



## DETAILS

### 1. Persons Contacted

#### Yankee Atomic Electric Company (YAEC)

F. W. Bean, Lead Electrical QA Engineer  
D. L. Covill, Lead Civil QA Engineer  
R. E. Guillette, QA Engineer (Framingham)  
J. H. Herrin, Site Manager (PSNH)  
G. F. McDonald, Jr., QA Manager (Framingham)  
J. F. Nay, Jr., Lead Mechanical QA Engineer  
J. A. Philbrick, Senior Project Engineer (PSNH)  
S. B. Sadosky, Lead Start-up/Test QA Engineer  
J. W. Singleton, Field QA Manager  
R. Tucker, Engineer (Framingham)

#### United Engineers and Constructors (UE&C)

R. H. Bryans, Site Engineering Manager  
J. J. Carrabba, Preventive Maintenance Supervisor  
J. A. Grusetskie, Engineering Manager Assistant  
D. C. Lambert, Field Superintendent of QA  
D. G. McClellan, Lead Civil/Structural Engineer  
D. C. Turnquist, Lead Pipe Support Engineer

#### Fischbach-Boulos-Manzi (FBM)

G. W. Breeden, Project QC Manager

#### Pittsburgh DesMoines Steel Co. (PDM)

W. A. Stiger, Field QA Manager

#### Pullman-Higgins (Pullman)

R. G. Davis, Field QA Manager  
D. B. Hunt, QA Records Supervisor  
P. A. Werts, Lead QA Hanger Inspector

#### Royal Insurance

J. C. Anzivino, Authorized Nuclear Inspector

#### Westinghouse

C. E. Walker, Systems Engineer

## 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, the inspector examined the anchor bolt support configuration for the Condensate Storage and Refueling Water Storage Tanks. These field fabricated tanks were being erected by Pittsburgh DesMoines Steel Co. (PDM) and specific tank support details were evaluated with regard to PDM engineering drawings. QA records for inspection coverage and NDE were also spot-checked. The inspector questioned some apparently undersized shop-weld conditions, but further engineering evaluation revealed the acceptability of these welds based upon design loading criteria. UE&C Specification (246-1) and Procedure (WS-1), PDM Specification (WS-15), and the ASME Section III Code requirements for Class 3 atmospheric storage tanks were all reviewed to confirm work activities in line with governing requirements.

The inspector witnessed the final Unit 1 containment dome concrete placement, lift number 1-CS-1PP-1. The placement documentation was in order and the requirements of Perini procedures FCCP-2 and QCP 10.5 were followed. UE&C specification 13-2 for concrete consolidation invokes the recommendations of ACI-309 for the consolidation of concrete. The vibrator frequencies were measured and the amplitude calculated per ACI requirements. As a post-placement check, the inspector verified the control of a patching operation in the dome area, boxed out for a construction-aid platform. This activity was appropriately categorized and controlled as a minor repair.

The inspector also verified that the Unit 2 diesel generators were provided adequate storage protection following their installation in the uncompleted diesel generator building. The splicing of rebar by the cadweld method was observed at the control room wall construction opening (splice 53/028, drawing 1-CB-RBP-24). The cadweld splicing was verified to be in accordance with Perini procedure FCCP-007.

No violations were identified.

## 3. Licensee Action on Previously Identified Items

- a. (Closed) Unresolved item (443/80-13-05 and 444/80-13-01): Licensee control of program for 50.55(e) evaluation. The inspector reviewed the following documents and discussed the implementation of recent procedural revisions with senior licensee QA personnel:

-- UE&C Field Administration Construction Procedure (FACP-1),  
Revision 2, 10/4/82

- YAEC Guidance for Tracking of Potential 55e, 10/11/82
- UE&C Draft of Administrative Procedure (AP-48) for Home Office Review and Issue of Significant Deficiencies (10CFR50.55(e)), 10/15/82
- YAEC Field QA Memorandum on Review of Seabrook NCRs/Potential 50.55e's and Part 21's, 4/12/82

FACP-1 requires engineering review of contractor nonconformance reports (NCRs) and deficiency reports to evaluate significance relative to 10CFR50.55(e). UE&C home office review is coordinated and discussed in FACP-1 and further delineated in AP-48, currently under review. YAEC overview of the program is provided by the QA guidance for tracking and reviewing NCRs.

This program appears to provide adequate licensee control of the evaluation process and timeliness for construction deficiency reporting (CDR). The inspector verified effective corrective action by the licensee to expedite CDR issuance, where warranted. He has no further questions on the licensee control of this area.

This item is closed.

- b. (Open) Violation (443/81-05-02): Failure to install pipe support in line with ISI guidelines. The inspector reviewed the licensee response to the Notice of Violation, noting a commitment to revise UE&C document IS-1, providing guidelines for ISI of piping systems. He examined the current revision (Rev.7) of IS-1 and determined that dimensional clearances for ISI access were specified and that through the design review process, interference problems would be precluded.

