

U.S. NUCLEAR REGULATORY COMMISSION  
REGION I

Report No. 84-06  
Docket No. 50-443  
License No. CPPR-135 Priority - Category A  
Licensee: Public Service Company of New Hampshire  
Post Office Box 330  
Manchester, New Hampshire 03105  
Facility Name: Seabrook Station, Unit 1  
Inspection At: Seabrook, New Hampshire  
Inspection Conducted: April 30 to May 4, 1984  
Inspector: E. H. Gray (via RMC) 6/6/84  
R. A. McBrearty, Reactor Engineer date  
Approved By: J. P. Durr 6/6/84  
J. P. Durr, Chief, Materials and Processes date  
Section, EPB, DETP

Inspection Summary:

Inspection on April 30, 1984 to May 4, 1984 (Report No. 50-443/84-06)

Areas Inspected: Routine, unannounced inspection of preservice inspection activities including program review, observations of work in progress, review of NDE procedures and review of PSI data; and inspection of licensee actions on previous inspection findings. The inspection involved 32 inspectors hours onsite by one regional based inspector.

Results: No violations were identified.

## DETAILS

### 1. Persons Contacted

#### Yankee Atomic Electric Company (YAEC)

- D. L. Covill, FQA Surveillance Supervisor
- \* R. E. Guillette, Supervisor - CQAE
- \* R. A. Jeffrey, PSI Coordinator
- \* J. L. Marchi, QA Surveillance
- \* G. F. McDonald, Construction QA Manager
- \* W. T. Middleton, QA Specialist
- L. E. Mullins, PSI Coordinator
- \* G. Papanic, PSI Supervisor (Startup)
- \* P. A. Oikle, Senior QA Engineer
- E. D. Sosnowski, Construction Supervisor (PSNH)

#### Nuclear Energy Services (NES)

- \* P. DiNardo, Project Engineer
- \*\* S. Foote, NDE Level III
- \* A. Smith, PSI Automated UT Level III

#### USNRC

- \* A. Cerne
- \* H. M. Wescott

\* Denotes attendees at the exit interview.

\*\* Telephone contact.

### 2. Licensee Action on Previous Inspection Findings

(Closed) Violation (443/83-12-02) - Performance of ultrasonic examination using an unqualified procedure. The licensee fabricated samples, containing defects, representing the production weld joint geometries. The samples were ultrasonically examined using the technique of the questioned procedure. Ultrasonic examination results were compared to radiographic examination results to verify that the ultrasonic technique was capable of detecting the known defects in the samples. The inspector's review of documentation associated with the above verified that the known weld defects were detected using the questioned technique; therefore, qualifying the procedure for the examination of fillet welds.

Based on the above, this item is considered closed.

### 3. Preservice Inspection (PSI) Activities

The PSI program is intended to comply with the requirements of the ASME Code, Section XI, 1977 Edition through Summer 1978 Addenda.

#### a. Observations of Examinations in Progress

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

- ° Weld #1-SB-RV-103-121, Upper Shell to Intermediate Shell Circumferential Weld.
- ° Weld #1-SB-RV-101-171, Intermediate Shell to Lower Shell Circumferential Weld.

The above observations, including system calibration, were made to ascertain compliance with applicable ASME code and procedural requirements, and with regulatory requirements and licensee commitments.

The examinations were done from the RPV inside surface using the Nuclear Energy Services (NES) Inc. remote, automated examination tool. An examination frequency of 2.25 MHz was used with 1 inch diameter transducers and beam angles of 0°, 45° shear and 60° shear. The transducer rate of travel was limited by the procedure to a maximum of 6 inches per second, the actual rate was observed to be less than 5 inches per second. The inspector found that the requirements of procedure 80A6477, Revision 1 were met.

A review of personnel qualification/certification records of those participating in the automated examinations indicated that the individuals were properly certified in accordance with SNT-TC-1A.

No violations were identified.

