U.S. NUCLEAR REGULATORY COMMISSION
REGION I

Report No. 50-354/85-37

Docket No. 50-354

License No. CPPR-120 Priority -- Category B

Licensee: Public Service Electric and Gas Company
80 Park Plaza - 17C
Newark, New Jersey 07101

Facility Name: Hope Creek Generating Station, Unit 1

Inspection At: Hancocks Bridge, New Jersey

Inspection Conducted: July 30, 1985 - August 2, 1985

Inspectors: Robert A. McBrearty August 22, 1985
R. A. McBrearty, Reactor Engineer date

Approved by: J. T. Wiggins 8/22/85
J. T. Wiggins, Chief date
Materials and Processes Section

Inspection Summary: Inspection on July 30, 1985 - August 2, 1985 (Report No. 50-354/85-37)

Areas Inspected: Routine, unannounced inspection of licensee action on previous inspection findings; PSI activities related to the mechanized ultrasonic examination of reactor pressure vessel welds including observations of work in progress, procedure review and data review; demonstration of ability to detect cracks in 22" diameter and 28" diameter material containing corrosion resistant cladding. The inspection involved 33 hours onsite by one regional based inspector.

Results: No violations were identified.

DETAILS

1. Persons Contacted

Public Service Electric and Gas Company

*R.F. Brandt, Nuclear Plant Services Engineer
*G.L. Duncan, PSI Senior Supervisor
*R.T. Griffith Sr., Principal QA Engineer
*T.J. McLaughlin, QA Engineer

Southwest Research Institute (SwRI)

*E.J. Feige, Inspection Engineer

U.S. Nuclear Regulatory Commission

*A.R. Blough, Senior Resident Inspector
*S.K. Chaudhary, Senior Resident Inspector
*J.J. Lyash, Resident Inspector

*Denotes those present at the exit meeting on August 2, 1985.

2. Licensee Action on Previous Inspection Findings

(Closed) Unresolved Item (354/83-11-04): Ultrasonic examination of welds with corrosion resistant cladding (CRC). During the course of this inspection the licensee demonstrated his ability to detect cracks in 22" diameter and 28" diameter samples containing CRC. (See paragraph 4 of this report). Prior to this inspection a similar demonstration was performed by the licensee on 12" diameter cracked samples and is documented in Inspection Report No. 50-354/85-28.

Based on the results of those demonstrations this item is considered closed.

(Open) Inspector Follow Item (354/83-15-01): Verification that vessel ultrasonic tracks are properly installed. The licensee's PSI vendor is in the process of performing mechanized ultrasonic examination of reactor pressure vessel welds. This includes verification of proper track installation to assure that the welds are adequately examined.

This item will remain open pending completion of the vessel weld examinations.

3. Procedure Review

The following ultrasonic examination procedure was reviewed by the inspector with regard to ASME code and regulatory requirements:

- SwRI-NDT-700-6, Revision 21, "Mechanized Ultrasonic Examination of Ferritic Vessels Greater Than 2.0" in Thickness at Hope Creek"

The inspection found that the procedure complied with applicable code requirements and with NRC Regulatory Guide 1.150, Revision 1.

No violations were identified.

4. Observations

The inspector observed portions of the mechanized ultrasonic examination of the following reactor pressure vessel welds:

- Weld W 8
- Weld W 16 - 2
- Weld W 16 - 7
- Weld W 16 - 8

The examinations were done using 1" diameter, 2.25 MH_2 transducers and sound beam entry angles of 0°, 45° and 60° in accordance with the specific scan plan for each examination. The inspector verified that the transducer movement rate was within procedural requirements.

The cathode ray tube display of each transducer was recorded on video tape and will serve as a permanent record of the examination. Additionally, a strip chart record of each examination is maintained. The video tape and the strip chart are used by the Level II individual to evaluate examination results.

In addition to the above, the inspector requested that the technical adequacy of procedure SwRI-NDT-800-100, Revision 1 be demonstrated on 22" diameter and 28" diameter samples of CRC piping welds which contained cracks. The demonstration was done in the inspector's presence by a SwRI Level II individual.

Equipment calibration for each examination was done using licensee provided calibration blocks of the same configuration as the cracked samples. All procedural requirements regarding calibration and scanning were met, and the cracks in each sample were successfully identified.

Based on the demonstrated ability to detect cracks, the inspector stated that the procedure was acceptable for the examination of 22" diameter and 28" diameter CRC piping welds. The procedure was deemed acceptable for the examination of 12" diameter CRC piping welds based on a previous demonstration which is discussed in Inspection Report No. 354/85-28.

No violations were identified.

5. Independent Measurements and Calculations

During the inspector's observation of the licensee's mechanized ultrasonic examination of reactor pressure welds, the inspector made independent calculations of the transducer movement rate. The inspector used information provided by the data acquisition system and verified by calculation that the transducer movement rate approximated 2" per second.

The inspector's calculations showed the movement rate to be within the mandated procedural requirement that search unit movement rate for scanning shall not exceed 6" per second.

No violations were identified.

6. Data Review

The inspection reviewed data which were generated during the ultrasonic examination of reactor pressure vessel shell to lower head weld W 8. The review was done to ascertain compliance with procedural and scan plan requirements. Additionally, the inspector assessed the clarity and usefulness of the video tape record of the examination with regard to evaluation of examination results.

The following were included in the inspector's review:

- Scan Plan Parameter Record for Examination #255
- Examination #225 Scan Plan Examination Table
- Calibration Sheet #570023
- Calibration Sheet #570024
- Mechanized UT Examination Record Sheet #720290
- Mechanized UT Examination Record Sheet #101173

The inspector observed the review of the video tape and strip chart associated with weld W 8 which was done by the SwRI Level II who is responsible for evaluating the mechanized ultrasonic examination data.

Scan plan requirements were compared with the examination data and the inspector found that the scan plan was properly implemented with regard to extent of examination, required sound beam angle and frequency, and the use of the proper calibration block.

The data evaluation was done by an individual who's certification records verified that he was properly trained and qualified to evaluate mechanized UT data.

No violations were identified.

7. Personnel Qualification/Certification Records

The inspector reviewed personnel records of individuals who participated in the examinations which were observed by the inspector to ascertain that they were qualified to perform their assigned duties.

The records indicated that each individual had received special training in the use of the mechanized equipment and that they were properly qualified to perform their assigned responsibilities.

No violations were identified.

8. Exit Interview

The inspector met with licensee representatives (denoted in Paragraph 1), at the conclusion of the inspection on August 2, 1985. The inspector summarized the purpose and the scope of the inspection and the findings. At no time during this inspection was written material provided by the inspection to the licensee.