



**BOSTON EDISON**

Pilgrim Nuclear Power Station  
Rocky Hill Road  
Plymouth, Massachusetts 02360

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

April 15, 1988  
BECo Ltr. #88-070

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

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

Subject: NRC Inspection Report 50-293/87-57

Dear Sir:

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

The corrective actions described in the response consider the previous self identified problems and Notices of Violation pertaining to control of Locked High Radiation Areas. To prevent recurrence, much of the responsibility for control of Locked High Radiation Areas has been shifted to Radiation Protection personnel. Their specialized knowledge and sensitivity to high radiation area control issues in combination with the demonstrated support of Station Management in enforcing Radiation Protection procedures and policies will ensure effective and lasting resolution of these problems.

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

*R. G. Bird*  
for R.G. Bird

BPL/b1

Attachment: Response to Violation (87-57-01)

cc:

Mr. William Russell  
Regional Administrator, Region 1  
U.S. Nuclear Regulatory Commission  
475 Allendale Rd.  
King of Prussia, PA 19406

Sr. Resident Inspector - Pilgrim Station

*IEP*  
*11*

8804210008 880415  
PDR ADOCK 05000293  
Q DCD

P550 567 530

ATTACHMENT

Response to Notice of Violation (87-57-01)

Boston Edison Company  
Pilgrim Nuclear Power Station

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

Notice of Violation

As a result of the inspection conducted on December 7, 1987 to January 19, 1988, and in accordance with the NRC Enforcement Policy (10 CFR 2, Appendix C), the following violation was identified. Three previous Notices of Violation dated March 13, March 23, 1987, and April 28, 1987 were issued for problems related to the control of Locked High Radiation Areas. It is evident that corrective actions taken in response to these Notices of Violation have not been effective in precluding recurrence.

The Station Technical Specification 6.11, "Radiation Protection Program," requires that "procedures for personnel radiation protection shall be prepared consistent with the requirements of 10 CFR 20 and shall be approved, maintained and adhered to for all operations involving personnel radiation exposure."

The Station Procedure 6.1-012, "Access to High Radiation Areas," requires in part that the areas controlled under this procedure remain locked or guarded at all times.

Contrary to the above, on December 15, 1987, December 27, 1987, and on January 8, 1988, doors to the areas being controlled as Locked High Radiation Areas were found to be unlocked and unattended, in violation of the Station Procedure 6.1-012.

This is a Severity Level IV Violation (Supplement I).

Pursuant to the provisions of 10 CFR 2.201, Boston Edison Company is hereby required to submit to this office within thirty days from the receipt of the letter which transmitted this Notice, a written statement or explanation in reply, including: (1) the corrective steps which have been taken and the results achieved; (2) corrective steps which will be taken to avoid further violations; and (3) the date when full compliance will be achieved. Where good cause is shown, consideration will be given to extending this response time.

Response

Discussion:

Pilgrim Nuclear Power Station (PNPS) Technical Specifications Section 6.13.2 requires that each high radiation area in which the intensity of radiation is greater than 1000 mrem/hr be locked to prevent unauthorized access. The keys to such areas shall be maintained under the administrative control of the Shift Foreman on duty and/or the unit Health Physicist. PNPS Procedures No. 6.1-012 "Access to High Radiation Areas" and No. 1.3.10 "Key Control" reflect these requirements.

For the purposes of this report, those areas controlled to meet the requirements of PNPS Technical Specifications Section 6.13.2 will be referred to as Locked High Radiation Areas (LHRAs).

## Attachment (continued)

### Cause:

Under the current procedure, the person issued an LHRA access key has the clear responsibility to ensure that the door is either locked or guarded. The investigation of recent incidents indicates persons involved were aware of their responsibilities. However, their attention to detail in the process of ensuring LHRA doors were secured was insufficient. A multidisciplinary task force convened to review the recurring problems concluded that continued reliance on single point accountability represented an unnecessary potential for error in the future. This task force endorsed the practice of independent verification of LHRA closure as an effective method of eliminating the root cause of the continuing deficiencies. This practice has been in effect since January 8, 1988.

For the events on December 15, 1987 and January 8, 1988 the individuals relied on the automatic door closure mechanisms to properly secure the doors. When interviewed, the individuals described auditory and visual signals that to them confirmed a properly secured door. However, the individuals did not verify the doors were locked by attempting to open the door without the use of the key.

Investigations have shown that the automatic closure mechanisms cannot be relied upon to properly secure doors. This is especially true when items such as electrical cable and hoses pass through a doorway. Because of these problems, the commonly prescribed practice for verifying that a LHRA door is properly secured is to push and pull (shake) the door. The individuals involved in the events on December 15, 1987 and January 8, 1988 did not acknowledge being informed of the technique or the need to shake the door.

The individual involved in the event on December 27, 1987 stated that he had shaken the door to verify that it was secured. In this case, the LHRA was entered by one door and exited by another. The door that was used to enter the room had to be verified closed from inside the room. The door locking mechanism is not visible from inside the room and the distance from the door stop to the door is difficult to perceive. Investigations revealed that an electrical cable was looped under the door interacting with the door and door frame. The cable may have restricted the door's movement, so that it appeared secure when shaken.

### Corrective Actions Taken and Results Achieved:

- The initial actions taken were to secure the LHRA doors and to notify appropriate management personnel. Investigations were conducted which concluded that unauthorized personnel did not access the unlocked doors. Radiation surveys of the areas controlled by the LHRA doors showed the area dose rates to be less than 1000 mr/hr.
- Disciplinary actions were taken against the individuals responsible for the events and included suspensions without pay for the events on December 15, 1987 and January 8, 1988.
- On December 28, 1987 an interim policy change was initiated that allows issuance of keys to Locked High Radiation Areas to Radiation Protection personnel only, unless specifically authorized otherwise.

Attachment (continued)

- On January 8, 1988 an interim policy change was initiated that required a minimum of two persons to enter a LHRA. When exiting an area, one individual is required to remain at the control point until the assigned Radiation Protection Technician independently verifies that the door is properly secured.

Corrective Actions Taken to Prevent Recurrence:

- A multidisciplinary task force was assembled to assess the LHRA door control issues and recommend actions to preclude recurrence. As a result, the Radiation Work Permits (RWPs) for LHRAs have been revised to consolidate the requirements and techniques for control of these areas. The previously described policy changes initiated on December 28, 1987 and January 8, 1988 have also been formalized by incorporation to RWPs for [redacted]
- Increased emphasis has been placed on the proper functioning of Locked High Rad Doors. This includes the identification and repair of mechanical problems as well as controlling impediments to proper door closure.
- On January 19, 1988 the Station Director established a uniform disciplinary policy for individuals who violate the procedures or policies used in the control of high radiation areas. It follows:
  - \* First offense - Disciplinary action which could result in suspension without pay.
  - \* Second offense - Disciplinary action which could result in termination of employment.

Safety Consequences:

A review concluded that unauthorized access to high radiation areas did not result from these events. The maximum time that a high radiation area door was unlocked and unattended was approximately one hour forty minutes. Locked high radiation door audits are conducted each shift establishing a maximum duration of approximately 8 hours that an unlocked high radiation door could be unattended prior to discovery.

Date of Full Compliance:

Full compliance was achieved on January 8, 1988 when the Tip Room door was secured at approximately 1314 hours. The corrective actions taken have proven effective in preventing recurrence of similar problems. A review of Radiological Occurrence Reports and once a shift door audits since January 8, 1988 identified no instances of unlocked and unattended LHRA doors.