

U.S. NUCLEAR REGULATORY COMMISSION
REGION I

Report No. 50-293/87-39

Docket No. 50-293

License No. DPR-35 Priority - Category C

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

Facility Name: Pilgrim Nuclear Station

Inspection At: Plymouth, Massachusetts

Inspection Conducted: August 31 - September 4, 1987

Inspectors: P. W. Eselyroth
for A. Krasopoulos, Reactor Engineer, DRS

10/20/87
date

Approved by: P. W. Eselyroth
P. W. Eselyroth, Chief (Acting),
Plant Systems Section, DRS

10/20/87
date

Inspection Summary: Inspection on August 31 - September 4, 1987 (Report No. 50-293/87-39)

Areas Inspected: Routine unannounced inspection of the fire protection/prevention program including a review of: the licensee's efforts to complete the maintenance work outstanding on fire protection systems; efforts to complete work on degraded barriers; installation, operability and maintenance of fire protection systems; fire protection LERs; fire fighting capabilities; fire protection equipment maintenance, inspection and tests and a facility tour.

Results: No unacceptable conditions were identified.

DETAILS

1.0 Persons Contacted

1.1 Boston Edison Company (BECo)

- *K. P. Roberts, Nuclear Operating Manager
- *R. A. Ledgett, Special Assistant to Sr. Vice President, Nuclear
- *P. J. Hamilton, Compliance Management, Group Leader
- *R. E. Grazio, Field Engineering Section Manager
- *R. Wozniak, Fire Protection Group Leader
- *W. M. Sullivan, Sr. Fire Protection Engineer
- *R. Velez, Project Manager
- *R. V. Fairbank, Licensing and Analysis Section Manager

1.2 Nuclear Regulatory Commission (NRC)

- J. Lyash, Resident Inspector
- T. J. Kim, Resident Inspector

*Denotes those present at exit interview.

2.0 Followup of Previous Inspection Findings

(Closed) Unresolved Item (86-36-01) Unimplemented Maintenance Work on Degraded Fire Protection Equipment and Excessive Reliance on Fire Watches

The NRC in a review of the Operability and Maintenance of fire protection (FP) systems determined that the licensee did not diligently perform the maintenance and repair work on fire protection equipment. This assessment was made on the basis of a review of the maintenance request (MR) list which identified about 300 unimplemented maintenance requests on fire protection equipment. Some MRs were outstanding since 1983. The licensee in a management meeting with the NRC acknowledged that a problem with maintenance exists and committed to correct it. During this inspection, the inspector reviewed the maintenance request list and determined that only 37 MRs of relatively minor safety significance on fire protection equipment are still outstanding.

The inspector also randomly examined some of the maintenance work performed on various fire protection systems and did not identify any unacceptable conditions. Since the backlog of MR's has been significantly reduced and the repair work performed appears to be adequate, this item is resolved.

With regard to the use of fire watches, the licensee is still relying excessively on fire watches as an interim compensatory measure for degraded fire barriers.

The barrier issue is still an unresolved concern with the NRC and is addressed as such in the write-up of the open unresolved item, 86-36-02, in this report.

(Closed) Unresolved Item (86-36-05) Ineffective Corrective Actions to QA Audit Findings

The NRC identified deficiencies in the licensee's fire protection program which were similar to ones that the licensee's own QA audits had previously identified. The NRC then questioned the effectiveness of the corrective and preventive actions taken by the licensee in response to the QA audit findings. This area was reviewed during NRC inspection 87-38 and found to be satisfactory. This item is administratively closed.

(Open) Unresolved Item (86-36-02) Licensee Event Reports (LERs) Identify Deficiencies in Fire Barriers

The licensee in various LERs identified that some fire barriers were inoperable. The reasons for declaring the barriers inoperable were that either proper surveillance did not take place or that the installation records could not be found, or the barriers appeared degraded to some degree, or that the necessary fire test records for penetration seals could not be found. The licensee established a program to evaluate the barriers, and restore the degraded barriers to operable status.

This program and the actions taken by the licensee are as follows: The plant is divided into eleven (11) fire areas separated by fire walls and floors. Subsequent to identification of the fire barriers concern, the licensee performed a survey of all the barriers (approximately 300) to verify the barrier adequacy.

