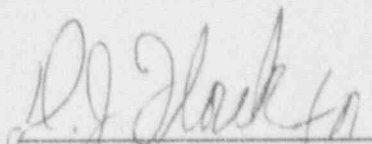


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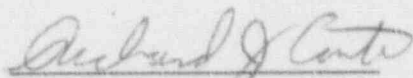
REPORT NO. 93-01  
DOCKET NO. 50-293  
LICENSE NO. DPR-35  
LICENSEE: Boston Edison Company  
RFD #1 Rocky Hill Road  
Plymouth, Massachusetts 02360  
FACILITY: Pilgrim Nuclear Power Station  
INSPECTION AT: Plymouth, Massachusetts  
INSPECTION DATES: January 11 - 14, 1993  
ACCOMPANIED BY: A. Burritt, Operations Engineer

LEAD OPERATOR:

  
C. Sisco, Operations Engineer

2/3/93  
Date

APPROVED BY:

  
Richard J. Conte, Chief  
BWR Section, Operations Branch  
Division of Reactor Safety

2/3/93  
Date

INSPECTION SUMMARY: Inspection conducted January 11 - 14, 1992 (Inspection Report 50-293/93-01)

**AREAS INSPECTED:** A regional initiative safety inspection was conducted of the licensee's EOPs using Inspection Procedure 42001 to include an assessment of the technical adequacy of the EOPs; the EOP review, revision, and approval process; the QA involvement in the EOP program; the operator training in EOPs. Further, plant housekeeping was assessed with particular focus on the back panels in the main control room.

**RESULTS:** Based on this sampling review, the EOPs are generally technically accurate and are written and formatted in accordance with licensee's procedures. The ease of use and review of the engineering calculations that support the EOPs is a strength of the licensee's EOP program. The licensee's controls to ensure significant plant problems are made known

to the operating staff in a timely manner were weak. The review, revision and approval process for EOP Support procedures was weak in that they are not reviewed and approved in the same manner as the EOPs. These weak areas were left unresolved (section 3).

The inspector determined that QA auditors routinely perform independent, indepth reviews of the EOP program. The lessons plans used to instruct plant operators in the use of the EOPs are well written and are consistent with the PSTG and EOPs. The EOPs are useable by the operating crew and the crew understands how to perform the EOPs.

The licensee took prompt corrective actions to improve housekeeping in the back panels of the main control room.

## DETAILS

### 1.0 INTRODUCTION AND OVERVIEW

This regional initiative safety inspection reviewed for adequacy the facility's emergency operating procedures (EOPs) and supporting development documentation, implementing procedures, and training. The requirements for the inspector and related guidance can be found in NRC Inspection Manual Procedure (IP 42001). This IP was developed as a result of special inspections conducted to verify completion of a TMI-2 Accident task action item (TAP) No. I.C.1, "Guidance for the Evaluation and Development of Procedures for Transients and Accidents" (NUREG-0737 and Supplement 1).

### 2.0 TECHNICAL ADEQUACY OF EOPS

#### Scope

The scope of the inspection was to determine that the EOPs are consistent with the NRC endorsed accident mitigation strategies. In addition, the inspection was to determine if the licensee has procedural controls in place to maintain the technical basis, format, verification and validation of the EOPs.

The inspector reviewed the licensee's current Plant Specific Technical Guidelines (PSTGs) which are used to develop the EOPs.

#### Findings

The inspector determined the PSTG to be complete, well documented, and generally technically accurate. The inspector reviewed selected engineering calculations which are used as the bases of various setpoints within the EOPs. The inspector determined the engineering calculations to be consistent with the PSTG. The engineering calculations are contained within a single document which makes for ease of use and review. The PSTG and supporting calculations are controlled by procedure 6.08, "Maintaining The Plant Specific Technical Guidelines For EOPs."

The inspector reviewed the EOPs and determined the procedures are consistent with the PSTG and engineering calculations except as described in section 3.0 of this report. The EOPs are controlled by procedures 1.3.4-13, "EOP Verification Program," and 1.3.4-14, "EOP Validation Program."

