

JAN 28 1988

Docket No. 50-293

Boston Edison Company  
ATTN: Ralph G. Bird  
Senior Vice President - Nuclear  
800 Boylston Street  
Boston, Massachusetts 02199

Gentlemen:

Subject: Inspection No. 50-293/87-33

This refers to your letter dated December 21, 1987, in response to our letter dated August 21, 1987.

Thank you for informing us of the corrective and preventive actions documented in your letter. These actions will be examined during a future inspection of your licensed program.

Your cooperation with us is appreciated.

Sincerely,

ROBERT M. GALLO

William V. Johnston, Acting Director  
Division of Reactor Safety

cc:

K. P. Roberts, Nuclear Operations Manager  
Paul Levy, Chairman, Department of Public Utilities  
Chairman, Board of Selectmen  
Plymouth Civil Defense Director  
J. D. Keyes, Boston Edison Regulatory Affairs and Programs  
E. D. Robinson, Nuclear Information Manager  
R. N. Swanson, Nuclear Engineering Department Manager  
The Honorable E. J. Markey  
Senator Edward P. Kirby  
The Honorable Peter V. Forman  
Sharon Pollard, Secretary of Energy Resources  
Peter W. Agnes, Assistant Secretary of Public Safety,  
Commonwealth of Massachusetts  
Rachel Shimshak, MASSPIRG  
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Commonwealth of Massachusetts (2)

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Management Assistant, DRMA (w/o encl)  
Section Chief, DRP  
R. Wessman, PM, NRR  
PAO (2) SALP Reports Only  
Robert J. Bores, DRSS  
S. J. Collins, DRP

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Briggs/gcb

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01/11/88

**BOSTON EDISON**  
Executive Offices  
800 Boylston Street  
Boston, Massachusetts 02199

**Ralph G. Bird**  
Senior Vice President — Nuclear

December 21, 1987  
BECO Ltr. #87-202

U.S. Nuclear Regulatory Commission  
Attention: Document Control Desk  
Washington, DC 20555

License No. DPR-35  
Docket No. 50-293

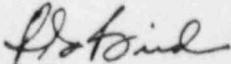
Subject: NRC Inspection Report 50-293/87-33

Dear Sir:

Attached is a revision of Boston Edison Company's response (BECO Ltr. #87-176, October 5, 1987) to the Notice of Violation contained in the subject inspection report. Our response is revised as a result of clarifications obtained during a telephone conference between Boston Edison Company and NRC representatives on November 10, 1987.

Subsequent to the NRC Inspection 87-33, multiple communications with the NRC inspector occurred at our request. These communications were necessary because we did not effectively communicate our position during the inspection. The need for effective communication and diligence in investigating inspectors' concerns in a timely manner has been reemphasized to the appropriate members of our staff.

Please do not hesitate to contact me directly if you have any questions.

  
R.G. Bird

BPL/1a

Regional Administrator, Region I  
U.S. Nuclear Regulatory Commission  
631 Park Avenue  
King of Prussia, PA 19406

Sr. Resident Inspector

~~871225/1/87~~ APP

ATTACHMENT

Boston Edison Company  
Pilgrim Nuclear Power Station

Docket No. 50-293  
License No. DPR-35

Notice of Violation

10CFR50.54 (a)(1), requires each nuclear power plant licensee subject to the Quality Assurance Criteria in 10CFR50, Appendix B, to implement pursuant to 10CFR50.34(b)(6)(ii), the quality assurance program described or referenced in the Safety Analysis Report, including changes to that report.

Boston Edison Company Quality Assurance Manual (BEQAM) Volume II implements the requirements of 10CFR50, Appendix B. BEQAM, Section 6, Document Control, requires that measures be established to assure that documents affecting quality are reviewed for adequacy and approved for release by authorized personnel.

