

Commonwealth Edison Company  
Byron Generating Station  
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Byron, IL 61010-9794  
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January 30, 1996

LTR: BYRON 96-0023  
FILE: 2.01.0703

U. S. Nuclear Regulatory Commission  
Washington, DC 20555

Attention: Document Control Desk

Subject: Byron Station Units 1 and 2  
Braidwood Station Units 1 and 2

10 CFR Part 21 Notification  
Intermittent Failure of Diesel Generator Relay  
NRC Dockets 50-454 and 50-455  
NRC Dockets 50-456 and 50-457

Applicability

This notification is submitted in accordance with the requirements of 10 CFR Part 21, Section 21.21(b), 21.3a(3), and 21.3d(4).

Identification of Facilities and Components

Byron Nuclear Generating Station Units 1 and 2  
Braidwood Nuclear Generating Station Units 1 and 2

130 Diesel Generator Electrical Relays procured from Amerace Corporation

Part #: EGPDRC2017003, date code: #9245

Identification of Component Manufacturer/Supplier

Amerace Electronic Components  
7474 Utilities Road  
Punta Gorda, Florida 33982

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### Nature of Defect

The defect is related to an incomplete solder process on the coil termination to the transient suppression assembly board on the subject relays. The relays were manufactured by Amerace and provided specific to ComEd. The defective relay consists of a nuclear dedicated relay "EGPD" with the commercial "R" option. The commercial grade option is an add-on board to the relay which consists of an internal diode which suppresses a coil deenergization transient. The defective solder joint occurred at the interface between the relay and the add-on board. These relays were provided to ComEd for use as replacement parts in the Emergency Diesel Generator (D/G) local control panels at ComEd's nuclear stations.

On November 16, 1995, an attempt was made to start the 1A D/G at Byron Station. The 1A D/G started; however, the D/G did not come up to full speed. The D/G then shutdown with no trip indications. A second start attempt was performed and the D/G started and operated normally. An investigation determined that a relay in the D/G local control panel was intermittently failing to energize. This intermittent failure was the apparent cause of the D/G to come up to full speed. The suspect relay was replaced and the 1A D/G ran normally after the relay replacement. The failed relay and two (2) previously replaced relays from the same date code (#9245) were sent to ComEd's System Material Analysis Department (SMAD) for evaluation. SMAD subsequently determined that two (2) of the three (3) analyzed relays were intermittently failing due to a cold solder joint. ComEd determined that all relays from the date code, #9245, were potentially suspect. All relays from the suspect date code were confirmed to be installed only at Byron and Braidwood Stations. Subsequent testing performed by ComEd on the suspect relays from the 9245 date code has revealed that approximately 50% of the relays were improperly soldered and subject to the intermittent failure mechanism.

### Time of Discovery

The failure of the 1A D/G during its surveillance run occurred on 11/16/95. ComEd determined that the failure was a potential defect subject to the provisions of 10CFR21 on 12/5/95. Final determination that the defect was reportable per 10CFR21 was made on 1/26/96.

### Number and Location of All Defective Components:

Per the vendor, date code #9245 for part # EGPDR2017003 consisted of 130 relays, all of which were provided to ComEd. Of the 130 relays in lot #9245, 100 were installed at Byron Station and 21 were installed at Braidwood Station at the time of the interrupted surveillance run on the Byron 1A D/G on 11/16/95.

Corrective Actions:

Immediately upon identification that the entire #9245 date code of relays was suspect, ComEd initiated replacement activities at Byron and Braidwood Stations. All suspect relays at Byron and Braidwood Stations have been identified and replaced with fully qualified relays. Note that some relays from date code #9245 were removed from their respective D/G control panels and subsequently reinstalled after shop testing was performed to ensure that the relays were properly soldered.

Per ComEd's request, Amerace conducted an extensive investigation on the subject relays. Amerace's investigation included a visit by Amerace representatives to ComEd's SMAD testing facilities. In a 1/10/96 letter from Amerace to ComEd, Amerace indicated that they had identified the root cause of the defect, defined the scope of the relays affected and taken corrective action to prevent similar occurrence. Amerace also indicated that no other similar failures had been identified over the past three years for their various relay configurations. The scope of Amerace's review included over 18,000 relays provided to both nuclear and non-nuclear customers. Amerace's conclusion is that the failure is isolated to date code #9245, all of which was provided to ComEd. As further justification for the conclusion that the defect is isolated to the #9245 date code, ComEd has performed extensive testing of 37 similar relays from another date code (#9448) and no defective relays were identified.

In 1995, Amerace moved the assembly of the relay product line from Control Products Corporation in Grafton, Wisconsin to Amerace's in-house facilities in Punta Gorda, Florida. In the 1/10/96 letter to ComEd, Amerace indicated that their operators and QC personnel have been counseled on the nature of this defect and have been made aware of the need for proper soldering techniques.

10 CFR 21 Evaluation

The identified defect directly led to the interrupted surveillance run of the 1A D/G at Byron Station on 11/16/95. The defective faulty relay did not lead to an incident of significant magnitude. However, there was potential for a more significant event in a circumstance where Emergency AC power was needed. Therefore, ComEd has determined that the improper solder process on the subject relays does constitute a defect per the requirements of 10CFR21 and is reportable to the NRC.

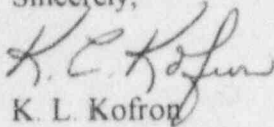
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Contact

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Sincerely,



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Station Manager  
Byron Nuclear Power Station

KLK/BA/rp

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