The inspector determined the EOPs are written and formatted in accordance with procedure 1.3.4-10 "Writers Guide For Emergency Operating Procedures."

## Conclusion

Based on this sampling review, the EOPs are generally technically accurate and are written and formatted in accordance with licensee's procedures. The ease of use and review of the engineering calculations that support the EOPs is a strength of the licensee's EOP program.

### 3.0 EOP REVIEW, REVISION AND APPROVAL PROCESS

#### Scope

The scope of the inspection was to determine whether significant changes to the licensee's EOPs impact plant operations and to verify that the licensee's administrative procedures adequately govern the review, revision, and approval process of the EOPs and support procedures.

#### Findings

The inspector reviewed a Quality Assurance department audit (Report No. 92-06) conducted in August 1992 that identified an error in the EOP support calculations. The error concerned the incorrect elevation of the High Pressure Coolant Injection (HPCI) system exhaust line inside the pressure suppression chamber. The calculation incorrectly determined the elevation of the HPCI system exhaust line inside the pressure suppression chamber to be 82.5 ft. The correct elevation is 92.5 ft. This error was evaluated by the Nuclear Engineering Department to be of little safety significance, but this basis was not documented by the licensee. The licensee also reviewed the supporting calculations and verified that no other errors were evident. The licensee representatives concluded the cause of this error to have been a miscalculation made while using station drawings.

The licensee initiated a Procedure Change Notice to revise the EOPs to include the 92.5 ft. setpoint, which included a safety evaluation, a Plant Deficiency Report to revise the support calculations, and scheduled the completion of the necessary revisions by the end of refueling outage 9, scheduled for April 1993.

Based on a review of the licensee's safety evaluation, the inspector concluded that the change did have some safety significance. Although the EOPs with the error would still assure containment integrity, containment pressures would unnecessarily increase to about 18 psig for some accident scenarios.

The inspector further noted that the plant operating staff had not been made aware of this significant plant problem. When brought to the licensee's attention, the licensee's immediate corrective actions were to brief the on-shift operating staff of the problem, and issue a standing order to all plant operators requiring that the HPCI system be secured at a pressure suppression chamber water level of 95 ft. In addition, all other EOP related pending

Procedure Change Notices and Deficiency Reports were reviewed by the licensee to verify that no other significant problems remained. The licensee conducted a critique (No. 93-013) to review the events relating to the management of this significant problem. In addition, the licensee issued Problem Report No. 93.9009.

Based on a review of the process used to assess QA audit report findings, the inspector concluded that licensee's process of promptly notifying plant operating staff of significant plant problems was weak. Licensee representatives agreed to review this process. This area is an unresolved pending completion of licensee action as noted above and subsequent NRC staff review (293/93-01-01).

The inspector audited the review and revision process of the EOP support procedures. The inspector determined the review and revision process of EOP support procedures differs from that of the EOPs. The EOP support procedures are reviewed and revised as plant operating procedures. The EOPs are reviewed and revised in accordance with the EOP program requirements. A notable difference in these processes is the procedural field verification and validation that occurs for each of the EOPs.

The EOP support procedures contain some of the accident mitigation strategies that are defined in the PSTG and the EOPs. Therefore, EOP support procedures should be clearly identified as EOPs and receive the same level of review and revision as the EOPs. For example, the following deficiencies in EOP support procedures could have been identified by an EOP type validation and verification level of review and approval.

As one example of this problem, two EOP support procedures are not transitioned into from the EOPs. These procedures are:

- Procedure 5.3.21, "Bypassing Selected Interlocks," Attachment 4, "HPCI Low RPV Pressure Isolation"
- Procedure 5.3.26, "RPV Injection During Emergencies," Section 2.1, "Fire Water Crosstied to Feedwater."

Another example of this problem was found during the walkdown of EOP Support procedure 5.3.21, "Bypassing Selected Interlocks." The inspector determined that individual jumpers are not provided and labeled for each of the evolutions described in the procedure. In addition, the electrical jumpers that are provided are equipped with various sized alligator clips that are to be attached to pan head screws. This type of an electrical connection may not provide a secure method to install a necessary electrical bypass.