By performing this survey, the licensee also satisfied the Fire Barrier Technical Specification (TS) surveillance requirements. During this survey, the licensee made sketches of each fire barrier and on the sketches identified all of the barrier penetrations to facilitate future T.S. surveillances. The survey determined that the barriers have approximately 5200 penetrations. As a result of this survey, the licensee determined that about 3,900 of these penetrations did not meet the acceptance criteria.

The following table summarizes the status of the barriers at the time of the inspection:

No. of fire areas	11
No. of barriers	300
No. of penetrations	5,200
No. of degraded penetrations	3,900
No. of penetration seals that need minor repairs	3,000
No. of penetration seals that need to be replaced	900

*All numbers are approximate.

Of the 900 seals needing replacement, the licensee is proceeding with replacement of 550 and conducting evaluations of the need for 350 of the seals.

With regard to the evaluations, the inspector stated that because of the extensive review time required and because a large number of these evaluations were not performed at the time of the inspection, the licensee must send these evaluations to the Region approximately a month before restart, so that the adequacy of the evaluations can be verified by an in-house regional review. The licensee agreed. The inspector also noted the following conditions with regard to barrier adequacy that need to be resolved with the NRC/NRR prior to restart:

- A) The licensee was granted an exemption by NRR from the 10 CFR 50 Appendix R requirement to provide a fixed suppression system in the control room. The granting of the exemption was partly based on the licensee's assertion that the control room is separated from high risk areas by three hour fire rated barriers. However, the licensee in their current survey of the fire barriers determined that the floor separating the control room from the cable spreading room is not a three hour rated fire barrier because it contains penetrations that do not have a fire rating.

The licensee performed an evaluation of this condition and concluded that since a fire in either the control room or the cable spreading room will require use of the alternate shutdown methods, the floor need not be fire rated. The inspector informed the licensee that since this barrier formed the basis upon which an exemption request was granted, the matter must be resolved with NRR.

- B) The NRC in the Branch Technical Position CMEB 9.5-1 requires that "..... Openings inside conduit larger than four (4) inches in diameter should be sealed at the fire barrier penetration. Openings inside conduit four (4) inches or less in diameter should be sealed on each side of the fire barrier and sealed either at both ends or at the fire barrier with non-combustible material to prevent the passage of smoke and hot gases."

The licensee in Nuclear Engineering Department Work Instruction (NEDWI) 352 outlines the position that for conduits extending three (3) feet from the fire barrier a smoke and hot gas seal need not be installed.

The inspector informed the licensee that since this position is not in agreement with the BTP or the guidance contained in Generic Letter 86-16, the issue must be resolved with NRR prior to restart.

3.0 Background and Scope of Inspection

The NRC in various recent inspections identified deficiencies in the licensee's fire protection program which the licensee committed to address and correct prior to restart. The specific deficiencies were in the areas of the fire brigade training, the maintenance of fire barriers, and the maintenance of fire protection equipment and fire protection staffing.

The purpose of this inspection was to evaluate the licensee's corrective actions in these areas and inspect other portions of the fire protection program to verify that the licensee is maintaining this program in accordance with the applicable licensing commitments and regulatory requirements. The documents reviewed, the scope of review and the inspection findings for each area of the programs reviewed are described in the following sections.

3.1 Review of Maintenance to Fire Protection Equipment and Fire Barrier Reports

The inspector reviewed the Maintenance Request List as described in Section 2 of this report and observed the condition of fire protection equipment where repairs were made to verify when possible the quality of the work. Similarly, the inspector reviewed repairs made to the fire barriers. No unacceptable conditions were identified although two issues requiring resolution with NRR were identified as described in Section 2.0 of the report.

3.2 Review of Fire Fighting Capabilities

The inspector reviewed the training given to the fire fighters, conducted interviews with fire fighters and the fire fighters' instructor, inspected fire fighting gear, reviewed individual fire fighter training files, miscellaneous lesson plans and drills to evaluate the licensee's onsite capability to fight fires.

