



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION III
799 ROOSEVELT ROAD
GLEN ELLYN, ILLINOIS 60137

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ACTION - ROSSI

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MEMORANDUM FOR: E. L. Jordan, Director, Division of Emergency Preparedness
and Engineering Response, IE

FROM: C. E. Norelius, Director, Division of Reactor Projects, RIII

SUBJECT: POTENTIAL 10CFR21 NOTIFICATION

Attached is a memorandum from our Senior Resident Inspector at Dresden concerning a potential Part 21 Notification of Electro-Motive diesel generators. After review, we believe that his concerns are justified and recommend consideration be given to addressing this issue with Electro-Motive.

If additional information is required, please contact Mr. T. Tongue of my staff (815/458-2852).

C. E. Norelius

C. E. Norelius, Director
Division of Reactor Projects

Attachment: Memo T. Tongue
to G. Wright

cc w/attachment:
R. Bernaro, NRR
B. Grimes, IE

EAB/Weiss
INFO/EGCB Stewart

JE19

MEMORANDUM FOR: G. C. Wright, Chief, Division of Reactor
Projects, Section 2C

FROM: T. M. Tongue, Senior Resident Inspector
Dresden Nuclear Power Station

SUBJECT: POTENTIAL 10 CFR 21 NOTIFICATION RE.
ELECTRO-MOTIVE EMERGENCY DIESEL GENERATORS
(E D/G)

On about April 14, 1985, the Dresden Unit 2 E D/G was found with loosened windings in the generator stator. This has been repaired and evaluated by the licensee for continued operation until a long term repair can be accomplished during a routine refueling outage.

Through discussions with licensee personnel and my own observations, I found that every 12th winding had been loosened on the outboard end of the generator (away from the engine) and all of the windings were loosened on the inboard side (next to the engine). The repair, under guidance of corporate engineering, consisted of placing additional support blocks in the windings with epoxy. The Unit 3 and 2/3 E D/G's were examined with no evidence of damage identified.

Presently, information on the evaluation of the occurrence by the licensee indicates that this type of problem normally occurs from paralleling the generator slightly out of phase. A protective relay installed prevents the paralleling greater than $+5^{\circ}$ and was replaced with a relay of $+3^{\circ}$. Testing of the used relay by the licensee's Operational Analysis Division (OAD) shows no sign of failure.

No further evidence of failure has been identified and all 3 ED/Gs have been successfully tested during routine surveillance. The licensee is presently pursuing the cause and has long term plans to rewind all 3 generators.

At this time, it appears that the licensee action for Dresden is appropriate, however, I feel this may be reportable under 10 CFR 21 for generic installations. The loose windings could have experienced a more serious failure and resulted in damage to the moving and/or stationary windings while the ED/G is under loaded conditions during an event. Later information shows that the generator sets are of older design (15-20 years old) and, unless proven otherwise, it appears that other nuclear facilities with the same vintage ED/Gs should be notified to at least inspect for a similar occurrence.

G. C. Wright

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By memo of April 25, 1985, and at my suggestion, the station requested that a corporate level 10 CFR 21 evaluation be conducted on the subject.

The engine and generator description are:

Manufacturer:

Electro-Motive Division
General Motors Corp.
LaGrange, Illinois

Generator:

Model A-20-C1
Serial 67-K1-1008
Synchronous Generator
2400/4160 Volts
782/452 Amps.
3250 KVA
900 RPM
60 cycles per second (HE)
3 phase
0.8 Power Factor

Engine:

Model 20-645-E4
Serial 67-J1-1140

I discussed this matter with Eric Wiess of IE - H.Q. on June 27, 1985 and the next day with Jim Stewart at NRC H.Q., who is an E D/G expert. Mr. Stewart confirmed that this is evidence of paralleling out of phase and agreed with the adequacy of the temporary fix. He also contacted Electro-Motive Division (EMD) of General Motors and was informed that CECO had not contacted the manufacturer. At that time, EMD was going to contact CECO for further information.

As of this date, I have received no further information from headquarters or the licensee. Please contact me if you need any further information.

T. M. Tongue
Senior Resident Inspector,
Dresden Nuclear Power Station