

JUL 18 1984

Docket No. 50-443

Public Service Company of New Hampshire
ATTN: Mr. Robert J. Harrison
President and Chief Executive Officer
P.O. Box 330
Manchester, NH 03105

Gentlemen:

SUBJECT: Construction Appraisal Team Inspection 50-443/84-07

This refers to the NRC Construction Appraisal Team (CAT) inspection conducted by the Office of Inspection and Enforcement (IE) on April 23-May 4, 1984 and May 14-25, 1984, at the Seabrook Station in Seabrook, New Hampshire. The Construction Appraisal Team was composed of members of IE, NRC Regions I and III, and a number of consultants. The inspection covered construction activities authorized by NRC Construction Permit CPPR-135.

This inspection was the seventh of a series of construction appraisal inspections planned by the NRC Office of Inspection and Enforcement. The results of these inspections are being used to evaluate implementation of the management control of construction activities and the quality of construction at nuclear power plants.

As you are aware, this inspection was performed during a time when construction activities were not in progress. The enclosed report identifies the areas examined during the inspection. Within the areas, the effort consisted primarily of detailed inspection of selected hardware subsequent to Quality Control inspections and an examination of the related procedures and records.

Appendix A to this letter is an Executive Summary of the results of this inspection and of conclusions reached by this office. Hardware and documentation for the construction areas reviewed were generally found to be in accordance with requirements and commitments. The NRC CAT inspectors found few deficiencies in their inspection of welding for piping and piping supports/restraints, including the ASME Code radiography for these piping systems. However, of concern to the NRC CAT inspectors is the apparent lack of communication between the construction and engineering organizations. In several areas, examples were identified where revisions to designs were performed apparently without regard for their impact on constructed and installed hardware. In addition, in several instances, conflicting information was presented to the NRC CAT inspectors from various groups within the applicant's organization, further demonstrating communication deficiencies resulting from ineffective management of interfaces. These communication problems are subjective; however, if they remain uncorrected, they could result in additional deficiencies similar to those identified during this inspection.

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Public Service Company of
New Hampshire

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Appendix B to this letter contains a list of potential enforcement actions based on the NRC CAT inspection findings. These are being reviewed by the Office of Inspection and Enforcement and the NRC Region I Office for appropriate actions.

In accordance with 10 CFR 2.790(a), a copy of this letter and the enclosures will be placed in the NRC Public Document Room unless you notify this office, by telephone or by other means, within 10 days of the date of this letter and submit written application to withhold information contained herein within 30 days of the date of this letter. Such applications must be consistent with the requirements of 10 CFR 2.790(b)(1).

No reply to this letter is required at this time. You will be asked to respond to these findings after a decision is made for appropriate enforcement action.

Should you have any questions concerning this inspection, please contact us or the NRC Region I Office.

Sincerely,
*Original Signed By
R: C: DeYoung*
Richard C. DeYoung, Director
Office of Inspection and Enforcement

Enclosures:

1. Appendix A - Executive Summary
2. Appendix B - Potential Enforcement Actions
3. Inspection Report 50-443/84-07

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*See previous concurrence

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| 06/ /84 | 06/ /84 | 06/ /84 | 06/ /84 | 06/ /84 | 06/ /84 |

An extensive display of offensive graffiti was observed through much of the facility. This is not, in itself, a safety problem, however, it does show lack of pride in the work by all concerned and is symptomatic of poor attitudes and lack of discipline which could have safety implications. This observation, like the other findings, must be laid at the doorstep of top management. It is noted that major changes in project management have recently been made which presumably will result in correction of the observed deficiencies.

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Richard C. DeYoung, Director
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APPENDIX A

EXECUTIVE SUMMARY

An announced NRC Construction Appraisal Team (CAT) inspection was performed at the Seabrook Station during the period April 23-May 4, 1984 and May 14-25, 1984.

Overall Conclusions

Hardware and documentation for the various construction areas reviewed were generally found to be in accordance with requirements and commitments. Few deficiencies were identified in the inspection of welding for piping and piping supports/restraints, including the ASME Code radiography for these piping systems. However, deficiencies were identified by the NRC Construction Appraisal Team which indicate several Public Service Company of New Hampshire program weaknesses that imply management deficiencies. The identified program weaknesses are as follows:

1. Hardware is being installed and inspected while design changes continue. This iterative design process has significantly affected the installation and inspection work thus far completed. It appears that the full impact of changes and revisions have not been properly assessed by the engineering organization for their potential impact on procured and installed hardware. While these changes may not be significant from the design standpoint, they may have significant impact on procured and installed hardware.
2. A communication problem between the applicant's various management, engineering and construction groups (utility, engineering, contractors, and QA/QC personnel) was identified. Throughout the inspection period, numerous discussions and meetings were held to provide the NRC Construction Appraisal Team (CAT) an understanding of the installation of seismic cable tray supports and the procurement classification, seismic design philosophy, and seismic qualification of the cable tray system. No consistent methods for control of design, procurement and installation were presented to NRC CAT inspectors by the applicant's representatives.
3. Weaknesses involving piping support installations have been previously identified by NRC Region I. Many of these weaknesses have existed for some time. The NRC CAT inspectors noted similar programmatic weaknesses with regard to installation activities in the mechanical construction area.

