BBC BROWN BOVERI Brown Boveri Electric, Inc.

Manufacturer of I·T·E Electrical Power Equipment

April 28, 1983

Mr. Victor Stello, Jr., Director
Office Inspection & Enforcement
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Reference: Limerick Generating Station
Philadelphia Electric Company
Significant Deficiency Report No. 74
Dated March 24, 1983

Dear Mr. Stello:

This is a follow-up report to an interim 10CFR50.55(e) report filed by the Philadelphia Electric Company with regard to a potential deficiency in 5HK switchgear supplied to the Limerick Generating Station by Brown Boveri Electric. This report was filed with the Office of Inspection & Enforcement, Region I.

The report stated, "During pre-operational testing, one breaker inadvertently closed following completion of the spring charging and, two others spontaneously and continuously closed and tripped following the spring charging cycle." The circuit breakers were returned to Brown Boveri Electric for evaluation of the reported problems. This evaluation revealed that the second problem, wherein it was reported that the circuit breakers closed and tripped spontaneously and continuously following the spring charging cycle could not be duplicated. This condition can occur if the racking screw is not properly positioned in the "connected", "test" or "disconnected" position. This second reported condition was determined not to be a problem.

The first condition wherein it was reported that the circuit breaker inadvertently closed following completion of the spring charging was determined to be an intermittent problem on this one circuit breaker. The condition was corrected by adding a light spring to the close latch in the circuit breaker operating mechanism. The addition of this spring forces the clearances in the close latch and associated linkages to be taken up in one direction. This reduces the shock from the latch and linkages so that when the close latch roller, which is part of the cam assembly, is driven by the closing springs at the end of the charging cycle hits against the close latch, the latch is held and does not slip.

The same basic operating mechanism is used on all BBE HK circuit breakers. This includes the 5HK, 7.5HK, 15HK and the 38HKV circuit breakers. The HK circuit breakers have been in production since approximately 1961. Some of

Switchgear Systems Division
Spring House, PA 19477 • (215) 628-7400

the early 38HKV circuit breakers which first went into production in 1973 experienced a slipping close latch which was thought to be caused by the heavier closing spring load. It was at this time that a light spring was added to the close latch of the HK operating mechanism. The spring is identified as Part No. 162374-A.

From the time of initial production in 1961 up until 1973, this close latch anti-shock spring was not used in the mechanism of the HK circuit breakers because there was no evidence of the close latches slipping. This spring was added to all HK circuit breaker mechanisms in October of 1973 and was included in production circuit breakers until June of 1975. In June of 1975, the spring was omitted on all 5, 7.5 and 15HK circuit breakers because the lack of occurrences of slipping latches did not warrant its continued use. In June of 1977 because of production changes, the spring, again, was added to all HK circuit breakers. The spring has been used continuously on the 38HKV circuit breakers since 1973.

The condition, wherein after the close spring charge, the circuit breaker closes unintentionally without initiation of the manual or electrical close operation, was experienced intermittently on one circuit breaker out of approximately 150 HK circuit breakers at the Limerick Generating Station. The condition, once experienced, may not occur again for 50 to 75 operations of the circuit breaker. Because of the infrequency of this condition occurring, the condition may go unnoticed by many users.

Instructions for the installation of the close latch anti-shock spring in the HK mechanism are contained in Brown Boveri Electric IB-8307. A copy of this instruction book is enclosed with this letter. Brown Boveri Electric will notify the users of HK circuit breakers of how to correct this condition if it is detected or to add the spring at the regularly scheduled maintenance inspection.

D. D. DUVALL
Vice President

EWR/jm

Enclosure

cc: A. V. Boetticher
W. E. Laubach
E. W. Rhoads
L. H. Schmidt
J. R. Silverio