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U.S. Nuclear Regulatory Commission  
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**Completion of Reply to Notice of Violation 97-80-01**

Boston Edison Company (BECo) provided an initial response to Notice of Violation 97-80-01 by letter dated October 17, 1997, (BECo 2.97.104). That response provided the reasons for the specific procedural violations cited by the NRC and the corrective actions taken and results achieved. A sixty day extension was requested in order to conduct an in-depth root cause of the overall issue of procedural compliance at Pilgrim Station and thereby determine meaningful and effective corrective actions to preclude recurrence. A multi-discipline root cause team was formed to analyze the procedural compliance data contained in the Pilgrim Station corrective action data base, assess root cause, correlate the relationship to the previous and current procedural compliance corrective action activities, and recommend comprehensive solutions. A discussion of the team's findings and Pilgrim's corrective actions to preclude recurrence are enclosed.

This letter describes the following corrective actions to preclude recurrence:

- A 1998 organization goal for addressing procedure adherence will be developed and individual department tasks for meeting the goal will also be developed.
- Establish a cross functional team for improving procedure structure and content.
- Managers will be updated on the overall broad procedural compliance issues and with issues that may be unique to their area of oversight.



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Details of the activities to be undertaken to implement these corrective actions are described in the enclosure.

Should you have any questions or require further clarification, please do not hesitate to contact me.

*L. J. Olivier*  
for L. J. Olivier

Enclosure  
Completion of Reply to Notice of Violation 97-80-01

cc w/encl.

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## Enclosure

### Completion of Reply to Notice of Violation 97-80-01

On September 17, 1997, the NRC issued the 40500 team inspection results of the Pilgrim Station corrective action processes (NRC IR 97-80). The NRC identified three specific issues relating to procedural compliance at Pilgrim Station that became NRC Notice of Violation (NOV) 97-80-01. Boston Edison Company (BECo) provided an initial response by letter dated October 17, 1997. In this response, the reasons for each of the instances of procedural noncompliance were addressed along with the specific corrective actions taken or planned for each instance. A sixty day extension to determine corrective actions to preclude recurrence was requested and granted. The extension was needed to conduct an in-depth root cause of the broader issue of procedural usage and why noncompliance with procedures remains an issue at Pilgrim Station.

A multi-discipline root cause team was formed to analyze the procedural compliance data contained in the Pilgrim Station corrective action data base, assess root cause, correlate the relationship to the previous and current procedural compliance corrective action activities, and recommend comprehensive solutions. The root cause analysis findings and corrective actions to preclude recurrence are presented below.

#### Findings

The corrective action program (CAP) information data base was reviewed to determine the extent of organizational procedure non-adherence. These data show procedure non-adherence exists in every work unit, at all job levels in the organization. Administrative tasks are cited three times more frequently than technical tasks.

A defense of quality, barrier matrix was developed to determine the barriers that are in place to ensure procedure compliance. The potential weaknesses of the barriers and the probability of failure of any of the barriers were assessed and reconciled to the data base. It was concluded the barriers that are most likely to be weak or potentially fail are management expectations and standards, supervisory oversight, procedure complexity and construction, and time and resources to implement jobs correctly.

A survey of the organization corroborated the barrier analysis conclusions. This survey probed for agreement or disagreement on each of the proposed barriers and solicited free form feedback. As a feedback question, the survey solicited an opinion on why procedure non-compliance events occur and what management can do to correct the problem.

## Root Cause

Two primary causes have been identified for procedure non-adherences at Pilgrim.

- The structure and content of procedures are complex and inhibit performing tasks in a timely and complete manner. Problem resolutions via procedural additions and/or repairs over the years have contributed to many of the cumbersome requirements.
- Manager and supervisor oversight efforts to resolve procedure adherence issues have been generally ineffective. Although action plans have been formulated to resolve the problem, they were not effective nor validated to ensure the actions were solving the problem. Also, the emphasis on following procedures is not consistently carried through using coaching on implementation of assigned tasks nor is there sufficient accountability for procedure non-compliance. This provides an attitude of acceptance toward procedure non-compliance.

Several ancillary and contributing causes were also identified. These ranged from the hierarchy of the procedure system (Policies, Nuclear Organization Procedures (NOPs), Procedures, and Work Instructions) to training on updates and to perceived time pressure. While these concerns are related to the problem, they are of a contributing nature, generally limited in scope, and not the root of the problem. However, while the effort to correct the root causes is the major focus of the corrective actions to preclude recurrence, elements of the contributing causes are included as part of the overall corrective action plan required to preclude recurrence. The contributing causes are:

- The content of procedures for new and revised versions is sometimes ineffectively communicated to the users.
- A time/pressure perception exists in some disciplines when performing tasks.
- End-user input is not universally used in procedure development and revision.

## Corrective Actions to Preclude Recurrence (CATPR)

The procedure non-adherence problem is the result of two primary root causes, a complex and confusing procedure structure, and ineffective oversight and corrective action validation at the manager and supervisory level. The corrective actions to preclude recurrence, therefore, are structured to address these causes and build on past corrective actions already taken or that are still in progress.

## CATPR 1

A 1998 organization goal will be established for improvement in procedure adherence. The goal will be developed and instituted by February 1, 1998.

