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July 5, 1986
PY-CEI/OIE-0215 L

MURRAY R. EDELMAN
SR. VICE PRESIDENT
NUCLEAR

Mr. Charles E. Norelius, Director
Division of Reactor Projects
U.S. Nuclear Regulatory Commission
799 Roosevelt Road
Glen Ellyn, IL. 60137

Perry Nuclear Power Plant
Docket No. 50-440
50-440/86011 Noncompliance Response

Dear Mr. Norelius:

This letter acknowledges receipt of Inspection Report 50-440/86011 attached to your letter dated June 6, 1986. The report identifies areas examined by Messrs. J. A. Grobe, K. A. Connaughton and J. W. McCormick-Barger from April 9 through May 12, 1986 at Perry Nuclear Power Plant, Unit 1.

Our response to the Notice of Violation contained within your report is included as Attachment 1. Attachment 2 provides our response to concerns raised in your cover letter concerning corrective actions to preclude future occurrences of personnel errors. As you will notice from our response, prompt senior management attention has been taken to correct these situations and to preclude similar occurrences in the future. Our present schedule does not appear to be a contributor to the types of situations identified in your report. We believe the actions taken and the additional training provided will cause the number of these occurrences to diminish rapidly as we proceed with startup.

This response has been submitted to you within the required thirty days of the date of your Notice. If you have any additional questions, please feel free to contact me.

Very truly yours,
M. R. Edelman
Murray R. Edelman
Senior Vice President
Nuclear Group

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Attachment

cc: Jay Silberg, Esq.
John Stefano (2)
J. Grobe
J. Keppler
Document Control Desk
Washington, D.C.

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1. Restatement of Violation

Perry Unit 1 Technical Specification 3.3.7.10 requires, in part, that with the Unit 1 Vent Radiation Monitor Noble Gas Activity Monitor inoperable, except as the result of a nonconservative setpoint, immediately suspend containment/drywell purge and vent.

Contrary to the above, on April 13, 1986, as a result of a planned maintenance activity the Plant Vent Radiation Monitor Noble Gas Activity Monitor was rendered inoperable for reasons other than a nonconservative setpoint for a period of approximately three and one-half hours without suspension of containment/drywell purge operations.

This is a Severity Level IV violation.

Corrective Steps Which Have Been Taken and Results Achieved

This event resulted from a misunderstanding of system design and failure to properly respond to alarm indications. In preparing the tagout to perform preventive maintenance on the Unit 2 Plant Vent Radiation Monitor, the Unit Supervisor (US) failed to realize that a common breaker supplied power to both the Unit 1 and Unit 2 Plant Vent Radiation Monitors. Tagging out this breaker, results in a loss of power to both monitors. The US also incorrectly assumed that only the sample pump for the isokinetic probe was being tagged out. The sample analysis blower, a Technical Specification required component was actually tagged out. The Repetitive Task Card associated with this maintenance activity also failed to identify this as a Technical Specification related activity.

After hanging the tags and opening the breaker associated with the Unit 1 and Unit 2 Plant Vent Radiation Monitors, the Unit 1 Plant Vent Air Radiation Monitor Flow Low Alarm was actuated. Shift operators silenced the alarm but failed to take further action as called for in the Alarm Response Instruction. As a result, containment/drywell purging was not stopped as required by Technical Specifications. This situation existed for approximately 3.5 hours until the tags were cleared and the breaker closed. The Unit Supervisor on the next shift, while reviewing the cleared tags, identified the problem and initiated a condition report which was followed by LER 86-004.

Shift operators have received additional training on the Airborne Radiation Monitoring System (ABRM) operating characteristics, design and electrical diagrams. This training also reinforced the need to adhere to Alarm Response Instructions. The Repetitive Task Cards associated with radioactive effluent systems were reviewed, and a note was added to the cards to indicate their relationship to Technical Specifications.

Corrective Steps Which Will Be Taken to Prevent Recurrence

In addition to the action already taken, the System Operating Instruction for the ABRM system, SOI-D17, will be reviewed and appropriate changes made to clarify ABRM system operability requirements.

