

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) THREE MILE ISLAND, UNIT 1	DOCKET NUMBER (2) 0 5 0 0 0 2 8 9	PAGE (3) 1 OF 013
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TITLE (4)
DIESEL GENERATOR DIFFERENTIAL RELAYS

EVENT DATE (5)			LER NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)		
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAMES		DOCKET NUMBER(S)
0	7	1984	1984	005	00	0	8	1984			0 5 0 0 0
											0 5 0 0 0

OPERATING MODE (9) N

POWER LEVEL (10) C 10 10

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)

<input type="checkbox"/> 20.402(b)	<input type="checkbox"/> 20.406(e)	<input type="checkbox"/> 80.73(a)(2)(iv)	<input type="checkbox"/> 73.71(b)
<input type="checkbox"/> 20.406(a)(1)(i)	<input type="checkbox"/> 80.36(a)(1)	<input checked="" type="checkbox"/> 80.73(a)(2)(v)	<input type="checkbox"/> 73.71(e)
<input type="checkbox"/> 20.406(a)(1)(ii)	<input type="checkbox"/> 80.36(a)(2)	<input type="checkbox"/> 80.73(a)(2)(vi)	OTHER (Specify in Abstract below end in Text, NRC Form 365A)
<input type="checkbox"/> 20.406(a)(1)(iii)	<input type="checkbox"/> 80.73(a)(2)(i)	<input type="checkbox"/> 80.73(a)(2)(viii)(A)	
<input type="checkbox"/> 20.406(a)(1)(iv)	<input type="checkbox"/> 80.73(a)(2)(ii)	<input type="checkbox"/> 80.73(a)(2)(viii)(B)	
<input type="checkbox"/> 20.406(a)(1)(v)	<input type="checkbox"/> 80.73(a)(2)(iii)	<input type="checkbox"/> 80.73(a)(2)(x)	

LICENSEE CONTACT FOR THIS LER (12)

NAME M. R. KNIGHT, TMI-1 SENIOR LICENSING ENGINEER	TELEPHONE NUMBER 7 1 7 9 4 8 - 8 5 5 4
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COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS
B	E K	8 7	G O 8 O	N					

SUPPLEMENTAL REPORT EXPECTED (14)

YES (If yes, complete EXPECTED SUBMISSION DATE) NO

EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR

ABSTRACT (Limit to 1400 spaces, i.e., approximately fifteen single-space typewritten lines) (16)

On July 16, 1984, it was discovered that the diesel generator differential relays may not be capable of withstanding a seismic event and could result in both diesel generators being unavailable. TMI-1 was in long term cold shutdown with the Reactor Coolant System at atmospheric pressure at the time of discovery.

This event was discovered as a result of INPO Significant Event Report (SER):18-84 "Differential Relay Problems in Emergency Diesel Generator Control Circuits". One of the problems cited was that relays with similar model numbers to TMI-1 relays have failed seismic testing in the deenergized state. The supplier for TMI-1 Diesel Generator Differential relays (Westinghouse) was unable to provide documentation to show that the relays are qualified. The manufacturer (General Electric) does not recommend these relays for seismic service.

Diesel Generator Differential relays will be replaced with relays whose qualification is known. Until replacements are obtained and the relays are changed, TMI-1 diesel generators will remain in standby and the differential relay trip function will be defeated prior to criticality except for diesel generator testing.

No incorrect operation of the relays has been noted and the seismic acceleration required to cause misoperation is unknown. Public health and safety were unaffected.

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LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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TEXT (If more space is required, use additional NRC Form 366A's) (17)

DIESEL GENERATOR DIFFERENTIAL RELAYS (EVENT DATE 07/16/84)

I. PLANT OPERATING CONDITIONS BEFORE THE EVENT:

TMI-1 was in long term cold shutdown at the time of the occurrence with the Reactor Coolant System at atmospheric pressure. The diesel generators were in standby.

II. STATUS OF STRUCTURES, COMPONENTS, OR SYSTEMS THAT WERE INOPERABLE AT THE START OF THE EVENT AND THAT CONTRIBUTED TO THE EVENT:

N/A.

III. EVENT DESCRIPTION:

INPO SER 18-84 advised of Differential Relay Problems in Emergency Diesel Generator Control Circuits. One of the problems cited was sensitivity to shock. This problem applies to General Electric Model CFD relays. The GE Model addressed in the SER is 12CFD22B1A. The differential relays used on TMI-1 diesel generators are Model 12CFD12B1A. Based on the similarity of the model numbers, investigation was commenced to determine the seismic qualification of the relays at TMI-1.

Based on the following information the relays were determined to be unsatisfactory:

- a) The supplier (Westinghouse) is unable to provide documentation to show that the relays are qualified.
- b) The manufacturer (General Electric) does not recommend the relays for seismic service.
- c) The INPO SER states that the relays similar to TMI-1 relays failed seismic testing. (The level at which they failed is not known.)

Cause of the event is attributed to improper application of the subject relays in the original plant design. The diesel generators were kept in standby but were placed under administrative control until corrective action can be taken.

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TEXT (If more space is required, use additional NRC Form 366A's) (17)

IV. COMPONENT FAILURE DATA:

The relays are General Electric High Speed Differential Relays Model 12CFD12B1A.

V. AUTOMATIC OR MANUALLY INITIATED SAFETY SYSTEM RESPONSES:

N/A

VI. ASSESSMENT OF THE SAFETY CONSEQUENCES AND IMPLICATIONS OF THE EVENT:

The diesel generator differential relays operate a lockout relay which trips and locks out the diesel generator breaker and diesel engine in the event of an electrical fault within the generator windings. Incorrect operation during a seismic event could result in both diesel generators being unavailable.

No incorrect operation of the relays has been noted and the seismic acceleration required to cause misoperation is unknown.

VII. PREVIOUS EVENTS OF A SIMILAR NATURE:

None.

VIII. CORRECTIVE ACTION PLANNED:

The relays will be replaced with relays whose qualification is known. If unable to replace the relays prior to criticality, the differential relay trip function will be defeated except for testing of the diesel generator.

The function of the differential relays is to limit the amount of damage in the event of a fault within the generator windings. A fault that would correctly operate the relays would render the diesel inoperable as a direct result of the fault. Disconnecting the relays as a temporary measure will not compromise safety because it will not reduce diesel generator reliability and will not increase the probability of a fault.



GPU Nuclear Corporation
Post Office Box 480
Route 141 South
Middletown, Pennsylvania 17057-0191
717 944-7621
TELEX 84-2386
Writer's Direct Dial Number:

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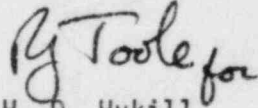
U. S. Nuclear Regulatory Commission
Document Control Room
Mail Stop 058
Washington, D.C. 20555

Dear Sir:

Three Mile Island Nuclear Station, Unit 1, (TMI-1)
Operating License No. DPR-50
Docket No. 50-289
LER 84-005-0

This letter transmits Licensee Event Report (LER) No. 84-005-0 which deals with Diesel Generator Differential Relays. Public health and safety were unaffected.

This LER is being submitted pursuant to 10 CFR 50.73, using the required NRC forms (attached). NRC Form 366 contains an abstract which provides a brief description of the event. For a complete understanding of the event, refer to the text of the report which appears on Form 366A.

Sincerely,

H. D. Hukill
Director, TMI-1

HDH:MRK:vjf

Enclosure

cc: Dr. T. E. Murley, NRC, Region I, Regional Administrator
R. Conte, NRC, Senior Resident Inspector
J. Van Vliet, NRC, Project Manager

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