

U.S. NUCLEAR REGULATORY COMMISSION

Region I

Report No. 50-443/84-08
50-444/84-03
50-443
Docket No. 50-444
CPPR-135
License No. CPPR-136 Priority -- Category A

Licensee: Public Service Company of New Hampshire
1000 Elm Street
Manchester, New Hampshire 03105

Facility Name: Seabrook Station, Units 1 and 2

Inspection at: Seabrook, New Hampshire

Inspection conducted: May 29 - June 25, 1984

Inspectors: *A.C. Cerne* 6/26/84
A.C. Cerne, Sr. Resident Inspector date signed

H.M. Wescott 6/26/84
H.M. Wescott, Resident Inspector date signed

date signed

Approved by: *William J. Raymond* 7/11/84
for R.M. Gallo, Chief, Projects Section 2A, date signed
Division of Project and Resident Programs

Inspection Summary:

Inspection on May 29 - June 25, 1984 (Combined Report No. 50-443/84-08 and 50-444/84-03)

Areas Inspected: Routine inspection by the resident inspectors of work activities, procedures and records relative to electrical terminations; portions of the RHR line flushing; I&E Bulletin review; tank farm pipe chase buildings; CRDM cooling shroud; steam generator tube plugging (Unit 1); storage of EDG and NSSS components (Unit 2); and I&C procedures. The inspectors also reviewed licensee action on previously identified items and performed plant inspections. The inspection involved 128 inspection hours (including 3 hours off-shift) of Unit 1 activities and 52 inspection hours of Unit 2 activities.

Results: One violation (Unit 2) was identified (paragraph 10) concerning inadequate storage and preservation of NSSS components.

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DETAILS

1. Persons Contacted

P. B. Bohan, Turnover Manager, Public Service Company of New Hampshire (PSNH)
 J. DeVincentis, Project Engineering Manager, Yankee Atomic Electric Company (YAEC)
 W. P. Johnson, Vice President (PSNH)
 D. C. Lambert, Field Superintendent of QA (UE&C)
 D. A. Maidrand, Assistant Project Manager (YAEC)
 G. F. McDonald, Construction QA Manager (YAEC)
 D. G. McLain, Startup Manager (PSNH)
 J. A. Philbrick, Senior Project Engineer (PSNH)
 J. W. Singleton, Field QA Manager

2. Plant Inspection-Tours (Units 1 and 2)

The inspectors observed work activities in-progress, completed work and plant status in several areas of the plant during general inspections of the plant. The inspectors examined work for any obvious defects or noncompliance with regulatory requirements or license conditions. Particular note was taken of the presence of quality control inspectors and quality control evidence such as inspection records, material identification, nonconforming material identification, housekeeping and equipment preservation. The inspectors interviewed craft personnel, supervision, and quality inspection personnel as such personnel were available in the work areas.

Specifically, an inspector examined some electrical terminations in the "A" train remote shutdown panel (MM-CP-108A). He traced the selected cable routing thru the Cable and Routing Schedule (CASP) to termination points in other equipment (ie: instrument rack, IR-93, and Intelligent Remote Terminal Unit, IRTU-3). Ground connections for the drain wires and cable shields and jumper installation per the UE&C design and vendor wiring diagrams were verified.

A portion of the flushing operation for the "B" train RHR piping was witnessed. The water flow path was from the Refueling Water Storage Tank thru the RHR "B" pump and heat exchanger to a temporary piping connection at the suction to a safety injection pump and then to a waste tank via additional temporary piping. The Preoperational Test Program Manual was reviewed for relevant discussion of system cleaning instructions. Specific General Test Procedures were noted.

The inspector also noted, during site tours, the exercise of the component cooling water pumps, with flow paths to the equipment vault area, housing both trains of the SI pumps and RHR and CBS pumps and heat exchangers. The flow path was partially walked and temporary piping, bypassing flow into containment, was noted. The necessity for running the pumps for instrument calibration purposes was discussed with one of the responsible test engineers.

No violations were identified.

3. Inspection Report Correction

Region I Combined Inspection Report 50-443/84-04 and 50-444/84-02 in paragraph 2.(2) discussed Bulletin 80-05 closeout and a request for further evaluation of certain items of generic interest to the Office of Inspection and Enforcement. The second item in that section of the report mistakenly refers to the "volume control tanks."

