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VICE PRESIDENT
ELECTRIC PRODUCTION

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June 28, 1984

Docket Nos. 50-277
50-278

Dr. Thomas E. Murley
Office of Inspection and Enforcement
U.S. Nuclear Regulatory Commission
Region I
631 Park Avenue
King of Prussia, PA 19406

SUBJECT: Information Relative to I.E. Bulletin 84-02,
entitled, "Failures of General Electric Type HFA
Relays in Use in Class 1E Safety Systems"

Dear Dr. Murley:

I.E. Bulletin No. 84-02 concerning "Failures of General Electric Type HFA Relays in Use in Class 1E Safety Systems", dated March 12, 1984, required that actions be taken by all holders of operating licenses. The actions are restated below along with responses for Peach Bottom Unit 2 and Unit 3.

Request 1a:

1. Plants in Operation
 - a. Develop plans and schedules for replacing (1) nylon or Lexan coil spool-type HFA relays used in normally energized safety-related applications and (2) nylon coil spool-type HFA relays used in normally de-energized safety-related applications. The replacement relays and any replacements made in the future should meet the requirements of the applicable IEEE standards. The replacement program for energized and de-energized relays should be performed on a "best efforts" basis

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during plant outages of sufficient duration. The entire replacement program should be completed within two years from the date of this bulletin.

The replacement schedule should consider the following recommended priority:

- A. Nylon or Lexan normally energized in the reactor trip system.
- B. Nylon or Lexan normally energized in the other safety-related applications.
- C. Nylon normally de-energized in the reactor trip system.
- D. Nylon normally de-energized in other safety-related applications.

Response 1a:

1a. There are 723 HFA Relays used in the Reactor Protection System and other safety-related systems on Peach Bottom Units 2 & 3. Of these relays, 710 are the older type relays that have Lexan or Nylon spools. It is planned to replace all the HFA relay coils (464), that fall into the above 4 priority categories, with new Century Series coils or relays. The replacement coils and relays have been determined to be qualified for their intended service. We had previously initiated a modification to replace all Nylon and Lexan 115 Vac HFA coils in the Reactor Protection System and the Primary Containment Isolation System. Replacement coils are available on site to start this portion of the replacement program. The following plans apply to each of the four priority categories.

A&C. Century Series coils are available to replace all of these coils, except for two relays on each unit. These relays will be replaced due to coil unavailability. The work is planned to be completed on Unit 2 during the present refueling outage and on Unit 3 during the next refueling outage, which is planned to start April 1985. This work involves 70 replacements on Unit 2 and 81 replacements on Unit 3.

- B. Century Series coils are available to replace normally energized 115 Vac coils used in the other safety-related applications. The work is planned to be completed on Unit 2 during the present refueling outage and on Unit 3 during the next refueling outage, which is planned to start April 1985. This work involves 49 replacements on Unit 2 and 53 replacements on Unit 3.

Century Series coils are being purchased to replace the normally energized 125 Vdc HFA coils in the other safety-related applications. These coils will be installed on Unit 2 during the present refuel outage or during next outage of sufficient duration depending on the date of the receipt of the new coils. The coils on Unit 3 will be replaced during the next refueling outage. This work involves 22 replacements on Unit 2 and 22 replacements on Unit 3.

- D. Century Series coils are available to replace all the normally de-energized nylon 115 Vac coils used in other safety-related applications. The work is planned to be completed on Unit 2 during the present refueling outage. This work involves 3 replacements on Unit 2.

Century Series coils are being purchased to replace all the normally de-energized nylon 125 Vdc coils in the other safety-related systems. These coils will be installed on Unit 2 during the present refuel outage or during next outage of sufficient duration depending on the date of the receipt of the new coils. The coils on Unit 3 will be replaced during the next refueling outage. This work involves 115 replacements on Unit 2 and 49 replacements on Unit 3 and common equipment.

Request 1b(1):

- 1b. During the period before relay replacement, develop and implement surveillance plans that include:
- (1) Monthly functional tests of all reactor trip system normally energized relays that verify relay contacts change state when the relay coil is de-energized.

Response 1b(1):

There are 62 reactor protection system (RPS) normally energized HFA relays in each of Peach Bottom Unit 2 and Unit 3. Prior to the issuance of this bulletin, 54 of these relays in each unit were being functionally tested at least once a month, with 20 of these relays in each unit being functionally tested once a week. There are 4 HFA normally energized relays (Neutron Monitoring Noncoincident Trips) in the RPS which do not require a functional test because the relays' contacts are no longer used and had been jumpered out of the logic during a previous modification.

As a result of this bulletin, four additional surveillance tests (ST 11.10A, B, C, D) were written to functionally test the 4 remaining RPS normally energized HFA relays once per month. These new surveillance tests were reviewed and approved by the Plant Operational Review Committee. On May 3, 1984, the four new surveillance tests were used to functionally test the four remaining relays in question on Peach Bottom Unit 3. Unit 2 was removed from service on April 28, 1984, to start its 6th refueling outage, and therefore the four relays in question on Unit 2 were not functionally tested because the relays will be replaced during the refuel outage.

