

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

Region I

Report No. 79-10/79-20

Docket No. 50-272/50-311

License No. DPR-70/CPFR-53 Priority     --     Category     C    

Licensee: Public Service Electric & Gas Co.

80 Park Place

Newark, New Jersey 07101

Facility Name: Salem Nuclear Generating Station Unit 1 & 2

Inspection at: Hancocks Bridge, New Jersey

Inspection conducted: March 20-22, 1979 and March 27-28, 1979

Inspectors: H. H. Nicholas for

T. H. Smith, Reactor Inspector

5/4/79  
date signed

H. H. Nicholas for

G. Kalman, Reactor Inspector

5/4/79  
date signed

Approved by: H. H. Nicholas for  
D. L. Caphton, Chief, Nuclear Support Section  
No. 1, RO&NS Branch

date signed

5/4/79  
date signed

Inspection Summary:

Inspection on March 20-22, 1979 and March 27-28, 1979 Combined Report Nos. 50-272/79-10 and 50-311/79-20)

Areas Inspected: Routine, unannounced inspection by regional based inspectors of (Unit 1) the containment integrated leak rate test procedure; surveillance of pipe supports and restraints; preparations for refueling; and licensee action on previous inspection findings; (Unit 2) licensee action on previous inspection findings. The inspection involved 56 inspector-hours (Unit 1 - 43 hours, Unit 2 - 13 hours) on site by two NRC regional based inspectors.

Results: No items of noncompliance were identified.

## DETAILS

### 1. Persons Contacted

The below listed technical and supervisory personnel were contacted.

#### a. Public Service Electric and Gas Company

- B. Canfield, Maintenance Supervisor
- G. Duncan, ISI Maintenance Engineer
- L. Fry, Senior Performance Supervisor
- \*\*R. Griffith, Senior Staff Engineer, QA
- R. Lombard, Operations Engineer
- \*H. Midura, Manager Salem Generating Station
- \*M. Metcalf, QA Engineer, Resident Group
- \*\*E. Meyer, Project QA Engineer
- \*J. Nichols, Reactor Engineer
- \*J. Stillman, Station QA Engineer
- \*J. Zupko, Chief Engineer

#### b. U.S. Nuclear Regulatory Commission

D. Capton, Chief, Nuclear Support Section No. 1

\* denotes those present at the exit interview on March 22, 1979.

\*\* denotes those present at the exit interview on March 28, 1979.

The inspectors also talked with and interviewed other members of the engineering and technical staffs.

### 2. Licensee Action on Previous Inspection Findings

(Closed) Unresolved Item (272/79-01-02): The inspector reviewed Revision 13 (dated March 1979) of M16E "Containment Isolation Type B and C Tests." This revision requires that the Type B and C leakage summation be calculated using the higher leak rate of two series containment isolation valves in one penetration. The procedure also requires a comparison of the present leak rate to the previously determined leak rate for valves six inches and larger to monitor potential valve degradation. This item is considered resolved.

(Closed) Unresolved Item (272/79-01-03): The inspector reviewed Surveillance Procedure SP (0) 4.0.5-V "Inservice Testing - Valves", Revision 4. This procedure requires the check of valve position indication required by IWV-3300 for valves which are inaccessible for direct observation during plant operation. This item is considered resolved.

(Closed) Unresolved Item (272/79-01-04): Surveillance Procedure SP (0) 4.0.5-V Revision 4 requires that dual function check valves be tested in both the open and shut direction.

Detailed measurements of normally closed check valves, as required by paragraph IWV-3520 (b)(2), cannot be made due to lack of system instrumentation. In the Pump and Valve Test Program Twenty Month Update submitted February 9, 1979, the licensee has requested exemption from making these measurements. These items are considered resolved.

(Closed) Unresolved Item (272/79-01-05): Surveillance Procedure SP (0) 4.0.5-V has been revised to include maximum stroke times for all power operated Category A and B valves. This item is considered resolved.

(Closed) Unresolved Item (272/79-01-06): The inspector reviewed Revision 3 of SP (0) 4.0.5-V (Maint), "Inservice Testing-Valves". The resolution of each subpart of the unresolved item is as follows.

- (1) The revised procedure specifies that valves on which maintenance is performed or valves which fail stroke time criteria are to be tested under this procedure.
- (2)(3) The format of the running log has been revised and is now maintained by valve type and associated testing requirements.
- (4) The format of the test sheets has been changed to provide a space for the shift supervisor to indicate his review for each individual valve test.

(Closed) Unresolved Item (272/79-01-07): The inspector reviewed Revision 6 of SP (0) 4.6.1.1 "Containment System - Primary Containment" and determined that valve ISA 905 had been added to the procedure. The licensee also performed a review and determined that all applicable valves are included in SP (0) 4.6.1.1.

(Open) Unresolved Item (272/79-01-01): The inspector reviewed SP (0) 4.0.5-P, "Inservice Testing - Pumps" Revision 4 and "Pump Allowable Test Ranges" data. The resolution of each subpart of the unresolved item is as follows.

