



# Pennsylvania Power & Light Company

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March 23, 1982

Norman W. Curtis  
Vice President-Engineering & Construction-Nuclear  
215 / 770-5381

Mr. R. C. Haynes  
Regional Administrator  
Region I  
U. S. Nuclear Regulatory Commission  
631 Park Avenue  
King of Prussia, PA 19406

SUSQUEHANNA STEAM ELECTRIC STATION  
INTERIM REPORT OF A DEFICIENCY INVOLVING  
AGASTAT E7000 SERIES TIME-DELAY RELAYS  
ERs 100450/100508 FILE 821-10  
PLA-1042



Dear Mr. Haynes:

This letter serves to provide the Commission with an interim report related to PP&L's evaluation, under the provisions of 10 CFR 50.55(e), of an apparent deficiency relating to the potential failure of the subject Agastat E7000 relays. Control Products Division of Amerace Corporation, manufacturer of the relays, identified the existence of the potential for relay failure to Bechtel/PP&L and the NRC in accordance with 10 CFR 21.

The deficiency as it relates to the Susquehanna Steam Electric Station was originally identified as potentially reportable to Mr. E. C. McCabe of NRC Region I by telephone on February 17, 1982 by Mr. A. R. Sabol of PP&L.

The attachment to this letter contains a description of the problem, its cause, and safety implication. Corrective action has been identified for 189 of 213 affected relays. PP&L anticipates providing the NRC with a final report identifying the remaining corrective action by June 1, 1982.

We trust the Commission will find this report to be satisfactory.

Very truly yours,

N. W. Curtis  
Vice President-Engineering & Construction-Nuclear

JS:sab

Attachment

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ERs 100450/100508

File No. 821-10

Mr. R. C. Haynes

cc: Mr. Richard C. DeYoung (15)  
Director-Office of Inspection & Enforcement  
U. S. Nuclear Regulatory Commission  
Washington, D.C. 20555

Mr. G. McDonald, Director  
Office of Management Information & Program Control  
U. S. Nuclear Regulatory Commission  
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Subject

Agastat E7000 Series Timing Relays

Description of Problem

Agastat has identified a problem with the E7000 Series Time-delay relays manufactured between the 24th week of 1981 and the 3rd week of 1982. 213 relays manufactured during this period were delivered to SSES.

When the relays are operated at high temperatures for extended periods of time, the timing characteristics of the relay are affected. This results in shorter time delays than those set on the relay dial. Agastat has verbally indicated that these effects can be noticed if the relays are operated at 165°F for a period of 7-10 days; at 180°F, the effects are noticeable in approximately 4 hours.

Cause

Extended performance Quality Assurance tests performed by Agastat have determined that the pneumatic timing diaphragms manufactured by one of two diaphragm suppliers exhibit a time and temperature based bleed-out of a fluid substance from the diaphragm. This substance may affect the diaphragm seal on the relay when operated at high temperatures for extended periods of time.

Analysis of Safety Implications

The Agastat E7000 Series Timing Relays are used in the control schemes for the incoming feeder breakers on the 4KV ESS buses. The failure of these relays to time out properly can cause an improper automatic closure of the preferred and alternate incoming feeder breakers and result in a parallel connection of both offsite power supplies through the 4KV Engineered Safeguard System Switchgear. If the 4KV bus were to fail, the safe operation of the plant could be adversely affected due to the loss of the connected safety loads.

The improper timing of these relays represents a significant deviation from the performance specifications of the relay; therefore, PP&L has determined that this condition is reportable under the requirements of 10 CFR 50.55(e).

Corrective Action

A visual inspection can be performed to determine if the relays must be returned to Agastat Corporation for rework. Relays with a light pink diaphragm are satisfactory and do not require modification. Relays with a dark red (rust color) diaphragm are suspect and must be returned for rework.

On February 23-24, 1982, two (2) Agastat vendor representatives were on-site to determine if rework would be required. Of the 213 relays which were manufactured during the specified time interval, 200 were inspected by the vendor representatives. Sixty-three (63) relays were identified as having the dark red (rust color) diaphragm and 137 relays had the pink diaphragm. Of the 63 relays with dark red diaphragms, eleven (11) are located in non-Class 1E circuits. The remaining fifty-two (52) will be returned to Agastat for rework.

Final corrective action will also be established and implemented prior to fuel load for the following two groups of relays;

- (1) The 13 relays which were not inspected by the Agastat representative.
- (2) The 11 relays located in non-Class 1E circuits (corrective action will address preventing their potential removal from non-Class 1E circuits and subsequent installation in Class 1E circuits). These relays contain the potentially defective dark red diaphragms.