, and 81-05). This topic is also included in the current cycle of operator requalification training.

No unacceptable conditions were identified relative to the above item.

7. Station Operations Review Committee (SORC)

The inspector attended, as an observer, the October 28, 1981, Meeting of the Station Operations Review Committee (Meeting 81-112). No inadequacies were identified with respect to membership, quorum requirements, the review process, or qualifications of individuals. Alternates are specifically designated for Committee members and adequate controls over the number of alternates participating as voting members were in place.

The inspector noted that a system of tracking SORC open items has been established but does not appear to have received recent attention. Additionally, minutes had not been formally prepared for meetings held two months ago. Consequently, the inspector could not confirm that actions taken at this meeting were properly documented in meeting minutes and tracked to completion. The licensee stated that an effort to clear this backlog has been initiated.

This area will be continually reviewed during the routine inspection program. The specific problems of timely minutes and open item tracking remain unresolved pending further inspector review (272/81-27-01).

8. Radiological Effluent Monitoring

The inspector evaluated the adequacy of radiological effluent monitoring during routine containment pressure-vacuum relief operations.

To comply with Technical Specification 3.6.1.4 (Containment pressure limits -1.5 to +0.3 psig) the licensee finds it necessary to relieve containment pressure using the 10-inch pressure vacuum relief valves (VC 5 and 6) for about one hour per day. This operation is distinct from containment purge, which involves the use of 36-inch valves (VC 1&4) to exchange air in the containment and which is prohibited by Technical Specification 3.6.1.7 in Modes 1 through 4.

The inspector's review was prompted by observation of the following situation on October 26, 1981. The licensee conducted a containment pressure relief operation on Unit 2 between 10:34 and 11:45 a.m. with the plant vent gaseous activity monitor (2R41C) out of service. The containment gaseous activity monitor (2R12A) was in service and operable with the alarm setpoint at 4.33 E+4 cpm. Either of these two monitors will isolate all containment ventilation valves when its respective alarm setpoint is reached. Unit 2 Technical Specification Table 3.3-6 (Radiation Monitoring Instrumentation) lists the following under Process Monitors:

INSTRUMENT	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ALARM/TRIP SETPOINT	MEASUREMENT RANGE	ACTION
...					
a. Containment					
1) Gaseous Activity					
a) Purge & Pressure-Vacuum Relief Isolation	1**	1, 2, 3, 4 & 6	$\leq 4.5 \times 10^{-2}$ Ci/Sec	$10^1 - 10^6$ cpm	25
...					

** The unit vent sampling monitor functions in this capacity when the purge and exhaust isolation valves are open.

Technical Specification Table 3.3-3 (Engineered Safety Feature Actuation System Instrumentation) lists the following information:

FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
...					
c. Containment Ventilation Isolation					
...					
1) Containment Atmosphere Gaseous Radioactivity-High	2**	1	1	1, 2, 3, 4	17
...					

** The unit vent sampling monitor functions in this capacity when the purge and exhaust isolation valves are open.

Actions 17 and 25 require that valves VC 1-6 remain shut if less than one channel is operable.

The licensee stated his position that either monitor (2R12A or 2R41C) can serve to provide the containment isolation function and that 2R12A, even though it is not a vent monitor, will cause the required isolation at a setpoint equivalent to the release rate given in Table 3.3-6.

The inspector reviewed a document dated October 22, 1979, entitled, Radiation Monitoring System Alarm Trip Setpoints SNGS-2, which correlates the release rate of 4.5E-2 uCi/sec to an R12A setpoint of 5.77E4 cpm using a maximum plant vent flow rate of 5.5E4 cubic feet per minute with a x/Q of 2.2E-6 seconds per cubic meter.

The observed setpoint was set at 75 percent of the above calculated value.

The vent monitor, 2R41C, is set at a value (4.89E5 cpm) designed to prevent exceeding the instantaneous release rate limit during purge, calculated at 0.77 Ci/sec. Use of 2R41C as the isolation channel during pressure-vacuum relief would require reducing the setpoint to 2.86E4 which is not routinely done. Consequently, 2R12A is usually the single channel used to satisfy the Technical Specification monitoring requirements. For containment purge, station procedures require that R41C be operable.

Based on the above review and discussions with NRR, the inspector concluded that the use of channel 2R12A as the isolation monitor during containment pressure-vacuum relief appears consistent with the letter and intent of the Technical Specifications. To clarify the asterisk noted with regard to the vent monitor, the licensee proposed to request a change to the Technical Specifications. The inspector had no further questions on this item subject to further review when an amendment request is submitted (311/81-27-02).

