10CFR2.201

BOSTON EDISON
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Ralph G. Bird
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December 26, 1989
BECo Ltr. 89-181

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

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

Subject: NRC Inspection Report 50-293/89-10

Dear Sir:

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

Please do not hesitate to contact me if you have any questions regarding this report.

R.G. Bird

BPL/bl

Attachment:

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

Sr. Resident Inspector - Pilgrim Station

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ATTACHMENT

Boston Edison Company
Pilgrim Nuclear Power Station

Docket No. 50-293
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NOTICE OF VIOLATION

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." 10 CFR 20.203(c)(2) requires, in part, that each entrance or access point to a high radiation area shall be maintained locked except during periods when access to the area is required, with positive control over each individual entry. Technical Specification 6.13.2 requires that each high radiation area in which the intensity of radiation is greater than 1000 mrem/hour, shall have locked doors provided to prevent unauthorized entry into such areas.

Station Procedure 6.1-012, "Access Control to High Radiation Areas," requires, in part, that areas controlled under these procedures remain locked or guarded at all times.

Contrary to the above, on September 14, 1989, the southeast entrance to the condenser bay, controlled as a Locked High Radiation Area, was found to be unlocked and unattended, in violation of the Station Procedure 6.1-012.

RESPONSE

EVENT DESCRIPTION:

On September 14, 1989, a locked high radiation area (LHRA) access door was found to have been unsecured from about 1120 hours to 1235 hours. The door latching mechanism was locked but the latch did not extend into the doorjamb. The unsecured door provides one of three access points to the Condenser Bay (CB). While unsecured, the door was accessed by two individuals who had not been authorized entry. The dose received was below allowable limits. Pocket dosimeter readings for the entries were logged at 15 milli-rem and 5 milli-rem.

CIRCUMSTANCES LEADING TO THE EVENT:

On September 14, 1989, multiple Condenser Bay (CB) entries occurred for Instrument and Control (I&C) work and to define and post a contaminated area. Access to the CB was being controlled through door 'A' (see Figure I, Pg. 7). When the I&C work was completed at approximately 1120 hours, the I&C Technicians were directed by the Radiological Protection Technician (RPT) #1 to exit via door 'B' to prevent crossing a contaminated area. The contaminated area was created when a floor drain backed up after the I&C Technicians had entered the CB. Upon exiting door 'B', the I&C Technicians did not check that the door was locked and secured. After the I&C Technicians left, RPT #1 checked the door by pulling the door from inside the CB. The door did not open. It was later determined that although the door latching mechanism was locked, the latch did not extend into the doorjamb.

Meanwhile, preparations were being made to clean the contaminated area (approximately a 30 ft. by 30 ft. area around the floor drain) in the CB. Three Nuclear Plant Attendants (NPAs) were briefed on Radiation Work Permit (RWP) No. 89-14. Two NPAs were to provide decontamination support from outside the CB and a third NPA was to perform the decontamination inside the CB. The two support NPAs needed to get additional supplies and were told to meet the RPT at the CB. The RPT #2 and the third NPA prepared for entry to the CB.

At 1235 hours, the two NPAs who were to provide outside support went to door 'B' expecting to meet the RPT #2 and the third NPA. When the two NPAs arrived at door 'B', the RPT #2 was not present. They assumed the RPT was already in the CB and they should enter. One NPA then pushed on door 'B' with his shoulder and it opened. The two NPAs then entered the CB looking for RPT #2.

A few minutes later, the RPT #2 and the third NPA entered the CB through door 'A' finding the other two NPAs already in the CB.

