

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

Region I

Report No. 50-443/80-09
50-444/80-09
Docket No. 50-443
50-444
License No. CPPR-135 Priority -- Category A
CPPR-136

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: August 4 - September 5, 1980

Inspectors: *B. W. McGaughy*
A. C. Cerne, Resident Inspector

September 25, 1980
date signed

date signed

date signed

Approved by: *B. W. McGaughy*
R. W. McGaughy, Chief, Projects Section,
RC&ES Branch

September 25, 1980
date signed

Inspection Summary:

Unit 1 Inspection on August 4 - September 5, 1980 (Report No. 50-443/80-09)
Areas Inspected: Routine inspection by the resident inspector of work activities relative to piping erection and pipe and pipe support welding, structural steel erection, component support welding, and storage. The inspector also performed plant tours and reviewed licensee action on previously identified items. The inspection involved 62 inspector-hours, including six off-shift hours, by the NRC Resident Inspector.
Results: No items of noncompliance were identified.

Unit 2 Inspection on August 4 - September 5, 1980 (Report No. 50-444/80-09)
Areas Inspected: Routine inspection by the resident inspector of work activities relative to containment liner erection and welding. The inspector also performed plant tours and reviewed licensee action on previously identified items. The inspection involved 20 inspector hours, including one off-shift hour, by the NRC Resident Inspector.
Results: No items of noncompliance were identified.

DETAILS

1. Persons Contacted

Yankee Atomic Electric Company

F. W. Bean, QA Engineer
B. B. Beckley, Manager of Nuclear Projects (PSNH-Manchester)
P. B. Bohan, Senior Engineer (PSNH)
D. L. Covill, QA Engineer
W. J. Gagnon, QA Engineer
D. E. Groves, QA Engineer (Westborough)
J. H. Herrin, Site Manager (PSNH)
G. F. McDonald, QA Engineer (Westborough)
W. J. Miller, QA Manager (Westborough)
R. P. Pizzuti, Construction Manager (Westborough)
J. W. Singleton, Field QA Manager

United Engineers and Constructors (UE&C)

J. A. Grusetskie, Assistant Liaison Engineer
M. P. Hanson, Liaison Engineer Manager
J. J. Karn, Piping Supervisor
T. K. Kephart, Field Engineer
R. A. Kountz, Welding Superintendent
T. L. Opdyke, Field Engineer
R. J. Phelps, Field Superintendent of QA
J. C. Rebok, QA Engineer
L. R. Wade, Assistant Field Superintendent of QA
W. F. Ziemek, Assistant Liaison Engineer

Fischbach - Boulas - Manzi (FBM)

H. P. Patel, Chief Engineer
L. A. Shea, Project QA Manager

Perini Power Constructors (PPC)

M. Basford, Supervising QA Engineer
P. E. Bruce, Site QA Manager
G. J. Candela, Engineering Manager
J. J. Correa, Assistant Project Engineer
A. J. Glazier, Reinforcing Engineer
G. E. Koenig, Area Project Engineer
G. E. Myers, Supervising QA Engineer
O. R. Oates, QA Building Inspector
G. T. St. Hilaire, Assistant Site QA Manager

Pittsburgh Des Moines Steel Co. (PDM)

J. E. Hill, Superintendent
B. Goodrich, Lead Inspector
W. A. Stiger, QA Manager

Pullman-Higgins (Pullman)

R. G. Davis, Field QA Manager
R. R. Donald, QC Supervisor
J. Godleski, QA Records Engineer
C. D. Lyon, QC Inspector
D. M. Septelka, Lead Hanger Engineer
J. R. Townsend, Resident Manager

2. Plant Tours (Units 1 and 2)

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

The inspector specifically examined and discussed with appropriate personnel items in such areas as containment reinforcing steel erection, use of nonshrink grout in concrete repairs, receipt inspection and material location control, and the current status of several field drawings in use at their field locations.

No items of noncompliance were identified; however, one item remains unresolved as discussed below.

The inspector noted the general use of powder actuated fasteners to attach nonsafety lighting cable to structural steel members throughout the Unit 1 plant. Upon questioning he determined that no criteria existed to establish the acceptability of such inserts with regard to their effect (e.g., up to 1/2" penetration) on the safety-related function of the affected structural members.

UE&C Request for Information RFI 74/1181A was written and followed up with Engineering Change Authorization ECA 01/1840A which established criteria for the use of the subject fasteners. The ECA also required an inspection of all previous fastener installation with the submission of any nonconforming conditions for further evaluation.

Pending the completion of this required inspection and engineering determination as to the acceptability of existing nonconforming areas, this item is unresolved (443/80-09-01).