The inspector confirmed with the responsible contact engineer in IE that vacuum conditions were not a concern relative to the volume control tanks at Seabrook and that the referenced item should read:

"System design has been evaluated to ensure that cover gas can be admitted fast enough to keep up with the maximum rate of liquid removal from the Primary Drain Tank."

The inspector discussed this change with the responsible YAEC engineer and no additional questions have developed at this time.

4. Licensee Action on Previously Identified Items

- a. (Closed) Unresolved item (443/83-07-06): Discrepancies in pipe hanger weld process sheets. The inspector reviewed Pullman nonconformance report (NCR) 4594, to include the disposition to accept the field welds, the justification, and the steps to prevent recurrence of this nonconforming condition. The problem related to record clarity and not to the actual adequacy of the questioned welds. The cause of the problem (inadequate drawing revision control and duplicate process sheets) appears to have been corrected by the new Pullman program, ensuring Pullman engineering and QA process review.

The inspector checked for proper approval, concurrence, and sign-off of the NCR 4594 Review Board Response Form and has no further questions on this item.

- b. (Closed) Unresolved item (443/83-09-04): Questions on ASME support jurisdictional boundary and shaved anchor bolt loadings. The inspector reviewed engineering actions on the subject design concerns to include:

-- A rereview of the calculation concurrence for ECA73/4138B was performed for supports 4609-SV-5A and RM-5B. Revision 2 to the calculation set confirms acceptable loading conditions and now references both the studs and the back anchor plate of the embed.

-- Reviews for a random selection of 80 multiple supports, 5400 specific welds, and all Class 1 pipe supports was performed resulting in the identification of 86 B31.1/ASME boundary errors. However, no errors were found on the Class 1 supports, where the incorrect details could have resulted in an improper nondestructive examination of the weld. Of the 86 errors, 40 were made in the conservative direction (ie: B31.1 welds detailed as ASME welds) and the other 46 were analyzed for similarities between the weld procedures and inspection requirements. No significant differences were identified.

Based upon the above design reviews, resulting in the confirmation of actual hardware acceptability, the inspector has no further questions on these pipe support issues. Also, he did note several engineering recommendations to clarify any future ambiguities of a similar design nature.

This item is closed.

- c. (Closed) Violation (443/83-14-01): Failure to adequately inspect terminations of safety-related cables. The inspector reviewed Fischbach NCR-406, which directed the contractor to rework the deficient terminal connections. The inspector noted additional corrective steps to include retraining of craft and QC personnel, increased surveillance activities by the YAEC Level 2 QA organization, and a random re-inspection of cable terminations to verify that similar problems do not exist.

The inspector also examined a section of YAEC Audit Report (SA730CS280) discussing YAEC identified terminal installation problems. A YAEC follow-up indicated the completion of corrective action and closure of the audit finding on 10/31/83. This parallels the NRC required corrective action.

This item is closed.

- d. (Closed) Unresolved item (443/83-14-02): Lighting cable installation appears contrary to FSAR commitments. The inspector reviewed the disposition to FBM Deficiency Report (DR)204 which directs the rework of the subject lighting cables such that they are rerouted in conduit. This complies with the commitments discussed in the FSAR and precludes any apparent color coding violations which may arise from confusion of the lighting conductor jacket colors.

While the lighting cable installation is nonsafety-related, the FSAR discussion of the handling of local lighting circuits intends to prevent potential adverse interaction with safety-related circuits. Rework of the noted conditions meets both the new UE&C circuit design and the intent of the train separation requirements, per jacket color coding identification.

This item is closed.

- e. (Closed) Unresolved item (443/83-22-02): Design change to sizing of certain RHR flow measurement lines. The inspector reviewed revision C to Engineering Change Authorization (ECA) 19/0424 which clarifies the orifice flange tap details such that all affected design drawings are documented and YAEC review of the design change has been obtained. YAEC Blue Sheet 61 had been initiated to resolve any concerns regarding the handling of design changes and affected documents. UE&C response to the Blue Sheet indicates better control and delegation of responsibility per the provisions of the controlling document, UE&C Administrative Procedure (AP) 15.

This inspector has no further questions on this item and considers it closed.

