U.S. NUCLEAR REGULATORY COMMISSION
REGION I

Report No. 50-293/87-11

Docket No. 50-293

License No. DPR-63 Priority -- Category C

Licensee: Boston Edison Company

800 Boylston Street

Boston, Massachusetts 02199

Facility Name: Pilgrim Power Station

Inspection At: Plymouth, Massachusetts

Inspection Conducted: February 10-13, 1987

Inspectors: R. L. Nimitz
R. L. Nimitz, Senior Radiation Specialist
Region I
3/12/87
date

R. L. Nimitz for
W. T. Cooper, Jr., Radiation Specialist,
Region II
3/12/87
date

Approved by: M. Shanbaky
M. M. Shanbaky, Chief, Facilities Radiation Protection Section
3/12/87
date

Inspection Summary: Inspection on February 10-13, 1987 Report Number 50-293/87-11)

Areas Inspected: Routine, unannounced inspection of Radiological Controls for the outage including: action on previous findings; high radiation area controls; ALARA; in-field radiological control; and posting and labeling. The inspection involved two region based inspectors.

Results: One violation was identified: (failure to adhere to station approved procedures - five examples; failure to adhere to key control procedure; failure to adhere to the key audit procedure; failure to post an airborne radioactivity area;failure to adhere to the radiation work permit procedure; failure to post and barricade a contaminated area in accordance with procedures).

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DETAILS

1. Individuals Contacted

Boston Edison Company

*K. Roberts, Nuclear Operation Manager
*T. Sowden, Radiological Section Manager
*E. Gordon, Environmental and Radiological Health Services Group Leader
*S. Hudson, Chief Operation Engineer

USNRC

*J. Lyash, Resident Inspector, Pilgrim

*denotes those individuals attending the exit meeting on February 13, 1987

2. Purpose of Inspection

This inspection was a routine, unannounced radiological controls inspection during the outage. Specific areas reviewed were as follows:

- Licensee action on previous inspection findings
- ALARA Controls
- In-field Radiological Controls:
  - External Exposure Control
  - Internal Exposure Control
  - Respiratory Protection
- Posting, Labeling and Access Control (as appropriate) for:
  - Radioactive and Contaminated Material
  - Radiation and High Radiation Areas
  - Airborne Radioactivity Areas

3. Licensee Action on Previous Inspection Findings

3.1 (Closed) Follow Item (50-293/85-32-20) Licensee to approve procedure for accountability and storage of air sample data. The licensee established and approved procedure SI-RP.1002, "Radiological Survey and Air Sample Data Records," Revision 0 on January 15, 1987. This item is closed.

3.2 (Closed) Follow Item (50-293/83-17-03) NRC to review licensee post-accident sampling capabilities. This matter was reviewed during inspection No. 85-27. This item is closed.

3.3 (Closed) Follow Item (50-293/85-32-27) Licensee to provide criteria for shielding of radwaste storage areas. The licensee established procedure 6.9-197, "Operation and Control of Radioactive Material Storage Areas." The procedure provides criteria and guidance for shielding of such areas. This item is closed.

3.4 (Closed) Violation (50-293/84-44-02) Personnel did not adhere to radiation work permit requirements. The matter was reviewed during Inspection 85-02 and during this inspection. The licensee implemented corrective actions described in his August 19, 1984 letter. This item is closed.

3.5 (Closed) Violation (50-293/84-44-03) Personnel did not modify a radiation work permit in accordance with procedure requirements. This matter was reviewed during Inspection 85-02 and during this inspection. The licensee implemented the corrective action specified in his August 19, 1984 letter. This item is closed.

3.6 (Closed) Violation (50-293/84-44-04) Licensee to establish procedures for use of tele-dosimetry devices. This matter was reviewed during Inspection 85-02 and during this inspection. The licensee revised procedures to address NRC concerns in this area. This item is closed.

3.7 (Closed) Violation (50-293/84-44-05) Personnel did not adhere to airborne radioactivity survey requirements presented on a radiation work permit. The matter was reviewed during inspection No. 85-02 and during this inspection. The licensee implemented the corrective actions described in his August 19, 1984 letter. This item is closed.

