January 23, 1997

EA 96-367

Mr. Lew W. Myers
Vice President - Nuclear
Centerior Service Company
P. O. Box 97, A200
Perry, OH 44081

SUBJECT: NOTICE OF VIOLATION (NRC INSPECTION REPORT NO. 50-440/96008(DRS))

Dear Mr. Myers:

This will acknowledge receipt of your letter dated December 6, 1996, in response to our letter dated November 6, 1996, transmitting a Notice of Violation associated with the circumstances surrounding the loss of both trains of the Emergency Closed Cooling (ECC) system in 1993, and the loss of both trains of Control Room Emergency Recirculation due to low ECC temperature in 1994 at your Perry facility. We have reviewed your corrective actions and have no further questions at this time. These corrective actions will be examined during future inspections.

Sincerely,

/s/ M. Leach (for)

Geoffrey E. Grant, Director
Division of Reactor Safety

Docket No. 50-440

Enclosure: Ltr 12/06/96 L. W. Myers,
Centerior Energy, to US NRC w/encl

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December 6, 1996
PY-CEI/NRR-2118L

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

Ladies and Gentlemen:

Enclosed is the reply to the Notice of Violation contained in NRC Inspection Report 50-440/96-08, which was transmitted by letter dated November 6, 1996. The Notice of Violation describes three violations involving: a failure to comply with the actions of Emergency Closed Cooling (ECC) system Technical Specification Limiting Conditions for Operation; the failure to take adequate corrective actions to prevent ECC system temperature from decreasing below 55° F; and, the failure to appropriately classify an ECC system valve as an American Society of Mechanical Engineers Code, Section XI, Category "A" valve in a timely manner.

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

Very truly yours,

Lew W. Myers
Vice President - Nuclear

CRE:sc
Attachment
Enclosure

cc: NRC Region III Administrator
NRC Resident Inspector
NRC Project Manager

9612100164

Operating Companies
Cleveland Electric Illuminating
Toledo Edison

DEC 0 9 1996

PY-CEI/NRR-2118L
Attachment 1

I, Lew W. Myers, being duly sworn state that (1) I am Vice President, Nuclear of the Centerior Service Company, (2) I am duly authorized to execute and file this certification on behalf of the Cleveland Electric Illuminating Company and Toledo Edison Company, and as the duly authorized agent for Duquesne Light Company, Ohio Edison Company, and Pennsylvania Power Company, and (3) the statements set forth herein are true and correct to the best of my knowledge, information and belief.

Lew W. Myers

Lew W. Myers

Sworn to and subscribed before me, the 6th day of December, 1996.

Brenda Alvord

REPLY TO A NOTICE OF VIOLATION

Violation 96008-I

Restatement of Violation

Technical specification 3.7.1.2 requires, for Operational Conditions 1, 2, 3, 4, and 5, the emergency closed cooling (ECC) loop(s) shall be operable which are associated with systems or components which are required to be operable. With an ECC loop(s) inoperable which is associated with system(s) or component(s) required to be operable, declare the associated system(s) or component(s) inoperable and take the action required by the applicable specification(s).

A. Contrary to the above, from March 19 to July 2, 1993, while the plant was in Operational Conditions 1, 2, 3, 4, or 5, ECC Train A was inoperable and its associated systems or components were not declared inoperable, and action was not taken for its associated systems or components as required by the applicable specifications. (01013)

B. Contrary to the above, from 3:13 a.m. on June 14, 1993, until 11:05 p.m. on June 15, 1993, a period of about 45 hours, while the plant was in Operational Conditions 1, 2, or 3, both trains of ECC were inoperable and their associated systems or components were not declared inoperable, and action was not taken for their associated systems or components as required by the applicable specifications. (01023)

This is a Severity Level III problem (Supplement 1).

Reason for the Violation

The ECC train/system inoperability discussed in the Notice of Violation resulted from excessive leakage through valve 0P42-F295A. This leakage was caused by a combination of personnel error and inadequate procedural direction for setting motor-operated valve (MOV) limit switches and mechanical stops. The valve was improperly set during maintenance performed on March 19, 1993, resulting in the excessive leakage. A post-maintenance leakage test was not programmatically required nor performed at that time since the valve was classified as an American Society of Mechanical Engineers (ASME) Code, Section XI, Category "B" valve, and as such, did not have specific leakage criteria assigned. The valve leakage was not identified until July 1, 1993, when a routine operational evolution identified concerns with the isolation capability of the ECC system.

Corrective Steps Taken and Results Achieved

The limit switches and mechanical stops for valve 0P42-F295A were readjusted on July 2, 1993. An allowable leakage criteria was determined for the valve and a post-maintenance leak test was performed on the same day. The valve successfully met its leakage acceptance criteria and passed the post-maintenance test.

