

GENERAL ELECTRIC

GENERAL ELECTRIC COMPANY, 175 CURTNER AVE., SAN JOSE, CALIFORNIA 95125
MC 682, (408) 925-5040

NUCLEAR POWER

SYSTEMS DIVISION

MFN 040-82

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Office of Inspection and Enforcement
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Attention: Richard C. DeYoung, Director

Subject: GENERAL ELECTRIC HMA RELAYS

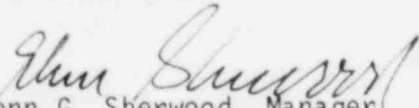


This letter is to inform you of our evaluation of a deficiency in HMA relays, which has previously been reported under 10CFR Part 21 by the General Electric Power Systems Management Business Department (PSMBD). The NRC was notified of this condition on July 8, 1981. The potential defect involves HMA relays, manufactured from January 1976 through June 1981, whose contact leads may not be fully insulated. A PSMBD Service Advice letter dated November 12, 1981 notified all purchasers of the HMA relays to inspect for the problem. However, no relay failures resulting from this problem have been identified.

There are no operating BWR plants which utilize HMA relays supplied by GE's Nuclear Power Systems Division. All HMA relay potential problems will be corrected before plant startup.

The attached evaluation identifies our application of the HMA relays in various systems, as well as the plant that may be affected by this deficiency.

Very truly yours,


Glenn G. Sherwood, Manager
Safety & Licensing Operation

Attachment.

cc: B. H. Grier, Region I
J. P. O'Reilly, Region II
J. G. Keppler, Region III
U. Potapovs, Region IV
R. H. Engelken, Region V
L. S. Gifford (GE Washington Liaison Office)

ATTACHMENT

An evaluation of the safety impact of the potentially defective HMA Relays manufactured in the period 1/1976 through 6/1981 and defined by GE-PSMBD service advice 721-PSM-166.1 is as follows:

Examples of the systems in which potentially defective HMA Relays are found include:

Susquehanna 1	RHR, HPCI, Auto. Depressurization (ADS)
Susquehanna 2	RHR, HPCI
Hope Creek	RHR, Core Spray
Perry 1	RCIC, RHR
Limerick 2	RHR, Core Spray
Grand Gulf 1	RHR
Grand Gulf 2	RHR, LPCS, HPCS (Power Supply)
CNV	HPCS (Power Supply)
Clinton	HPCS (Power Supply)
TVA Hartsville	HPCS (Power Supply)
River Bend	LPCS

Functionally, applications of potentially defective HMA Relays in safety related circuits appear to fall entirely into three categories. This observation is based on a sample check. The three categories are as follows:

- 1) HMA Relays are used in monitoring applications in safety related systems where the relay performs strictly a monitoring function. The relays are used to actuate annunciators, and computer inputs. Examples of this utilization of potentially HMA Relays include:

Susquehanna 1

The same relay coils energize when the respective ADS solenoid is energized. The relay contacts operate non-safety related computer inputs.

The other relays are used as power loss monitors in the ADS system. The coil is energized by the respective ADS logic power. The contacts operate non-safety related annunciators.

In Category 1, the potential safety impact of a failure of an HMA Relay is the loss of electrical isolation between the safety and non-safety circuits. If this were to occur, it is possible that an electrical fault and a failure of the safety circuit could result. The lack of adequate isolation capability is in violation of IEEE 279 Page 4.7.2 Isolation Devices, the code of Federal Regulations 10CFR50 Appendix A Criterion 22, and other codes and standards applied on a plant unique basis. It should be noted, however, that per the PSMBD service advice, no failures of HMA Relays have ever been reported. HMA Relays are seismically qualified as part of the enclosure in which they are installed.

- 2) HMA Relays are used in safety related logic circuit applications to provide both a safety function and a non-safety function. The relay is relied upon to provide isolation, coil-to-contact and contact-to-contact, between safety and non-safety portions of the circuit.

Examples of HMA Relays utilized in this type application include relays used in the electrical control of HPCS power supply switch-gear which perform a safety related logic function. Also, the relay provides contacts that perform a non-safety annunciator trip function. Coil-to contact and contact-to-contact isolation is required.

In this category, the potential safety impact of a failure of an HMA Relay is either the resultant failure of the safety circuit resulting from a relay failure, or the failure of the safety circuit due to a fault introduced by a failure of the relay to properly isolate the non-safety circuit. The likelihood of a safety circuit failure in this category is greater than in Category 1 because there are two failure modes instead of one. Other considerations regarding safety impact applicable to Category 1, are also applicable to Category 2.

- 3) The third category of HMA Relay applications include those relays that only perform a logic function. Examples in this category are relays which are part of the pump stop circuits for the RHR pumps. The safety impact of a failure of one of these HMA Relays is the resultant failure of the safety related logic circuit.

GE will issue Field Disposition Instructions (FDIs) to inspect and repair potentially defective HMA Relays at all affected projects. FDI schedules are attached.

Additionally, manufacturing will inspect and purge all defective HMA Relays. It is assumed that PSMBD has corrected the problem and no new defective HMA Relays will be provided.

CORRECTION OF HMA RELAYS

<u>PLANT</u>		<u>SCHEDULE</u>
La Salle 1	50-373	2/5/82
La Salle 2	50-374	2/5/82
Grand Gulf 1	50-416	2/19/82
Grand Gulf 2	50-417	2/19/82
Susquehanna 1	50-387	2/12/82
Susquehanna 2	50-388	2/12/82
Limerick 1	50-352	4/30/82
Limerick 2	50-353	4/30/82
Fermi	50-341	2/19/82
Perry 1	50-440	2/19/82
Perry 2	50-441	2/19/82
Zimmer	50-358	2/26/82
Shoreham	50-322	2/26/82
Hope Creek 1	50-354	7/23/82
Hope Creek 2	50-355	7/23/82
Nine Mile Pt. 2	50-410	7/23/82
Hanford	50-460	7/23/82
River Bend	50-458 50-459	7/23/82
Clinton	50-461 50-462	7/23/82
TVA (Hartsville)	50-517 518 519 520 521	12/10/82