Date of Full Compliance

Full Compliance with Technical Specification 3.3.7.10 was achieved when the sample analysis blower was returned to service. SOI-D17, "Airborne Radiation Monitoring System" will be reviewed and revised as appropriate by July 21, 1986.

2. Restatement of Violation

Perry Unit 1 Technical Specification 3.6.1.1.2 requires, in part, that Primary Containment Integrity be maintained during core alterations.

Contrary to the above, Primary Containment Integrity was not maintained during core alterations conducted between:

- a. April 14 and 23, 1986, in that automatic containment isolation valve 1G33-F004 was open and inoperable due to an improperly processed facility modification while redundant automatic isolation valve 1G33-F001 was not closed and deactivated in its closed position.
- b. March 12 and April 30, 1986, in that redundant manual containment isolation valves 1P54-F726 and 1P54-F727 were not closed.

This is a Severity Level IV violation.

2.a) Corrective Steps Which Have Been Taken and Results Achieved

On March 11, 1986, an Instrument and Control Test Support Engineer (I&C TSE) performed an as-built walkdown (visual verification) of an electrical panel using an out-of-date drawing (dated January 30, 1986). The TSE observed a jumper in the panel that was not shown on the out-of-date print. The TSE assumed the jumper in the panel was a spare and initiated a Work Order to remove it. The jumper was removed on April 14, 1986. The G33 system engineer was not contacted prior to removal of this jumper, nor was the work order process followed correctly in that an authorizing design change document was not utilized.

On April 21, 1986, a review of the Work Order which removed the jumper revealed that the jumper had originally been installed correctly using approved procedures to supply power to the closing circuit of valve G33-F004. The Work Order was returned to the work planner, but no other corrective actions were taken at that time. On April 23, 1986 during routine surveillance testing, valve G33-F004 failed to close as required.

Immediately upon failure of G33-F004 to close, operations personnel closed and tagged out valve G33-F001, the inboard isolation valve which restored containment integrity. A condition report was initiated followed by LER-86-007. The jumper was replaced, using approved procedures by April 25, 1986.

I&C personnel have been counseled regarding the necessity for researching outstanding design changes, the requirements for using the latest revision of drawings in the field and for ensuring that identified discrepancies receive appropriate engineering evaluation. I&C planners have been counseled regarding the importance of using proper engineering documents and of contacting the appropriate System Engineer to establish retest requirements when planning Work Orders. Procedure TPI-24, "As-Built Drawings", has been revised to require formal engineering review of discrepancies identified during walkdowns. System Engineers are being trained concerning the requirements for identifying and initiating immediate corrective action following discovery of design deficiencies.

The appropriate Operations Section personnel have been instructed as to their responsibility for ensuring that design change documents accompany Work Orders. Similar retraining is being conducted for Quality Assurance Section personnel. Procedure PAP-0607. "Perry Plant Drawing Control," which was recently revised, stresses the responsibility of all individuals to assure that only the latest revision of any drawing is used for testing, verification or component manipulation. It also states that "Each Work Order being worked shall be accompanied by a Controlled Copy of the Design Change Package (DCP)."

Corrective Steps Which Will Be Taken to Prevent Recurrence

In addition to the steps already taken, the Nuclear Quality Assurance Department is in the process of conducting an audit of the As-Built Walkdown Program for Electrical Elementary Diagrams and Electrical Interconnection Wiring Diagrams to verify appropriate design configuration control.

Date of Full Compliance

Full compliance with Technical Specification 3.6.1.1.2 was met when valve G33-F001 was closed and tagged out on April 23, 1986. The NQAD audit will be completed by August 1, 1986. Training will be completed by August 1, 1986.

