

U.S. NUCLEAR REGULATORY COMMISSION
REGION I

Report No. 50-293/84-11

Docket No. 50-293

License No. DPR-35

Licensee: Boston Edison Company
800 Boylston Street
Boston, Massachusetts 02199

Facility Name: Pilgrim Nuclear Power Station

Inspection At: Plymouth, Massachusetts

Inspection Conducted: April 23-27, 1984

Inspectors:

P. K. Eapen
Dr. P. K. Eapen, Lead Reactor Engineer

5/30/84
date

James A. Prell
J. A. Prell, Reactor Engineer

5/30/84
date

Approved by:

A. T. Gody
A. T. Gody, Chief, Management
Programs Section, EPB, DETP

6/1/84
date

Inspection Summary: Routine unannounced inspection on April 23-27, 1984
(Inspection Report No. 50-293/84-11) by two region based inspectors

Areas Inspected: Piping Replacement Program, the QA/QC Administration Program and the Training Program. The inspection involved 76 inspector hours onsite and 4 hours at the corporate office.

Results: One violation (failure to follow procedures during welding) was identified.

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DETAILS

1. Persons Contacted

Boston Edison Company (BECO) and General Electric Company (GE)

- *M. Bonnet, BECO Waste Management Coordinator
- H. Brannor, BECO Quality Assurance
- *R. Choate, GE Quality Assurance
- *R. Cook, BECO Nuclear Training Department
- *J. Crowder, BECO Senior Compliance Engineer
- J. Convey, BECO Quality Assurance Engineer
- *W. Dooley, BECO Nuclear Training Department
- D. Eng, GE Site Manager
- F. Forsythe, GE Manager, Technical Support
- *M. Hart, GE Lead Quality Control
- *C. Mathis, BECO Nuclear Operations Manager
- *J. Mattia, BECO QA Group Leader
- E. Menslage, BECO QC Inspector II, Mechanical
- B. Perkins, BECO QC Inspector III/Training Coordinator
- *J. Phelps, GE Quality Control Supervisor
- D. Sanford, BECO Director Nuclear Training Department
- *F. Schellenger, BECO Quality Engineering Group Leader
- *D. Sukaner, BECO Station Services Group Leader
- *R. Thibault, GE Production Manager
- *E. Ziemianski, BECO Nuclear Operations Support Manager

USNRC

- *R. Borchardt, Reactor Inspector

The inspectors also interviewed other licensee personnel during the course of the inspection.

*Denotes those present at the exit interview.

2. Exit Interview

An exit meeting was held on April 27, 1984 (see paragraph 1 for attendees) at which time the findings of the inspection were formally presented. BECO representatives acknowledged the findings.

At no time during this inspection was written material provided to the licensee by the inspectors.

3. BECO's Action on Previous Inspection Findings

(Closed) Open item (293/81-36-01): Inadequate documentation control for Failure and Malfunction Reports (F&MRs). The BECO program for F&MR control was reviewed. The following actions were noted:

- a. Boston Edison Quality Assurance Manual (BEQAM) and Nuclear Operations Procedure 1.3.24 were revised to include documentation requirements for F&MRs.
- b. Special training was conducted for the initiators of F&MRs to address documentation requirements.

The above actions adequately address the concern of this open item. This item is closed.

(Closed) Open Item (293/81-36-07) Establish requirements to control Certificates of Conformance (C of C's). The most recent issue of BEQAM II (December 30, 1983) was reviewed. Exhibit II-4-1 of Section 4, "Procurement Document Control", provides the requirements for a C of C. This satisfies the concerns of the open item. This item is closed.

(Closed) Non Conformance (293/82-05-01) Failure to provide timely response to Deficiency Reports (DRs). The licensee has revised the BEQAM to clearly state DR response requirements. Implementing department procedures have also been revised. The inspector reviewed Nuclear Operations Department Procedure 1.3.2.6, "Response to Deficiency Reports and Action Items", Revision 3. The procedure adequately addressed the concerns of this item. In addition, the Senior Vice-President Nuclear now requires that a weekly summary DR status report be sent to department managers from the QA Manager to provide prompt management attention. A copy of this summary report is also sent to the Vice President, Nuclear Engineering and Quality Assurance. This reporting system has been implemented since March of 1984. The inspector reviewed several recent responses and noted a general improvement in the responses. This item is closed.