The following tasks will be required for each department as part of this goal implementation:

- Include procedure adherence as a required focus for the corrective action program (CAP) quarterly self-assessment program. A report of department procedure compliance and improvements experienced during the quarter will be required. The reports shall provide details of coaching and accountability actions. The reports will continue until satisfactory performance thresholds are achieved.
- Establish focus themes for procedure adherence and improvement meetings to be held on a bi-monthly frequency. These meetings will follow the format similar to that of department safety meetings with procedural issues selected for discussion as case studies based on department-specific issues.
- Department performance matrices will be developed and used in evaluating long term progress or possible recurrence of procedure non-compliance problems. The matrices will also be used by the managers to apply accountability and ownership.

## CATPR 2

Some improvements were made from the previous effort to integrate the high level policies and nuclear organization procedures (NOPs). This work needs to continue. Therefore, a cross functional and multi-disciplined team will be established to continue the effort to improve procedure structure and content. The team shall specify what content is required in procedures and establish a definition of procedure compliance. Integral to this effort will be the task to work with department managers to cancel, combine, consolidate and re-write procedures. The extent of input from the end users for the revised procedures will be determined by the respective department manager. Team selection will be from all groups and all levels.

The team will take importance of the procedure relative to safety, reliable plant operation, and the incidences of procedural non-compliances into account when establishing the priority of procedures to be worked through this effort.

This effort will complete by June 30, 1998.

### CATPR 3

Because of the varying nature of department roles and responsibilities, the type of procedure non-adherence differs for each department. Therefore, in addition to the broader organizational corrective actions to be taken, department-specific corrective actions will need to be determined and implemented at the department level. Therefore, the root cause team leader will explain to each group and department manager, the CAP data base trends, the survey results, and the results of the root cause analysis. This will familiarize the managers with the overall broad procedural compliance issues and with issues that may be unique to their particular area of oversight. This activity will be completed by March 10, 1998.

#### Discussion of Past Corrective Actions

Although previous corrective actions have not resolved the problem of procedure compliance, these past activities were correctly focused albeit not in sufficient detail. Our evaluation of these activities concluded most of the actions have been effective in resolving various aspects of the problem but suffered from a lack of cohesive programmatic assessment for determining how appropriate and effective the activities were for problem resolution. Thus, the activities were not necessarily ensuring resolution of the problem in total.

The following is a summary of some of the past and current corrective actions taken.

- Management expectations and personal accountability were discussed in small group meetings (in January and again in September 1997) with all personnel.
- Procedural improvements were made on known problem procedures.
- Management oversight in the field was increased.
- An error rate performance indicator was developed.
- QA oversight was increased.
- An error matrix was developed and is maintained by the maintenance department.
- A monthly senior managers audit program was established.
- Root cause assessment improvements were made.
- Performance monitoring and trending improvements were made.
- Failure Prevention Institute (FPI) training was provided for conducting more comprehensive root cause assessments.
- The worker level self assessment process was strengthened with increased management participation and oversight.
- An Independent Oversight Team (IOT) was formed.
- Monthly human performance reports were developed.
- A culture index was conducted.
- The management oversight program was focused on conducting observations of performance related activities.
- Enhanced problem reporting was established.
- A real-time behavior-based human error performance monitoring program was developed.
- A procedure change process redesign effort was established. \*

- The Mission Organization and Policies (MOPS), Nuclear Organization Procedures (NOPs), and Administrative procedures were reviewed, revised and consolidated.
- The QA deficiency report (DR) process was consolidated into the problem report (PR) process.
- The modification process was redesigned. (Completion of the procedure revisions and personnel training is expected to be completed on or before December 31, 1997.)
- Root cause analysis and human error prevention training were expanded.

\* A procedure change team has re-written the procedure change process. The revised process will provide for a broader class of field changes that allows work to continue without waiting for the full procedure change and issue process to be completed.

Please note, however, current restrictive language in the Administrative Section of the PNPS Technical Specifications needs to be revised to allow this field change procedure revision capability to take place. The needed proposed Technical Specification changes were submitted for NRC review and approval on September 19, 1997, (BEC letter 2.97.096). Based on NRC feedback, this change is expected to be approved near the end of the first quarter 1998.

The procedure change team reviewed the option of breaking out the change portion of the process redesign and issuing other portions; however, the team feels it is best implemented in total. Therefore, this process revision has been placed on hold until approval of the Technical Specification change request.

### Summary

We are committed to the corrective action process enhancements introduced at Pilgrim in the 1996 timeframe. The problem reporting thresholds have been sufficiently lowered, and the organization is becoming more comfortable in its use for recognizing and resolving problems.

However, we recognize that more attention is needed in the oversight of emerging problem trends highlighted by the corrective action program. In particular, the effectiveness of corrective actions taken or being taken requires continuous evaluation to ensure the problem is being resolved. In the case of procedural adherence, although myriad action plans to resolve the problem were developed, each met with limited success. The activities were managed at the task level by different individuals but were not being measured in a total programmatic sense for effectiveness at resolving the problem of procedural adherence across the station. Therefore, the corrective actions to preclude recurrence are assigned with actions at both the Vice President Nuclear/Station Director level and department manager/supervisor level. The Vice President Nuclear/Station Director will keep the issue highly visible, while the department managers/supervisors resolve the problems at the department level. Monitoring of the problem will continue at all levels of management until evidence shows the problem to be resolved.