However, field inspection revealed that in certain installations (eg: proximity of pipe whip restraint PW-58-3 to reactor coolant valve weld RC-58-07, F0701), the actual design detailed conditions which violate the ISI clearances required by IS-1. While the conduct of in-service inspection may actually be possible using special equipment, the inspector questioned the validity of the IS-1 document if in fact its guidelines were not being adhered to.

The licensee agreed to develop a program for identifying and controlling ISI access problems during the current construction phase to preclude unnecessary future problems. Pending NRC review of the adequacy of this new program, this item remains open.

- c. (Closed) Violation (443/81-12-01): Failure to install proper bolts in instrumentation supports. The inspector reviewed an engineering disposition requiring replacement of the current bolts with the specified high-strength bolt material. He verified that this rework is being tracked on the YAEC "Future Verification Items" list and that the current status is documented.

Corrective action on the root cause of this violation was implemented with additional training and procedural controls on the utilization of

the proper purchase order bill of materials for receiving inspections. Since identification of this violation, the inspector has noted improved receipt inspection controls and no further problems in this area.

This item is closed.

- d. (Open) 10CFR50.55(e)/Part 21 Reports: Raceway support bolted strut fitting design/testing discrepancies. The status of material control was inspected and documented in the NRC 82-03 combined inspection report. During this inspection, the inspector questioned the adequacy of the bolting material controls, since a containment junction box (support 3167) was identified with two different types of unauthorized bolt hardware.

UE&C Engineering Change Authorization (ECA 03/1087A) currently allows the use of only one type of strut bolt/nut combination, although retrofit is not as yet necessary. Since this junction box had not yet been QA inspected, the inspector determined that installation controls, rather than the inspection process, should be further investigated. The licensee took immediate corrective action to trace the source of the improper bolts and to identify all other questionable installations.

Pending final licensee testing, evaluation, and reporting relative to the 50.55(e) status, this item remains open. Additionally, proper electrical support material control in the interim also remains an NRC concern and must be satisfactorily addressed before this item can be closed.

#### 4. Safety-Related Structures (Units 1 and 2)

##### a. Structural Steel

The inspector examined completed and/or in-process structural steel erection in the following areas within Unit 1:

- Service Water Pumphouse (Elev. 50 and South MCC Room)
- Containment Enclosure Ventilation Area (Elev. 51 and beam pocket details)
- Tank Farm area adjoining the Primary Auxiliary Building (Elev. 78 and seismic isolation joint details)

These items were specifically evaluated with regard to criteria provided by the AISC Manual of Steel Construction with particular note taken of correct erection with regard to bearing connection stress values, slotted hole and torque considerations, and web tear-out (block shear) concerns. Welding and specific design details (eg: Nelson stud usage) were spot-checked and both Engineering Change Authorizations (ECA) and Supplied Material Deficiency Reports (SMDR) were reviewed for disposition of installation change details in line with design change controls.

The emergency feedwater pump building stairwell A structural steel installation was also inspected. The as-built characteristics were

checked against design drawings, F-101618 and FP-13779, and fabrication was verified in accordance with UE&C specifications 12-1 and 12-5. Perini QC inspection reports were reviewed, in particular structural steel inspection reports 1339 and 1451 along with weld data cards 81 and 133. The inspector reviewed major component tensile set bolt records and receipt inspection report 3200 (sequence number 4953) for this safety-related stair installation.

No violations were identified.

b. Structural Details

The inspector checked miscellaneous structural details in the following areas, verifying proper engineering control in line with the design criteria in each case.

- Service Water Cooling Tower pipe support structural beam seats and bearing plate interface (Drawings F101712 and F805068).
- Service Water/Circulating Water Pump House structural wall design to include rebar and construction opening keyway details. (Drawings F101085 and F101091).
- Use of the Richmond (SAE-3) ductile embeds in the Service Water Pump House (ECA 01/3500B and 01/3712A).

The inspector also observed a unique anchor system in use for the Unit 2 diesel generator foundation. UE&C drawing F101354 illustrates the Decatur Engineering anchor installation details. While the manufacturer's literature recommends a two-bolt-diameter engagement of the upper stud within the internal coupler, the UE&C design details only a one-bolt-diameter thread engagement. The inspector questioned this nonconformity. UE&C engineering confirmed through further discussion with Decatur Engineering that the UE&C design engagement will develop the full anchor strength. The inspector had no further questions regarding this installation.

No violations were identified.

5. Reactor Coolant Pressure Boundary (RCPB) Piping (Unit 1)

The inspector traced and walked the route of the following piping runs, as installed, from their containment penetration entry to the respective reactor coolant loops.

- 1-RC-58
- 1-RH-160 and 180
- 1-CS-360

Specifically examined were the sequence of components, fittings, welds, and code/spec. breaks with regard to the details of the applicable UE&C P&IDs and Isometric drawings. The inspector also spot-checked the quality of completed and in-process welding, required NDE conduct, and the status of pipe support installation. Pullman weld repair record packages were reviewed

as were the following Nonconformance Records (NCR) written against the indicated piping installations.