(Closed) Non Compliance (293/82-13-01): Failure to establish adequate measures for design control. BECO has implemented all corrective actions identified in the June 7, 1982 letter. These actions included:

- a. Issuance of Nuclear Organization Policy on May 13, 1982 to address design requirements. (This policy is now replaced by a formal procedure NOP 83E1, "Control of Modifications to Pilgrim Station").
- b. Additional requirements added to QA Procedure 3.02 on April 20, 1982 to address QA reviews of individual design changes and audits of design change activity.
- c. Review of all installed NUREG 0737 modifications to identify design exceptions from the NUREG guidelines.

- d. Issuance of Deputy Manager Memo #82-246 on May 13, 1982 to stress full adherence to procedures while conducting design change activities. The inspector reviewed several ongoing design change activities, (Conceptual design #83-62, PDCR 81-38 and design activities for IE Bulletin 79-14), and noted that the quality and effectiveness of the design change activities had improved. QA audits (82-3 and 83-23) for design change activities were reviewed. These audits were conducted to assess the design control program against ANSI N45.2.11. The audits identified isolated nonconformances in the program. Engineering personnel found the audits meaningful. The audit findings were used to further improve the design change program.

The BECO review of NUREG 0737 design activities was adequate. Details of this review are discussed below. This item is closed.

(Closed) Open Item (293/82-13-02): Review NUREG 0737 modifications, as installed, and report identified exceptions from the NUREG requirements to NRC. BECO conducted a systematic review for each of the installed NUREG 0737 modifications and identified several exceptions from the NUREG requirements. The identified exceptions were reported to NRC in BECO letters 82-145, 82-148, 82-152, 82-159, and 82-181. This item is closed.

(Closed) Open Item (293/82-10-04): Review contractor drawings and calculations for modifications required by IE Bulletins 79-14 and 80-17. The inspector reviewed contractor drawings and stress calculations for as found and as modified conditions of the Scram Discharge Header (East) and noted that the BECO review of these documents was adequate. The BECO representative monitoring this activity was qualified and experienced. He was familiar with the design model, computer program, design assumptions and the results. He also discussed adequately the basis for review and acceptance of the contractor's activity. This item is closed.

(Closed) Non Conformance (293/83-21-01): Failure to establish a schedule for audits of outside organizations. The inspector reviewed the formal schedule (QPI-3580 dated 10/7/83) for performing surveys and audits of outside organizations. Current audits were conducted in accordance with the established schedule. This item is closed.

(Closed) Non Conformance (293/83-21-02): Use of Action Item system in place of Deficiency Reports (DR) to initiate corrective action on audit deficiencies.

On September 6, 1983 the BECO Audit Group Leader sent a memorandum to all QAD personnel to require review of all outstanding Action Items (AIs) against the DR requirements of QAD procedure 16.03. As a result of this memorandum, many of the AIs were upgraded to DRs and many others were closed out. As of March 23, 1984 only 13 of the initial 175 AIs remained open. The inspector reviewed Action Item number 115. It was closed out in accordance with QAD procedure 16.03. This item is closed.

(Closed) Open Item (293/83-22-01): Failure to have a summary document depicting the hierarchy of procedures that implemented the QA program, in accordance with ANSI N18.7-1976. The BEQAM was revised on April 1, 1984 to reference an "Index of Procedures to ANSI N.18.7 Criteria". This index was issued April 13, 1984 as a controlled document. This item is closed.

4. QA/QC Administration Program

The purpose of this inspection was to ascertain that BECO had defined the scope and applicability of the QA program, established controls for the preparation, review and approval of QA/QC procedures and established a mechanism for reviewing and evaluating the QA program.