3. Licensee Action on Previous Inspection Findings

(Closed) Infraction (443/79-06-04 and 444/79-06-03): Lack of documentation controls. The inspector reviewed Pullman Procedure VI-1, Revision 3 on "Document Control" and verified that surveillance activities were being conducted in accordance with this procedure. Certain pullman field drawings were also randomly checked for current revision status. The review of corrective actions taken by Pullman and previously by Perini (Report 80-04) in this area closes this item.

(Closed) Unresolved item (443/79-10-02 and 444/79-10-01): Rebar bending verification. The inspector reviewed the following documents for disposition and current procedural controls over the inspection and documentation requirements for rebar bending during fabrication.

-- Perini Nonconformance Report (NCR) 576.

-- Perini Quality Assurance Procedure (QAP) 10.2, with Interim Procedure Changes (IPC) 2 (Revision 1), and 3.

Discussion with the licensee clarified fabrication inspection attributes relative to Division 2 of ASME Section III. This item is resolved.

(Closed) Unresolved item (443/80-04-01): Necking-in of area near Dravo shop weld. The inspector examined the disposition of Pullman NCR 178, which directed the removal and replacement of the questionable portion of the pipe spool. Controls over this replacement process were in evidence.

The licensee has initiated corrective action with Dravo for both evaluation of the questionable area and development of acceptance criteria to prevent recurrence of similar questionable pipe conditions. This item is resolved.

(Closed) Unresolved item (443/80-07-02): Questionable pipe support conditions. The inspector reviewed the resolution of Pullman NCRs 258 and 296 and determined that corrective action was appropriate to the situation. He examined both the clarifying statement of clip angle tolerances in UE&C Request for Information (RFI) 73/0724A and the interpretation of weld limited access conditions in a Pullman Memo of September 3, 1980. The licensee has initiated action to identify to all subcontractors the need for consideration of limited access or special orientation conditions on all safety class welding. The inspector has no further questions. This item is resolved.

4. Containment Liner Erection (Unit 2)

The inspector witnessed repair welding on the liner floor seams and inspected preparation, fit up, and completed welding on the vertical seams of the first ring. Special requirements with regard to impact tested material (i.e.: Knuckle plate over 5/8" thick) were evaluated with regard to both ASME Section III, Division 2, and ASME Section IX specifications. PDM Welding Procedure Specifications WPS 68-4, 68-5, and 74-3, along with their applicable Procedure Qualification Records (PQR), were all checked with regard to the essential variables (and supplementary essential variables, where applicable) of ASME Section IX. The qualified welder list was spot-checked.

Where welders were accomplishing pick-up repairs on previously completed welds, the inspector questioned the need to perform a magnetic particle inspection (MT) of the excavated cavities. While the requirements of ASME III, Division 2 are subject to interpretation in this regard, PDM personnel agreed with the most conservative approach and initiated steps to evaluate all weld repair cavities by MT prior to repair welding. The inspector verified that this new activity and system were working a few weeks after raising the question.

The inspector also questioned what root gap tolerance was applicable to the first ring liner seams, where PDM Drawing E3 specified a 1/4" gap with backing bar. PDM Drawing Hold Notice (DHN) 38 was issued on September 5, 1980 to clarify the specific weld tolerances. The inspector noted that all fit-up conditions he had previously observed were within tolerance.

Certain PDM records (Fabrication Check Lists-FCL, FCL Addenda, Additional Work Notices, and NDF Reports) were examined to verify the existence of a quality record system with appropriate traceability. All above areas were evaluated with regard to the requirements of the following governing documents:

- ASME III, Division 2 - 1975.
- UE&C Specification 006-15-1, Revision 4.
- UE&C Procedure WS-4A, Revision 5.
- UE&C Drawing F101462, Revision 6.
- PDM Drawings W-2 (Revision D), E-3 (Revision R), E-51 (Revision R), E-51 (Revision C), and E-52 (Revision E).

No items of noncompliance were identified.

5. Unit 1 Structures

a. Structural Steel Erection

The inspector noted a loose structural steel connection for a beam supporting a stair landing in the Primary Auxiliary Building (PAB) Equipment Vault. Upon closer examination he determined that the slotted hole in the clip angle attaching the beam to the supporting wall embed had been cut with a torch. The inspector's concern in this area primarily rested with the fact that this stair beam connection was positioned directly over three stacked runs of safety-related cable tray. An investigation revealed that while this connection had at one time been high-strength bolted and inspected, the structural framing in the area had been altered, as authorized by ECA 08/0492A, with the observed connection never properly retightened.

Additionally, a reduction in the QA requirements for the erection of certain structural steelwork, like the stair A307 bolted connections, had been authorized by ECA 01/1041A. The inspector questioned the decision to reduce QA requirements in an area where the failure of certain stair connections might adversely affect nearby safety-related components.