9. Operational Summary

Unit 1

At 1:50 p.m. on October 29, unit 1 tripped from 98 percent power due to loss of the 1A Vital Instrument Bus. The 1A Vital Instrument Inverter output fuse had blown, placing all Channel 1 protective relays in the tripped condition, including the UV relay for one Reactor Coolant Pump. Indicated loss of one pump at this power level generates a direct reactor trip. Prior to recovery, the Channel 1 outputs (including several high steam flows) were still tripped when an actual Low Tave condition resulted in safety injection at 1:58 p.m. and 2:03 p.m. The high head pumps injected and were reset when termination criteria were met, within 5 minutes each time. The safety injections were terminated before the plant went solid.

Immediately prior to the inverter failure, the power supply fuse to the inverter cooling fan had been replaced. All fuses were replaced and the inverter retested. No subsequent problems were found, and the inverter was declared operable.

At 6:49 a.m. on November 5, a reactor/turbine trip occurred from 65 percent power. The cause for the trip was determined to be a problem in the E-H Control System. Extensive testing eventually identified a faulty printed circuit board which was subsequently replaced.

At 1:30 p.m. on November 6, the unit tripped from 4 percent power due to a low level in 12 Steam Generator because of operator error. Steam Generator level control was in manual. At 2:11 p.m. a Safety Injection occurred when Tave fell below 541 degrees and steam flow indicated high when 1A Vital Instrument bus was lost. The 1A Vital Instrument bus was lost when licensee engineers removed and replaced a lamp fuse to the cooling fan in the inverter cabinet. (See Safety Injection on October 29). Prior to startup, the power cable to the fan was rerouted away from the control wires in the inverter. During the safety injection, two inlet valves to the Boron Injection Tank (BIT) did not initially operate as required. The cause was attributed to boric acid buildup on the valve stem. The valves were cleaned, tested, and declared operable. The licensee has increased the frequency of tests and inspections of these valves until the packing can be replaced during the next outage.

Unit 2

At 5:54 a.m. on October 22, a reactor/turbine trip occurred from 75 percent power due to a low water level in 24 Steam Generator. The cause for the low level was loss of 21 Main Feed Pump which tripped on low suction pressure.

At 2:58 a.m. on November 16, a reactor/turbine trip occurred from 100 percent power due to a low level in 24 Steam Generator caused by loss of 22 Main Feed Pump from low suction pressure.

At 5:06 p.m. on November 19, a turbine/reactor trip occurred from 90 percent power due to low level in 24 Steam Generator, caused by low Main Feed Pump 22 suction pressure. Investigation resulted in replacing the pressure switch and cleaning the sensing line. At 8:12 p.m., a reactor/turbine trip occurred from 30 percent power while returning to service. The cause was a high level in 24 Steam Generator which occurred due to operator error when shifting from manual to automatic control. The unit was returned to service at 2:39 a.m. on November 20.

At 8:09 p.m. on November 24, a reactor/turbine trip occurred from 100 percent power due to a low level in 24 Steam Generator. The generator low level was caused by loss of 22 Main Feed Pump which tripped on low suction pressure. Installed instrumentation indicated that feed pump suction pressure decreased while condensate flow increased. The licensee is investigating several possible malfunctions which would give this indication.

The inspector expressed his concern about the repeated reactor/turbine trips caused by the loss of feed pumps and low suction pressure. A licensee representative acknowledged the inspector's concerns and outlined an extensive program to identify the cause for the trips. In addition to the frequent inspection, cleaning, and blowdown of the feed water and condensate pump suction strainers, the mechanical traps (strainers) in the condensate polishing system have been removed, inspected, repaired, as appropriate, and reinstalled. Several small holes were identified and repaired which would have caused blowby of resins and clogging the feed water pump suction strainers. The licensee is procuring additional instrumentation necessary to monitor up to 51 plant parameters in the secondary system. The licensee believes this will provide enough information to determine and correct the cause for the frequent plant trips. The inspector will continue to monitor the licensee's progress and followup any further trips which are feed pump related.

The inspector had no further questions regarding the operations during this period.

