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APR 03 1981

Mr. Boyce H. Grier, Director
United States Nuclear Regulatory Commission
Office of Inspection and Enforcement, Region I
631 Park Avenue
King of Prussia, PA 19406

SUBJECT: Significant Deficiency Report No. 19
Final Report for Violations of Separation Criteria
in the PGCC (Revised)
Limerick Generating Station, Units 1 and 2
NRC Construction Permits Nos. CPPR-106 & 107

REFERENCE: USNRC Letter to J. S. Kemper (PECO) Dated February 13, 1981

FILE: QUAL 2-10-2 (SDR #19)

Dear Mr. Grier:

In accordance with the above referenced letter, attached is our revised final report on the subject deficiency. It has been revised to give a more definitive description of the corrective actions to be taken and to provide a date by which these actions will be completed for each Unit. We do not anticipate that these corrective actions will impact our construction schedule or fuel load dates.

If there are any questions on this matter we would be pleased to discuss them with you.

Sincerely,

John S. Kemper

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

J. P. Durr, Resident NRC Inspector (Limerick)

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FINAL REPORT

VIOLATIONS OF SEPARATION CRITERIA IN THE POWER GENERATION CONTROL COMPLEX

LIMERICK GENERATING STATION
UNITS 1 AND 2

PHILADELPHIA ELECTRIC COMPANY

DECEMBER, 1980

Revised March, 1981

SDR-19-1

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1.0 Introduction

The Limerick Generating Station Power Generation Control Complex (PGCC) was purchased from General Electric Company as part of Nuclear Steam Supply System contract. The PGCC is comprised of the main control room consoles and vertical control boards as well as the panels containing the control logic for the safety-related and non safety-related plant systems.

Violations of the Project requirements regarding separation of safety-related internal panel wiring have been identified in several PGCC panels and it has been determined that plant safety could have been compromised under certain conditions had these separation violations gone undetected.

This significant deficiency was reported via telecon to the USNRC, Region I on November 19, 1980 and a Final report was submitted in December, 1980. This revised Final Report is being submitted in response to the USNRC letter to J. S. Kemper dated February 13, 1981.

In compliance with 10CFR 50.55(e), this revised Final Report is issued to describe the deficiencies, analyze their safety implications, and describe the actions to be taken to correct them.

2.0 Description of Problem

During visits to the General Electric Company PGCC fabrication facility, Philadelphia Electric Company (PECO) engineering personnel observed violations of Project separation criteria in Limerick safety-related PGCC panels which were under construction. Separation as required by the connection diagrams was not being consistently provided for internal panel wiring. The Project separation criteria for internal panel wiring of the PGCC are implemented through the use of notes on these connection diagrams.

The noted violations were discussed with General Electric Company. As part of the resolution of these violations, it was agreed that corrections would be implemented by General Electric field personnel after delivery to Limerick via Field Disposition Instructions (FDI).

After receipt of the PGCC panels at Limerick, PECO QA personnel identified several instances of violations of the Project separation criteria while inspecting the internal wiring of several panels. Several of these violations were in addition to those previously identified at the factory.

Although General Electric had not yet completed field modifications to the PGCC panels prior to the PECO QA inspections, PECO has concluded that numerous changes to the panels will be required to achieve compliance with the Project separation criteria and, therefore, this is considered to be a Significant Deficiency. Based on the extent of the violations observed both in the factory and at the site, it is concluded that this deficiency can be attributed to a lack of adequate instruction of the factory wiring personnel and a breakdown of the factory QC inspection program.

3.0 Analysis of Safety Implication

Because of the multiplicity of wires and panels involved with this deficiency, it is not feasible to identify individual safety implications. However, if these conditions had gone undetected, safety could have been compromised by the unanalyzed failure of a safety-related system. The inadequate separation of internal panel wiring could lead to an unanalyzed failure of a safety- related system due to the propogation of a failure to that system from a redundant safety-related system or from a non safety-related system.

4.0 Corrective Action Taken

Based on the inspections that have been performed to date on the safety-related panels and consoles, it is apparent that a complete re-inspection of each panel is required to verify that all separation violations have been identified and corrected. General Electric Company has been informed by letter of the PECO position that all PGCC panels containing safety-related components must be re-inspected for compliance with the Project separation criteria.

Inspections of all PGCC panels containing safety-related components will be performed by Bechtel Power Corporation Quality Control Engineers in accordance with inspection criteria provided by General Electric Co. to PECO. These inspection criteria are in conformance with the Project separation criteria as defined in the Limerick Final Safety Analysis Report Section 8.1.6. Any non-conformances with these criteria will be documented on Non-Conformance Reports (NCR's) which will be forwarded to General Electric Co. for resolution.

Resolution of any non-conformances will be accomplished by either analyses or modifications to achieve adequate separation. Analysis will only be used where it can be shown that the propagation of a failure due to the lack of separation will not cause the failure of reduniant safety-related systems or components. These analyses will be reviewed and approved by PECO prior to acceptance as valid resolutions of the non-conformances. Modifications will consist of either providing additional space between wires requiring separation, the installation of fire resistant barriers, or the encapsulation of wires in metallic conduit or fire resistant sleeving. The proposed G.E.Co. modifications to resolve each non-conformance will be reviewed and approved by PECO.

The inspections described above will begin in April 1981 and continue until all PGCC panels containing safety-related components have been inspected. The analyses and/or modifications required to resolve the non-conformances will be completed by January 1984 for Unit I and June 1986 for Unit II.

5.0 Conclusions

The corrective actions described above will correct and eliminate violations of Project separation criteria within the PGCC panels prior to loading fuel for each unit.