5. Bulletin Review

The inspector reviewed the following IE Bulletins, for which no response had been required of the Seabrook licensee, to determine any generic applicability to Seabrook construction. In all of the below cases, the issues identified by the Bulletins were not applicable to Seabrook. Either the subject components or systems had not been used in the Seabrook design (eg: BWR applicability), had been qualified for Seabrook service by specific testing, or had problems related to nonconstruction concerns.

Bulletins

77-05 & 05A	79-26
77-07	80-01
78-03	80-02
78-07	80-07
78-08	80-13
78-11	80-14
78-13	80-15
78-14	80-17
79-10	80-22
79-12	80-25
79-16	80-29
79-19	82-03
79-22	83-02

These Bulletins are considered nonapplicable to Seabrook and are closed.

6. Tank Farm/Pipe Chase Buildings (Unit 1)

- a. The inspector examined the Tank Farm area above the Refueling Water Storage Tank (RWST) and the adjacent Service Water pipe chase areas. Specifically, he inspected a sample of structural connections, confirming their erection and inspection to have been accomplished under the applicable safety-related program requirements. A nonstandard connection detail was noted and found to have been documented and dispositioned in accordance with the proper engineering practices (reference: Perini Supplied Material Deficiency Report, SMDR 591).

The following pipe supports were spot-checked against their design details for such attributes as weld size and length, anchor bolt material and sizing, shimming, and pipe saddle installation:

- M/S 1833-RG-4
- 1801-SG-09
- 1802-SG-12

The inspector also reviewed the relevant piping isometric drawings for proper support location, component installation (eg: valves and strainers), and piping configuration. While no violations were identified, certain questions with regard to supports 1801-SG-09 and 1802-SG-12 remain unresolved, as follows.

Because of elevation differences between the support steel and the supported pipe strainer assemblies, shims were installed under the support anchor-bolted,

bearing plates. However, the shims were not detailed on either the design or erection drawings. The installed shim plates also represent a smaller area than that of the design bearing plates, which is of engineering concern if compressive loads are applied in that direction. Additionally, the bearing plate anchor-bolt holes appear to have been oversized beyond the allowable requirements of ASME Section III, NF-4720. This is particularly questioned, because the design calls for mild steel anchor bolts, for which the code specifies more conservative bolt hole requirements.

The inspector discussed the above concerns with engineering and QA personnel. While it appears that the specific pipe support loading directions do not require larger shim plates, the general concern of allowing such shimming without prior engineering approval is still valid. This question, along with that of the oversized bolt holes has been formally addressed to UE&C engineering on a YAEC Blue Sheet.

Pending review of the Blue Sheet response to determine both the acceptability of the installed supports and the generic applicability of the stated concerns, this issue remains unresolved (443/84-08-01).

- b. The inspector also examined certain nonsafety installations to evaluate their handling in accordance with commitments to USNRC Regulatory Guide(RG) 1.29. A support for nonsafety piping (1827-RG-01) was found to have been correctly designed and installed in accordance with Seismic Category 1 requirements, for which specific QC inspection attributes are required. Also, the handling of the structural tees and cement fiber panels, comprising a part of the Tank Farm roof immediately over the RWST, was discussed with QA personnel.

While the seismic categorization of these items already has been raised by the more general question of the seismic design of the entire Tank Farm structure (reference: Integrated Design Inspection findings 4-1 and 4-3), the inspector reviewed the QA aspects of the subject tee/panel installation because of potential impact upon the safety-related RWST below. QA discussions with engineering revealed that the structural tees and cement fiber panels are treated as left-in-place forms for the concrete placed above them. The inspector confirmed that this concrete is treated as a safety-related placement. Since no special processes are involved with installation of the tees and panels and since engineering personnel have confirmed that worst-case loadings would occur during the wet concrete placement, the decision to handle the tee/panel erection under the nonsafety QA program (QAS-4) appears justified.

While the follow-up of RG 1.29 implementation revealed no violations or unresolved questions in the above areas, follow-up of a similar component did identify a concern, as discussed in the following paragraph.

7. Control Rod Drive Mechanism (CRDM) Cooling Shroud

The inspector reviewed a Westinghouse letter to IE&C (NAH-U-2969) dated January 19,1984 in which the need for seismically qualifying the CRDM cooling

shroud was discussed. Recent design of the Reactor Vessel head vent and level indication systems utilizes the CRDM shroud to provide support for some Class 1 piping associated with these systems. The Westinghouse position indicates that the CRDM shroud could be considered an intervening element between the ASME support and the seismic building structure, without any need for seismic qualification of the shroud itself.

