

UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
OFFICE OF NUCLEAR REACTOR REGULATION  
WASHINGTON, D.C. 20555-0001

November 20, 1996

**NRC INFORMATION NOTICE 96-62: POTENTIAL FAILURE OF THE INSTANTANEOUS  
TRIP FUNCTION OF GENERAL ELECTRIC RMS-9  
PROGRAMMERS**

Addressees

All holders of operating licenses and construction permits for nuclear power plants.

Purpose

The U.S. Nuclear Regulatory Commission (NRC) is issuing this information notice to alert addressees to the potential that the instantaneous trip function of some General Electric RMS-9 overcurrent trip device programmers may fail to trip the associated 480-V ac circuit breaker at the desired current setting. It is expected that recipients will review the information for applicability to their facilities and consider actions, as appropriate, to avoid similar problems. However, suggestions contained in this information notice are not NRC requirements; therefore, no specific action or written response is required.

Description of Circumstances

General Electric Nuclear Energy (GE NE) sent the results of an evaluation of some reported failures of the instantaneous trip function of GE Type RMS-9 Overcurrent Trip Device Programmers to all affected customers and the NRC in a letter dated August 30, 1996. These devices were provided as spare parts, or as components of either refurbished GE Type AK 480-V ac circuit breakers or new AK7/AKR-7 circuit breakers for overcurrent protection. The affected programmers may trip at an instantaneous current value below the selected setting.

The devices were manufactured by GE Electrical Distribution and Control and supplied by GE NE as safety-related components for balance-of-plant and unspecified applications. Since the specific applications and associated safety functions of the RMS-9 programmers are not known to GE NE, the company notified affected licensees in accordance with 10 CFR 21.21(b). However, because some licensees may have purchased these devices as commercial-grade items or from a dedicating entity other than GE NE, the NRC is issuing this information notice to ensure that all potentially affected licensees are notified.

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updated on  
11/22/96

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### Discussion

The cause of the failure of the instantaneous trip function was determined to be a polyester epoxy film on the internal switch contacts. The film acts as an insulator, so that if the instantaneous switch setting is changed from its initial setting, the contacts do not make and the programmer automatically fails to its lowest instantaneous pickup setting (1.5X). The film is the result of insufficient curing of the conformal coating (polyester epoxy) applied to the RMS-9 programmer during final assembly. Testing by GE showed that some of the coating ran under the switch during application and the coating was not properly cured because it was masked by the switch during the ultraviolet curing process. Over time, the external switch contacts acted as wicks and drew some of the uncured coating into the switch where it formed a thin film on the internal switch contacts.

Testing by GE also showed that the film did not form between the movable contacts and the stationary contacts in the switch. Therefore, if the instantaneous trip function is operating properly and the switch has not been moved from its initial position, it should continue to operate properly.

An RMS-9 programmer that trips at a value lower than the selected value could cause a motor to fail to start because the starting current could be higher than the setpoint in the programmer. If a programmer trips at higher than expected value, it is possible that the breaker may not trip soon enough under fault conditions and other breakers upstream may have to trip to clear the fault, resulting in the loss of more of the power system than anticipated. However, no reported failures of the type discussed herein have resulted in a breaker tripping at a current higher than the desired setting.

### Related Generic Communications

NRC Information Notice 93-75, "Spurious Tripping of Low-Voltage Power Circuit Breakers With GE RMS-9 Digital Trip Units," was issued on September 17, 1993, to alert licensees to the potential for the RMS-9 programmers to cause spurious circuit breaker trips when exposed to short duration (100 microseconds) current spikes (high-frequency electrical noise). Although the same component is involved in both instances, the two problems are unrelated.

This information notice requires no specific action or written response. If you have any questions about the information in this notice, please contact one of the technical contacts listed below or the appropriate Office of Nuclear Reactor Regulation (NRR) project manager.



Thomas T. Martin, Director  
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LIST OF RECENTLY ISSUED  
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Information Notice No.	Subject	Date of Issuance	Issued to
96-61	Failure of a Main Steam Safety Valve to Reseat Caused by an Improperly Installed Release Nut	11/20/96	All holders of OLs or CPs for nuclear power reactors
96-60	Potential Common-Mode Post-Accident Failure of Residual Heat Removal Heat Exchangers	11/14/96	All holders of OLs or CPs for nuclear power reactors
96-59	Potential Degradation of Post Loss-of-Coolant Recirculation Capability as a Result of Debris	10/30/96	All holders of OLs or CPs for nuclear power reactors
96-58	RCP Seal Replacement with Pump on Backseat	10/30/96	All holders of OLs or CPs for pressurized-water reactors
96-57	Incident-Reporting Requirements Involving Intakes, During a 24-Hour Period That May Cause a Total Effective Dose Equivalent in Excess of 0.05 Sv (5 rems)	10/29/96	All U.S. Nuclear Regulatory Commission licensees

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OL = Operating License  
CP = Construction Permit

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original signed by  
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Tech Editor has reviewed and concurred on 10/17/96

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