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PP&L Pennsylvania Power & Light Company

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Norman W. Curtis
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October 12, 1981

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



SUSQUEHANNA STEAM ELECTRIC STATION
INTERIM REPORT OF A POTENTIALLY REPORTABLE
DEFICIENCY INVOLVING CUTLER-HAMMER SIZE 2 MOTOR STARTERS
ERS 100450/100508 FILES 821-10/900-10
PLA-943

Dear Mr. Haynes:

This letter serves to provide the Commission with an interim report of a potentially reportable deficiency involving the failure of NEMA size 2 contactors. The problem was originally reported under the provisions of 10 CFR 50.55(e) in a telephone conversation between A. Sabol of PP&L and E. Brunner of NRC Region I on August 19, 1981. The information contained in this report is submitted pursuant to the requirements of 10 CFR 50.55(e).

The attachment to this letter contains a description of the problem, its cause, safety implications and the corrective action taken to preclude recurrence.

We trust the Commission will find this report to be satisfactory. We expect to furnish a final report in December, 1981.

Very truly yours,

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

FLW:sab

Attachment

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October 12, 1981

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

Mr. G. McDonald, Director (1)
Office of Management Information & Program Control
U. S. Nuclear Regulatory Commission
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Mr. Gary Rhodes
U. S. Nuclear Regulatory Commission
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SUBJECT

Cutler-Hammer NEMA Size 2 AC Motor Starters

DESCRIPTION OF PROBLEM

Deficiencies were discovered in Cutler-Hammer NEMA Size 2 AC motor starters during combined seismic and hydrodynamic load qualification testing of 480 VAC motor control centers. The deficiencies were found when two test specimen contactors were disassembled and inspected after one failed pre-seismic and the other post-seismic functional tests. Both failures consisted of the inability of the contactors to properly seal (close) when energized. This was accompanied by a loud noise.

The disassembly and inspection of these two test specimens revealed the following deficiencies:

- Excessive accumulation of potting epoxy on the side of the contactor magnet.
- Improperly installed bearing plates of the magnet.
- Chips of plastic molds found in the gap between the armature and magnet of the contactor.

These tests and inspections were conducted at Wyle Laboratory in Hunstville, Ala.

Field testing, as recommended by Cutler-Hammer (Eaton Corporation), revealed that four out of 36 Class 1E starters at SSES Unit 2 exhibited excessive noise levels. See CORRECTIVE ACTION below.

CAUSE OF DEFICIENCIES

Based upon the inspections performed at Wyle Labs and upon performance of seismic tests using another Cutler-Hammer NEMA size 2 contactor, it has been concluded that the deficiencies were not the result of seismic testing; rather, the cause appeared to be related to the suppliers design, manufacturing, and inspection process.

ANALYSIS OF SAFETY IMPLICATIONS

Size 2 AC Motor Starters are used as components of various safety-related systems such that if one were to fail, it could impair the system safety function. Until testing is performed (see CORRECTIVE ACTION below), however, which demonstrates that a high noise condition is indicative of a continuity failure, the significance of the deficiency is uncertain. For this reason, PP&L currently considers the size 2 AC Motor Starter's high noise anomaly to be a potentially reportable deficiency under the provisions of 10 CFR 50.55(e).

CORRECTIVE ACTION

Eaton Corporation recommended that all safety-related, size 2 AC Motor Starters be field checked to verify that they do not exhibit a similar high noise condition, such as noted at Wyle Labs, at both normal and reduced (85% of normal) voltages.

All SSES Unit 2 size 2 starters were so tested and four out of 36 Class 1E and seven of 60 non-Class 1E contactors exceeded the noise limits of the supplier's test. All Unit 2 size 2 motor starters that failed the high noise tests were returned to Eaton Corporation for disassembly and inspection. These corrective actions are being controlled under Bechtel NCR No. 7893. Since contact continuity was not checked in the Unit 2 tests, the safety impact of the noisy starters is unclear.

To ascertain if a safety deficiency does exist, all Unit 1 & Common Size 2 AC Motor Starters will be checked for both high noise conditions and contact continuity at both normal and reduced (85% of normal) voltages.

The results of the Unit 1 & Common testing will provide the basis for determining the reportability of the condition. We expect to complete the testing and issue a final report by December 30, 1981.