



PERRY NUCLEAR POWER PLANT

10 CENTER ROAD
PERRY, OHIO 44081
(216) 259-3737

Mail Address:
P.O. BOX 97
PERRY, OHIO 44081

Donald C. Shelton
SENIOR VICE PRESIDENT
NUCLEAR

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United States Nuclear Regulatory Commission
Document Control Desk
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Perry Nuclear Power Plant
Docket No. 50-440
Reply to a Notice of Violation

Gentlemen:

Attached is the Perry Nuclear Power Plant's reply to the Notice of Violation contained in NRC Inspection Report 50-440/95009 dated January 19, 1996.

If you have questions or require additional information, please contact Mr. James D. Kloosterman, Manager - Regulatory Affairs at (216) 280-5833.

Very truly yours,

A handwritten signature in dark ink, appearing to read 'J. Kloosterman', with a long, sweeping horizontal stroke extending to the right.

JRW:sc

Attachment

cc: NRC Project Manager
NRC Region III
NRC Resident Inspector

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Operating Companies
Cleveland Electric Illuminating
Toledo Edison

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RESPONSE TO NOTICE OF VIOLATION

Violation 95009-01

Restatement of the Violation

10CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," requires that measures be established to assure that conditions adverse to quality, such as failures and deficiencies, are promptly identified and corrected. In the case of significant conditions adverse to quality, the measures shall assure that the cause of the condition is determined and corrective action taken to preclude repetition.

Contrary to the above:

- A. As of December 1, 1995, the significance had not been determined for a condition adverse to quality identified on July 12, 1994, and was not evaluated and promptly corrected. The condition was related to a 10 inch drop in reactor pressure vessel water level that occurred on July 11, 1994, during a shutdown condition. (50-440/95009-01a)
- B. Conditions adverse to quality observed on May 9, 1995, were not formally identified in the corrective action system until November 16, 1995. These were errors in calculations for performance of a safety-related water leg pump that were not promptly evaluated and corrected. (50-440/95009-01b)
- C. Prompt corrective actions were not established for a significant condition adverse to quality discovered on April 1, 1995, for improper assembly of a safety-related tubing compression fitting on an emergency diesel generator lubricating oil system. Thus a recurrence of improper installation of a compression fitting on the safety-related containment and drywell purge system occurred on or about October 31, 1995, and was identified on November 2, 1995. (50-440/95009-01c)

Response

The causes and corrective actions for each example delineated in the violation will be discussed individually, followed by a conclusion which provides an overview of actions that PNPP has taken and will take in the future, to improve Corrective Action Program effectiveness.

Reason for Violation (95009-01a)

This example was previously addressed as Unresolved Item (URI), 50-440/94011-02(DRP), in NRC Inspection Report 94-011 dated September 19, 1994. The URI was written to determine the causes, effects, and safety significance of a sudden decrease in Reactor Pressure Vessel (RPV) level that occurred on July 11, 1994. The July 11, 1994, transient was initiated by an inadvertent isolation of a Residual Heat Removal (RHR) system shutdown cooling isolation valve during post maintenance testing. The operating RHR

pump failed to trip when the valve isolated, which led to void formation in the RHR suction line. The RHR suction line voiding was not recognized prior to restoration of shutdown cooling and opening the suction valve; a 10 inch RPV level drop subsequently occurred when the RHR suction line void refilled with reactor coolant. Condition Reports CR 94-1064 dated July 11, 1994, and CR 94-1089 dated July 14, 1994, were initiated to address the issues related to this event, and to determine the respective causes and the resultant corrective actions. Two Human Performance Enhancement System (HPES) evaluations were also performed. Documentation was submitted to the NRC Resident Inspectors to close URI 50-440/94011-02(DRP) on October 9, 1995. This documentation failed to adequately address and resolve the issues associated with the July 11, 1994, event. This example of the violation was caused by the failure of Engineering management to adequately prioritize the resolution of the equipment anomalies that occurred during the July 11, 1994, event, as well as, less than adequate intradepartmental communications within the Perry Nuclear Engineering Department (PNED) (i.e., between the Systems and Design Engineering sections).