- (1) Comparisons of operating pump data with appropriate acceptance criteria are now being conducted as required by Subsection IWP 3200. This item is considered resolved.
- (2) Reference values for pump parameters have been established in accordance with Subsection IWP 3110. This item is considered resolved.
- (3) Limits for bearing temperatures and inlet pressures have been specified as required by Subsection IWP-3210. This item is considered resolved.
- (4) Thermocouples used for determining bearing temperatures have not been calibrated as required by Subsection IWP-4113. A licensee representative has committed to complete these calibrations by June 1, 1979. (Open)

(Closed) Unresolved Item (311/78-29-04): The inspector reviewed SUP-DTP-30-LRT-2 "Reactor Containment Type C Leak Rate Test" through Change 18. The resolution of each subpart of the unresolved item is as follows.

- (1) 10 CFR 50 Appendix J and the above procedure require draining of both sides of a containment isolation valve prior to testing. The inspector reviewed valve lineups for penetrations 18, 49, 54 and a random sample of other penetrations to ensure complete draining. No discrepancies were discovered. This item is considered resolved.
- (2) The inspector reviewed valve lineups for penetrations 49, 54, E22 and a random sample of other penetrations to ensure the downstream side of the valve under test was vented. No discrepancies were discovered. This item is considered resolved.
- (3) All tests were conducted using the primary test method. No procedural changes were required. This item is resolved.

(Closed) Unresolved Item (311/79-01-01): The following items are resolved based on a review of SUP 48 "Preservice Testing of Pumps and Valves" and discussions with licensee personnel.

- a. SMII No. 17 has been cancelled and replaced by SUP 48.

- b. SUP 48 has been revised to include maximum stroke times for all Category A and B valves.
- c. SUP 48 has been revised to require testing of dual purpose check valves in both the open and closed directions.
- d. Detailed measurements of normally closed check valves, as required by paragraph IWV-3520 (b)(2), cannot be made due to lack of system instrumentation. The licensee has requested exemption from making these measurements.
- e. SUP 48 has been revised to require a check of valve position indicators for inaccessible valves.
- f. The testing of Category C relief valves has been incorporated into SUP 48.
- g. The pump bearing temperature stabilization criteria of IWP-3500 have been incorporated into SUP 48.
- h. The revised SUP 48 calls for the measurement of all required pump bearing temperatures and vibration data.

(Closed) Unresolved Item (311/78-56-01): Licensee fuel handling building crane inspection reports were reviewed and no discrepancies were identified. This item is now resolved.

(Closed) Unresolved Item (311/78-56-02): Licensee reevaluated and augmented the fuel handling building fire protection system. The fuel handling building was subsequently inspected by an NRC fire protection specialist (311/79-05) and no discrepancies were identified. This item is now resolved.

3. Containment Integrated Leak Rate Test (CILRT) Procedure

a. General

The inspector reviewed a draft version of the CILRT procedure SP (O) 4.6.1.2, "Containment System - Type A Integrated Leak Rate Test Unit NO. 1." for conformance with 10 CFR 50 Appendix J (App J), ANSI N45.4, Salem 1 Technical Specifications, and current NRC positions. With the exception of the below items the inspector had no further questions on the draft procedure.

b. CILRT Procedure

The below items associated with the CILRT procedure are collectively designated as open item (272/79-10-01).

(1) Test Duration

The procedure has a provision which allows the test to run less than 24 hours. ANSI N45.4 requires a test duration of 24 hours unless it can be shown that an accurate leakage rate can be obtained from a shorter test. It is the NRR's position that a 24 hour test is required to insure an accurate and representative leakage rate determination.

(2) Acceptance Criteria

Section V.B. 3 of Appendix J specifies the requirement for analysis and interpretation of CILRT results. The inspector also informed the licensee of the NRR position regarding the acceptance criteria of the CILRT.

The measured leakage rate at the 95% upper confidence level plus required additions must be less than 0.75 La.

(3) Data Evaluation Technique

The procedure does not specify a data evaluation method. The inspector informed the licensee that the NRC accepts the mass point data evaluation technique as the preferred method.

(4) Leak Repair

There is no warning or prohibition statement in the procedure against repairing leaks after the containment is pressurized. If leakage is discovered during the test, which could cause the test not to meet the acceptance criteria, the offending leak may be isolated and the test continued provided that:

- (a) The penetration is locally testable and is given a local leak rate test (LLRT) both before and after repair;
- (b) The pre-repair LLRT results are added to the CILRT results to determine the success of the initial CILRT attempt (as found leakage); and
- (c) The post repair LLRT results are added to the CILRT results to determine the success of the final CILRT attempt (as left leakage).

(5) Events Log

ANSI N45.4 requires that a dated log of events and pertinent observations be maintained during the test. This is currently not required in the procedure.

(6) Atmospheric Data

The current procedure has a data sheet with space to record atmospheric data, however, the exact data to be recorded is not specified. ANSI N45.4 requires that atmospheric pressure and ambient temperature be recorded hourly during the test.

