



Commonwealth Edison
1400 Opus Place
Downers Grove, Illinois 60515

April 8, 1994

Mr. William Russell, Director
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington D.C. 20555

Attn: Document Control Desk

Subject: Commonwealth Edison Company
10 CFR Part 21 Final Report (File 94-03)
Douglas-Randall Time Delay Relay failure in Westinghouse Eagle-21

Dear Mr. Russell:

The purpose of this letter is to notify the NRC Staff of Commonwealth Edison Company (CECo) concerns regarding the failure of Douglas-Randall time delay relays used in the Westinghouse Eagle-21 Plant Protection System. The relays provide AC power to various internal Eagle-21 components. The failures of this relay were characterized by repetitive switching of the associated loads or by simply switching "off" the associated loads. The loss of AC power to the system renders the system incapable of performing its design safety functions.

A root cause investigation concluded that the failure of an aluminum electrolytic capacitor caused the failure. This failure was determined to be an end-of-life failure which was accelerated by localized heating within the module. The heat generated by a resistor in close proximity to the capacitor caused the premature failures. The corrective action of removing the heat source to the capacitor by relocating the resistor to the outside of the epoxy module has been completed.

Provided as an attachment to this letter is CECo's notification in accordance with the requirements of 10 CFR Part 21, Section 21(c)(3).

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Mr. W. T. Russell

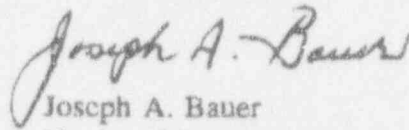
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As stated in the attached report, corrective actions have been completed for all Westinghouse Eagle-21 Plant Protection System time delay relays installed at CECOs Zion Station. No other CECOs stations utilize this component.

If there are any questions regarding this notification, please direct them to this office.

Respectfully,



Joseph A. Bauer
Nuclear Licensing Administrator

Attachment: 10 CFR Part 21 Final Report

cc: J. Martin, Regional Administrator - RIII
J.E. Dyer, Directorate III-2 Director, NRR

10 CFR PART 21 NOTIFICATION

Premature Failure of Douglas-Randall Time Delay Relay used in
Westinghouse Eagle-21
Part-21 file #9403

This notification is submitted in accordance with the requirements of 10 CFR Part 21, Section 21(c)(3).

Identification of Facility and Component

The defective design/component was identified only at Commonwealth Edison Zion Station. The affected component is Westinghouse Part # PS12800H02 (Time Delay Relay) and is used in the Westinghouse Eagle-21 Plant Protection System.

Component Manufacturer

The time delay relay is manufactured by Douglas-Randall and is used by Westinghouse Electric Corporation in the Eagle-21 Plant Protection System.

Nature of Defect

The Douglas-Randall time delay relays are used in the Westinghouse Electric Corporation Eagle-21 AC Power Distribution Panels and provide AC power to various internal Eagle-21 components. The failures of this relays were characterized by repetitive switching "on" and "off" of the associated loads or by simply switching "off" the associated loads.

A root cause investigation concluded that the failure of an aluminum electrolytic capacitor at location C2 within the epoxy encapsulated TDR module caused the repetitive switching and/or hard failure. The failed capacitors were electrically open due to the loss of electrolyte. This failure was determined to be an end-of-life failure which was accelerated by localized heating within the module.

The heat generated by a resistor, R1, in close proximity to the capacitor caused the premature failures. The corrective action was to remove the heat source to the capacitor by relocating the resistor, R1, to the outside of the epoxy module.