On August 28, 1980 another ECA (01/1853A) was approved which clarified the need for a procedurally defined inspection of A307 bolted and other fastened connections in all safety-related areas. The licensee indicated all high-strength connections in stairways, and specifically the equipment vault, would receive a 100% reinspection. Other areas would be spot-checked for problems. A system to track the status of high-strength bolted connections, similar to a weld traveler, is to be established by the responsible contractor to document current status and thus identify areas where rework may require reinspection. A commitment was made to investigate the possibility that additional connections may have burned slots and to evaluate such conditions as necessary. Perini NCR 1047 was written to document for disposition and corrective action the specific connection found by the inspector.

Pending implementation of the structural steel connection "traveler" program, disposition of the NCR, and further investigation into the prevalence of burned slots, this item is unresolved (443/80-09-02).

b. Seismic Considerations

The inspector verified that the design of plant stairs and gratings has considered seismic events and the potential missile hazards to safety-related components. The design seismic isolation between the PAB equipment vault and the Control building was noted on the drawings and checked in the field. Specific design details for "slip joints" where structural steel members connected the two buildings across the isolation gap were examined, as was the certification for the required self lubricating bearing plates.

The following drawings were reviewed with regard to the above items:

- UE&C Drawings F101530, Revision 8; F101510, Revision 10; F113229, Revision 2; F113230; and detail F101555N.
- Cives Drawing FP1080, Revision 9.

No items of noncompliance were identified.

c. Welding

The inspector observed some anchor bolt welding in the PAB and checked both the weld rod control and authorizing documentation. Perini WPS 156.12 was examined with regard to the criteria necessary for consideration of this procedure as a prequalified weld in accordance with AWS D.1.1. Perini General Weld Procedure FCCP-156 and UE&C Drawing F101512, Revision 6 were also reviewed for applicable requirements.

No items of noncompliance were identified.

6. Safety-Related Piping (Unit 1)

a. Welding

The inspector observed welding of the following stainless steel pipe spools:

- 1-CBS-1210-01, Welds F0101 and F0105
- 1-RH-160-03, Weld F0301
- 1-RC-58-02, Weld F0201

Field Weld Process Sheets, Isometric Drawings, and Weld Rod Stores Requisitions were checked to verify identification, documentation, and inspection of criteria procedurally required for quality welding. Actual welding conditions and conduct, the sequence of operations, interpass temperature controls, and the use and documentation of purge dams were all spot-checked. The inspector also noted the presence or availability of QC welding inspectors and checked their inspection verification of hold point items on the weld process sheets.

The weld end preps for 1-CBS-1213-02, weld F0201, were visually examined by the inspector, as were the results of a cutting operation on 1-CBS-1214-02, welds F0207 and F0208. The in-process controls, including bevel angle and land measurements and required NDE, were discussed with the responsible QC inspector and other QA personnel.

All above items were evaluated with regard to the requirements established in the following documents:

- ASME B&PV Code, Section III, Subsection NC (1977 Winter Addenda).
- UE&C Specification WS-1, Revision 6.
- Pullman General Welding Standard GWS-III, Revision 2.

No items of noncompliance were identified.

b. Installation

The inspector checked the installed status of piping runs in the following systems:

- Containment Spray System (CBS), Train B (South Vault)
- Safety Injection System (SI), Train A (North Vault)

The pipe runs were walked checking line numbers, component installation and identification, branch connections, orientation, and the overall condition of the pipe spool pieces and welded joints.

The following drawings were used to verify installation as per detail:

- UE&C Drawings
 - F805023, Revision 5
 - F805010, Revision 4
 - F805008, Revision 5
 - F805012, Revision 5
 - D800369, Revision 5
 - D801203, Revision 4
 - D801201, Revision 4
- Dravo Isometric Drawings
 - E2936-IC-801201, Revision 4
 - E2936-IC-801210, Revision 3
 - E2936-IC-800058
- Dravo Sketches
 - E2936-123
 - E2936-126
 - E2936-194

and UE&C Engineering Change Authorization ECA 08/07241A.

No items of noncompliance were identified.

c. Pipe Supports

The inspector checked the in-place welded condition of the following pipe supports and compared them with their Pullman detail drawings:

-- 1208-SG-02

-- 1209-RG-1 and 1209-SV-2 (Combination)

The hanger field weld process sheets were reviewed for correct status and the weld electrode certifications spot-checked. A field modification to one of the hangers was verified to be in accordance with the appropriate details in UE&C Drawing M801208, Revision 6.

No items of noncompliance were identified.

d. Train Separation

The inspector traced separability of the redundant train piping for both the Safety Injection and Containment Spray systems in accordance with commitments made in the Seabrook Station PSAR and PSAR Figure 6.3-3. Cross-connected piping runs were identified and evaluated with regard to Regulatory Guide 1.70 regarding analysis of passive failures in ECCS systems. The applicable UE&C P&I Diagrams (Drawings F805010 and F805023) were examined.