2.b) Corrective Steps Which Have Been Taken and Results Achieved

On April 30, 1986, shift operators discovered that the containment fire hose reel inboard/outboard supply isolation valves were in the open position. These valves are required to be closed during core alterations in accordance with Technical Specification 3.6.1.1.2 for primary containment integrity. Investigation revealed that the valves had been opened prior to beginning core alterations and that shift operators had neglected to initiate proper administrative controls to track their positions. Additionally, review of completed valve lineups during the interval March 21, 1986 - April 30, 1986 failed to identify this error.

The immediate corrective action upon identification of this problem was to close the subject valves. A condition report was initiated followed by LER 86-008. Shift operators have been retrained concerning Technical Specification requirements for containment integrity, the surveillance test control program and the Fire Protection System, System Operating Instruction (SOI). Shift personnel directly involved in the event have been counseled regarding their responsibility to properly review SVI acceptance criteria (including valve lineups) and on the need to initiate the necessary administrative controls when Technical Specification related equipment is involved.

Corrective Steps Which Will Be Taken to Prevent Recurrence

As described above, all corrective actions have been taken.

Date of Full Compliance

Full compliance with Technical Specification 3.6.4.1.2 was achieved when the inboard/outboard supply isolation valves were closed on April 30, 1986.

3. Restatement of Violation

Perry Unit 1 Operating License Condition C.(6) requires implementation of the licensee's approved fire protection program.

The licensee's approved fire protection program as implemented by Plant Administrative Procedure (PAP)-1923 requires, in part, that compensatory measures be taken for inoperable automatic fire suppression equipment protecting the diesel generators (when the diesel generators are required operable) and for inoperable manual hose reels protecting areas of the control complex.

Contrary to the above, compensatory measures were not taken while the Control Complex and Diesel Generator Building CO₂ Systems were inoperable between April 26 and May 7, 1986.

Corrective Steps Which Have Been Taken and Results Achieved

On April 7, 1986 shift operators authorized a tagout to tag closed the CO₂ suppression control valve OP54-F5622 to prevent discharge of CO₂ during maintenance on CO₂ control panels. On the same day, a second tagout which tagged additional CO₂ system valves, was written to isolate the CO₂ hose reels for maintenance. Both tagouts impaired CO₂ fire protection capability to the Diesel Generator Building and isolated the CO₂ supply to the fire hose reels in the Control Complex Building. Due to these impairments, appropriate compensatory measures were taken.

Work on the CO₂ control panels was completed on April 8, 1986, the first tagout was cleared and the tags were removed. Concerned with the safety of the personnel still performing maintenance on the CO₂ hose reel, the Unit Supervisor (US) decided to leave valve OP54-F5622 in the closed position and to tag it closed under the remaining tagout. The US did not, however, subsequently modify the existing tagout. Maintenance on the CO₂ hose reels was completed on April 26, 1986 and the second tagout was cleared. The tags were removed and all valves listed on the tagout were restored to their proper positions. Since OP54-F5622 had not been added to the second tagout, it was not repositioned and therefore remained in the closed position.

On May 7, another tagout was initiated and compensatory measures taken to again work on the CO₂ panels. While hanging the tag on OP54-F5622, operators discovered the valve already to be in the closed position. Compensatory measures remained in effect until the valve was again opened. A condition report was written, followed by LER 86-010. Although this impairment did not adversely affect the ability of the plant to achieve and maintain safe shutdown, it was a violation of the tagout procedures and resulted in an uncompensated loss of a supplemental fire protection system.

The Unit Supervisor has been counseled with respect to his responsibilities and the importance of strictly adhering to tagout procedures. This event was also discussed with other control room operators.

Corrective Steps Which Will Be Taken To Prevent Recurrence

All corrective actions have been taken.

Date of Full Compliance

Full compliance with Operating License Condition C.(6) was achieved when control valve OP54-F5622 was opened on May 7, 1986.

