

**PHILADELPHIA ELECTRIC COMPANY**

LIMERICK GENERATING STATION

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PLANT MANAGER  
LIMERICK GENERATING STATION

May 14, 1990

Docket No. 50-352  
License No. NPF-39

U.S. Nuclear Regulatory Commission  
ATTN: Document Control Desk  
Washington, DC 20555

SUBJECT: Limerick Generating Station, Unit 1  
Reply to a Notice of Violation  
NRC Inspection Report NO. 50-352/90-07 and 50-353/90-06

Dear Sirs:

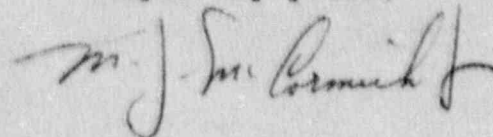
Attached is Philadelphia Electric Company's reply to a Limerick Generating Station (LGS) Unit 1 Notice of Violation contained in NRC Inspection Report No. 50-352/90-07 and 50-353/90-06 for LGS, Units 1 and 2, dated April 13, 1990.

This Notice of Violation pertains to the control of preventive maintenance on a safety system and was identified during an NRC inspection conducted between January 30 and March 5, 1990, at LGS Units 1 and 2.

The attachment to this letter provides a restatement of the violation and our response.

If you have any questions, or require additional information please contact us.

Very truly yours,



CCE:nlk

Attachment

cc: T. T. Martin, Administrator, Region I USNRC  
T. J. Kenny, USNRC Senior Resident Inspector, LGS

9005210053 900514  
PDR ADOCK 05000352  
Q PIC

TEO

bcc: D. M. Smith - 52C-3  
G. M. Leitch - 200  
D. R. Helwig - 51A-11  
J. W. Durham, Sr., - S23-1  
M. J. McCormick, Jr., - A5-1  
G. D. Edwards - A5-1  
J. W. Spencer - A5-1  
J. A. Muntz - 336  
G. J. Madsen - SB3-4  
J. M. Madara - 53A-1  
J. F. O'Rourke - SB4-3  
R. J. Lees - 53A-1  
G. A. Hunger, Jr., - 52A-5  
Secretary, NCB - 52C-7  
Commitment Coordinator - 52A-5  
Correspondence Release Point - 340  
DAC  
PA DERBRP Inspector - 335

Reply to a Notice of Violation

Restatement of the Violation

As a result of an inspection conducted from February 26, 1990, through March 5, 1990, and in accordance with the NRC Enforcement Policy (10CFR Part 2, Appendix C), the following violation was identified.

Plant Technical Specification 6.8.1 requires written procedures to be established, implemented and maintained to control various plant activities.

Preventive maintenance procedure PMQ-600-023, "Preventive Maintenance Procedure for Replacement of EQ ASCO Solenoid Valves (Generic)," paragraph 7.1.2, states "insure the replacement solenoid valve and the installed solenoid valve name plate data agree or an approved equal has been provided."

Contrary to the above, on February 20 and 21, 1990, during the replacement of solenoid operated valves in the Unit 1 reactor core isolation cooling system the mechanic failed to implement paragraph 7.1.2 of procedure PMQ-600-023 resulting in the installation of three ASCO A/C Solenoid Valves in lieu of the required ASCO D/C Solenoid Valves. All three solenoid valves subsequently failed.

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

RESPONSE

Admission of Alleged Violation

Philadelphia Electric Company acknowledges the violation.

BACKGROUND

On February 20 and 21, 1990, three ASCO D/C solenoid valves were replaced with three ASCO A/C rated solenoid valves in the Reactor Core Isolation Cooling (RCIC) system. The valves that were affected were the RCIC barometric condenser drain isolation valve, HV-50-1F005, the RCIC steam drain line isolation valve to the main condenser (inboard), HV-49-1F025, and the RCIC steam drain line isolation valve (outboard), HV-49-1F026. This work was performed as directed by the instructions contained in an Environmental Qualification (EQ) Preventive Maintenance (PM) Maintenance Request Form (MRF).

The work was being performed in accordance with Preventive Maintenance Procedure PMQ-600-023, "Preventive Maintenance Procedure for Replacement of EQ ASCO Solenoid Valves (Generic)." Step 7.1.2 of this procedure states "Insure the replacement solenoid valve and the installed solenoid valve name plate data agree or an approved equal has been provided." This step was not satisfactorily performed in that three (3) ASCO A/C solenoid valves were installed in locations where ASCO D/C solenoid valves were required.

On February 28, 1990, HV-50-1F005 failed closed (see figure 1) when the operating solenoid failed. The discovery of the valve failure prompted an investigation into the event. This valve is not essential for the operation of the RCIC system, therefore, the RCIC system remained operable. Subsequently, on March 1, 1990, HV-49-1F025 failed via the same mechanism as the HV-50-1F005 failure. With HV-49-1F025 failed closed, there was a possibility of condensation collecting in the steam supply line to the RCIC turbine. With condensation in this line, there is a possibility that the RCIC turbine would not properly respond to an initiation signal. For this reason the RCIC system was declared inoperable.