Although the individual deficiencies identified in this report are resolvable from a technical standpoint, the program weakness that they reflect requires management attention to assure that they do not adversely affect future site activities.

AREAS INSPECTED AND RESULTS

Electrical and Instrumentation Construction

Construction and documentation deficiencies identified by the NRC Construction Appraisal Team (CAT) indicate the status of electrical cable tray seismic supports to be indeterminate. Ongoing and extensive design changes in this area have adversely affected construction and the quality verification processes. The applicant did not appear to appreciate the impact of this condition. Numerous discussions with the applicable engineering and construction personnel confirmed that organizational interface and project communication were ineffective in this area.

Other deficiencies identified by NRC CAT included a number of Class 1E cable installations which did not exhibit the required physical separation between redundant electrical divisions; unauthorized modification of previously QC accepted Class 1E cable installations; and electrical equipment containing vendor installed wiring which exhibited characteristics not in accordance with industry standards.

Instrumentation components were generally found to be installed in accordance with applicable requirements. However, the NRC CAT inspectors observed that a number of design changes relative to tubing slope requirements had been approved for use without review commensurate with the original design. These approvals had been documented on records which were not consistent with the applicant's program requirements.

Mechanical Construction

Mechanical equipment and HVAC duct and supports were generally found to be constructed in accordance with applicable requirements. Piping and piping supports/restraints that had been "as-built" were found to be in accordance with drawing requirements. However, some hardware deficiencies were noted in pipe supports/restraints that had not been Quality Control (QC) accepted. Discrepancies between foundation attachment designs and their seismic requirements were also identified regarding mechanical equipment installations.

Programmatic weaknesses were noted regarding the lack of clarity and consistency in the site procedures for piping, piping supports/restraints and mechanical equipment, and in the handling of identified nonconforming conditions. The lack of timely final QC inspections for completed piping and piping supports/restraints installations was also noted. Some ASME classified equipment not installed to Code requirements is indicative of a lack of proper review and control of site activities.

Civil and Structural Construction

Concrete quality, cadwelding and concrete material certification were found to be acceptable. Rebar appeared to be placed in accordance with the fabrication and installation drawings. However, deficiencies identified by the NRC CAT inspectors, the NRC Region I personnel, and the applicant's QA organization indicate the need for a review of the vendor rebar detail drawings for conformance to design, especially around openings.

Bolted structural steel connections in the containment annulus steel were found to be below minimum torque values. Structural steel member size, configuration, connections and bolt qualification testing were found acceptable. It was identified that the design of certain pipe whip restraints had not properly considered the design loading from other supports attached to the restraint structure.

A problem previously identified by the applicant, relating to concrete expansion anchor bolts for piping and electrical supports, was identified. This problem involved torque values below the specified QA check torque. The previous corrective actions were not successful in maintaining the proper amount of bolt torque.

Welding and Nondestructive Examination

Welding and nondestructive examination activities were generally found to be conducted in accordance with applicable codes and specifications. Few deficiencies were identified by the NRC CAT inspectors in this area. However, a number of examples were identified where completed vendor structural welds did not meet the acceptance criteria specified by the Architect-Engineer. The applicant has performed an engineering evaluation concerning this problem and concluded that the welds are adequate for the intended application.

In the area of nondestructive examination, the NRC CAT inspectors reviewed samples of radiographic film in final storage in the vault. As the applicant's program does not provide for a review of radiographs by the applicant's NDE organization prior to their storage in the vault, samples of film were selected that had been reviewed by the applicant's organization, as well as film that had not been reviewed prior to vault storage. No deficiencies were identified with the radiographs that had received the applicant's review; however, deficiencies were identified by the NRC CAT inspectors with the radiographs which had not been reviewed by the applicant.

Material Traceability and Controls

In general, the project material traceability and controls program was found to be acceptable. Problems were identified regarding traceability of anchor bolt/nut assemblies, equipment mounting bolts and nuts, flange fasteners, and the use of indeterminate fastening materials in seismic bolting applications.

Design Change Controls and Corrective Action Systems

The design change control activity was generally found to be in conformance with applicable requirements. The problems identified were determined to be specific cases and not an indication of a failure of the design change control system to function as intended. The specific problems identified included one ANSI piping installation with incorrect dimensions, one ECA not followed by a revision after engineering rejection and the issuance of an ECA without including the affected drawings.