(7) Absolute Values

10 CFR 50 Appendix J paragraph III.A.3.(c) requires that leakage rates be calculated using absolute values corrected for instrument error. The procedure presently does not require that calculations be made using corrected data.

(8) Containment Volume Changes

Volume decreases of containment due to level increases in the reactor coolant system and the containment sump mask containment leakage. The measured leak rate must be conservatively compensated for this volume change. The procedure currently measures reactor coolant system level but does not require analysis for correcting the measured leak rate. Containment sump level changes are not presently required to be recorded.

(9) Volume Weighting Factors

Temperature (RTD) and dew point instrument volume weighting factors are not available in the current procedure. There is also no plan in the procedure as to how these factors will be reassigned if instrumentation is lost due to failure.

(10) Venting and Draining

Systems which are not drained and vented as required by Appendix J paragraph III.A.1.(d) must have their containment isolation valve Type C test leakage added to the Type A test measured leakage prior to comparison with the acceptance criteria. There is no indication in the procedure which systems are in this category.

(11) Data Rejection

During the CILRT outlying data may be rejected provided definitive data rejection criteria have been established. Currently, there are no such criteria in the procedure.

4. Preparation for Refueling

a. Scope

Preparatory activities and procedures related to the forthcoming refueling were reviewed. Fuel vendor documentation and licensee inspection reports associated with the receipt of 40 new fuel assemblies were reviewed. Refueling procedures were reviewed for compatibility with technical specifications and for compliance with applicable standards.

b. Documents Reviewed

- Procedure I-2, Rev. 8, Refueling;
- NRC Form 741 completed by fuel vendor for 40 fuel assemblies;
- Form 54990, Fuel Assembly Inspection, completed by licensee;
- Form 54991, Fuel Receiving Record - Container Report, completed by licensee.

c. Findings

The inspector identified no discrepancies during the review of documents associated with the receipt of new fuel assemblies.

The content of the refueling procedure was compared to the guidelines set forth in ANSI 18.7. On the basis of this review, the inspector identified several items which were not addressed by the procedure.

- (1) One refueling prerequisite condition, the requirement for a RHR loop to be in operation, was not listed under the initial condition section of the procedure.
- (2) The requirement for continuous monitoring of source range neutron instrumentation during core alterations was not addressed.



- (3) Post refueling core verification procedures were not addressed.

Licensee representatives agreed to add the three items listed above to the refueling procedure. This matter will be reviewed during the refueling inspection and is considered unresolved. (272/79-10-02)

The inspector expressed concern over the potential for misuse of the new fuel elevator to raise an irradiated fuel assembly from the spent fuel pool. Licensee representatives agreed to evaluate whether it was mechanically possible to transfer a fuel assembly from the spent fuel pool to the new fuel elevator. If necessary, administrative controls will be established to decrease the likelihood of such an event. This matter is an inspector follow-up item (272/76-10-03).

Licensee representatives agreed to review refueling related procedures to ascertain that prior to resumption of fuel movement following an interruption of refueling operations, all refueling prerequisite conditions will be reverified in the course of following existing surveillance schedules. Prerequisite conditions not included in existing checks will be added to the refueling procedure if any possibility exists that they may be overlooked following an interruption in refueling operations. This matter is an inspector follow-up item (272/79-10-04).

5. Pipe Supports and Restraints

a. Scope

The inspection consisted of a document review of hydraulic snubber inspection procedures and reports. The inservice inspection program for pipe support systems was reviewed and the progress of the licensee's inspection effort was discussed with cognizant personnel.

b. Documents Reviewed

- Long-Term Inservice Examination Plan for Class 1, Class 2, and Class 3 Components and Systems at Salem Generating Station, Unit 1.

- Procedure M 11B, Rev. 4, Hydraulic Snubbers.
- Procedure M 17B, Rev. 4, Coded Component and Pipe Support Visual Examination.
- Procedure Examination Qualification and Certification Program, Rev. 2.
- Snubber Visual Inspection Reports dated 3/10/77 and 1/13/78.

c. Findings

Except as noted below, the inspector identified no problems with the pipe support and restraint inspection program.

The licensee snubber visual inspection procedure does not include the requirement to measure the snubber piston position to ascertain that the piston movement would not bottom during normal thermal induced movement. Licensee representatives stated that Technical Specifications do not specifically address the requirement for piston position measurement during the visual inspection and that this additional step would impose additional work with questionable benefit considering the limited and unique application of the hydraulic snubbers. This matter will be designated an inspector follow-up item pending inspection of the snubbers and their specifications during the refueling shutdown. (272/79-10-05).

6. Unresolved Items

Items about which more information is required to determine acceptability are considered unresolved. Paragraph 4.c. of this report contains unresolved items.

7. Exit Interview

At the inspection's end the inspectors held a meeting (see Paragraph 1 for attendees) to discuss the inspection scope and findings. The unresolved items were identified.