U.S. NUCLEAR REGULATORY COMMISSION
REGION I

Report No. 50-311/84-45

Docket No. 50-311

License No. DPR-75 Priority -- Category C

Licensee: Public Service Electric and Gas Company

Post Office Box 236

Hancock's Bridge, New Jersey 08038

Facility Name: Salem Nuclear Generating Station, Unit 2

Inspection At: Hancocks Bridge, New Jersey

Inspection Conducted: December 10-21, 1984

Inspectors: Robert A. Mc Brearty
R. A. McBrearty, Reactor Engineer

Jan. 31, 1985
date

Approved by: Jacque P. Durr
J. P. Durr, Chief, Materials and Processes Section, EB, DRS

1/31/85
date

Inspection Summary:

Inspection on December 10-21, 1984 (Report No. 50-311/84-45)

Areas Inspected: Routine, unannounced inspection of ISI activities including program review, observations, review of ISI data, review of NDE procedures and review of QA involvement with ISI activities. The inspection involved 44 hours onsite and 27 hours in office by one region based inspector.

Results: No violations were identified.

## DETAILS

1. Persons Contacted

Public Service Electric and Gas Company (PSE&G)

R. Brandt, Nuclear Plant Services - Engineer
*W. Denlinger, Lead Engineer - Station QA
L. Lake, ISI Engineer
*R. S. Patwell, Lead Engineer - Lic. & Reg.
*D. A. Perkins, Station QA Engineer
*D. W. Rogozenski, ISI Supervisor
S. W. Siemkiewicz, ISI Engineer
R. J. Skibinski, Senior Staff QA Engineer
*W. P. Treston, Senior ISI Supervisor
*J. M. Zupko, Jr., General Manager - Salem Operations

Southwest Research Institute (SwRI)

W. M. Howell, Team Leader
S. Magaro, NDE Level II
E. Ruescher, Group Leader - NDE Level III

U.S. Nuclear Regulatory Commission

**C. Y. Cheng, MTEB - NRR
**L. Frank, MTEB - NRR
*J. Linville, Senior Resident Inspector
*R. Summers, Resident Inspector

*Denotes those present at the exit meeting
**Telephone contact

2. Inservice Inspection (ISI) Program Review

The inspector reviewed the following to ascertain compliance with applicable ASME Code requirements, licensee commitments and regulatory requirements.

- The facility Technical Specification 4.0.5
- Long-term Inservice Examination Plan for Class 1 and Class 2 Components and Systems at Salem Generating Station, Unit 2.
- Examination Plan for the 1984 Inservice Examination of Salem Generating Station, Unit 2

The long term plan was prepared for the licensee by Southwest Research Institute (SwRI) and is intended to meet the applicable requirements of the ASME Code, Section XI, 1974 Edition through Summer 1975 Addenda. The

use of that particular edition of Section XI complies with 10 CFR 50.55a (g) and the facility Technical Specification 4.0.5.

Licensee responsibility for establishing and maintaining the Unit 2 ISI program is assigned to the ISI department which performs the same function for unit 1 as documented by Inspection Report 50-27?/84-22.

The inspector verified that examinations scheduled during the current outage were completed, and that program changes were properly documented.

No violations were identified.

3. Procedure Review

The following SwRI nondestructive examination (NDE) procedures were reviewed by the inspector to ascertain compliance with applicable ASME code and regulatory requirements:

- SwRI - NDT - 600-3, Revision 61, Deviation 15, "Manual Ultrasonic Examination of Pressure Piping Welds"
- SwRI - NDT - 600-30, Revision 16, Deviation 7, "Manual Ultrasonic Examination of Pressure - Retaining Welds in Heat Exchangers"
- SwRI - NDT - 600 - 36, Revision 6, Deviation 1, "Manual Ultrasonic Examination of Studs and Bolts Greater than One Inch to Less than Two Inches in Diameter"
- SwRI - NDT - 600 - 37, Revision 5, Deviation 5, "Manual Ultrasonic Examination of Hexagonal Nuts"
- SwRI - NDT - 900 - 1, Revision 50, "Visual Examination of Nuclear Reactor Components by Direct or Remote Viewing"

The inspector's review indicated that the applicable code and regulatory requirements were met.

No violations were identified.

4. ISI Data Review

The inspector selected for review NDE data representing examinations which were performed during the current refueling outage. The review was done to ascertain that recorded indications were properly evaluated and that programmatic requirements were met. Data representing the following welds were included in the inspector's review:

- Residual Heat Removal System 14" diameter elbow to pipe weld 14-RH-1211-7.

- Residual Heat Removal System 14" diameter elbow to pipe weld 14-RH-1211-17.

- Safety Injection System 6" diameter pipe to elbow weld 6-SJ-1242-11.

- Feedwater System 14" diameter elbow to pipe weld 14-BF-2231-18.

- Regenerative Heat Exchanger cap to shell weld 2-RHE-1.

Ultrasonic indications were detected in each of the aforementioned welds, and were plotted and evaluated by SwRI, the licensee's ISI vendor.

Using the licensee's data, the inspector replotted selected ultrasonic reflectors and found the following:

- Approximately 30% of the inspector's replots indicated that the original plots were done using incorrect shear wave angles - 45° used instead of 60° and angles less than 20° were used when 45° angles were required.