Within two (2) hours an air jumper was installed on HV-49-1F025, which reopened the valve. The second valve in this line, HV-49-1F026, was available to isolate this drain line upon a RCIC system initiation. Even with HV-49-1F025 reopened the RCIC system was administratively left in an inoperable status, however, it was available and would have functioned as designed if manually or automatically actuated.

Early on March 2, 1990, HV-49-1F026 failed in a manner similarly to the two (2) other valves. In response to this failure, the Main Control Room operators closed the RCIC steam supply inboard isolation valve, HV-49-1F008, removing the system from service. The air jumper that was installed on HV-49-1F025 was removed and the valve was returned to its design configuration. The three (3) solenoid valves failed within a period of 35 hours. The investigation initiated, on February 28, 1990, as a result of the first failed valve, identified the immediate cause of the failures on March 2, 1990.

By March 3, 1990, the temporary plant alteration, which added the air jumper to maintain HV-49-1F025 in the open position, was reinstalled. Later that day, repairs were completed on HV-49-1F026. A surveillance test was satisfactorily performed on this valve demonstrating it to be operable. The RCIC system was warmed up, lined up for automatic actuation, and declared operable at 0415, on March 3, 1990.

On March 6 and 7, 1990, a short outage was initiated on the RCIC system. During this outage, the RCIC system was again

declared inoperable, HV-49-1F025 and HV-50-1F005 were repaired, and the temporary plant alteration that maintained HV-49-1F025 in the open position was removed. At the completion of this work the RCIC system was declared operable.

#### Reason for the Violation

The MRFs that were used to perform the initial replacement of the ASCO solenoid valves were generated by the PM Baseline. The PM Baseline is a computer database that automatically initiates MRFs and schedules preventive maintenance on plant installed equipment at specified intervals. The MRFs generated via this mechanism are required to specify the equipment and the reason for the work. However, additional information is occasionally provided to expedite the work planning process. In the MRFs for the solenoid valve replacements a storeroom product code number was provided for the replacement valves. The specified product code number was incorrect, by specifying an ASCO A/C solenoid valve, not the required D/C solenoid valve.

The information provided by the PM Baseline was assumed to be correct by the MRF Section 3 Planner and Section 2 Reviewer and was not correctly verified by either individual. Both individuals were unaware that only the periodic scheduling aspects of the PM Baseline had been previously validated and not all information provided on the MRFs was conformed to be accurate. Subsequently, the MRFs were released and work was performed in accordance with them. This resulted in the incorrect part being provided to the Maintenance Craftsmen performing the field work.

When the Craftsmen initiated the work activities they discovered that one (1) solenoid valve installed in the plant did not have a valve name tag to permit proper verification for replacement part adequacy. No specific direction was provided to the Craftsmen by the MRF as to how they should proceed if the valve name tag was missing. The Craftsmen compared the installed valve and the new valve and verified that the pipe size, valve body model number, and the solenoid were similar. The Craftsmen felt that this was an adequate verification and installed the new valve. This resulted in the installation of an incorrect type solenoid valve.

For the other two (2) solenoid valves only partial name tag information was verified. The Craftsmen compared the installed part to the new part but relied upon the manufacturer's catalog number for this comparison. Even though a single catalog number is used for both ASCO A/C and D/C solenoid valves of similar application, the power requirements for the solenoids are also specified. Because the Craftsmen focused their attention on the

valves having identical manufacturer's catalog numbers they failed to recognize that the new valve was not the correct replacement part for the installed valve. Consequently, the incorrect type solenoid valve was installed.

A Root Cause Analysis was performed and this violation has been attributed to the following causes:

- 1) PROCEDURE - No guidelines existed for entering and verifying data into the PM Baseline. When the PM Baseline generated MRFs for the replacement of ASCO valves in the RCIC system, incorrect information was provided for the storeroom product code number for the three solenoid valves.

Due to the length of time since information was entered into the PM Baseline, the exact cause for incorrect information being entered was not determined. A possible cause is suspected to be that no formal guidelines existed describing the requirements of data entry into the PM Baseline. No specific actions are being suggested to correct the data input process to the PM Baseline. This is because plant components have been input into the Baseline and no further bulk input into the system will be required. Corrective actions have been initiated to verify information supplied via this mechanism prior to being used.

- 2) PROCEDURE - The Administrative and Maintenance Guidelines used to perform the MRF review were less than adequate. These guidelines did not designate anyone to review information in section two (2) of the MRF if provided by the output of the PM Baseline. In this event, storeroom product code numbers for the ASCO solenoid valves were provided by the PM Baseline and were not correct.

