U. S. NUCLEAR REGULATORY COMMISSION
Region I

Report Nos.: 82-22
82-21
50-272
Docket Nos.: 50-311
DPR-70
License Nos.: DPR-75 Category: C

Licensee: Public Service Electric and Gas Company

80 Park Place

Newark, New Jersey 07107

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

Inspection At: Hancock's Bridge, New Jersey

Inspection Conducted: August 23-27, 1982

Inspectors: G. W. Meyer
G. W. Meyer, Reactor Inspector 9-24-82
date signed

Approved By: J. D. Bellinger for
D. L. Caphton, Chief, Management Programs Section, DETP 9/30/82
date signed

Inspection Summary:
Inspection on August 23-27, 1982 (Combined Inspection Report No. 50-272/82-22; 50-311/82-21)

Areas Inspected: Routine, unannounced inspection by a region-based reactor inspector of maintenance; Technical Specification related calibration; and measuring and test equipment. The inspection involved 37 hours onsite.

Results: No violations in two areas; two violations in one area (violation - lack of control of measuring and test equipment, paragraph 4.d.1, and failure to provide effective corrective action for measuring and test equipment, paragraph 4.d.2).

DETAILS

1. Persons Contacted

W. Bacon, Instrumentation and Controls (I&C) Supervisor
*J. DeStefano, Quality Assurance (QA) Engineer
J. Driscoll, Assistant General Manager, Salem
R. Gabel, Maintenance Planning Coordinator
V. Gadzinski, Senior Maintenance Planning Supervisor
*J. Gallagher, Maintenance Manager
J. Ketcham, Maintenance Supervisor
B. Leap, Station QA Engineer, Acting
*L. Miller, Technical Manager
A. Orticelle, Senior I&C Supervisor
R. Piccolo, Maintenance Supervisor
T. Spencer, Senior Maintenance Supervisor

USNRC

L. Norrholm, Senior Resident Inspector
*R. Summers, Resident Inspector

*Present at exit interview.

2. Maintenance

a. Requirements

The requirements governing the conduct of safety-related maintenance are specified in the following documents:

-- 10 CFR 50, Appendix B; Quality Assurance Criteria

-- Technical Specifications, Section 6; Administrative Controls

-- Regulatory Guide 1.33, Rev. 2/ANSI N18.7-1976; Quality Assurance Program Requirements

-- Regulatory Guide 1.37/ANSI N45.2.1-1973; Cleaning Requirements

-- Regulatory Guide 1.39/ANSI N45.2.3-1973; Housekeeping Requirements

-- Regulatory Guide 1.58/ANSI N45.2.6-1973; Qualification of Inspection, Examination, and Test Personnel

b. Program Review

The above documents specify that the program for conducting maintenance achieve the following:

-- Administrative controls are established.

-- Program responsibilities are designated.

-- Procedures for performing the work with suitable inspection points are established.

-- Preventive maintenance schedules are established.

-- Control of special processes is established.

-- Equipment control methods are established.

-- Records of the maintenance performed are maintained.

The inspector reviewed the following procedures to verify that the licensee maintains an administrative system to meet the above requirements:

-- Administrative Procedure (AP)-9, Control of Station Maintenance

-- AP-10, Inspection Order Program

-- AP-15, Safety Tagging Program

-- AP-20, Nonconformance Program

-- AP-21, Mechanical System Cleanliness Program

-- AP-31, Housekeeping Program

-- Maintenance Procedure A-19, Equipment History Administration and Review

c. Implementation

The inspector reviewed the following areas to verify compliance with the licensee's maintenance program requirements:

-- Maintenance Department Organization chart completed in 1982

-- Nine work orders (WO's) - 901123, 901819, 901825, 901941, 902761, 909638, 939024, 987685, and 989974

-- Eight maintenance procedures, including two preventive maintenance procedures - M2B, M3A, M3Z, M11E, M11V, M13A, M13B, and M14A

-- Three welder qualification files

-- 1982 Welders Log

-- Certifications for visual examination, Level II, for seven maintenance department personnel

-- Annual Equipment History Review, January 4, 1982

-- Maintenance Department Deficiency Report (DR) Log

-- Three DR's completed in 1982 - MD 1115, MD 1193, and MD 1194

-- Two Equipment History Files

-- Salem Inspection Order System, Unit 1 Summary Report

d. Findings

The inspector identified no violations.