4.1 Reference Documents

- Pilgrim Nuclear Power Station (PNPS) Final Safety Analysis Report (FSAR) Appendix D
- PNPS Technical Specifications (TS) Section 6
- ANSI N18.7-1976 Section 4.1
- BECO Q-List Manual
- Boston Edison Quality Assurance Manual (BEQAM) II

4.2 Documents Reviewed

- BECO Quality Assurance Program, December 30, 1983, Sections 1, 2, 4, 5, 16 and 18
- MAC-83-1058, Biennial Review of the Boston Edison Company Quality Assurance Program, 9/2/83
- Report for the Combined Utility Assessment of the Boston Edison Company Quality Assurance Program, 12/5 - 9/83
- QADP 2.01, Preparation and Control of Quality Assurance Procedures, Revision 8 - 12/30/83

4.3 Details

The BECO QA/QC Program was reviewed to assure the following:

- The program identified structures, systems, components, documents and activities covered by it.
- Administrative controls were established to control development, review, approval, distribution and implementation of QA/QC department procedures.
- Procedures and responsibilities were established to control and administer changes to QA documents.
- Measures were established for assessing the effectiveness of QA/QC programs periodically.
- A corrective action program existed for modifying problem areas identified in the QA Program.

No violations were identified.

5. Training

The purpose of this inspection was to review the training of non-licensed operators and QC inspectors. The BECO training program was originally established to meet the requirements of ANSI 18.1-1971. In 1982, BECO decided to upgrade their training program to meet the standards established in ANS-ANSI 3.1 and the "INPO Training and Qualification Guidelines" in order to receive INPO accreditation. Full implementation of the upgraded training program was not yet complete.

5.1 Reference Documents

- Pilgrim Nuclear Power Station (PNPS) Final Safety Analysis Report (FSAR), Section 13.3
- PNPS Technical Specification, Section 6.3 and 6.4
- ANSI 18.1 - 1971, Section 5.5
- NFPA No. 27-1975, "Private Fire Brigade"
- ANSI/ASME 45.2.6 - 1978
- BECO Policy Statement No. 18, "Nuclear Training Standards"
- NUREG-0737, Clarification of TMI Action Plan Requirements

5.2 Documents Reviewed

The inspector reviewed the following sections from the Pilgrim Nuclear Power Station Training Manual:

- Section 3.6.1, Shift Technical Advisors Initial Group Training
- Section 3.6.2, Shift Technical Advisors Requalification Training
- Section 3.2.1, Initial Maintenance Group Training
- Section 3.2.2, Additional Maintenance Group Training

5.3 Details

The BECO training program and training activities were reviewed to assure the following:

- The training program was implemented in accordance with the commitments and requirements of the FSAR.
- Program changes were controlled and administered in accordance with established procedures.
- Management was involved in the training activities.
- Training activities were audited by QA.
- Employees were trained in accordance with the FSAR commitments and NRC requirements.
- The on-the-job training program was well defined.
- Female employees were trained in pre-natal radiation exposure.

Training records of six maintenance personnel, three fire brigade personnel, four Shift Technical Advisors (STAs) and three QC inspectors were reviewed and found to be adequate.

BECO initiated several actions to upgrade the training program for INPO accreditation. The training staff level was increased from 5 to 26 in 1982. A new training facility was developed. A control room simulator and an instrumentation and control simulator have been ordered. A target date of first quarter 1985 has been established to obtain INPO accreditation.

No violations were identified.

6. Piping Replacement Project

BECO has established the Piping Replacement Project to address intergranular stress corrosion cracking problems in piping systems and components. The piping includes:

- a. Risers and headers
- b. Recirculation inlet and outlet nozzle safe ends on the reactor vessel
- c. 28" Recirculation piping
- d. Residual Heat Removal System piping
- e. Reactor Water Clean-up System piping inside the drywell
- f. Stainless Steel portions of the Core Spray piping inside the drywell.

This inspection is one of a series of inspections scheduled for this project. It supplements NRC inspection No. 50-293/84-08.