INITIAL ACTIONS TAKEN:

- RPT #2 questioned the two NPAs and determined that they had accessed door 'B' to the CB.
- The NPAs were directed to leave the CB.
- RPT #2 checked door 'B' and determined that it was locked but not latched and then secured door 'B'. RPT #2 also toured the CB and determined that no other personnel were in the CB.
- The two NPAs' pocket dosimeters were read and indicated doses of 15 milli-rem and 5 milli-rem.
- Door 'B' was verified locked and secured and appropriate management personnel were informed of the event.
- A guard was posted outside of the CB at door 'B' until its operability was verified.
- The CB was toured by a second individual to reverify no personnel were in the CB. No personnel were found.
- The three doors to the CB were reverified and all other LHRA doors were verified to be secured.
- A LHRA key inventory was performed. The inventory revealed all keys to be present and properly controlled.
- Pocket dosimeter readings for September 14, 1989, were reviewed to verify other personnel had not received unauthorized radiation exposures in the CB. The review determined no additional unauthorized exposures had occurred as a result of the event.

CAUSE:

Unauthorized access was caused by a failure to adhere to approved procedures. Procedure 6.1-012 "Access Control to High Radiation Areas" requires the RPT who has responsibility for the issued LHRA key to assure all accessible doors are secure (locked and latched) upon exiting a LHRA. Investigations revealed RPT #1 did not properly verify door 'B' to be secure when exiting the CB at 1130 hours. Additionally, on three separate occasions (including the exit at 1130 hours) on September 14, 1989, RPT #1 only checked the doors that were accessed as opposed to all accessible doors (door 'C' was not checked). The I&C personnel who exited door 'B' without checking that the door was secured, also did not meet the requirements of Procedure 6.1-012.

Not checking all accessible doors upon exiting a LHRA was a human performance problem. The RPT #1 had been trained and was generally knowledgeable of the requirements. However, on September 14, 1989, he was focused on properly defining and posting the contaminated area while providing health physics support to ongoing work.

Similarly, the I&C personnel did not fully meet their responsibility to assure door 'B' was properly secured upon egress. They assumed the door had closed behind them.

Attachment 5 to Procedure 6.1-012 "Standard Requirements for Entry to Locked High Radiation Areas" is attached to each issued RWP for LHRAs. This attachment is intended to be reviewed during the RWP briefing. When interviewed, the two I&C technicians involved in the event, stated they were not familiar with the requirements of Attachment 5, and could not recall being briefed on those requirements on the day of September 14, 1989.

The functioning of the door also contributed to the event. The door was sticking against the doorjamb and would not self close. The door could be opened/closed without using excessive force, but did require greater than normal force (a strong push/pull). RPT #1 has a small thin build. making it plausible that the door would have appeared secured when pulled. However, because LHRA doors are designed to open from inside an area, it would not be possible to determine if a door was locked from inside the area.

Entry was made into the CB by the two NPAs without meeting the requirements of Technical Specification 6.13.2 and Procedure 6.1-022, "Issue Use and Termination of Radiation Work Permits". Investigations found that the NPAs were not generally knowledgeable of the requirements for entry to high radiation areas. Further investigation revealed that General Employee Training (GET) did not fully address the requirements for entry to high radiation areas (i.e., dose rate meter, dose integrating device, or coverage by a RPT with a dose rate meter).

CORRECTIVE ACTIONS TAKEN TO AVOID FURTHER VIOLATIONS AND RESULTS ACHIEVED:

- Radiological Operations personnel were required to read Procedure 6.1-012, "Access Control to High Radiation Areas" and to discuss any questions with their supervisors.

- Radiological Section Standing Order No. 89-09 was issued allowing only radiological supervisors to exercise LHRA door and key control, and requiring a radiological supervisor to observe and supervise each High Radiation Area (HRA) entry briefing.

- HRA access was restricted to allow entries only for required operator tours and emergencies until the above two actions were completed.

- Procedure 6.1-012 was revised (Revision 29, approved 9/21/89) to require a job aid that prompts the person responsible for a LHRA key to check all accessible doors upon exiting an area. A job aid was prepared identifying the accessible doors for each LHRA and has a signature block to be signed for each door that is verified and locked.

- Radiological Operations personnel were trained on Revision 29 to Procedure 6.1-012 (complete 9/21/89) and Standing Order No. 89-09 was rescinded.

- A "For Your Information" (FYI) notice was issued on September 16, 1989, to reemphasize and clarify HRA entry requirements for PNPS personnel.