3. Calibration of Instruments and Gauges

a. Requirements

The requirements governing the calibration of instruments and gauges used to satisfy Technical Specification requirements are specified in the following documents:

-- 10 CFR 50, Appendix B, Quality Assurance Criteria

-- Technical Specifications, Section 6; Administrative Controls

-- Regulatory Guide 1.33/Rev. 2/ANSI N18.7-1976; Quality Assurance Program Requirements

b. Program Review

The Technical Specification has various requirements on the parameters of safety-related equipment. The licensee has a program for the calibration of the instruments and gauges used to satisfy these requirements (the calibrations are not specifically delineated in the Technical Specification). The above documents specify that the calibrations achieve the following:

-- Established calibration schedule frequencies are being followed.

-- Procedures have been reviewed and approved, contain acceptance criteria consistent with requirements, and contain detailed instructions commensurate with the complexity of the calibration.

-- The technical content of procedures is adequate to perform satisfactory calibration.

-- Calibration data was adequately and accurately recorded and was within established tolerances.

The inspector reviewed the following procedures to verify that the licensee's administrative program for calibration meets the above requirements:

-- Administrative Procedure (AP)-10, Inspection Order System

-- Performance Department Manual, Section 3.4, Calibration Program, and Section I, General Information

-- Maintenance Department Procedure A-9, Calibration Program

c. Implementation

The inspector reviewed the following areas to verify compliance with the licensee's calibration program:

-- I&C Department Organization Chart

-- Salem Inspection Order (IO) System; Unit 1 System Summary Report, July 21, 1982

-- Five Technical Specification related calibrations, including the IO used to schedule it and the Instrument Calibration Data Card record - IO's 401607, 401629, 402481, 405949, and 406164

-- Maintenance Department Call-out Card System for scheduling of alarm switch calibrations

-- Seven Auxiliaries Control Switch History Cards which record alarm switch calibrations - AD-M033, -M068, -M070, -M091, -M164, -M176, and -M633

d. Findings

(1) The inspector identified no violations.

(2) Maintenance Procedure A-9, Calibration Program, specifies that the alarm switches calibrated by the Maintenance Department shall be calibrated on a two year frequency and that the calibrations be scheduled and controlled by the Call-out Card System, a tickler file. However, the inspector found that the Call-out System was not apparently being used, as a brief review revealed no entries in the last year. Also, review of the seven Auxiliaries Control Switch History Cards noted above revealed that the last calibrations had been performed in 1979 and all seven switches had exceeded their specified calibration frequency of every two years by up to fifteen months. A licensee representative stated that although the alarm switches

did apply to safety-related systems and would indicate problems associated with system operation, the switches were not used to satisfy any Technical Specification or regulatory requirements. The licensee representative stated that the identified problem would be corrected, probably by means of evaluating the importance of the alarm switches to operation of safety-related systems and plant systems and by incorporating the calibration of the alarm switches judged to be significant into the Inspection Order (IO) Program, the station's computer scheduling system.

This item (272/82-22-01; 311/82-21-01) is open pending licensee action to calibrate alarm switches in a controlled manner and subsequent NRC:RI inspection.

(3) The calibration of Technical Specification related instruments and gauges is controlled by the Inspection Order (IO) Program, the station's computer scheduling system. This system provides effective implementation of those calibrations listed with specific IO entries. However, the inspector found no thorough evaluation performed by the licensee to ensure that all Technical Specification related instruments have been entered into the IO system.

In the inspector's sample of five instruments, all five were in the IO system, although IO's 405949 and 406164 had been entered into the IO system in 1982. The inspector stated that a master list of the instruments and gauges used to meet Technical Specification and Inservice Test requirements and the IO numbers which control their periodic calibration would be desirable to ensure complete coverage. A licensee representative stated that master lists had been used to control work performed under the IO system in other areas and the need for a master list in this area would be evaluated.

This item (272/82-22-02; 311/82-21-02) is open pending completion of the licensee evaluation and subsequent NRC:RI inspection.

4. Measuring and Test Equipment

a. Requirements

The requirements governing the control of measuring and test equipment on safety-related work are specified in the documents referenced in paragraph 3.a.

b. Program Review

The above documents specify that the control and calibration of measuring and test equipment achieve the following:

-- Test equipment shall be calibrated at specified frequencies.

-- Calibrations shall be traceable to the National Bureau of Standards.

-- Test equipment shall be controlled in an acceptable manner, including use of calibration stickers, a master equipment list and periodic inventories.

-- Accountability of test equipment and its usage shall be maintained.