Contrary to the above on August 6, 1987, it was determined that Plant Design Change (PDC) 86-70, Standby Gas Treatment System Modification, had been reviewed, released and implemented but did not completely specify design verification testing requirements as required by BEQAM, Section 3, Paragraph 3.3.2.8., specifically electrical functional and logic testing requirements.

In addition, Temporary Procedure 87-128, Preoperational Test of Standby Gas Treatment System (SBGTS) Modification Per PDC 86-70 was reviewed, approved and released for performance on July 22, 1987 and contained several errors and did not verify all design aspects of PDC 86-70. Specifically, neither the formal review process of PDC 86-70, nor the formal review of TP 87-128 identified the missing testing requirements of the PDC or the failure of the TP to fully verify the SBGTS modified design.

Response

Discussion:

On November 10, 1987, Boston Edison Co. management personnel contacted NRC Region I management personnel via telecon to provide further explanation of the position described in our initial response to the Notice of Violation dated October 5, 1987. This dialogue enhanced our understanding of the basis for the Notice of Violation.

We concur with the inspector's general concerns regarding the adequacy of reviews and the need to more completely specify pre-operational testing requirements in Plant Design Change packages. During the telephone conference, however, it was agreed that the perceived errors in TP87-128, identified in Sections 2.2.B<sup>x</sup>, 2.2.D and 2.2.E of the Inspection Report, were not errors. Although it was agreed that the error identified in Section 2.2.A of the inspection report would have been identified during the conduct of the test, it was also agreed that errors of this nature could be eliminated by a more thorough technical review. Agreement was not achieved regarding the perceived error identified in Section 2.2.C<sup>x</sup> of the Inspection Report, as we continue to believe that a cognizant inclusion of an unnecessary procedural step is not an error.

ATTACHMENT 1 (Cont.)

The errors in TP 87-128 were identified by the inspector prior to the implementation of the preoperational test. During the conduct of a preoperational test, the test is halted if a discrepancy is identified. The discrepancy must be resolved and the procedure reviewed prior to continuing the test. This conservative testing philosophy, in combination with the multiple levels of review and verification associated with the plant modification process, provide assurance against the possibility of errors in the final product. However, we recognize that the propensity to rely on the process, as opposed to assuring that the job is done right at each step in the process, must be guarded against.

Cause:

The errors identified in TP87-128 were a result of a lack of a thorough technical review by independent reviewers. These reviews may have resulted from a substantial increase in individual work load in support of the plant outage. In particular, procedure reviewers are normally selected from the line organization based on their technical expertise. These line organization reviewers have concurrent managerial and/or technical responsibilities. Although the need to take the time to do the job right the first time has been repetitively communicated by senior BECo management, a situation of conflicting priorities may have resulted in a less thorough preoperational test review than desired.

The incomplete specification of electrical functional and logic testing requirements in PDC86-70 resulted from a lack of procedural definition or other guidance regarding the level of detail required to be specified in a PDC. Because of this lack of guidance, the level of detail of testing requirements specified in PDC's has been inconsistent. We believe this situation developed in part because of the demonstrated ability of the Modification Management Group's personnel to prepare preoperational tests with limited direction from the Nuclear Engineering Department.

Corrective Actions Taken:

- The Nuclear Engineering Department issued Technical Quality Memo (TQM) No. 92 on August 19, 1987 to reemphasize to engineering personnel the responsibility to clearly specify testing and acceptance requirements in Plant Design Change packages.
- The Design Review Board (DRB) members have been specifically reinstructed concerning their responsibility to assure PDC packages contain complete preoperational testing requirements. The DRB members are comprised of the engineering discipline Group Leaders who are responsible for the performance of engineers performing design functions for Pilgrim Nuclear Power Station.
- Temporary Procedure (TP) 87-128 has been revised to correct the identified discrepancies. TP87-128 Revision 3 was completed on August 29, 1987.

ATTACHMENT 1 (Cont.)