Corrective Steps that Will Be Taken to Avoid Further Violation

The procedure on adjusting Limitorque limit/torque switches, General Electrical Instruction (GEI)-0014, "Limitorque Limit/Torque Switch Adjustment," was revised to provide the requisite level of direction for

setting limit and torque switches, and adjusting mechanical stops. The procedure revision also added a post-maintenance test requirement for butterfly valves that have an established seat leakage limit. Training was conducted for appropriate Maintenance and Engineering personnel on this issue and on the necessity of verifying proper butterfly valve closure.

An engineering evaluation was performed to determine if other motor operated butterfly valves were affected by the causes that resulted in the inoperability of 0P42-F295A; other than the other valves in the ECC system which perform a similar isolation function (0P42-F295B, 0P42-F325A, and 0P42-F325B, which were not leaking but had no leakage criteria established), no other concerns were identified. These valves were re-categorized as an ASME Code , Section XI, Category "A" valves on October 8, 1996. As such, they will be periodically leak tested as part of the In-service Testing program (ISTP) against specific leakage acceptance criteria. Additionally, the Engineering Department conducted a review of other ASME Code, Section XI, Category "B" valves in the ISTP to determine if their respective categorization needed to be changed: no additional valves requiring re-categorization were identified.

Date When Full Compliance Will Be Achieved

Full compliance has been achieved.

Additional Information

Both examples in this violation state that the actions required by Technical Specification (TS) 3.7.1.2. were not taken as required. With respect to example B, although the actions required by TS 3.7.1.2. were not taken, this specification would not have been the most limiting TS. TS 3.8.1.1.e. required that with a Diesel Generator (DG) (e.g., Division 2 DG) inoperable, a "cross-train check" be performed. Given that ECC train "A" was inoperable, the associated TS 3.8.1.1.e. shutdown statement would have been entered had the inoperability of ECC train "A" been recognized.

Violation 96008-II

Restatement of Violation

10 CFR Part 50, Appendix B Criterion XVI, "Corrective Action," requires, in part, that measures be established to assure that conditions adverse to quality 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, as of September 11, 1996, the licensee had failed to promptly correct a significant condition adverse to quality as demonstrated by the following:

1. In February 1986, a control complex chiller tripped on low refrigerant temperature due to low lake water temperatures (Emergency Closed Cooling water to the chiller must be greater than 55° F to meet chiller design requirements). As corrective action for this condition the licensee initiated Design Change Package (DCP) 86-0224 to alleviate the problem; however, the design change only considered ECC accident heat loads and did not consider minimum loads when Emergency Service Water was less than 55° F.

2. In February 1994, with ESW "A" and ECC "A" running and supplying a minimal heat load, ECC "A" temperature was observed to be below 55° F.

3. DCP 94-0027 was implemented in Spring 1996 to maintain ECC temperature above 55° F with low lake water temperature and low heat load conditions and the post-modification test did not confirm the adequacy of the design. Subsequently, on March 7, 1996, ESW "A" and ECC "A" were in operation with no heat load, and ECC "A" temperature decreased from 64° F to 56° F before ESW "A" was secured to prevent ECC "A" from decreasing below 55° F. (02014)

This is a Severity Level IV violation (Supplement I).

B. Contrary to the above, as of August 26, 1996, the licensee had not corrected a significant condition adverse to quality. Specifically, the licensee had previously identified on January 20, 1994, that valves 0P42-F295A/B and 0P42-F325A/B were not classified as Category "A" in accordance with American Society of Mechanical Engineers (ASME), Section XI, 1983, Article IWV-2000, and no corrective action was taken until this condition was identified by the NRC during a 1996 inspection. (02024)

This is a Severity Level IV violation (Supplement I).

Violations A. and B. are addressed individually below.

Background (Violation A.)

As stated in the Inspection Report, Control Complex chiller unit operability has been challenged in the past due to low refrigerant temperatures resulting from ECC supply temperatures being less than 55° F, particularly with little or no heat loading on the ECC system. This scenario occurs as a result of low ESW system temperatures; the ESW system is supplied from Lake Erie and provides the source of cooling for the ECC system via the ECC system heat exchangers. The issue was initially identified in February 1986, when the Control Complex chiller units tripped while operating with ECC supply (i.e., ESW system) water temperatures at 34° F. The corrective actions resulting from this event primarily involved restricting ESW flow to the ECC heat exchanger via installation of a bypass line at the ESW discharge of the heat exchanger, effectively reducing the discharge line from a 14 inch diameter to a 3 inch diameter, thus minimizing heat exchanger heat transfer. Throttling instructions were provided to Operations personnel regarding control of ECC system temperatures to assure adequate heat removal capability during accident conditions. These actions were believed to have resolved ECC system temperature control concerns.

In February 1994, the ECC system was observed to be drifting below 55° F during RHR heat exchanger performance testing, again challenging the operability of the Control Complex chillers. The event was evaluated via the corrective action process, with notification provided to the NRC under LER 94-005. The results of the investigation indicated that the 3 inch diameter ESW by-pass line was sized without considering minimum heat loads potentially generated during testing operations. Plant operators were locally stationed to continuously monitor and control ECC system temperatures when the Lake Erie water temperatures fell below 55° F. An additional modification was pursued to relieve the operator burden by installation of automatic temperature control.