4. Posting, and Labeling

The inspector reviewed the adequacy, effectiveness and implementation of the licensee's posting and labeling (as appropriate) of the following materials and areas:

- radioactive and contaminated material
- radiation and high radiation areas
- airborne radioactivity areas.

This review was with respect to criteria contained in applicable licensee procedures and 10 CFR 20.

The evaluation of the licensee's performance was based on inspector tours of controlled areas and independent observations and surveys made by the inspector.

Findings

Within the scope of this review, the following apparent violations were identified: (50-293/87-11-01)

Technical Specification 6.8 requires, in part, that the procedures recommended in Appendix A of Regulatory Guide 1.33 be established and implemented.

1. Procedure 6.1-024, Revision 13, "Radiological Posting of Areas of the Station," requires in section VII E that areas where airborne radioactive concentrations are greater than .21MPC be posted as "Caution Airborne Radioactivity Area."

   Contrary to the above, at about 10 a.m. in February 12, 1987, the sand blasting tent on the Turbine Deck exhibited airborne radioactivity concentrations of .29 MPC and the area was not posted as specified above.

   NOTE: Airborne Radioactivity concentrations up to 6 MPC had been regularly previously measured in the tent. In addition, the area was required to be posted in accordance with 10 CFR 20.

2. Procedure 6.1-024, Revision 13, "Radiological Posting of Areas of the Station," requires in part, in section VII E, that areas where loose surface contamination exceeds 1000 dpm/100cm^2 be posted with the words "Caution Contaminated Area" and be barricaded so as to show the extent of the affected area.

   Contrary to the above, at about 7 p.m. on February 10, 1986 an area on the Refuel Floor around the stored reactor vessel head exhibited loose surface contaminate levels of up to 2000 dpm/100cm^2 and the areas was not barricaded so as to show the extent of the affected area. In addition, the posting was inadequate in that personnel could enter the non-barricaded entry point of the area without realizing that the area was contaminated.

   The above matters were brought to the licensee's attention. The areas were subsequently posted as required.

5. <u>High Radiation Area Access Controls</u>

The inspector reviewed the adequacy, implementation and effectiveness of the High Radiation Area Access Control Program. The review was with respect to criteria contained in applicable procedures, Technical Specification 6.8, "Procedures," and Technical Specification 6.13, "High Radiation Area Access Control."

The evaluation of the licensee's performance in the area was based on: independent inspector observations and radiation surveys, discussions with personnel and review of documentation.

Findings

Within the scope of this review, the following apparent violations were identified: (50-293/87-11-01)

Technical Specification 6.8 requires, in part, that the procedures recommended in Appendix A of Regulatory Guide 1.33 be established and implemented.

1. Procedure 1.3.10, Revision 15, "Key Control," requires in part in section IIIA.7 that the Watch Engineer signify his approval of issuance of a High-High Radiation Area Access Key to an individual by initialing the key log for that issuance. The Watch Engineer will also date and initial that the key has been returned.

   Contrary to the above, on December 15, 1986, January 16, 1987 and January 20, 1987 and at other times, High-High Radiation Area Access keys were issued to an individual and the Watch Engineer did not initial the key log to signify his approval for issuance of the key.

2. Procedure 6.1-012, Revision 18, "Access to High Radiation Areas", requires that keys controlled by radiation protection personnel be audited at each shift turnover. Key audits are to be documented on a form specified in the procedure.

   Contrary to the above, on February 3 and 8, 1987, at least one required audit was not performed.

   NOTE: Licensee personnel were unable to locate documentation of the audits and concluded that the audits were not performed. Documentation for audits other than the above two, were readily available.

The following additional matters were brought to the licensee's attention.

° A High-High Radiation Area Key authorized users list is located in the Watch Engineer's Administration Office. The following was noted relative to this list and controlling procedure:

  - Parts of the list were illegible
  - There is no clear guidance regarding qualification of individuals authorized to use the keys.