It was stated by the MRF Section 2 Technical Reviewer and the MRF Section 3 planner that each individual assumed the product code number was previously reviewed and approved by the EQ Coordinator when the PM Baseline was developed in 1984. A review of Maintenance Guideline MG-13, "Preventive Maintenance Guideline," and Administrative Guideline AG-45, "Work Package Planning Guideline," identified that there was no designated person responsible for the review of product code numbers when this information was provided by and entered in MRF Section 2 by the PM Baseline. As a contributing causal factor, the Section 3 Planner had not received any formal training on AG-45. He had, however, read and was familiar with the AG-45 and used it during planning activities.

- 3) PROCEDURE - The PM procedure, PMQ-600-023, was not explicit regarding what actions were required by the worker if name plates were missing nor what information

on the name plate needed to be verified as identical to the replacement part.

It was stated by the craftsmen during interviews conducted for the investigation of this event that they felt the procedure steps were less than adequate in identifying what information was to be compared between the two name tags. Procedure step 7.1.2 states "Insure the replacement solenoid valve and the installed solenoid valve name plate data agree," and step 7.2.1 states, "Record the name plate data." The craftsman stated that standard maintenance practice is to verify the solenoid valve catalog number, and record the solenoid serial number. Additionally, step 7.1.2 did not adequately address the self checking verification requirements of the two (2) solenoid valve name tags. Because of the above procedure deficiencies, the craftsmen performing the solenoid valve replacements did not follow the intent of step 7.1.2 and installed the incorrect type of solenoid valve.

#### Corrective Actions Taken and Results Achieved

By March 3, 1990, the temporary plant alteration, which added the air jumper to maintain HV-49-1F025 in the open position, was reinstalled. Later that day, HV-49-1F026 was replaced with the correct type ASCO D/C solenoid valve. A surveillance test was satisfactorily performed on this valve and the component was determined to be operable. The RCIC system was warmed up, lined up for automatic actuation, and declared operable at 0415, on March 3, 1990.

On March 6 and 7, 1990, a short outage was initiated on the RCIC system. During this outage, the RCIC system was again declared inoperable. The outage was used to replace HV-49-1F025 and HV-50-1F005 with the correct ASCO D/C solenoid valve. Also, the temporary plant alteration that maintained HV-49-1F025 in the open position was removed. At the completion of this work the RCIC system was declared operable.

#### Corrective Actions to Avoid Future Non-compliance

The following Corrective Actions were initiated as a result of the Root Cause Analysis investigation. The scope of the investigation started with the data input into the PM Baseline and ended with the completion of work activities that returned the RCIC system to an operable status.

1. The incorrect storeroom product code numbers for these ASCO solenoid valves were removed from the PM Baseline upon being

discovered during the performance of the investigation of this event. The correct solenoid valve storeroom product code number for these valves, for both Units 1 and 2, will be incorporated into the PM Baseline. These corrections will be completed by June 22, 1990.

2. An information note will be incorporated into the PM Baseline, for both Units 1 and 2, stating that the subject valves are DC rated. This note addition will be completed by June 22, 1990.
3. We will perform a sampling review of all Units 1 and 2 EQ PM Baseline data to ensure product code number correctness for all DC rated components. The sample is to include solenoid valves. This sampling review will determine if a generic concern exists associated with information in the PM Baseline. This review will be completed by July 1, 1990.
4. Administrative Guideline, AG-45, "Work Package Planning Guideline," will be revised to specify that the work package planner is responsible for the review of product code numbers being used for parts replacements to ensure they are correct. Regardless of the PM Baseline data review results errors in information from the PM Baseline will not affect field work in that all product code numbers will be verified correct prior to use. This revision will be completed by July 1, 1990.
5. A formal training program will be developed and implemented in conjunction with AG-45 to properly train new personnel in the Maintenance Planning Section. This program will be in place by July 1, 1990.
6. This incident will be reviewed with the Maintenance Planning Section to stress the importance of attention to a detailed review of work packages using all available references and that each MRF should be treated uniquely. This review will be completed by July 1, 1990.
7. Incorporate into procedure PMQ-600-023 a note stating to notify Maintenance Section Supervision immediately in the event a solenoid valve name tag is missing. The revision will be completed by July 1, 1990.
8. This incident will be reviewed with all Maintenance Craftsmen to stress the importance of attention to detail in all maintenance tasks. This review will include discussions of required actions if a work step cannot be performed as written and the correct manner in which replacement components are to be verified. These reviews will be completed by June 30, 1990.



9. Revise PMQ-600-023 step 7.1.2 to incorporate Job Leader sign-off while recording installed and replacement name tag valve catalog number, volt/hertz rating, and wattage rating. This revision will be completed by June 29, 1990.
10. Revise PMQ-600-023 step 7.2.1 to require the recording of the replacement solenoid valve's serial number with a Job Leader sign-off. This revision will be completed by June 29, 1990.

Date When Full Compliance Was Achieved

Full compliance was achieved upon the completion of work activities that replaced the three (3) valves with the correct ASCO D/C solenoid valve and returned the Unit 1 RCIC system to an operable status, on March 7, 1990.

# FIGURE 1