The inspector reviewed the following procedures to verify the licensee's administrative program for measuring and test equipment:

-- Administrative Procedure (AP)-20, Nonconformance Program

-- AP-22, Measuring and Test Equipment Calibration Program

-- Maintenance Procedure A-9, Calibration Program

-- Maintenance Procedure M3P, Portable Test Instrument Calibration

-- Performance Department Manual, Section 3.2, Test Equipment

c. Implementation

The inspector reviewed the following areas to verify compliance with the licensee's test equipment program:

Maintenance Department:

-- Instrument List

-- Test Equipment Sign-out Log

-- Three Calibration Data Sheets - most recent calibrations for instruments M-79, M-133, and M-137

-- Two Equipment History Files - M-32 and M-79

-- Test Equipment Evaluation for M-137

I&C Department:

-- Deficiency Report (DR) Log (from January 2, 1981 to August 25, 1982)

-- Seven Deficiency Reports - DR's 1304 and 1551 to 1556

-- Master Equipment List

-- Inventory of test equipment, August 25, 1982

-- Test equipment usage log

-- Examination of five test instruments, including Test Equipment Calibration Data Sheets

-- Seven Equipment History Files: PD-004, -030, -099, -148, -167, -199, and -332

-- One Test Equipment Record Volume (for instrument PD-003)

d. Findings

(1) 10 CFR 50, Appendix B, Criterion XII, "Control of Measuring and Test Equipment" states "Measures shall be established to assure that tools, gages, instruments, and other measuring and testing devices used in activities affecting quality are properly controlled, calibrated, and adjusted at specified periods to maintain accuracy within necessary limits"

The inspector found that a violation (272/82-22-03; 311/82-21-03) existed for inadequate control of measuring and test equipment in the maintenance department based on the following examples:

(a) Questionable Calibration. Multi-amp tester M-137 was sent to a calibration vendor for checking of its calibration. The vendor found it to be out-of-calibration on March 23, 1982, but returned it to the licensee with a valid vendor calibration sticker. However, the inspector reviewed the calibration data sheet and found that the vendor documentation listed the "condition returned-outside tolerance" and no "after adjustment" values were listed. The inspector examined tester M-137 and confirmed that a vendor calibration sticker was affixed. A licensee representative stated that the tester had not been used subsequent to the questionable calibration and would not be used until proper calibration was verified.

(b) Inadequate Accountability of Equipment. The inspector selected a sample of six instruments from the Equipment Sign-off Log and requested to examine the instruments. A licensee representative found four instruments, which the inspector verified to have current calibration stickers. However, the licensee representative could not find instruments M-76 and M-184 nor could he find any documentation to describe their whereabouts.

(c) Inadequate Equipment List. AP-22, Section 5.1, specifies the station policy that "a test equipment and calibration

standards inventory list shall be established by each department maintaining such equipment" and that the list be updated. The inspector reviewed the Maintenance Department Instrument List and found the list to be inadequate due to numerous omissions of information (e.g., location, calibration procedure, calibration frequency), handwritten changes, and inclusion of inappropriate equipment (e.g., Sears slide projector, D cell battery rechargers, etc.).

(d) No Periodic Inventories of Equipment. AP-22, Section 5.2, specifies that a periodic inventory be conducted of all test equipment. Licensee representative could not show any inventories from 1981 or 1982. He stated that an inventory had been performed in April or May, 1981, but that no record of the inventory existed.

(e) Inadequate Test Equipment Calibration Records. AP-22, Section 7.1, specifies that a file shall be established for each specific type of test equipment and shall include calibration data sheets. The inspector examined the file for instrument M-32 and found one data sheet dated September 23, 1981 (M-32 is scheduled to be calibrated every three months). The inspector examined the file for instrument M-79 and found two calibration data sheets dated August 4, 1982 and December 22, 1980 (M-79 is scheduled to be calibrated every six months).

(f) Inadequate Storage of Test Equipment. The inspector requested to examine instrument M-137 and was led to the second floor storage room in B Building, well removed from the other test equipment and the Test Equipment Sign-out Log. The storage room was not locked, was in a poor state of housekeeping, and contained a wide variety of tools, spare parts and consumables.

The licensee representative stated that due to the size of instrument M-137, there was not sufficient room in the locked cabinets where the other test equipment was stored to also store instrument M-137.

