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MAR 26 1984

JOHN S. KEMPER
VICE-PRESIDENT
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Mr. Thomas E. Murley, Director
United States Nuclear Regulatory Commission
Office of Inspection and Enforcement, Region 1
631 Park Avenue
King of Prussia, PA 19406

SUBJECT: Significant Deficiency Report #132
Final Report on Misapplication of KF
Underfrequency Relays
Limerick Generating Station, Units 1 and 2
NRC Construction Permits Nos. CPPR-106 & 107

REF: Telecon of February 28, 1984

FILE: QUAL 2-10-2 (SDR #132)

Dear Mr. Murley:

The referenced telecon notified the USNRC of a 10CFR50.55(e) reportable condition. The enclosure to this letter is provided as a final report concerning the misapplication of Westinghouse KF Underfrequency relays. The KF relays are installed in the Diesel Generator Breaker Ready to Load Circuit at the Limerick Generating Station.

Sincerely,

John S. Kemper

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Attachment
Copy to:

Director of Inspection and Enforcement
United States Nuclear Regulatory Commission
Washington, DC 20555

S. K. Chaudhary, Resident NRC Inspector (Limerick)
J. Wiggins, Resident NRC Inspector (Limerick)

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Limerick Generating Station
Significant Deficiency Report #132
Misapplication of the KF Underfrequency Relays
Final Report

March 26, 1984

1.0 Introduction

This report is intended as a final report concerning the misapplication of the Westinghouse KF Underfrequency relays at the Limerick Generating Station (LGS).

The USNRC was notified of this 10CFR50.55(e) reportable condition in a telecon, dated February 28, 1984.

2.0 Description of Problem

Westinghouse KF relays were supplied to Limerick as part of the emergency diesel generator control boards. These boards were built and supplied by the diesel generator vendor, Colt Industries. Colt modified the standard Westinghouse relay design in their factory to allow it to operate as a permissive interlock in the diesel ready-to-load circuit.

During bench calibration of the KF relay, it was observed that the relay did not operate as intended in the circuit. The relay closed its contact upon decreasing frequency below the setpoint. The proper operation for this application is for the relay to close its contact upon increasing frequency above the setpoint. Further investigation revealed the relay was functioning properly. It was, however, being misapplied in the diesel ready-to-load circuit.

3.0 Safety Implications

The diesel ready-to-load relay picks up and seals-in to allow the generator breaker to close when contacts of both the KF frequency relay and the generator voltage monitoring relay are closed. If the deficiency described above had not been identified, the KF frequency relay contact may have opened prior to the voltage monitoring relay contact closing, thus preventing pick-up of the ready-to-load relay. Because the occurrence of this malfunction depends on the setpoints of both the frequency and the voltage relay, it is not possible to say that the malfunction would have definitely occurred; however, the malfunction could occur in a circuit which had previously operated correctly if the setpoint of either the frequency or the voltage relay was subject to drift.

The inability to connect the generator to the Class IE busses after a loss of offsite power could have created a substantial safety hazard.

4.0 Corrective Action

The KF Underfrequency relays at Limerick were modified by rewiring the relay contacts. This enables the relay to provide a contact which closes on increasing frequency. All corrective actions have been completed and verified by testing.

The diesel generator manufacturer (Colt Industries) stated that the KF relay in the diesel breaker circuit is their "standard" design. Other users may not be aware of a potential problem in their diesel generator loading circuitry.

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