The scope of the review was to:

- a. verify that all personnel designated to take part in fire emergencies are trained in these actions and in the overall emergency plan;

- b. verify that the licensee has established a training program that ensures the capability to fight potential fires;
- c. verify that the licensee's training program consists of initial classroom instruction followed by periodic classroom instructions, fire fighting practices and fire drills;
- d. verify that the licensee had developed fire fighting strategies for fires in all safety related areas and in areas in which a fire could present a hazard to safety related equipment; and,
- e. verify that the fire fighters can fight plant fires with the equipment available.

No unacceptable conditions were identified.

The licensee, in explaining the fire fighter training program, stated that a state certified instructor has been recently hired to be on site to conduct the brigade training. Prior to joining the BECO organization, the individual was an instructor at the Massachusetts Fire Academy and a lieutenant in the local fire department. This addition enhances the plant fire protection program.

The training records review identified that the licensee has about 80 fire fighters who have completed all required training and they are eligible to be members of the fire brigade.

3.3 Fire Protection Program Staffing

The licensee's current fire protection engineering activities are numerous resulting from F.P. system upgrade modifications, maintenance and repair activities and efforts to achieve full compliance with the regulatory requirements, namely 10 CFR 50, Appendix R. Because of the magnitude of the F.P. work, the inspector reviewed the site engineering and corporate staffing levels that support this effort.

The licensee makes extensive use of outside consultants in the F.P. area to supplement and assist their own engineering staff. The corporate Appendix R effort utilizes eighteen (18) "outside consultants", engineers and technicians.

The fire protection activities at the site are carried out by the site fire protection group consisting of six persons, engineers and technicians. Four of these positions are currently occupied by qualified contract (temporary) personnel, but the licensee stated that these positions are authorized to be permanent and the hiring process for these positions has begun.

The inspector did not identify any unacceptable conditions with the staffing levels or personnel qualifications.

3.4 Review of Equipment Maintenance Inspection and Tests

The inspector reviewed the following documents to determine whether the licensee is implementing the maintenance inspection and testing requirements of the plant fire protection equipment:

- Procedure 8.B.19A, Fire protection equipment inspection
- " 8.A.6A, Fire extinguisher quick check monthly inspection
- " 8.B.20A, Monthly fire protection checklist
- " 8.B.1C, Fire pump shutoff valve position inspection checklist
- Procedure 8.B.1A, Weekly fire pump test checklist
- " 8.B.3.1A, Interior fire hose stations and cabinets monthly inspection checklist
- Procedure 8.B.21A, Emergency lighting unit test
- " 8.B.4E, Smoke and heat detector supervised circuit checklist
- Procedure 8.B.22A, Halon system visual inspection

The above documents were reviewed to verify compliance with the T.S. and other established procedures.

No unacceptable conditions were identified.

3.5 Facility Tour

The inspector toured the plant and reviewed miscellaneous fire suppression and fire detection systems. This included fire pumps, fire water piping and distribution systems, post indicator valves, hydrants and the contents of hose houses. The inspector also toured accessible vital and non-vital plant areas and examined fire detection and alarm systems, automatic and manual fixed suppression systems, interior hose stations, fire barrier penetration seals, and fire doors. The inspector observed general plant housekeeping condition and randomly checked tags or portable extinguishers for evidence of periodic inspections. No deterioration of equipment was noted. The inspection tags attached to extinguishers indicated that monthly inspections were performed. The tour included a walkdown of the Halon Test procedure in the Cable Spreading Room to assess procedure feasibility and accuracy. The plant tour identified one minor deficiency.

The inspector observed that the spanner wrench of hose station TB-28-06 was missing. This is believed to be an isolated incident with no safety significance.

No other unacceptable conditions were identified.

4.0 Unresolved Items

Unresolved items are matters about which more information is required to ascertain whether they are acceptable items, violations or deviations. One unresolved item updated during this inspection is discussed in Section 2.

5.0 Exit Interview

The inspector met with licensee representatives (see Section 1.0 for attendees) at the conclusion of the inspection on September 3, 1987. The inspector summarized the scope and findings of the inspection at that time. The inspector also confirmed with the licensee that the report will not contain any proprietary information. The licensee agreed that the inspection report may be placed in the Public Document Room without prior licensee review for proprietary information (10 CFR 2.790).

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