Corrective Steps Taken and Results Achieved

On November 13, 1995, preparations were being made to place the Reactor in Cold Shutdown to support repairs of Drywell cooling fans which had failed the day before. In order to obtain additional information regarding the phenomenon discussed in URI 50-440/94011-02(DRP), and to fully resolve the related technical issues and safety significance, personnel were staged at selected locations within the plant during the line-up of the RHR system to the shutdown cooling mode. This staging was to observe and evaluate RHR equipment/system performance, including the related Control Room indications (e.g., RPV level). When the RHR system was placed into service, an approximately 1 inch reactor water level decrease was noted when the RHR system inboard shutdown cooling suction isolation valve, 1E12F009, was opened. When the RHR system outboard shutdown cooling suction isolation valve, 1E12F008, was subsequently opened, an approximately 5 inch reactor water level decrease was observed and a "banging or popping" noises were reported by personnel stationed near the 1E12F008 valve and in the "A" RHR pump room. The indications and system performance paralleled that exhibited in the July 11, 1994, event. Potential Issue Form (PIF) 95-2301 was initiated to evaluate and resolve the plant equipment/system anomalies observed on November 13, 1995. This PIF evaluation received significant management attention and appropriate resources were applied to ensure the evaluation was thorough and comprehensive. The evaluation determined that under certain conditions and specific system configurations, steam voids form in the RHR system suction piping due to thermal conditions within the piping. This evaluation also determined that the operability of the RHR system was not affected by this event. Based on these conclusions, changes to the methodology for establishing shutdown cooling were implemented and the establishment of shutdown cooling was closely monitored during the January 1996 unit shutdown. No RPV level decrease was noted during the shutdown and the data taken supports the conclusions of PIF 95-2301 regarding void formation in the RHR suction piping. Additional reviews and evaluation of RHR system performance are in process to identify and address additional potential causes of RHR system suction piping voiding.

Actions to Avoid Further Violations

Changes to the methodology for establishing shutdown cooling have been implemented and are proceduralized in the respective System Operating Instruction.

The PNED has implemented Work Communication meetings among PNED supervisors to periodically discuss key issues, thus facilitating more effective communications between the individual Engineering elements. Additionally, the Director of PNED generated a memo on January 25, 1996, to reinforce effective communication and interface, both internally and externally. Items covered were "Maintaining A Questioning Attitude," "Schedule Must Not Sacrifice Quality," "Ownership/Accountability," and "Team Play."

Engineering backlogs have been effectively reduced as a result of the Perry Course of Action (PCA) resulting in improved resource management and prioritization.

The Corrective Action Program now requires specific training and qualifications to investigate significant issues that are identified. This programmatic change has contributed to a general improvement in the level of detail, promptness, and quality of PIF investigations.

Date When Full Compliance Will Be Achieved

Full compliance has been achieved.

Reason for the Violation (95009-01b)

This example involves errors in calculations regarding performance of a safety-related water leg pump, that were not promptly documented and evaluated via the Corrective Action Program. The NRC cited this example due to the delay in documenting these errors in the corrective action system. The reason for this violation appears to be a lack of thorough understanding regarding the need for timely identification and evaluation of potential issues, including those that are immediately corrected. The individuals involved with the issue believed that the deficiencies identified during the revision to calculation E21-4, "1E21C0002 Waterleg Pump Performance Related to Keepfill," dated May 9, 1995, had been evaluated and corrected as part of the associated Design Change Packages (DCPs) during the calculation revision and approval process. The entire Emergency Closed Cooling System (ECCS) waterleg pump calculations were corrected as part of the calculation revision process. As a result, the involved individuals did not recognize the necessity of documenting the deficiencies in the Corrective Action Program.

Corrective Steps Taken and Results Achieved

The personnel involved with the revision of the calculation have been individually coached. This coaching included communicating the requirement to initiate a Potential Issue Form (PIF) for items that meet the threshold criteria for initiation in the Corrective Action Program, and to

appropriately evaluate and disposition these items, including for trending purposes. PIF 95-2355 was initiated to address the calculation deficiencies.

In addition, management has taken a more proactive position in communicating and monitoring expectations regarding the Corrective Action Program. A directive by the PNPP Plant Manager, memo from R. D. Brandt to Site Personnel dated December 8, 1995, defined expectations regarding the use of the Corrective Action Program. Management expectations regarding implementation of the corrective action program are now routinely communicated via the site and Refueling Outage newsletters. These expectations have been specifically reinforced at section meetings and during the Human Performance Enhancement Day training sessions. The site policy, "Management By Walking Around," M&C-3, continues to provide management with opportunities for one-on-one communications regarding expectations with respect to utilization of the Corrective Action Program.

Corrective Steps That Will Be Taken To Avoid Further Violations

Perry management will continue to emphasize the importance and expectations for the Corrective Action Program. A PNED policy statement is being developed to provide additional guidance on the minimum requirements for documentation of design deficiencies identified either during review of engineering documents or through individuals outside of PNED. The effectiveness of the initiatives listed in this response are being monitored via the Corrective Action Program monitoring and reporting processes.

Date When Full Compliance Will Be Achieved

Full compliance has been achieved.

Reason for the Violation (95009-01c)

This example states that prompt corrective actions were not taken for a situation documented in CR 94-427, dated April 1, 1994, resulting in the recurrence of a similar event on or before November 2, 1995. While corrective actions were taken for the April 1, 1994, event in accordance with the timeliness requirements of the Corrective Action Program, these actions did not preclude recurrence of the similar event discussed in the Notice of Violation. Additionally, even though the evaluation performed for CR 94-427 did not adequately identify the causes for the event (as discussed in NRC Inspection Report 50-440/95005) the corrective actions taken for the initial occurrence were timely and appropriate. An extensive reevaluation of the events which occurred in April 1994, November 1995, and a similar event in February 1996, has determined that the most probable causes for the improper assembly of the tubing compression fittings were a combination of: incomplete training and the absence of adequate instructions on compression fittings; inattention to detail and inadequate work inspection; and, untimely follow-through on identified corrective actions (e.g., the development of a compression fitting installation instruction). The evaluation also determined that at the time the maintenance work associated with each of these instances was performed, the ferrule(s) were already missing. The ferrule(s) were apparently not installed as required during original fitting installation or previous maintenance. It was not identified that the

ferrule(s) were missing during the maintenance activities delineated in the Notice of Violation. Since the actual dates could not be determined when the respective improper assemblies occurred, the concern was evaluated as a generic issue. The corrective actions identified have been developed to address the generic concern.