The inspector also reviewed UE&C Drawings F202354, F202264, and F202265 to trace the separability between trains of the diesel generator (DG) storage tank to day tank piping runs. He inspected the installed piping, which was not encased in concrete, to include the in-line valves, their identification and overall condition.

On the diesel generator fill piping within the DG building, the inspector observed a completed, bimetallic field weld. He reviewed the applicable Pullman WPS 77-III-8/1-KI-12 (Revision 1) and supporting PQR for consistency with the essential variables delineated in ASME Section IX. The Field Weld Process Sheet for this Class 3 weld (1-DG-4374-05, F0501), the final Liquid Penetrant Examination (PT) Report, and the weld consumable insert certification were all examined.

No items of noncompliance were identified.

7. Safety-Related Components (Unit 1)

- a. The inspector had previously noted the lack of nitrogen purge pressure internal to a Containment Spray Heat Exchanger (1-CBS-E-16B). The removal of this purge had been authorized since piping installation to the heat exchanger was in progress.

Recent continued piping fitup has revealed some corrosion conditions inside the heat exchanger. These were identified by the licensee and are being addressed by the licensee QA program. However, the inspector inquired as to what steps would be taken for long term, in-place storage protection after all piping is fit up and until testing and operation activities commence. While the licensee had no plans for special corrosion protection beyond the Level C storage conditions that this component would be exposed to, UE&C Field General Construction Procedure FGCP 6 notes minimum protection requirements with reference to the manufacturer's recommendations for further criteria.

The Struther Wells Corporation (the heat exchanger supplier) notes in their "Job Site Storage Recommendations" that Level D storage is adequate, but a bi-monthly inspection for nitrogen purge and evidence of oxidation is required.

The inspector questioned whether the licensee's intended long term storage program was consistent with the manufacturer's recommendations. He also realizes that this question is generic to most components with corrosion potential and thus should be answered on a programmatic basis. The licensee has referred this question to UE&C engineering for further evaluation.

Pending engineering analysis and determination of those storage criteria which are deemed necessary to provide long term corrosion protection after fit up and prior to use and the procedural definition of those criteria on a programmatic basis, the inspector considers this item unresolved with the intent to review the final program for consistency with ANSI N45.2.2 commitments (443/80-09-03).

- b. The inspector checked the status of the following components:
- Boron Injection Tank (1-SI-TK-6)
 - 6" Motor Operated Limitorque Valve (1-CBS-V-0049)
 - Diesel Generator Fuel Oil Transfer pumps (1-DG-P-38A and B)

While the tank is in storage at the Newington, N. H. facility, the inspector verified that the storage level designation, the inspection frequency, and the inspection criteria were all in accordance with the Westinghouse NSSS Component Receiving and Storage Criteria for Mechanical Equipment (March 1976). He also checked that the quality records package includes the appropriate Manufacturer's Data Report and Certificate of Compliance.

The installation of the valve was checked with regard to NCR 474 written against it. While the valve itself was placed on Hold and appropriately tagged, Limited Work Authorization 073 was approved for installation. A visual examination of the installed valve revealed proper storage position and working heat wiring.

The inspector reviewed the document packages and Receiving Inspection Reports for the recently arrived (August 19, 1980) transfer pumps. Code Data Reports and certifications were included.

No items of noncompliance were identified.

8. Electrical Equipment Channel Welding (Unit 1)

The inspector observed the welding of channel steel to anchor bolts in the Diesel Generator building. He inspected the pre-welding fitup condition and compared several observed parameters (e.g.: bevel angle, root gap, backing plate position) with the specified requirements for the pre-qualified weld invoked for use from AWS D1.1-75. The governing FBM Construction Procedure, FECP-403 (Revision 2), was reviewed as were the following UE&C documents specifying anchor bolt size, type, and weld authorization.

-- Drawings - F101354, F101697, F101698, F111393

-- ECA 01/1622C

The inspector noted that the backing plate gap configuration appeared not only to be inconsistent from weld to weld, but also varied from the pictorial description in both the ECA and the AWS criteria. The inspector indicated that field control of the backing plate fabrication to the required criteria appeared suspect and he questioned whether these welds could in fact be classified as "AWS prequalified."

A stop work order (FBM-SWO-1) on this welding was issued immediately and existing welds were placed on hold and so tagged.

Pending establishment of better field fabrication controls and either successful qualification of the subject weld configurations or further

engineering evidence that these welds are covered by AWS prequalification, this item remains unresolved (443/80-09-04).

9. Unresolved Items

Unresolved items are matters about which more information is required in order to ascertain whether they are acceptable items, items of noncompliance, or deviations. Unresolved items disclosed during the inspection are discussed in Paragraphs 2, 5a, 7a, and 8.

10. 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.