#### b. Procedure Review

The following NES ultrasonic examination procedures were reviewed by the inspector to ascertain compliance with applicable ASME code and regulatory requirements:

- ° 80A6477, Revision 1, "Automated Ultrasonic Examination Procedure for Reactor Pressure Vessel Shell Welds from the ID Surface"
- ° 80A6478, Revision 1, "Automated Ultrasonic Examination Procedure for Reactor Pressure Vessel Upper Shell to Flange Weld from the Flange Mating Surface"

- 80A6479, Revision 1, "Automated Ultrasonic Examination Procedure for Reactor Vessel Nozzle to Shell Welds from the Nozzle Bore"
- 80A6480, Revision 1, "Automated Ultrasonic Examination Procedure for Near Surface Technique from the ID Surface"
- 80A6461, Revision 2, "Ultrasonic Examination Procedure - General Requirements for Seabrook Nuclear Power Station"
- 80A6462, Revision 1, "Ultrasonic Examination Procedure for Austenitic Piping Welds"

Procedure 80A6462 governed the manual ultrasonic examination of reactor coolant loop piping. The inspector's review of the procedure disclosed discrepancies with Section XI requirements. The code requires that ultrasonic procedures provide information regarding the thickness dimensions to be examined and the product form to be examined (casting, forging, plate, etc.). Procedure 80A6462, Revision 1 does not contain the required information and will be revised to meet the code requirements. The inspector determined the following:

1. Calibration data associated with reactor coolant loop piping welds indicated that a valid calibration was performed.
2. The calibration block was acceptable per Section XI for the use to which it was put in that the block material was of the same specification and form as the production material and block thickness was acceptable for the examination thickness.

Figures 2 through 4 of the procedure provide information regarding angle beam scan path requirements for material thickness ranging from 1/8 inch to 2 inches. A formula is provided to calculate the required scan path for thicknesses greater than 2 inches. The coolant loop welds which were examined using the procedure all were greater than 2 inches thick, but no data were available to verify that the necessary calculations were made. The NES Level III who participated in the examinations was contacted from the site by the inspector and, during the telephone conversation, stated that the scan paths were calculated using the procedural formula.

At the exit meeting on May 4, 1984, the inspector stated that Procedure 80A6462, Revision 1 should be revised to include the aforementioned code requirements and, additionally, that the angle beam scan path calculations should be part of the examination documentation representing welds greater than 2 inches thick.

The above are considered unresolved pending procedure revision and the availability of the scan path calculations (443/84-06-01).

c. PSI Data Review

Data associated with the following were reviewed by the inspector to ascertain that applicable programmatic and procedural requirements were met:

Automated Ultrasonic Examination

- Weld #1-SB-RV-IR-128-101-F, inlet nozzle "F" inner radius
- Weld #1-SB-RV-IR-128-101-G, inlet nozzle "G" inner radius
- Weld #1-SB-RV-SE-301-121-H, outlet nozzle "H" safe-end
- Weld #1-SB-RV-SE-301-121-E, outlet nozzle "E" safe-end

Manual Ultrasonic Examination

- Weld #1-RC-5-1-4, 31-inch I.D. reactor coolant system pipe to elbow weld
- Weld #1-RC-3-1-1, 27½-inch I.D. reactor coolant system pipe to pump nozzle weld

Liquid Penetrant Examination - Nozzle I.D. Surface

- Hot Leg Nozzles at 22°, 158°, 202° and 303° azimuth location
- Cold Leg Nozzles at 67°, 113°, 247° and 293° azimuth location

The inspector found that the automated examination results were in the evaluation process at the time of this inspection.

The manual ultrasonic examinations were done using calibration block number SB-RC-4 which was intended for use on 27½-inch I.D. and 29-inch I.D. piping. Block number SB-RC-3 was listed for use on the 31-inch I.D. piping welds. The licensee and his PSI vendor concluded that block SB-RC-3 was not suitable for its' intended use because of significant acoustic differences (19 db more attenuation than the production material). Block SB-RC-4, 29-inch I.D., was found to be acoustically similar to the production material. Response differences due to curvature were demonstrated by the licensee's PSI vendor to be insignificant. The demonstration was done using the 36-inch O.D. section and the 20-inch O.D. section of a variable radius demonstration block.

The licensee stated that he is attempting to locate material to fabricate an acoustically similar calibration block of the correct diameter for use during the inservice inspection of the 31-inch I.D. reactor coolant system piping. The inspector had no further questions at this time concerning the calibration blocks.

The liquid penetrant examinations were done on the clad surface, I.D., of the nozzles subsequent to preparation by grinding for ultrasonic examination. The reviewed data verified that rejectable indications were properly removed and that re-examination by the liquid penetrant method confirmed that the final surface was free of rejectable penetrant indications.

The grinding and the examinations were done by Westinghouse Electric Corporation personnel and QA surveillance was provided by the Yankee organization.

No violations were identified.

4. Unresolved Items

Unresolved items are items about which more information is required to ascertain whether they are acceptable, violations or deviations. An unresolved item is discussed in Paragraph 3.b.

5. Exit Interview

The inspector met with licensee representatives (denoted in Paragraph 1) at the conclusion of the inspection on May 4, 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.