6.1 Reference/Requirements

- (1) 10 CFR 50, Appendix B
- (2) 10 CFR 50.59
- (3) IE Bulletins 82-03, 83-01 and 83-02
- (4) Boston Edison Quality Assurance Manual Volume II
- (5) General Electric (GE), Nuclear Production Control Manual (PIA-AE-II, issue 2, revision 2)
- (6) General Electric (GE), Boiling Water Reactor QA Program Description (NEDO-11209)
- (7) Bechtel Project Quality Assurance Manual, Job. No. 10394, Rev. 4
- (8) BECO Procedure No. 3.02 (Rev. 1)

6.2 Project Specific Documents Reviewed

- Project Quality Plan (Rev. 1)
- GE Interface Control Manual (Rev. 0)
- Conceptual Design No. 83-62
- Safety Evaluation No. 1617
- Specification M-544
- ALARA Program
- Traveler Nos. 2850, RT-110.1, RT-170.1, MS-2580.1
- Non-Conformance Report Nos: Recirc 15, Recirc 20, Recirc 6 and Recirc 27
- GE Welding Procedure Specification (WPC 8.8.6) (Rev. 4)
- Activities 100 and 2600

6.3 Details

The BECO piping replacement program, implementing procedures and selected activities were reviewed to assure the following:

- The project Quality Plan was developed to meet the requirements of 10 CFR 50, Appendix B and the Boston Edison Quality Assurance Manual.
- The activities adequately addressed the concerns of IE Bulletins 82-03, 83-01 and 83-02.
- Engineering and design activities were conducted in accordance with reference 8.
- Interfaces among participating project organizations were identified and controlled.
- Implementing procedures were developed to translate design requirements into installation.
- Engineering, design and project concepts were adequately developed, approved and established.
- BECO management provided an adequate overview.
- The QA organizations reviewed the Quality Plan and implementing procedures.
- QA audits were conducted in accordance with an established schedule.
- QC surveillances and inspections were adequately conducted.
- Engineering, QA/QC and craft personnel were adequately trained.

The inspector reviewed documents and activities identified in Section 6.2 against the requirements of the references identified in Section 6.1. The inspector toured the drywell to witness several ongoing activities, discussed the bases for several implementing procedures with cognizant personnel and witnessed QA/QC surveillances and inspections. The findings of this review are discussed in paragraph 6.5.

6.4 QA/QC Involvement in the Project

General Electric Company Quality Control (GE QC) is responsible for project QC activities. Specific functions of GE QC are described in Section 2.5.9 of reference 5. GE QC established hold points on job specific travelers and identified nonconformances. Nonconformance resolutions were timely. Engineering activities to be completed

for the nonconformances were tracked using a separate "punch list". QC had issued stop work orders as needed. Stop work orders were not lifted without the approval of QC.

GE QA responsibilities included review of project documents and audits, initiation of corrective actions and approval of vendors. These responsibilities are documented in paragraph 2.5.5 of reference 5.

BECO QC conducted daily surveillances and inspection of ongoing activities. Reference 4 documents these QC responsibilities. BECO QC has interfaced positively with GE QC. GE was responsive to the concerns identified by BECO.

The BECO QA organization conducted project audits in accordance with the requirements of reference 4. The inspector reviewed the records of a recent audit (84-12). The audit assessed inspections, design control, test control, document control, corrective actions and audits. GE's audit of the project was brief and had no findings. The report of the GE audit was not published at the time of this inspection. BECO QA personnel provided the background and scope of the GE QA Audits. They stated that they will monitor the adequacy and effectiveness of GE QA audits in the future.

6.5 Findings

The project was conducted in accordance with the established program and implementing procedures, with the following exception.

During a tour of the drywell with a GE QC inspector, the inspector noticed slag falling from a welding activity for the rigging lugs located at the 41' elevation and 180 degree azimuth. The QC inspector immediately requested the welder to stop until measures were established to contain the falling slag. The welder complied with the request. The NRC inspector discussed the matter with the lead welding supervisor and the job foreman who agreed to establish measures to contain falling slag prior to the resumption of the activity. Statements made by the supervisors indicated that they did not fully appreciate the need for protecting safety related equipment and electrical cables during the welding and pipe removal activities. The incident reflected a poor understanding of procedures by the craft.

The inspector informed licensee management that this activity violated Station Procedure 1.5.5, "Cutting, Welding and Hot Work", which required "Measures shall be taken to contain falling slag". This is a violation (293/84-11-01).