As required by the bulletin, all of the above mentioned surveillance tests functionally verify that the relay contacts change state when the relay coils are de-energized.

Request 1b(2):

- 1b. During the period before relay replacement, develop and implement surveillance plans that include:
 - (2) Visual inspections of all safety-related normally energized relays as soon as practical upon receipt of this bulletin. Thereafter, similar inspections should be accomplished in conjunction with the monthly functional test. These visual inspections should verify that relay coils are not deteriorating (e.g., inspect coil bobbins for visible cracks or melting), and should confirm cleanliness of the relay pole pieces.

Response 1b(2):

Prior to the issuance of this bulletin, during the last Unit 3 refueling outage, all Unit 3 HFA relays were visually inspected. Upon the receipt of this bulletin, PECO field engineers performed a visual inspection of all normally energized HFA relays in Unit 2. Using a routine test (RT 2.2), written as a result of this bulletin, a visual inspection of all safety-related normally energized Unit 3 HFA relays was performed on May 10, 1984. This RT includes normally energized relays in RPS, PCIS, HPCI, RCIC, 4kV switchgear, ADS, and the recirculation system. This RT will be performed monthly on Unit 3 until the relays are replaced. Unit 2 was removed from service on April 28, 1984, to start its 6th refueling outage; and therefore, the routine test (RT 2.2) for visual inspection of normally energized HFA relays is not required since these relays will be replaced during the refueling outage.

As specified in the bulletin, the visual inspections require inspection of coil bobbins for visible cracks and/or melting and confirm cleanliness of the relay pole pieces.

Request 1c:

- 1c. Provide a basis for continuing operation for the period of time until the normally energized relays are replaced. This basis should include a discussion of those measures addressed in Items 1a and 1b and any other preventive and/or corrective measures taken or planned.

Response 1c:

- 1c. During the past several years, there has been a developing pattern of end-of-life coil failures in our 115 Vac normally energized HFA relays. This pattern of failures has existed only on Unit 2, which is now shut down for refueling. None of the failures have prevented the relays from performing their safety function. It is expected that all Nylon and Lexan 115 Vac relay coils in Unit 2 safety-related systems will be replaced before Unit 2 returns to power. Plans are underway to replace 125 Vdc relay coils in Unit 2 as indicated in Response 1a above.

At the present time, there has not been any indication of end-of-life coil failures on Unit 3 HFA relays. Since the end-of-life coil failures on Unit 2 have been occurring on the 115 Vac normally energized relays, the previously addressed surveillance tests and monthly inspections on these Unit 3 relays will provide additional assurance for their correct operation. Therefore, the present condition of the Unit 3 relays will allow safe operation of the Unit until the relay coils are replaced in 1985.

Request 2:

Although the specific details involving the identified relay failures described above may not directly apply to your facility(ies), you are asked to review the general concerns expressed in the bulletin for applicability at your facility(ies). For example, if a different type of relay is used for the same safety functions described in this bulletin, or relays with similar materials are used for other safety-related functions, past operating history and the manufacturer's recommendations should be reviewed to determine if additional action is appropriate. Your response should describe the results of the review, and, if the general concerns apply, you should describe the short-term and long-term corrective actions to be taken and the schedules thereof.

Response 2

Although HFA relays are used extensively in the Reactor Protection System and other safety-related systems in the plant, we have compiled a list of the approximately 25 various types of additional relays used in safety systems in order to check for applicability of this bulletin. We are reviewing these types of relays to determine if materials similar to those in the HFA relays are used or if there are manufacturer's recommendations regarding replacement. Our review and evaluation of these additional relays is incomplete at this time; however, a review of past operating history indicates that no short-term corrective actions are necessary. When our evaluation is complete, we will provide a summary of the results. We will provide additional corrective actions and replacement schedules if it is found necessary to replace additional relays. The review is expected to be complete by September 30, 1984.

Request 3:

The written report required shall be submitted to the appropriate Regional Administrator under oath or affirmation under provisions of Section 182a, Atomic Energy Act of 1954, as amended.

Response 3:

An appropriate affidavit is attached.

If you require any further information, please do not hesitate to contact us.

Very truly yours,



Attachment

cc: A. R. Blough, Site Inspector
Document Control Desk

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SECURITY CONTROL

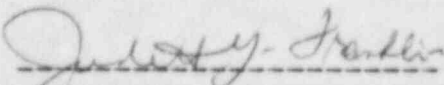
COMMONWEALTH OF PENNSYLVANIA :
: SS.
COUNTY OF PHILADELPHIA :

S. L. Daltroff, being first duly sworn, deposes and says.

That he is Vice President of Philadelphia Electric Company; that he has read the foregoing response to I.E. Bulletin 84-02 relative to Peach Bottom Units 2 and 3 and knows the contents thereof; and that the statements and matters set forth therein are true and correct to the best of his knowledge, information and belief.



Subscribed and sworn to
before me this 29TH day
of JUNE, 1981



Notary Public

JUDITH Y. FRANKLIN
Notary Public, Phila., Phila. Co.
My Commission Expires July 28, 1987