- There is no guidance relative to what action to take following identification of a lost High-High Radiation Area Key.

- The exact number of High-High Radiation Area Keys is not specified. Reactor Operations and Health Physics personnel differed on the exact number in place. Operations personnel were aware of the correct number.

° Procedure 6.1-12 provides guidance for issuance, control and audit of 'R' keys. These keys are used to control access to areas greater than 1 R/hr. The following was noted:

- The form used to document audits of the 'R' keys was not consistent with that described in the procedure.

- No guidance is in place for control and updating of the 'R' key identification log.

6. In-field Radiological Controls

The inspector reviewed the implementation, adequacy and effectiveness of the radiological controls for on-going radiological work.

The review was with respect to criteria contained in applicable procedures and regulatory requirements.

The following matters were reviewed:

° establishment, adequacy and implementation of appropriate procedures for the activities,

° adequacy and adherence to Radiation Work Permits,

° external exposure controls,

° internal exposure controls

° respiratory protection

° radiological surveys

The evaluation of the licensee's performance in this area was based on:

° observation of on-going work activities (e.g. Turbine Work and Reactor Refueling Operations)

- discussions with personnel
- review of documentation
- inspector performance of independent radiation surveys

Findings

Within the scope of this review, the following apparent violation was identified: (50-293/87-11-01)

Technical Specification 6.8 requires, in part, that the procedures recommended in Appendix A of Regulatory Guide 1.33 be established and implemented.

Procedure 6.1-022, Revision 21, "Issue, Use, and Termination of Radiation Work Permits (RWPs)," requires in part in Section E.7 that individuals exiting an RWP area note his/her time out and pocket dosimeter reading when they exit the area.

Contrary to the above, at or about 7:00 p.m. on February 11, 1987 three individuals did not properly sign out. Two individuals did not note their time out while the third individual did not note either his time out or pocket dosimeter reading. The individuals had left the area.

7. ALARA

The inspector reviewed the adequacy and implementation of the licensee's ALARA Program. The review was with respect to criteria contained in the licensee's Radiation Protection Manual and applicable NRC guidance.

The evaluation of the licensee's performance was based on observation of on-going work activities, discussions with personnel and review of documentation.

Findings

Within the scope of the review, the following was noted:

- The licensee has established and implemented 18 procedures in this area.

  The procedures cover the following matters:

  - Management Policy
  - Goal Setting
  - ALARA Audits

- Cost benefit analyses
- ALARA Committee guidance
- Dose reduction methods
- ALARA suggestions by employees
- Plant design changes
- Exposure budgeting
- ALARA guidance for health physics technician
- ALARA/RWP interface
- Temporary shielding
- Engineering control
- On-going job review
- daily exposure planning/tracking
- Exposure trending
- ALARA guidance for health physics technician

° Inspector review of the implementation of selected procedures found procedures to be implemented.

° The licensee is implementing methods to reduce personnel exposure during the outage activities as follows:

- The licensee has purchased and will install control rod drive flange shields. Use of these shields at other facilities has resulted in about a 70% reduction in exposure received by personnel working under the reactor vessel. The licensee estimated that about 204 person-rem will be saved by use of the shields. This is considered a good licensee initiative.

- The licensee has constructed an under vessel mock-up. The mock-up will be used to train personnel performing under vessel work (e.g. control rod drive removal, LPRM work).

- The licensee will perform hands-on training for personnel performing CRD disassembly and cleaning.

- The licensee is using prefabricated buildings and HEPA ventilation systems to reduce airborne radioactivity exposure of personnel.

Within the scope of this review, the following matter needing licensee attention was identified:

° The ALARA program is not yet effectively integrated into the RWP process. Adequate administrative controls are not yet in place to ensure appropriate modification of the RWP and ALARA controls following work scope or job methodology change. The interface is described by a memorandum.

8. Exit Meeting

The inspector met with licensee personnel (denoted in Section 1) at the conclusion of this inspection on February 13, 1987. The inspector summarized the purpose scope and finding of the inspection. Apparent violations were brought to plant managements attention.

No written material was provided to the licensee.