The review, revision and approval process for EOP support procedures is not at the level as that of the EOPs. Licensee representatives agreed to review this area. This area is an unresolved pending completion of licensee action as noted above and subsequent NRC staff review (293/93-01-02).

### **Conclusion**

The licensee's controls to ensure significant plant problems are made known to the operating staff in a timely manner is weak. The review, revision and approval process for EOP Support procedures was weak in that they are not reviewed and approved in the same manner as the EOPs.

## **4.0 QUALITY ASSURANCE INVOLVEMENT IN THE EOP PROGRAM**

### **Scope**

The scope of the inspection was to verify that the licensee conducts independent quality assurance (QA) audits of the EOP program. The inspector reviewed two QA audit reports and conducted an interview with a Senior QA staff auditor.

### **Findings**

The QA audits that have been conducted were in-depth reviews of the licensee's program. This was particularly evident as noted above by the calculation error identified in Audit No. 92-80. In addition, future QA audits are scheduled as a routine QA activity. From a review of these records and interviews, the inspector determined that the QA involvement in the EOP program is a strength of the licensee's program.

### **Conclusion**

The inspector determined that QA auditors perform independent, in depth reviews of the EOP program. These reviews are scheduled to continue on a routine basis.

## **5.0 PLANT OPERATOR TRAINING**

### **Scope**

The scope of the inspection was to verify, primarily based on performance in the simulator, that the control room staff understands how to implement the EOPs and are aware of recent changes to the procedures.

## Findings

The inspector reviewed lesson plans used to instruct the plant operating staff in the use of EOPs. The inspector determined that the lesson plans were well written and technically consistent with the PSTG and the EOPs.

The inspector conducted two operating scenarios using the plant referenced simulator. A plant operating crew, in their training cycle, demonstrated their abilities to carry out the procedural requirements of the EOPs during plant upset conditions. Following each scenario, the inspector conducted in depth discussions with the operating crew.

Based on interviews conducted and observed performance of the selected operating crew, the inspector determined the crew understands how to perform the EOPs. The inspector also determined that the crew was knowledgeable in the requirement to secure the HPCI system at a suppression chamber water level of 95 ft.

## Conclusion

The lessons plans used to instruct plant operators in the use of the EOPs are well written and are consistent with the PSTG and EOPs. The EOPs are useable by the operating crew and the crew understands how to perform the EOPs. Also, the crew is aware of recent changes to the EOPs.

## 6.0 OTHER OBSERVATIONS

The inspector conducted a walkthrough inspection of the back panels in the main control room. The inspector determined that housekeeping was poor in the panels inspected. The floor areas inside the back panels contained miscellaneous small nuts, screws, and discarded instrument brackets. The licensee took prompt corrective actions to improve housekeeping in the back panels of the main control room.

## 7.0 EXIT MEETING

An exit meeting was conducted at the Chiltonville Training Center on January 11, 1993. The inspector discussed the findings of the inspection with those individuals identified below. The licensee committed to reviewing the EOP support procedure issues and control those procedures as EOPs.

The following personnel were contacted during the inspection.

### Boston Edison Company

\*E. S. Kraft, Jr.

Vice-President, Nuclear Operations

\*L. Schmeling

Plant Manager

**Boston Edison Company**

*T. Sullivan	Operations Section Manager
T. Trepanier	Chief Operating Engineer
*N. Desmond	Compliance Division Manager
*R. Cannon	Sr. Compliance Engineer
D. Long	Safety Analysis Engineer
*M. Williams	Senior QA Engineer
J. Gerety	FS & MC Division Manager
J. Alexander	Training Manager
*T. Swan	Operations Training Supervisor
A. Shiever	Operator Training Supervisor
*E. Olson	Training Specialist
*W. Rothert	General Manager, Technical

**U.S. Nuclear Regulatory Commission**

*C. Sisco	Operations Engineer
*A. Burritt	Operations Engineer

\* Denotes those present at the exit meeting on January 14, 1993.