- The Modifications Management Group of the Nuclear Operations Department has established a three man team to conduct independent reviews of the preoperational test for the duration of RFO No. 7. This review team has no other concurrent responsibilities and provides additional assurance that the large number of modifications implemented during RFO No.7 receive thorough reviews.

Corrective Steps To Be Taken:

- As committed in TQM No. 92, NED procedures will be revised to specify the level of detail required for preoperational testing requirements in PDC packages.
- A process is being developed (proceduralized) to require comments from the station review of PDC packages to be collected by the Modification Management Group and sent to the Nuclear Engineering Department (NED) for disposition prior to approval by the Operations Review Committee. This process will provide feedback to the NED on PDCs released to the station.
- The results of the three man team's independent review of the preoperational tests prepared during RFO No. 7 will be evaluated to allow incorporation of lessons learned to the preoperational test review process if appropriate.

Date of Full Compliance:

Full compliance was achieved on August 29, 1987 when TP87-128 Revision 3 was completed.

**BOSTON EDISON**

Executive Offices  
800 Boylston Street

**Ralph G. Bird**  
Senior Vice President — Nuclear

October 5, 1987  
BECo Ltr. #87-176

U.S. Nuclear Regulatory Commission  
Attention: Document Control Desk  
Washington, DC 20555

License No. DPR-35  
Docket No. 50-293

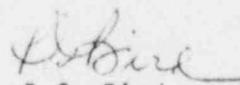
Subject: NRC Inspection Report 50-293/87-33

Dear Sir:

Attached is Boston Edison Company's response to the Notice of Violation contained in the subject inspection report.

Based upon our review and investigation of the matters described in the subject inspection report, we do not believe a Violation is appropriate. The basis for this position is described in the Attachment to this letter. A meeting with the appropriate level of NRC management has been requested to allow further explanation of our position and the reasons we believe that the Notice of Violation should be withdrawn.

Please feel free to contact either myself or Mr. Robert Grazio (Telephone 617-747-8189) if you have any questions.

  
R.G. Bird

BPL/1a

Regional Administrator, Region I  
U.S. Nuclear Regulatory Commission  
631 Park Avenue  
King of Prussia, PA 19406

Sr. Resident Inspector

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ATTACHMENT

Boston Edison Company  
Pilgrim Nuclear Power Station

Docket No. 50-293  
License No. DPR-35

Notice of Violation

10CFR50.54 (a)(1), requires each nuclear power plant licensee subject to the Quality Assurance Criteria in 10CFR50, Appendix B, to implement pursuant to 10CFR50.34(b)(6)(ii), the quality assurance program described or referenced in the Safety Analysis Report, including changes to that report.

Boston Edison Company Quality Assurance Manual (BEQAM) Volume II implements the requirements of 10CFR50, Appendix B. BEQAM, Section 6, Document Control, requires that measures be established to assure that documents affecting quality are reviewed for adequacy and approved for release by authorized personnel.

Contrary to the above on August 6, 1987, it was determined that Plant Design Change (PDC) 86-70, Standby Gas Treatment System Modification, had been reviewed, released and implemented but did not completely specify design verification testing requirements as required by BEQAM, Section 3, Paragraph 3.3.2.8., specifically electrical functional and logic testing requirements.

In addition, Temporary Procedure 87-128, Preoperational Test of Standby Gas Treatment System (SBGTS) Modification Per PDC 86-70 was reviewed, approved and released for performance on July 22, 1987 and contained several errors and did not verify all design aspects of PDC 86-70. Specifically, neither the formal review process of PDC 86-70, nor the formal review of TP 87-128 identified the missing testing requirements of the PDC or the failure of the TP to fully verify the SBGTS modified design.

Response

Boston Edison believes that Plant Design Change (PDC) 86-70 and Temporary Procedure (TP) 87-128 were prepared, reviewed, approved, released and implemented in compliance with the requirements of 10 CFR Part 50, Appendix B and the Boston Edison Quality Assurance Manual (BEQAM). We have, however, implemented actions described at the end of this response to further strengthen the PDC testing process.