After extensive evaluation of options and conceptual designs for resolution of the effects of low lake water temperatures, DCP 94-027 was developed to install a three-way, electro-hydraulic, temperature control valve capable of diverting and bypassing 100% of ECC system flows around the ECC heat exchanger, effectively eliminating heat transfer capability between the ESW and ECC systems. Following installation of the modification during the fifth refueling outage, temperatures were again recognized as decaying toward 55° F. The failure of the modification to control temperature without heat loading on the ECC system was investigated in accordance with the corrective action process.

Reason for the Violation (Violation A.)

This violation was caused by the failure to adequately recognize the full range of ECC system design and operating requirements, including those present during testing configurations until 1994. In developing DCP 94-027, system design and operating requirements were fully recognized and established in the respective design report. However, a heat transfer mechanism associated with the resultant modified configuration was not fully recognized during modification development and implementation; therefore, this heat transfer mechanism was not accounted for in the design nor the post-modification test.

Corrective Steps Taken and Results Achieved (Violation A.)

Procedural controls were implemented via precautions in the system operating instructions and guidance in the alarm response instructions, to avoid challenging the temperature limitations of the ECC system and Control Complex chillers given the gradual rate of decay of ECC while bypassing 100 percent of ECC heat exchanger flow.

Corrective Steps that Will Be Taken to Avoid Further Violation (Violation A.)

To address the issue associated with not fully recognizing system design and operating requirements, further occurrence should be precluded through changes that have been implemented in the design change processes. These changes include: development of formalized design reports which contain system functional and operational requirements, as well as, a complete modification design bases; a multi-disciplinary modification development and review team; and, integrated Operations involvement throughout the modification process, including testing.

Revised procedural controls (e.g., revision to Plant Administrative Procedure (PAP) - 0309, "Processing Plant Modifications," and Nuclear Engineering Instruction (NEI) - 0373, "Initiating, Developing, and Processing Design Modifications") are being developed to enhance post-modification testing guidelines, particularly with respect to demonstrating the functionality of installed modifications.

In addition, the bases for lowering the alarm setpoint for ECC water supply temperature to resolve system response to low lake water temperatures and to eliminate the need for administrative measures for operating the system over the complete range of lake temperatures, are being evaluated. The program involves establishing the design bases for chiller refrigerant temperature and developing test parameters and executing testing to demonstrate system operability at ECC supply temperature lower than the current 55° F limitation.

Date When Full Compliance Will Be Achieved (Violation A.)

Full compliance will be achieved with the implementation of the additional post-modification testing guidelines. This action will be completed by March 31, 1997.

Reason for the Violation (Violation B.)

As discussed in the reply to the first violation, valve 0P42-295A was initially classified as an ASME Code, Section XI, Category "B" valve, which does not require leakage testing to a specific acceptance criteria. When this issue was being evaluated in late 1993, it was identified that due to limitations that valve leakage had on ECC system operability, the valve's Code categorization needed to be re-evaluated and revised. This was documented in Condition Report 93-0508 as Condition Report Corrective Action (CRCA) 93-0508-01. However, when this corrective action was evaluated and subsequently closed, the corrective action focused on determining a specific leakage acceptance criteria; the issue of Code categorization was inappropriately not addressed. The reason that this action was not addressed was due to an oversight on the part of the individual that was responsible for evaluating and closing the respective CRCA. Since the valve was already categorized as a Category "B" valve as part of the approved ISTP, coupled with the failure to re-categorize the valve when it was identified during issue resolution, the valve remained improperly categorized until questioned by the NRC during their inspection.

Corrective Steps Taken and Results Achieved (Violation B.)

Valves 0P42-F295A, 0P42-F295B, 0P42-F325A, and 0P42-F325B were re-categorized as ASME Code, Section XI, Category "A" valves on October 8, 1996. As such, they will be periodically leak tested as part of the ISTP program against specific leakage acceptance criteria.

Corrective Steps that Will Be Taken to Avoid Further Violation (Violation B.)

As discussed in the response to Violation 96008-1, the Engineering Department conducted a review of other ASME Code, Section XI, Category "B" valves in the ISTP to determine if their respective categorization needed to be changed; no additional valves requiring re-categorization were identified.

Date When Full Compliance Will Be Achieved (Violation B.)

Full compliance has been achieved. To facilitate additional confidence that valves have been appropriately categorized/tested, an additional evaluation is in progress for non-safety to safety related system interfaces within the Primary Coolant Leakage Reduction for Systems Outside Containment program.

The following table identifies those actions which are considered to be regulatory commitments. Any other actions discussed in this document represent intended or planned actions, are described for the NRC's information, and are not regulatory commitments. Please notify the Manager - Regulatory Affairs at the Perry Nuclear Power Plant of any questions regarding this document or any associated regulatory commitments.

Commitments
Date When Full Compliance Will Be Achieved (Violation A.)
Full compliance will be achieved with the implementation of the additional post-modification testing guidelines. This action will be completed by March 31, 1997.