

UNITED STATES
NUCLEAR REGULATORY COMMISSION
OFFICE OF NUCLEAR REACTOR REGULATION
WASHINGTON, D.C. 20555

September 4, 1987

NRC INFORMATION NOTICE NO. 87-42: DIESEL GENERATOR FUSE CONTACTS

Addressees:

All nuclear power reactor facilities holding an operating license or a construction permit.

Purpose:

This information notice is being provided to alert recipients to potential failures of emergency electrical power supplies resulting from misalignment and/or degradation of fuse contacts. It is expected that recipients will review the information for applicability to their facilities and consider actions, if appropriate, to avoid similar problems. However, suggestions contained in this notice do not constitute NRC requirements; therefore, no specific action or written response is required.

Description of Circumstances:

At Browns Ferry Nuclear Plant, Unit 3, during routine surveillance testing of an emergency diesel generator on April 20, 1987, an explosion occurred in the electrical control cabinet. The explosion resulted from a phase-to-phase short in a cable bundle in the potential transformer (PT) fuse compartment.

The electrical control cabinet was supplied by Power Systems Division of General Motors, the diesel generator manufacturer. The licensee's investigation revealed that the cables routing power from the PT fuses to the transformers shorted after their insulation failed because of an overtemperature condition. This condition is believed to have been caused by an excessive air gap and/or poor contact between the spring finger contact arrangement of the PT fuses. The spring finger contacts were manufactured by Allis-Chalmers. The moveable contacts are mounted to the PT fuse compartment door so that when the door is opened, the contacts disconnect, thereby preventing anyone from pulling the fuse while it is carrying current. When the door is closed, the moveable contact finger connects with the stationary contact. Although the contacts were destroyed by the event, the licensee concluded that an air gap due to misalignment or contact degradation from corrosion, pitting, or burning, caused arcing and eventual failure. Although the cause has been attributed to inadequate maintenance of the contact, the licensee is considering design changes as a permanent solution.

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Discussion:

The licensee inspected the other seven diesel generator control cabinets and found three other instances of poor contact. Visual inspection for burning, pitting, corrosion and improper alignment and mating of contact surfaces were performed as well as micro-ohmmeter checks. Since 1973, four previous onsite events involving this type of pressure contact arrangement have occurred on non-safety-related electrical boards designed by General Electric Co. Because of this type of problem, General Electric modified similar contacts on its electrical boards to knife switch contacts. The licensee considers the problem to be generic and has initiated a visual inspection of all PT fuse compartments.

No specific action or written response is required by this information notice. If you have any questions about this matter, please contact the Regional Administrator of the appropriate regional office or this office.

Charles E. Rossi

Charles E. Rossi, Director
Division of Operational Events Assessment
Office of Nuclear Reactor Regulation

Technical Contacts: C. Brooks, RII
(205) 729-6196

Samuel D. MacKay, NRR
(301) 492-8394

Attachment: List of Recently Issued NRC Information Notices

Attachment
IN 87-42
September 4, 1987

LIST OF RECENTLY ISSUED
INFORMATION NOTICES 1987

Information Notice No.	Subject	Date of Issuance	Issued to
87-41	Failures of Certain Brown Boveri Electric Circuit Breakers	8/31/87	All nuclear power reactor facilities holding an OL or CP.
87-40	Backseating Valves Routinely to Prevent Packing Leakage	8/31/87	All nuclear power reactor facilities holding an OL or CP.
87-39	Control of Hot Particle Contamination at Nuclear Power Plants	8/21/87	All nuclear power reactor facilities and spent fuel storage facilities holding an NRC license or CP.
87-38	Inadequate or Inadvertent Blocking of Valve Movement	8/17/87	All nuclear power reactor facilities holding an OL or CP.
87-37	Compliance with the General License Provisions of 10 CFR Part 31	8/10/87	All persons specifically licensed to manufacture or to initially transfer devices containing radioactive material to general licensees, as defined in 10 CFR Part 31.
87-36	Significant Unexpected Erosion of Feedwater Lines	8/4/87	All nuclear power reactor facilities holding an OL or CP.
87-35	Reactor Trip Breaker, Westinghouse Model DS-416, Failed to Open on Manual Initiation from the Control Room	7/30/87	All nuclear power reactor facilities holding an OL or CP employing W DS-416 reactor trip breakers.
87-34	Single Failures in Auxiliary Feedwater Systems	7/24/87	All holders of an OL or a CP for pressurized water reactor facilities.

OL = Operating License
CP = Construction Permit

Discussion:

The licensee inspected the other seven diesel generator control cabinets and found three other instances of poor contact. Visual inspection for burning, pitting, corrosion and proper alignment and mating of contact surfaces were performed as well as micro-ohmmeter checks. Since 1973, four previous onsite events involving this type of pressure contact arrangement have occurred on non-safety-related electrical boards designed by General Electric Co. Because of this type of problem, General Electric modified similar contacts on its electrical boards to knife switch contacts. The licensee considers the problem to be generic and has initiated a visual inspection of all PT fuse compartments.

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*SEE PREVIOUS CONCURRENCES
RII *OGCB:DOEA:NRR
CBrooks SDMacKay
08/26/87 08/11/87

*PPMB:ARM
TechEd
08/12/87

*C/OGCB:DOEA:NRR
CHBerlinger
08/27/87

D/DOEA:NRR
CERoss
08/31/87

CONCURRED
BY PHONE
S.M.

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Discussion:

The licensee inspected the other seven diesel generator control cabinets and found three other instances of poor contact. Visual inspection for burning, pitting, and corrosion and proper alignment and mating of contact surfaces were performed as well as microhmmeter checks. Four previous onsite events involving this type of pressure contact arrangement have occurred dating back to 1973 on non-safety related electrical boards. Because of this problem, GE modified similar contacts on their electrical boards to use knife switch contacts. The licensee considers the problem to be generic and has initiated a visual inspection of all PT fuse compartments.

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