

PHILADELPHIA ELECTRIC COMPANY

2301 MARKET STREET

P.O. BOX 8699

PHILADELPHIA, PA. 19101

SHIELDS L. DALTROFF
VICE PRESIDENT
ELECTRIC PRODUCTION

(215) 841-5001

October 29, 1982

Re: Docket Nos. 50-277
50-278

Mr. John F. Stolz, Chief
Operating Reactors Branch #4
Division of Licensing
U.S. Nuclear Regulatory Commission
Washington, DC 20555

SUBJECT: Peach Bottom Proposed Technical Specification
on Degraded Grid Voltage Protection

Ref.: 1. Letter dated June 16, 1982, from
J. F. Stolz, NRC, to E. G. Bauer, PECO
2. Letter dated July 22, 1982, from
S. L. Daltroff, PECO, to J. F. Stolz, NRC

Dear Mr. Stolz:

In your letter (reference 1 above) you requested additional information concerning our proposed Technical Specifications on degraded grid voltage protection for Peach Bottom Station Units 2 and 3. In our letter (reference 2 above), in response to your request, we committed to provide detailed justification on channel check surveillance and functional test frequency. In this letter we will restate your concerns, and provide our justification.

- (2) The licensee has proposed no channel check surveillance and an extended functional test frequency of once per operating cycle for the degraded voltage protection system.

Discussion: The model Technical Specifications defined the frequency of channel check as at least once per 12 hours, and an instrument functional test on a monthly basis. From the Standard Technical Specifications, it appears that the majority of the instrumentation of the Engineered Safety Features system reflect this same frequency of surveillance. Therefore, the licensee should either submit in detail their justification for not providing and extending the required surveillance

A015

frequencies or submit frequencies which meet those in the model Technical Specifications.

RESPONSE

We propose functional testing of the degraded voltage protection system every operating cycle based on the high reliability of the protective relays and associated auxiliaries. We will show that testing of these relays at this interval will achieve a goal of 0.99999 probability of success, which is the goal for RPS instrumentation, as stated in Peach Bottom Technical Specification Bases 4.1.A, page 51. We have used the same goal although the challenges to the RPS were expected to be 1 to 10 per year while a review of Peach Bottom's past history indicates that there have been no situations which would have challenged the degraded grid voltage protection system.

To attain the goal of 0.99999, it is assumed that the degraded voltage protective relays will operate correctly on three of the four emergency buses per unit, since three buses are necessary for response to the Design Basis Accident for Peach Bottom. The goal can be obtained if an individual relay has a design reliability goal of 0.980. The probability of success is primarily a function of the failure rate and the test interval. The reliability for a component with a constant failure rate is given by: $R(t) = e^{-\lambda t}$, when t is the periodic surveillance testing interval. IEEE Standard 500-1977 gives a failure rate, λ , of 0.097×10^{-6} failures per hour for protective relays. For a once per 18 months testing interval, the reliability of the relay would be greater than 0.998. This reliability satisfies the design reliability of existing instrumentation.

A channel check surveillance is not appropriate for a protective relay scheme since a channel check would only indicate that AC and DC power is available to the protective relay schemes. This information will already be available to the operators. Loss of AC to any relay would initiate a trip of the feeder breaker and a transfer of that bus to the alternate source. This sequence of events would be annunciated in the Control Room on annunciators, "Bus Undervoltage", "Breaker Trip" and "Breaker Auto Close". If DC is lost to the relay scheme, there also will be an annunciator, "Auxiliary Control Bus, Loss of DC Power", indication in the Control Room. A channel check would therefore be redundant to information that is already available. We propose not using a channel check for the degraded voltage protection system.

If you have any questions or require additional information,
please don't hesitate to call.

Very truly yours,

A handwritten signature in cursive script, appearing to read "J. F. Stolz", written in dark ink.

cc: Site Inspector
Peach Bottom