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M. J. COONEY
MANAGER
NUCLEAR PRODUCTION
ELECTRIC PRODUCTION DEPARTMENT

April 4, 1984

Docket Nos. 50-277
50-278

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

SUBJECT: I.E. Bulletin 83-08 Electrical Circuit Breakers
with an Undervoltage Trip Feature in Use in
Safety-Related Applications Other than the
Reactor Trip System

Dear Dr. Murley:

The subject I.E. Bulletin requested licensees to respond under oath and affirmation after taking the following actions regarding circuit breakers utilizing undervoltage trip attachments (UVTA's) in safety related applications:

- (1) Identify the safety related applications of the breakers and the systems in which they are used.
- (2) Review the adequacy of the design, testing, and maintenance of the breakers in light of their operating experience and information conveyed in the bulletin.
- (3) Evaluate the need to take corrective measures to ensure proper operation of the breakers.

In accordance with the detailed instructions contained within the Bulletin, Philadelphia Electric Company has reviewed circuit breakers applications for Peach Bottom Units 2 and 3 in order to identify the use of Westinghouse type DB and type DS, General Electric type AK-2, and circuit breakers manufactured by

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other vendors that utilize an undervoltage trip feature in safety related systems (other than the reactor trip system).

The actions required in the Bulletin are as stated below along with our response.

1. Identify applications of W type DB, W type DS, or GE type AK-2 circuit breakers with the UV trip feature as discussed in IEB 83-01 or 83-04 in safety-related applications at your facility(ies), other than as RTBs. CP holders and licensees should also identify similar applications of other types of breakers by other manufacturers that use a UV trip feature. If such circuit breakers are used or planned for use, identify the system(s) involved.

Response:

The Westinghouse Type DB or DS and the G.E. Type AK-2 circuit breakers are not used in safety-related applications at Peach Bottom Atomic Power Station. We have identified one application of undervoltage trip devices on safety-related ITE Type K-600 circuit breakers. This is the 480V circuit breakers that feed Emergency Cooling Tower Fans OAK32, OBK32, and OCK32. The undervoltage trip devices are used to sense bus voltage and trip the circuit breakers on loss of bus voltage. No additional applications of undervoltage trip devices are planned at this time.

- 2a. Review the design of the UVTA and the connecting linkage. Using input from the breaker manufacturer, determine the design margin available to open the breaker. Evaluate whether or not this design margin is adequate in view of safety applications, considering possible problems of alignment, lubrication, adjustment or spring tension, etc., discussed in the "Description of Circumstances".

Response:

We have reviewed the design of the undervoltage trip devices with ITE and have found that the design margin to open the breaker is adequate for our application. Discussions with ITE and Philadelphia Electric Company Research and Testing personnel have found that there have been no problems of alignment, adjustment or lubrication with these devices.

- 2b. Describe the current breaker surveillance program, including details of test frequency, methodology, and response time measurement of UVTA device.

Response:

The testing program currently in use for the ITE 480V circuit breakers and tripping devices is performed every 5 years. The testing of the undervoltage trip devices consists of measuring the resistance of the coil and performing a mechanical trip test. The response time of the tripping is not measured. We believe it is unnecessary since, in our load shedding application, it is only necessary for the breaker to trip within several seconds.

- 2c. Review operating experience with the circuit breakers in your plant(s) identified in Item 1. Provide a list of all malfunctions (both failure to trip and failure to close on demand) associated with the UVTA, including the connecting linkages and latching mechanisms. The list should include the date of each malfunction, and the operating time prior to failure or date of installation, and the date(s) of major maintenance. In general, when the circuit breaker UVTA is actuated on undervoltage and the breaker contacts do not open within the design time response value, the NRC considers the breaker to have failed.

Response:

We are reviewing the Maintenance Request Forms (MRF's) to analyze the maintenance history of these breakers to determine if there have been any breaker failures attributable to the undervoltage trip attachment. Based on this review, there have been no failures attributable to the undervoltage trip attachments over the last several years. However, this review is continuing and will be completed back to the initial commercial operation dates of Peach Bottom Units 2 and 3. The review will be completed by April 27, 1984, and we will furnish the results to the NRC by May 4, 1984.

- 2d. Describe any preventive or corrective measures you have taken, or intend to take, based on the results of Items 2a, 2b, and 2c. Include any revisions to the surveillance test program and methodology. Specifically, address the inherent reliability of the UV trip feature in view of its apparent heavy dependence on intensive maintenance and surveillance and whether a

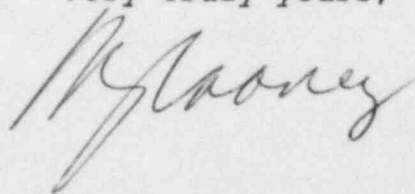
basic design change is warranted to correct the problem, e.g., using a voltage sensitive relay to sense loss of voltage and energize the shunt trip coil from an independent dc power source.

Response:

As a result of our review of this Bulletin, the Engineering and Research Department Research and Testing Division is modifying the 480V circuit breaker test procedure to include steps for testing the undervoltage trip devices. The devices have been tested in the past and the results recorded, but the procedure did not specifically call for it. An approved interim procedure that specifies a resistance and trip test for these devices was put into effect on March 30, 1984. The frequency of this test is being changed to once per every other refueling outage on Unit 2. In view of the application of these devices at Peach Bottom Atomic Power Station and their past reliability, the increased surveillance for the three circuit breakers is sufficient to detect potential failures of the undervoltage trip attachment. The formal approved procedure for testing the undervoltage trip attachments will be in effect by June 1, 1984.

If you require further information in this matter, do not hesitate to contact us.

Very truly yours,



cc: A. R. Blough, Site Inspector

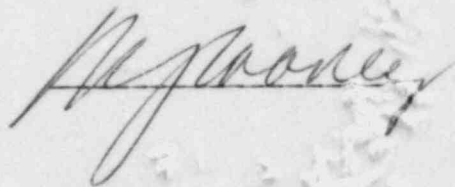
COMMONWEALTH OF PENNSYLVANIA :

ss.

COUNTY OF PHILADELPHIA :

M. J. Cooney, being first duly sworn, deposes and says:

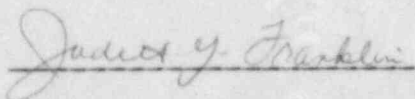
That he is Manager, Nuclear Production, of Philadelphia Electric Company, the Applicant herein; that he has read the foregoing response to I.E. Bulletin 83-08 and knows the contents thereof; and that the statements and matters set forth therein are true and correct to the best of his knowledge, information and belief.



Subscribed and sworn to

before me this 5TH day

of APRIL, 1984



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