- RC-58: NCR 1027
- RH-160: NCRs 282, 508, and 919
- RH-180: NCRs 1031, 1328, and 2372
- CS-360: NCRs 1079, 2390, and 2391

Disposition of the NCRs was evaluated. The inspector also examined the design controls for the addition of flow orifices to the RH-160 and 180 lines for preoperation flow balance and RHR pump runout limit needs (reference: ECAs 08/1581A and 08/1738B). An inspector question regarding the containment penetration details (X-37) for the CS-360 line was answered by a UE&C memorandum documenting the acceptability of similar penetration end plate details, both inside and outside containment, and a subsequent ECA (19/0425A) clarifying the questioned UE&C drawing details. Another inspector question regarding code/spec. break designation in the RC-58 line is to be similarly clarified by UE&C drawing revisions, as necessary.

No violations were identified.

#### 6. Safety-Related Pipe Support Installation (Unit 1)

The inspector observed work in progress and examined the process sheet for expansion bolt (Hilti) installation on pipe support 1212-SH-06 (CBS1212-01). The process sheet had nine designated hold points for Pullman Power Products QC inspection and signature. The work had passed six of the hold points and torque had been applied to the four anchor plate bolts with no signatures affixed to the hold points. The inspector determined that once torque had been applied, there was no means to inspect two of these hold point items. Pullman procedure JS-IX-6 provides that all process sheets for ASME Section III supports shall be controlled as described in Pullman procedure VI-5. Section 3.4 of procedure VI-5 states that "work shall not proceed beyond any hold point until the designated inspection has been made and signed off by the appropriate inspector". The licensee stated that actual inspections had been completed but that the documentation had not.

The inspector indicated to licensee QA personnel that control of Pullman hold point implementation had been a past NRC concern (reference: combined inspection report 82-03). He therefore informed the field QA manager and licensee senior project engineer at exit interviews on October 29 and November 5, 1982 that the failure to document this inspection of kwik-bolting activities in accordance with procedural hold-point requirements represents a violation with regard to 10 CFR 50, Appendix B, Criterion X (443/82-13-01).

Prior to the conclusion of the inspection, the inspector was shown documents indicating that procedural revisions would be forthcoming in this area. While licensee corrective action appears to be timely, the scope and implementation of these planned actions must be further evaluated by the NRC for proper closure of this issue.

## 7. Service Water Cooling Tower Components (Units 1 and 2)

The inspector examined certain installed cooling tower fan components. It was noted that fan 1-SW-FN51A (Hudson Product 30 foot diameter fan assembly) had a single blade positioned in the hub within the fanstack. This configuration would produce an unsymmetrical load upon the hub and bearings. The inspector reviewed UE&C Design Specification (9763-006-209-1) and the Ceramic Cooling Tower Company Installation Procedure (NCT-673-67) to ascertain if the correct procedures were being followed. According to the procedures, a single blade is installed initially to check the blade clearance within the fanstack, and the remaining blades are subsequently positioned. No deviation was noted from the installation procedure.

The inspector also examined the cooling tower fan motors, gear boxes, and gear reducers, specifically checking installed conditions, protection, and preventive maintenance (PM). Motor PM records to include visual inspection, space heater energization, shaft rotation, and wire megger tests were reviewed. A question developed regarding an apparent lack of procedural checks during the period of time between removal of the fan motors from warehouse storage till they were installed in place. While no actual problems developed during that time, UE&C agreed to a procedure revision (Interim Procedure Change 5 to Field General Construction Procedure, FGCP-6) delineating a time limit on such an in-transit period and assigning responsibility to the PM Supervisor to monitor equipment while in this in-transit status. The inspector had no further questions on this issue.

No violations were identified.

## 8. Design Issues (Units 1 and 2)

The inspector observed that the tornado missile labyrinth barriers provided for the Fuel Storage Building had a clear line of sight available through them. The barrier design and shadowing effects of surrounding structures do not appear to preclude the entry of tornado missiles into the building. The FSAR states that the building is designed to resist tornado missiles and that two feet of reinforced concrete is required to provide that function. Pending determination by engineering personnel of the adequacy of the tornado missile protection afforded by the barriers, this issue is unresolved (443/82-13-02).

The inspector also observed that FSAR Figure 1.2-7 depicts a 6'x10' removable block wall at elevation 7 within the Primary Auxiliary Building. While it has been ascertained that this wall is composed of reinforced concrete, there is a concern relative to the seismic adequacy of the wall section. Although this wall, since it is not of block construction, would not be covered by IE Bulletin 80-11, a review is to be made of the seismic analysis provided for this installation. Pending determination that this removable section does not jeopardize any safety related components, given a seismic event, this issue is unresolved (443/82-13-03).

9. 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 Paragraph 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.