Management Initiatives

You requested that we specifically address our program for identification of root cause(s) of the violations and those steps we plan or have already taken to assure prompt and comprehensive corrective action is taken to preclude occurrences involving similar personnel errors. You also requested that we consider the contribution to these occurrences to the ambitious scheduling of work activities requiring the cognizance and support of operating personnel. The following discussion addresses your concerns:

CEI management places utmost importance on the safe and efficient operation of the Perry Nuclear Power Plant. We continually strive to maintain the necessary level of resources and training to ensure the highest quality of operations. As evidenced by our approach to fuel loading activities, all project resources are directed support of operations activities and sufficient time is allowed to complete the necessary work to support each operational milestone. Daily operations overview meetings, which includes the management of all project support elements, are a primary vehicle for operations to ensure project resources are properly focused and the level of activities is one that operations can support. Upper management awareness and attention is focused on both progress of activities, as well as on the type, cause, and corrective action for problems encountered during each work phase. Personnel errors, such as identified in your report, receive immediate attention by all levels of management, for both root cause evaluation as well as ensuring immediate and long-term corrective action is taken to preclude reoccurrence.

Program For Identification of Root Causes

CEI employs several levels of review for identifying and correcting root causes of conditions and events. Conditions or events are documented on Condition Reports (CR), and supplemented by Nonconformance Reports (NR), Action Requests (AR), or Corrective Action Requests (CAR), in accordance with procedures. The procedures associated with these documents require that corrective actions be taken to preclude recurrence. These actions may be specific to the described event and may also reach out into a much broader scope. Condition reports and resulting LER's are reviewed by various levels of management, depending upon the significance of the event. These reviews assure a management overview of the event or condition as well as an analysis of the corrective actions taken.

In addition to specific trending of conditions or events as required by procedures, a significant amount of further management overview of plant events takes place. On a daily basis, a report describing plant status, evolutions and conditions reports generated is distributed to all supervision on the project and upper management. The conditions or events are discussed at a daily operations overview meeting involving all operations support elements. Emerging trends, as identified by similar events or commonality in cause, are assigned to a responsible section for followup corrective action. Other management meetings, including the Plant Operations Review Committee, Nuclear Safety Review Committee, and weekly Nuclear Group Management meetings monitor the plant conditions or events trends and discuss causes and corrective actions.

In addition, the Independent Safety Engineering Group monitors condition report information to define areas for further ISEG investigation and studies. These various mechanisms, both formal, and informal assure management awareness and attention to assure prompt and corrective action is taken to learn from our events and preclude reoccurrence. Finally, an overall project performance monitoring program is under development that will provide corporate and plant management with quantitative, graphical presentation of numerous plant performance trends, including condition reports and LERs. CEI believes that our efforts to date have been useful and have caused significant improvements in our programs. We intend to continue refining our monitoring and corrective action trending efforts to enhance their overall effectiveness.

Steps to Minimize Further Personnel Error Occurrence

Although many of the events which have occurred to date can be attributed to design and equipment problems which have been or are being resolved, several have involved personnel error, and these are being given considerable attention by upper management.

In recent months, CEI has conducted substantial additional training related to work processes, operational activities, and procedural and Technical Specification compliance. Senior management has specifically established a training program to ensure total project awareness of Technical Specification requirements and the need to communicate fully with the Control Room. Specific efforts have been undertaken to enhance the work order process, such as adding an experienced individual to the Maintenance work order process which centralizes the interface between Operations and Maintenance personnel. Special surveillance and assessments have, and will continue to be, performed to identify and correct potential problem areas. Areas assessed to date include Operations, Maintenance, Surveillance and Administrative Controls. Work related procedures and processes have been significantly modified to improve operational phase activities, particularly the tagout procedure and work order procedure.

CEI management has instituted controls to manage and support the number of operator related work activities (design change packages, work orders, etc.) that are processed on a daily basis. As noted in previous discussions we had instituted the Project Work Center (PWC) staffed with an SRO qualified individual, to centralize the control of work and activities that affect the plant. CEI believes that this technique has been beneficial to plant safety and has been helpful in supporting operations control of work activities. CEI will continue to employ our overall approach of monitoring and evaluating performance, enhancing work processes, providing additional training and support resources to minimize occurrences involving similar personnel error. We will make adjustments based upon future operations experiences and event root cause reviews.