- All available information was not used to identify weld contours and inside surface geometry. There is no evidence to indicate that existing radiographs were reviewed, and in some cases insufficient thickness measurements were made to aid in profiling surface contour.

- There is no evidence to indicate that current examination results were compared to preservice inspection (PSI) results.

- The evaluations by SwRI are not always compatible with information provided by the examination data sheets and the associated indication resolution record.

In response to the inspector's questions regarding the data and associated evaluations the SwRI representatives stated that they did not review radiographs, but that, although it was not documented, PSI data were reviewed to aid in evaluating current examination results. At the exit meeting the licensee stated that comparison of PSI and ISI data will be documented and included in future ISI data packages.

The licensee was in the process of reviewing and reevaluating this data and discussing the results with SwRI personnel.

This item is considered unresolved pending completion of the licensee's review and evaluation and subsequent NRC review of the licensee's actions (50-311/84-45-01).

5. Observations

Flange bolting on main steam system 8-MS-2242-2FB, and bolting on main steam system 8-MS-2212. valve 21-MS-12 were visually and volumetrically examined in place during the current refueling outage.

The ASME Code, Section XI, 1974 Edition, Summer 1975 Addenda requires that NDE shall be performed on 10% of the bolting in each joint, but not less than two bolts or studs per joint, and that 100% of the studs and nuts shall be visually examined. The code permits the examinations to be done when the bolting is in place under tension, when the connection is disassembled, or when the bolting is removed.

Visual examination records of the items note that the examination surfaces were painted. The inspector visually inspected the items to ascertain the condition of the painted surfaces, the extent of the paint, and to what degree the examinations may have been obstructed by the paint.

The inspector found that all accessible surfaces of the items were coated with a tightly adhering layer of what appeared to be a metallic paint.

The examination results were discussed with licensee personnel, and because of the tight adherence of the paint to the surface, the ultrasonic examination results were not questioned. The ability to perform a visual examination through a layer of paint was questioned by the inspector. This item is considered unresolved pending licensee evaluation of the affect of the paint on the visual examination results and subsequent NRC review of the licensee's evaluation (50-311/84-45-02).

6. Steam Generator Tubing Examination

Eddy current (ET) examination of steam generator #24 tubing was scheduled to be done during the current refueling outage. Prior to the performance of the eddy current examination a tube leak was detected and a visual examination revealed the presence of loose parts in the region of the peripheral tubes. The leak was determined to be caused by the loose parts.

Visual examination of the remaining steam generators revealed loose parts in those generators which prompted the licensee to perform eddy current examination of tubes in all four steam generators. The examinations included the following number of tubes in each generator:

- SG #21 - 415 tubes examined including 329 peripheral tubes
- SG #22 - 443 tubes examined including 329 peripheral tubes
- SG #23 - 432 tubes examined including 329 peripheral tubes
- SG #24 - 100% of the tubes - this generator was examined in compliance with the facility Technical Specification (T.S.) requirement.

A total of 42 tubes were plugged in the four generators. These included forty tubes which represented all the tubes subject to damage from the tube lane blocking devices (10 tubes in each generator), the leaking tube in generator #24, and one tube in generator #23 which produced a 38% ET

indication. The licensee chose to plug that tube although it did not exceed the 40% plugging limit at this time.

The results of the examinations were discussed with the licensee and by telephone with the NRR personnel listed in paragraph 1.

During the next refueling outage the licensee plans to examine 100% of the tubes in generator #23.

No violations were identified.

7. Quality Assurance (QA) Involvement in Inservice Inspection Activities

The inspector reviewed the following to ascertain that ISI activities were monitored by the licensee's QA department:

- Operations and Maintenance Monitoring Report #SWR-057, dated 12-12-84
- Operations and Maintenance Monitoring Report #SWR-058, dated 12-14-84

The reports confirmed that the QA group monitored SwRI ISI activities including calibration of examination equipment, observations of examinations in progress, use of proper calibration blocks, recording of indications, and compliance with the applicable NDE procedure. In addition the outage ISI plan was reviewed with respect to the 10-year ISI plan and a review of SwRI personnel qualification/certification records was performed.

No violations were identified.

8. Personnel Qualification/Certification Records

The inspector reviewed the records of SwRI NDE personnel to ascertain that they were properly qualified and certified to perform their assigned duties at the site.

The records were considered incomplete in that the documented training and experience did not, in all cases, reflect the total required time for level of certification shown on the document. An example of this involves an individual certified to Level II in the ultrasonic examination method. The documented hours of classroom training for this individual equalled 64. The requirement is 40 hours of training to become a Level I, and 40 additional training hours to become a Level II, a total of 80 hours of classroom training minimum.

The discrepancies were identified by the licensee's QA audit of the records and were confirmed by the inspector's review. Additional information was requested from SwRI by the licensee and was received at the site prior to the exit meeting. The licensee had not reviewed the new material, and this item is considered unresolved pending completion of the

licensee's review of the additional information and subsequent NRC review of the licensee's action (50-311/84-45-03).

No violations were identified.

9. Unresolved Items

Unresolved items are items about which more information is required to ascertain whether they are acceptable, violations or deviations. Unresolved items are discussed in Paragraphs 5, 6 and 8.

10. Exit Interview

The inspector met with licensee representatives (denoted in Paragraph 1) at the conclusion of the inspection on December 21, 1984. The inspector summarized the purpose and scope of the inspection and the findings. At no time during this inspection was written material provided by the inspector to the licensee.