The inspector concluded that the above violation had resulted from the assignment of responsibilities within the maintenance department. A maintenance supervisor is currently assigned the responsibility for the control of measuring and testing equipment as a collateral duty. He is primarily responsible for supervising approximately half of the electricians performing maintenance in the two reactor plants. The supervisor stated that he had received little clerical help in the test equipment area and had performed almost all the clerical functions himself. At the exit interview, the inspector questioned

having the control of test equipment, largely a clerical function, assigned to a supervisor who spends a majority of his time in the reactor plants. The inspector stated that to achieve effective test equipment control, the responsibility should be switched to someone associated with the maintenance office who is capable in clerical functions or the responsibility could remain assigned to the maintenance supervisor if he receives increased clerical help such that his workload in this area is reduced to be compatible with his other supervisory functions. The Maintenance Manager stated that he would evaluate the above alternatives as part of the corrective action to the violation.

(2) 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action" states "Measures shall be established to assure that conditions adverse to quality, such as...malfunctions,...defective material and equipment, and nonconformances are promptly identified and corrected."

The Salem Quality Assurance Manual commits Public Service Electric and Gas Company to meet ANSI N18.7-1976. ANSI N18.7-1976, paragraph 5.2.16, Measuring and Test Equipment, states in part: "When calibration, testing, or other measuring devices are found out of calibration, an evaluation shall be made and documented concerning the validity of previous tests and the acceptability of devices previously tested from the time of the previous calibration."

The inspector found that a violation (272/82-22-04; 311/82-21-04) existed for ineffective corrective action for measuring and test equipment found to have been used in an out-of-calibration (OOC) condition.

The licensee policy for evaluation of out-of-calibration (OOC) test equipment is stated as follows in AP-22, Measuring and Test Equipment Calibration Program, Section 10.0:

> When test equipment is reported by the calibration facility as having been out of calibration, the Storeroom shall issue a Deficiency Report (DR) per AP-20, Nonconformance Program, to the utilizing department head. The department head shall conduct an evaluation of the equipment's working history to determine if the test equipment had been used on safety-related equipment. The results of the evaluation shall be documented on the DR.

The inspector found the following examples of ineffective corrective action for OOC test equipment:

(a) When a standard used by the licensee to calibrate the licensee's measuring and test equipment was found to have

been OOC during itsprior use, no meaningful evaluation was performed to determine if the standard could have resulted in OOC test equipment which during their use would result in miscalibrated installed safety equipment. For example, decade box standard PD-193 was found to be OOC on January 26, 1981. The evaluation of the effect of the OOC standard on the test equipment which it had calibrated was completed on March 16, 1981. However, the evaluation concluded that the 27 specific test equipment pieces which it calibrated were not safety-related equipment. However, the "not safety-related" test equipment was used to calibrate safety-related equipment. No corrective action resulted other than the inadequate evaluation. This represents ineffective corrective action.

(b) The issuance of Deficiency Reports (DR's) for OOC test equipment was not timely. The inspector found that DR's 82-1551 to 82-1556 for OOC test equipment had been issued on August 6, 1982 and had been closed out on August 11, 1982. However, review of the six DR's revealed that the test equipment had been found OOC an average of eight months prior to issuance of the DR.

Due to the excessive time lag between determination of the OOC condition and the DR evaluation, no meaningful evaluation of the effect of the OOC test equipment on installed safety-related instruments and gauges could be made. Frequently the DR evaluation stated that the affected instrument had been recalibrated since the use of the OOC test equipment. This represents untimely corrective action.

(c) During review of the I&C Department DR Log, the inspector found an excessive number of open DR's from 1981. Specifically, the inspector found approximately 70 of the 210 DR's from 1981 still open. The DR's include both OOC test equipment and installed equipment under the responsibility of the I&C Department. The inspector reviewed DR 1304, issued on March 18, 1981 for test piece PD-330 when found OOC, and still open. The test piece had been evaluated and found to have been used on only one instrument which was not safety-related. A licensee representative stated that DR 1304 should have been closed out. This represents untimely corrective action.

(d) Section 3.2.10 of the Performance Department Manual states that test equipment found to be OOC three successive times when checked at the specified calibration frequency shall be checked for calibration at an increased frequency thereafter. However, the inspector found that instrument PD-489 was found OOC four successive times on April 7,

1981, September 10, 1981, December 30, 1981 and June 21, 1982. The inspector found that the specified corrective action was not implemented as the calibration frequency remained quarterly.

5. Management Meeting

Licensee management was informed of the scope and purpose of the inspection at an entrance interview conducted on August 23, 1982. The findings of the inspection were periodically discussed with licensee representatives during the course of the inspection. An exit interview conducted on August 27, 1982 (see Paragraph 1 for attendees) at which time the findings of the inspection were presented. In addition, in a telephone conversation with Glenn Meyer and Don Caphton on August 30, 1982, Henry Midura, General Manager, Salem Operations, was informed of the inspection results.