Discussion:

The subject Notice of Violation identifies three issues as follows:

1. PDC 86-70 did not completely specify design verification testing requirements as required by BEQAM, Section 3, Paragraph 3.3.2.8, specifically, electrical functional and logic testing requirements.
2. TP 87-128 contained several errors and did not verify all design aspects of PDC 86-70.

ATTACHMENT (Cont.)

3. The review requirements of 10CFR50, Appendix B and BEQAM Volume II, Section 6, Document Control were not fully implemented as evidenced by issue (1) and (2) above.

The balance of this discussion is formatted to address each of these issues.

Issue 1 - Design Verification Requirements:

Qualification testing is one of the BEQAM approved methods for performing design verification, but was not chosen for PDC 86-70. Instead, PDC 86-70 was verified using the design review method as permitted by the BEQAM.

The PDC received multiple levels of review and approval including independent, interdisciplinary and Quality Assurance Department reviews and approvals. In addition, calculations were made and independently reviewed to support the design. The multiple reviews and calculations verified the adequacy of the design and satisfied the requirements of BEQAM Paragraph 3.3.2.8. The reviews and calculations are documented in the PDC package. Qualification testing was not used as a verification method for this PDC.

Our plant design change procedures require that preoperational test requirements and acceptance criteria are specified in the PDC. The preoperational test TP 87-128 was prepared to verify the functions of the SBGTS for the different modes of operation. The requirements of Section 3.3.2.8 of the BEQAM do not apply to TP 87-128 since it is not a design verification test.

Section 10.4.2.27 of the work instruction for PDC 86-70 specifies the testing requirements for the logic portion of the PDC and identifies the required calibrations. Sections 10.5.19 and 11.4 of the work instruction specified the acceptance tests required for electrical equipment. The level of detail specified in these sections of the PDC was adequate to assure that the SBGTS functions were verified.

Issue 2 - Alleged Errors

Our responses to the specific discrepancies identified in Section 2.2 of the Inspection Report follow.

Section 2.2.A states,

"Paragraphs 7.2.5, 7.3.5 and 7.4.5 required 5 damper control switches to be in the auto position and their associated dampers in the open position. The associated dampers would be in the closed position with the specified switch position and no initiation signal present."

Response:

Although the procedure was in error as stated the errors would have been identified during the conduct of the test as follows:

- If the dampers were wired correctly, discrepancies between the observed damper positions and the damper positions specified in TP 87-128 would have been apparent.

ATTACHMENT (Cont.)

- Only two of the five dampers were affected by the modification. If those two dampers affected by the modification were wired incorrectly, a discrepancy between the modified dampers and non-modified dampers would have been apparent.
- In either case, TP 87-128 specified the correct damper positions in Attachment E, Steps E1 thru E20. Therefore, if the discrepancies had not been previously identified, they would have been identified in these steps.

Procedure 1.3.4 "Procedures" defines the process by which procedures are revised when errors are identified. Prior to completion of the test, the discrepancy would have been resolved and TP 87-128 would have been corrected.

Section 2.2.B states,

"Section 7.3.8 and 7.3.8.9 did not require verification that valve AON-112 closed when the 'B' Standby Gas Treatment System (SBGTS) fan tripped (per procedure). Inlet valve AON-106 was verified as closing."

Response:

AON-112 was verified to close during previous steps in the procedure which tested major portions of the circuit. Steps 7.3.8 and 7.3.8.9 tested discrete portions of the circuit that feed the previously tested AON-112 circuit. Those portions of the circuit were verified to be functional by these steps. This overlapping test method adequately demonstrates functionality of the subject valve.