10. Surveillance Activities

The inspector observed the licensee's performance of the following surveillance procedures:

a. 1 PD 2.6.020 Channel Functional Test
LT 459 Pressurizer Level Protection Channel I, Revision 3, November 29, 1979

b. 1 PD 2.6.017 Channel Functional Test
1 PT - 455 Pressurizer Pressure Protection Channel I, Revision 7, January 15, 1980

c. 1 PD 2.6.055 Channel Functional Test
1 LT 539 No. 13 Steam Generator Level Protection Channel I, Revision 2, December 7, 1979

d. 1 PD 2.6.045 Channel Functional Test
1 LT 529 No. 12 Steam Generator Level Protection Channel I, Revision 2, December 7, 1979

e. 1 PD 2.6.024 Channel Functional Test
1 PT - 505 First Stage Turbine Impulse Pressure Channel I, Revision 4, January 10, 1978

A CHANNEL FUNCTIONAL TEST shall be the injection of a simulated signal into the channel as close to the primary sensor as practical to verify OPERABILITY including alarm and/or trip function. This requirement in the Technical Specifications demonstrates "operability" for safety related instrumentation. The inspector confirmed the following: Testing was performed in accordance with adequate procedures; test instrumentation was calibrated; limiting conditions for operations were met; removal and restoration of the affected components were properly accomplished; and, the test results conformed with Technical Specifications and procedural requirements and were reviewed by personnel other than the individual performing the test. Any deficiencies noted were reviewed and resolved by the personnel of the responsible department. The personnel performing the surveillance activities were knowledgeable of the systems and the test procedures. The inspector confirmed that these personnel were qualified to perform the tests. The inspector had no further questions regarding the performance of these surveillance activities.

11. Maintenance Activities

The inspector observed maintenance activities on the following equipment:

a. 22 Charging Pump - replacement of rotor

b. 2A SEC - replacement of drawer, one output relay and system retest

c. Power Range Channel, 2N43 - detector current adjustment; bistable NC 302 and NC 306 adjustment; and, console (remote meter) adjustment

These activities were observed to ascertain the following: The work was conducted in accordance with approved procedures, regulatory guides, Technical Specifications, and industry codes or standards. The following items were considered during this review; The limiting conditions for operation were met while components or systems were removed from service; approvals were obtained prior to initiating the work; activities were accomplished using approved procedures and were inspected as applicable; functional testing was performed prior to declaring that particular component as operable; activities were accomplished by qualified personnel; radiological controls were implemented; and fire prevention controls were implemented.

At 5:27 a.m. on November 7, 1981, No. 22 Charging Pump shaft failed while in service. Replacement of the pump rotating assembly was initiated; however, Technical Specification 3.5.2 only permits inoperability of one ECCS subsystem for a period of 72 hours in Modes 1-3. On November 9, the licensee requested, and NRR granted, a one time extension to this time limit of an additional 48 hours.

Replacement of the pump assembly would also require performance of the ECCS flow distribution test dictated by Technical Specification 4.5.2.h. The licensee also requested relief from this requirement, based on pump shop test data and previous setting of the ECCS flow distribution throttle valves. By the same amendment to the license, this testing was deferred until the next cold shutdown provided that an adequate analysis and calculation demonstrated that the pump could be expected to perform in a manner similar to the failed pump.

Repairs were completed on November 10, and a successful ASME XI pump test performed as required by Technical Specification 4.0.5. The pump was declared operable at approximately 11:30 p.m. The inspector reviewed a safety evaluation dated November 10, 1981 (S-2-N100-MSE-110, Rev. 0) entitled, Postponement of Technical Specification 4.5.2.h Test For the Unit No. 2 - Centrifugal Charging/Safety Injection Pumps Salem Nuclear Generating Station Unit No. 2. Using shop test data for the pumps, and system resistance characteristics developed from previous field testing, the licensee concludes that the new rotating assembly exhibits performance characteristics which appear even closer to those of the installed No. 21 pump than the failed pump displayed. Accordingly, the conclusion drawn is that there is adequate assurance that a full flow test will show that system flow distribution under runout conditions will meet Technical Specification 4.5.2.h requirements.

Performance of the full flow test during the next cold shutdown will be verified at that time (311/81-27-03).

The inspector had no further questions regarding any maintenance activities observed.

12. System Operation and Review

The inspector conducted a walk down of selected portions of plant systems. The following drawings were used to conduct this review:

a. Component Cooling System (Unit 1) - 205231, revision 11, dated November 23, 1980

b. Containment Spray (Unit 1) - 205235, revision 7, dated January 23, 1981

c. Containment Spray (Unit 2) - 205335, revision 7, dated January 10, 1980

d. Safety Injection (Charging Pumps) - 205334, revision 8, dated May 6, 1980 - (Unit 2)

The walk down was conducted to confirm system operability. Included in this review was an examination of valve positions, seismic restraints and supports, leaks (unidentified), local indicators and instrumentation, unusual noise or vibrations, overheated equipment, and system conformance with "as built" drawings. No unacceptable conditions were identified.

13. Unresolved Items

Areas for which more information is required to determine acceptability are considered unresolved. Unresolved items are contained in Paragraphs 7 and 8.

14. Exit Interview

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