Favorable aspects of the design change control program identified include: changes that have been made as necessary to improve the program; QA auditing of the program; and supplementing of the current tracking system (PCN II) by individual engineering discipline tracking and controls. Where sampled, backup engineering data including engineering reports, calculations and letters were available to support ECA solutions and Request for Information answers.

The NRC CAT review of the applicant's corrective action program revealed that the program is generally acceptable. However, several deficiencies requiring management attention were observed involving: failure to identify nonconformances and take corrective action for control of cable identification and markings; failure to provide adequate corrective action to avoid repeated in-process weld material control deficiencies; and several repetitive nonconformances without corrective actions to preclude recurrence of nonconforming conditions. It was noted that NRC Region I had previously identified deficiencies relative to weld filler material controls and repetitive nonconformances.

APPENDIX B

POTENTIAL ENFORCEMENT ACTIONS

As a result of the NRC CAT inspection of April 23 - May 4, 1984, and May 14-25, 1984, the following items have been referred to NRC Region I as Potential Enforcement Actions (section references are to the detailed portion of the inspection):

1. Contrary to 10 CFR 50, Appendix B, Criterion II, and the Seabrook Station Final Safety Analysis Report (FSAR), Section 17.1.1.2, the applicant's quality assurance program has not effectively provided control over activities involving seismic cable tray support installations. The applicant's programs have not assured that these installations are in accordance with the applicable design documents. This condition appears to exist because design activities are not appropriately coordinated with engineering and construction organizations (Section II.B.1).
2. Contrary to 10 CFR 50, Appendix B, Criterion III, and the Seabrook Station FSAR, Section 17.1.1.3, design control has not been maintained as the applicant has:
 - a. Failed to properly review design changes relative to instrument tubing installations in a manner commensurate with the original design review. This is illustrated by a number of instances in which deviations from specified slope criteria have been authorized by the construction manager, rather than the responsible design organization (Section II.B.5). The applicant has also failed to ensure that materials specified for foundation attachments for the Primary Component Cooling Water pumps were similar to those used in the seismic analysis (Section III.B.4).
 - b. Not properly translated design drawings into fabrication and installation drawings in the area of rebar details around openings. Vendor rebar detailing errors have occurred and have not been identified during the drawing review or construction process (Section IV.B.1).
 - c. Not properly considered design loading conditions for four hot leg restraints and one cross-over leg restraint. The seismic loading from an attached pipe support had not been considered as a separate loading case without other pipe break loads (Section IV.B.2).
3. Contrary to 10 CFR 50, Appendix B, Criterion V, and the Seabrook Station FSAR, Section 17.1.1.5, the applicant has failed to effectively perform instructional and procedural activities in that several pieces of ASME III "safety-related" equipments were installed without instructions, procedures and quality control documentation. In addition, the procedure regarding the handling and installation of safety-related equipments did not contain adequate guidance or instructions to ensure appropriate qualitative and quantitative acceptance criteria and documentation (Section III.B.4).

4. Contrary to 10 CFR 50, Appendix B, Criterion VIII and the Seabrook Station FSAR, Section 17.1.1.8, the material traceability and control of some fasteners and materials have not been adequate to assure the use of correct parts or materials (Section VI.B.1).
5. Contrary to 10 CFR 50, Appendix B, Criterion X, and the Seabrook Station FSAR, Section 17.1.1.10, the program for inspection of activities affecting quality was not effectively implemented in that inspection programs have not assured that high strength structural steel bolted connections have the proper bolt tension (Section VI.B.2). In addition, structural steel shop weld inspections were found to be deficient with respect to the specified acceptance criteria (Section V.B.7).
6. Contrary to 10 CFR 50, Appendix B, Criteria XV and XVI, and the Seabrook Station FSAR, Sections 17.1.1.15 and 17.1.1.16, the applicant's program has failed to assure that nonconforming conditions have been properly identified, reviewed, resolved and evaluated for corrective action in accordance with documented procedures:
 - a. The program for inspection of construction activities failed to identify a number of cable installations that did not meet established criteria for physical independence of redundant electrical divisions. Most of the deficiencies identified involved cables and control panels transferred to "startup" jurisdiction (Section II.B.2).
 - b. Nonconforming conditions on piping and pipe supports/restraints were documented on informal reports or memoranda, and on Engineering Change Authorizations (Sections III.B.1 and III.B.2). In addition, nonconforming conditions on pipe support/restraints were improperly corrected/resolved on Support Rework Orders and Engineering Change Authorizations (Section III.B.1 and III.B.2).
 - c. Corrective measures were taken in order to maintain proper torque on Hilti concrete expansion anchor bolts. However, a significant number of mechanical and electrical anchor bolts were found to be below the minimum specified torque values (Section IV.B.4).
 - d. Measures were not taken to identify nonconformances and take corrective action to provide for control of cable identification and markings in accordance with FSAR commitments and specification requirements (Section VII.B.2).