This position is of concern not only from the standpoint of Regulatory Guide 1.29 which calls for seismic design of components which have the potential to adversely impact safety-related equipment, but also from the question of the proper engineering consideration of an intervening element. While the ASME defined "intervening element" does not have to meet ASME code requirements, the seismic qualification of such elements is not necessarily waived.

Since Class 1 pipe supports, which must be seismically supported, are involved in this question on the CRDM cooling shroud, this issue remains open. Pending NRC review of the licensee position and the engineering justification for the Westinghouse recommendation, if adopted, the need for seismic qualification of the CRDM shroud is unresolved (443/84-08-02).

8. Review of Procedure For Plugging Steam Generator Tubes

The inspector reviewed Westinghouse Procedure No. MRS 2.3.2 GEN-13, "Mechanical Plugging of Steam Generator Tubing and Tube Holes", Revision 6 which had been approved by the Westinghouse cognizant engineer. The steam generator tube plugging was performed in accordance with this procedure. A written report is to be generated by Westinghouse discussing the steam generator tube expansion and plugging.

No violations were identified.

9. Observation of Storage of the Emergency Diesel Generators (EDG) and Review of Storage Maintenance Records (Unit 2)

The inspectors toured the Unit 2 EDG building to observe storage conditions of the EDGs. The conditions appear to meet the requirements of ANSI N45.2.2 1972 for Level C storage.

The inspectors also reviewed the storage maintenance records which indicated that maintenance was being performed on a periodic basis as scheduled. The maintenance record indicated that Level D storage requirements should be met. Discussion with the licensee's inspector established that Level D was incorrect and should have indicated Level C. The inspector stated that the error would be corrected.

No violations were identified.

10. Observation and Review of Records of Storage and Preservation For NSSS Components (Unit 2)

The inspector reviewed the Westinghouse Nuclear Service Division (WNSD) manual "NSSS Component Receiving and Storage Guidelines", as pertains the storage

and preservation of the reactor vessel, steam generators and pressurizer.

The inspector further reviewed a random selected sample of the storage maintenance records for the above NSSS components. The records indicated that storage maintenance was being performed on a periodic basis as required. However, humidity, temperature and dew point measurements were not being taken as required by the instructions/procedures provided by Westinghouse in the WNSD manual.

Observations made in the Unit 2 containment established that:

1. Although air circulation systems with heaters and dehumidifiers had been installed for the secondary side of the steam generators 2B, 2C and 2D to control humidity and dew point, measurements had not been taken (verified by licensee representatives) to verify the limits established in the WNSD manual.
2. There was no air recirculation system provided for the secondary side of the steam generator 2A and the pressurizer.
3. The reactor vessel stud hole No.16 which was found uncovered did not appear to be fully coated with Tectyl-506 (used as a preservative for controlling oxidation) and contained an accumulation of grit and dirt of unknown origin. Removal of the protective cap from hole No.17 revealed that it contained approximately 1½ inches of stagnant water from an unknown source. The Tectyl on the flange face area surrounding these stud holes appeared to be worn off. A thorough examination of the remaining reactor vessel flange and stud holes could not be performed as they were covered by the construction platform.

Notwithstanding the corrective actions that have been taken by licensee representatives, the inspector considers the above to be a violation of 10CFR50, Appendix B, Criterion XIII (50-444/84-03-01).

11. Review of UE&C's I&C Procedures

The inspector continued to review UE&C's I&C Field Instrumentation Procedures (FIPs) including NSR Installation/Inspection Seismic, Control of Measuring and Testing Equipment, Storage of ASME Safety Related and Non-Safety Related Items and Material, Release of Equipment for Other Phases of Construction, and Work Package Program. The procedures were reviewed and approved by appropriate management including the ANI and Field Superintendent QC/QA.

No violations were identified.

12. Unresolved Items

Unresolved items are matters about which more information is required in order

to ascertain whether they are acceptable items, violations or deviations. Unresolved items disclosed during the inspection are discussed in Paragraphs 6a and 7.

13. Management Meetings

At periodic intervals during the course of this inspection, meetings were held with senior plant management to discuss the scope and findings of this inspection.