As mentioned above, on February 3, 1996, during preventive maintenance work, another event occurred in which a tubing compression fitting was reconnected with a ferrule missing. A mechanic reconnected a tubing compression fitting to the leak-off line of a fuel injector pump on the Division 1 Diesel Generator; the mechanic did not identify that a ferrule was missing. The compression fitting was identified to be improperly installed during a subsequent QA surveillance. This event is documented on PIF 96-0470 and is being evaluated.

Corrective Steps Taken and Results Achieved

After the identification of the missing ferrules on the associated compression fittings on November 2, 1995, the valve and the fittings were reworked to provide the proper installation. The individuals responsible for the improper valve installation were coached and disciplined. A review of self-checking practices was held with supervisors and craftsmen at the morning safety meeting held on November 6, 1995, with special emphasis placed on each individual's personal responsibility for their performance. Supervisors were instructed to review work packages at the time of issue for complete information and to review expected work performance at pre-job briefings with a special emphasis on self-checking practices. In addition, supervisors were instructed to use only personnel specifically trained in tube compression fittings for compression fitting maintenance.

After discovery, on February 3, 1996, of the improperly installed tubing compression fitting on the Division 1 Diesel Generator fuel injector pump leak-off line, the fitting was reworked to provide the proper installation. The remaining leak-off line connections were inspected and verified to be correctly installed. This incident and the other incidents cited in this Notice of Violation, were reviewed with Perry Maintenance Section (PMS) mechanics and the importance of ensuring properly installed ferrules prior to reconnecting the tubing was emphasized. This action was completed on February 9, 1996.

Corrective Steps That Will Be Taken To Avoid Further Violations

An enhanced General Maintenance Instruction (GMI) is being developed for the initial installation, inspection, and reconnection of tubing compression fittings. PMS mechanics will receive training on the proper installation and reconnection of tubing compression fittings. PMS Instrument and Control (I&C) technicians received tubing compression fitting installation training during the 4th quarter of 1995. Tubing compression fitting training will become an integral part of both the PMS mechanics and I&C technicians continuing training programs. In addition, the skill of tubing compression fitting installation will be included in a qualification card for PMS mechanics and I&C technicians. Contractors will be trained to the site

tubing compression fitting instruction and will be required to utilize the GMI and to maintain a valid qualification card for compression fitting work activities.

Date When Full Compliance Will Be Achieved

Full compliance will be achieved by April 1, 1996, upon completion of the training and issuance of the compression fitting GMI.

Conclusion

This violation, as stated above and illustrated in the three examples, is attributed to inconsistent management enforcement of the corrective action processes. The common themes that appear in the examples are lack of appropriate supervisory and management involvement in maintaining priorities, commitments, and schedules; and, lack of adequate communications to ensure the issues are documented and appropriately resolved by the requisite personnel and management.

The PCA identified three Corrective Action Program implementation concerns that have been and continue to be, addressed. To improve performance, the following PCA corrective actions have been taken over the past two years: lowering the threshold to initiate a corrective action document, increased management attention to corrective action backlogs, and an improved root-cause evaluation process. Implementation and effectiveness of these actions has not been consistent. To continually reinforce management expectations and to effect improvement in the corrective action process, site management has undertaken several additional initiatives. For example, on December 8, 1995, the Plant Manager issued a site-wide memo to reinforce the importance of effective utilization of the Corrective Action Program. Articles continue to be published in the site and Refueling Outage newsletters reinforcing the expectations for implementation of the Corrective Action Program. A self-assessment of the Corrective Action Program was completed on January 30, 1996, which concluded that the corrective action processes are improving; however, the assessment also concluded that continued management attention is needed. The site policy, "Management By Walking Around," M&C-3, continues to provide management with opportunities for one-on-one communications, including communication of expectations with respect of the Corrective Action Program, and to observe work in progress. Additionally, Human Performance Enhancement Day training was held site-wide in January 1996, to discuss performance deficiencies and to communicate management expectations, including the processes for documenting, evaluating, and correcting performance issues.

The actions delineated above were taken to assure that issues are identified, appropriately evaluated, and corrected in a time frame commensurate with their respective significance. The effectiveness of implementing these objectives is being monitored through the established Corrective Action Program monitoring methods. Individuals and management are being held accountable to ensure that the Corrective Action Program is effectively implemented.