- The two NPAs who entered the LHRA improperly were restricted from further HRA entries until retrained and tested in HRA controls.

- The other NPAs were also retrained and tested in HRA controls.

- Appropriate maintenance personnel received special training in HRA controls.

- Station supervisors and managers have received a special briefing in HRA controls from the Radiological Protection Manager.

- GET was revised on September 22, 1989 to present and emphasize the requirements for entry to HRAs.

- Maintenance Request No. 89-33-236 has been initiated to repair door 'B' to the CB.

- The radiological technician qualification training program was reviewed and it was determined that HRA controls were adequately covered.

- A Quality Assurance Surveillance on HRA controls was performed. The surveillance revealed previous actions to control LHRA doors were focused on administrative controls and recommended hardware enhancements to assure proper functioning of the doors.

- Worker Information Program (WIP) presentations were made to site personnel to reemphasize and clarify HRA and LHRA entry and exit requirements.

- A review of HRA and LHRA controls has been added to radiological technician cyclic training, at quarterly intervals.

ADDITIONAL ACTIONS IN PROGRESS TO AVOID FURTHER VIOLATIONS:

- New signs have been procured to differentiate LHRA doors from HRA doors that are not locked. These signs are large and conspicuous and add the word "LOCKED" to the standard HRA door danger sign. Additionally both sides of the LHRA doors will be labeled with the words "THIS IS A LHRA YOU MUST ENSURE THIS AREA IS LOCKED AFTER YOU EXIT OR ENTER".

- An Engineering Service Request (ESR #89-912) has been initiated to evaluate providing hardware enhancements to LHRA doors.

WHY PREVIOUS CORRECTIVE ACTIONS HAVE NOT REMAINED EFFECTIVE AND SUMMARY OF ACTIONS TO ASSURE DURABILITY OF MEASURES TO AVOID FUTURE VIOLATIONS:

Previous corrective actions for LHRA door events have been focused on stimulating proper personnel performance through administrative controls, refresher training, and disciplinary action. A review of the history of LHRA problems at PNPS has shown that these events, although generally classified as LHRA control problems, involved different facets of LHRA controls. For example, problems with LHRA door key controls (Violations 50-293/87-03, 50-293/87-11, 50-293/87-19) are unrelated to this violation and required different solutions than problems with personnel inadvertently leaving a LHRA door in an unlocked and unguarded condition (Violation 50-293/87-57, Inspection Report 50-293/88-37).

Increasingly stringent administrative controls have been applied for the two previous unlocked LHRA door events. The corrective actions taken for the event described in Inspection Report 50-293/88-37, established the requirement to check all accessible doors upon exiting a LHRA. Although effective for 8 months, this event showed that the sensitivity to properly implementing LHRA control requirements had diminished over time.

To assure durability the corrective actions for this event have addressed both personnel awareness and knowledge retention as follows:

- RPT cyclic training now includes a review of LHRA/HRA access requirements.

- Both initial GET and requalification GET now properly address LHRA/HRA access requirements.

- To reinforce procedure requirements, a checklist is used in the field to assure all LHRA doors are checked upon exiting a LHRA.

- Signs will be used to clearly distinguish LHRA doors from other radiologically controlled areas and to reinforce the requirement to assure LHRA doors are locked after exiting or entering an area.

DATE OF FULL COMPLIANCE:

Full compliance was achieved on September 14, 1989 when initial actions assured that no unauthorized personnel were in the CB and all access doors to the CB were secured.

SAFETY CONSEQUENCES:

The personnel who had unauthorized access to the CB received 15 milli-rem and 5 milli-rem. Had door 'B' not been accessed, the unlatched condition of the door would have been identified during the routine LHRA door check that is conducted every 8 hours, minimizing the potential for unauthorized entry. A LHRA door audit was in progress at the time of the event and the auditor arrived at CB door 'B' only minutes after the event was identified. The event had no potential to adversely impact the public health and safety.

FIGURE 1

CONDENSER BAY ACCESS DOOR LOCATIONS