

PHILADELPHIA ELECTRIC COMPANY

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APR 6 1984

JOHN S. KEMPER
VICE-PRESIDENT
ENGINEERING AND RESEARCH

Mr. Thomas E. Murley, Director
United States Nuclear Regulatory Commission
Office of Inspection and Enforcement, Region I
631 Park Avenue
King of Prussia, PA 19406

SUBJECT: NRC IE Bulletin No. 83-08, Dated 12/28/83
Electric Circuit Breakers with an Undervoltage
Trip Feature in use in Safety-Related Applications
Other than the Reactor Trip System
Limerick Generating Station-Units 1 and 2

FILE: GOVT. 1-1 (IE Bulletin)

Dear Mr. Murley:

Philadelphia Electric Company has reviewed IE Bulletin No. 83-08, as received on January 5, 1984, for Limerick Generating Station. The following is our reply to items 1, 2a, 2b, 2c and 2d:

1. At Limerick, the use of the circuit breaker undervoltage trip attachments (UVTA) in safety related applications will be limited to ITE (now Brown Boveri Electric) type K-600 circuit breakers in eight circuits from the 480 volt safeguard system. Four of these breakers are used in Unit one and four are planned for Unit two. For each Unit, two of the four breakers supply non-safeguard motor control centers and the remaining two breakers supply 200 horse power reactor building recirculation fans. The use of this undervoltage trip feature in the 480 volt feed to the fans is intended to protect the motors from excessive starting inrush current that can occur with low voltages. The use of this feature on the feed to the two non-Class IE motor control centers is to provide automatic isolation from the Class IE load center bus.
- 2.a The ITE undervoltage trip device does not have a latching mechanism and therefore is not similiar to the General Electric and Westinghouse designs. The ITE device has approximate dimensions of 3"x4"x2". It consists of a clapper type armature that is picked up by current in a coil. With

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voltages above the drop out set point, the armature is in the closed position. The drop out point can be adjusted between 30% and 60% of nominal voltage. At this set point, the low voltage operation is activated and the armature is opened by stored spring energy. This action completes a trip circuit and opens the breaker. The armature will reclose when 80% or more of the nominal voltage is reestablished. Other factors involved with the ITE design are:

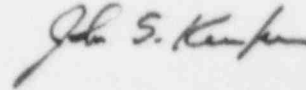
- (1) Vibration does not effect its adjustment.
- (2) No lubrication is required.
- (3) Dust does not accumulate between the magnet and the armature due to the orientation of the magnet and the lack of lubrication.
- (4) The manufacturer considers it to be a maintenance free device.
- (5) There has been no reported history of problems.

Due to its design simplicity, the ITE device is considered highly reliable. Nevertheless, the failure of these devices to operate will not have any adverse effect on the safe operation of Limerick. Failure to isolate the non-Class IE motor control centers will not overload the diesel generator or Class IE power system. Sufficient capacity exists to allow continuous operation of these motor control centers under all accident conditions. Failure of the UVTA's on the fan breakers will have no adverse consequences as our voltage regulation study has verified that adequate starting voltages will be available to these motors under all scenarios. We are currently considering removing the fan UVTA's because they are not needed.

- b. Presently, we plan to test and calibrate Class IE 480 volt load center breakers every 60 months. No special testing of the UVTA's is planned or warranted based on the information supplied above.
- c. During preoperational testing for Unit 1, there has been no malfunction attributed to the four ITE undervoltage trip devices on the 480 volt breakers.
- d. The design simplicity and operating history of the ITE undervoltage trip device used at Limerick gives confidence that no extraordinary maintenance and surveillance is required.

Based on the above reply, we plan no further action on this item.

Sincerely,



Copy to: Director of Inspection and Enforcement
United States Nuclear Regulatory Commission
Washington, DC 20555

S. K. Chaudhary, Resident NRC Inspector (Limerick)
J. Wiggins, Resident NRC Inspector (Limerick)

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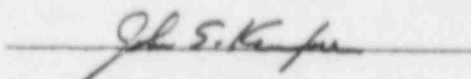
COMMONWEALTH OF PENNSYLVANIA :

ss.

COUNTY OF PHILADELPHIA :

JOHN S. KEMPER, being first duly sworn, deposes
and says:

That he is Vice President of Philadelphia Electric Company,
the holder of Construction Permits CPPR-106 and CPPR-107 for Limerick
Generating Station Units 1 and 2; that he has read the foregoing Response
to IE Bulletin 83-08 for Docket No. 50-352 and 50-353 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 6th day
of April 1984


Notary Public

PATRICIA D. SCHOLL
Notary Public, Philadelphia, Philadelphia Co.
My Commission Expires February 10, 1986