Section 2.2.C states,

"Paragraph 7.3.8.6 required the differential pressure across the calibrated perforated plate (DPI-AA-32) in the 'B' SBGTS train to be recorded with the 'B' SBGTS in standby (off). This reading was being taken to measure 'B' train bypass flow so it could be combined with 'A' train to determine system flow. Under the system conditions specified this reading would be zero (0) since one of the SBGTS modifications moved the upstream bypass flow connection such that the connection between the A and B SBGTS trains is now downstream (bypassing) of the calibrated orifice plate. The flow recorded on the 'A' calibrated orifice plate would represent full system flow for the specified lineup."

Response:

Recording flow through the standby train of the SBGTS was recognized as not being required in the draft review of the procedure. It was determined that the reading should be left in the procedure based on the following:

- Analysis of the data can be used to show no flow through the standby train when there should be no flow. This would reflect the integrity of the standby train inlet damper.

ATTACHMENT (Cont.)

- Reading standby train flow is of no consequence to the test performance or results.

Section 2.2.D states,

"Train 'B' logic requires AON-106 damper (inlet) to open and pick up a position limit switch which allows the 'B' SBGTS fan to start and outlet damper AON-112 to open. This logic sequence would occur during any start of the 'B' SBGTS train and was not checked in TP 87-128."

Response:

Although the logic sequence was not verified, the component functions were verified to occur. The actuation logic for this series of functions is as follows. AON-106 opens which operates a limit switch starting the fan. A contact on the fan motor starter relay causes AON-112 to open. This sequence was modified by the design. However, numerous independent wiring errors in several locations would be required for the components to function in other than the desired sequence. Design verification and construction verification, including QC verification of the as-built versus design configuration, provided assurance that the system wiring was correct. Verification of the logic sequence was considered redundant.

Section 2.2.E states,

"The procedure did not verify that per design the 'B' SBGTS train would remain running after 20 minutes if the 'A' train had insufficient flow or was tripped with the 'B' train in standby. The system is designed to trip the 'B' train after 20 minutes if sufficient flow exists."

Response:

The design sequence of operation following auto initiation of the SBGTS is as follows:

- Both 'A' and 'B' SBGTS trains start.
- After 20 minutes of operation the standby ('B') train shutdown.
- If insufficient flow or no flow ('A' SBGT fan tripped) is sensed, the standby ('B') train reinitiates after a 10 second time delay and locks in for a continuous run.

Section 7.3 of TP 87-128 properly demonstrated these functions. This was discussed in detail with the inspector subsequent to the inspection.

Issue 3 - Review Requirements:

10CFR50 Appendix B. Criterion VI and BEQAM Section 6, require that document control measures be established to control issue and revision of documents which prescribe activities affecting quality. These measures assure that documents, including changes, are reviewed for adequacy and approved for release by authorized personnel.

ATTACHMENT (Cont.)

Both PDC 86-70 and TP 87-128 were reviewed and approved in accordance with approved BECO procedures. These procedures require multiple reviews and approvals that were fully documented in TP 87-128 and PDC 86-70. Based upon our response contained herein, we believe that adequate reviews of both PDC 86-70 and TP 87-128 were performed.

Additional Actions:

The following additional actions have been taken or are planned to further strengthen the PDC process:

- As immediate action the Nuclear Engineering Department issued Technical Quality Memo No. 92 on August 19, 1987, to reemphasize to engineering personnel the responsibility to clearly specify testing and acceptance requirements, in Plant Design Change packages. As committed in memo No. 92 NED procedures applicable to design verification testing will be revised to clarify existing requirements.
- Temporary Procedure (TP) 87-128 has been revised to correct the identified discrepancies. TP 87-128 Revision 3 was completed on August 29, 1987.
- The Modifications Management Group of the Nuclear Operations Department has established a three man team to conduct independent reviews of the preoperational tests for the duration of RFO-7. This team provides additional assurance that the large number of modifications implemented during RFO No. 7 receive a thorough review for preoperational testing requirements.