

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

June 22, 1992

NRC INFORMATION NOTICE 92-45: INCORRECT RELAY USED IN EMERGENCY DIESEL
GENERATOR OUTPUT BREAKER CONTROL CIRCUITRY

Addressees

All holders of operating licenses or construction permits for nuclear power reactors.

Purpose

The U.S. Nuclear Regulatory Commission (NRC) is issuing this information notice to alert addressees to a potential problem that may exist at their facilities resulting from the failure of a relay in the control circuitry for an emergency diesel generator (EDG) output breaker to perform its intended design function. 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

On April 3, 1992, during the weekly idle start test of an EDG at the St. Lucie Plant, Unit 1, of the Florida Power and Light Company (the licensee), the control room operator was unable to close the output circuit breaker after the EDG had started, warmed up, and achieved rated speed. The licensee analyzed the control circuitry and found that a relay was not functioning properly for an unknown reason. The licensee sent the relay to Westinghouse for failure analysis. This relay is intended to prevent the output circuit breaker from closing when the generator is operating at a frequency below 54 Hz. However, the licensee found independent of the specific cause of the failure which occurred on April 3, 1992, that the relay had not been properly selected and was not able to perform its intended function. When operating as actually designed, the relay would permit the circuit breaker to close at all frequencies up to 62.5Hz. The licensee had not noticed this discrepancy during previous testing because the EDG usually achieves 90 percent of full voltage (the circuitry also includes an under-voltage permissive relay function) at almost the same time as it achieves 90 percent of full frequency. The licensee determined that the relay had been incorrectly selected because of an ambiguity in the Westinghouse catalog description for this particular relay (Style 177C717G03, 60 Hz/120 V). Westinghouse has since corrected the catalog description. The licensee corrected the error in relay selection by replacing the relay with another relay that properly performs the under-frequency permissive function.

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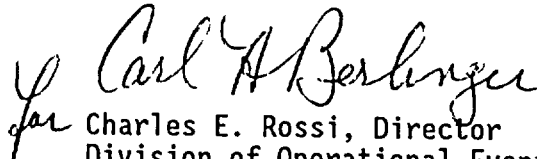
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Discussion

The EDG control circuitry is designed to prevent the output circuit breaker from closing prematurely. This circuitry includes under-frequency and under-voltage permissive relays to ensure that the EDG attains both 90 percent of rated frequency and 90 percent of rated voltage before the output circuit breaker closes. Under emergency conditions (e.g., accident conditions with loss of offsite power), use of the incorrect relay could allow the output circuit breaker to close before the EDG reaches the necessary operating conditions possibly resulting in shutdown of the diesel engine and/or damage to the safety-related loads.

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.



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

Technical contacts: Walter P. Haass, NRR
(301) 504-3219

E. Nick Fields, NRR
(301) 504-1173

Attachment: List of Recently Issued NRC Information Notices

LIST OF RECENTLY ISSUED
NRC INFORMATION NOTICES

Information Notice No.	Subject	Date of Issuance	Issued to
92-44	Problems with Westing- house DS-206 and DSL-206 Type Circuit Breakers	06/18/92	All holders of OLs or CPs for nuclear power reactors.
92-43	Defective Molded Phen- olic Armature Carriers Found on Elmwood Con- tactors	06/09/92	All holders of OLs or CPs for nuclear power reactors.
92-42	Fraudulent Bolts in Seismically Designed Walls	06/01/92	All holders of OLs or CPs for nuclear power reactors.
92-41	Consideration of the Stem Rejection Load in Calculation of Required Valve Thrust	05/29/92	All holders of OLs or CPs for nuclear power reactors.
92-40	Inadequate Testing of Emergency Bus Under- voltage Logic Circuitry	05/27/92	All holders of OLs or CPs for nuclear power reactors.
92-39	Unplanned Return to Criticality during Reactor Shutdown	05/13/92	All holders of OLs or CPs for nuclear power reactors.
92-38	Implementation Date for the Revision to the EPA Manual of Protective Action Guides and Pro- tective Actions for Nuclear Incidents	05/12/92	All holders of OLs or CPs for nuclear power reactors, non-power reactors and materials licensees auth- orized to possess large quantities of radioactive material.
92-37	Implementation of the Deliberate Misconduct Rule	05/08/92	All Nuclear Regulatory Commission Materials Licensees.

OL = Operating License
CP = Construction Permit

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VIB/DRIS	OEAB/NRR	RIII	VIB/DRIS	VIB/DRIS	VIB/DRIS
WPHaass*	ENFields*	KLandis**	GCwalina*	LNorrholm*	BKGrimes
04/15/92	04/15/92	04/13/92	04/15/92	04/21/92	04/23/92
OEAB/NRR	OGCB/NRR	DOEA/NRR	Tch. Edtr.*		
ACHaffee*	CBerlinger**	CRossi			
04/29/92	05/20/92	06/17/92	04/15/92		

DOCUMENT NAME: 92-45.in

**Telephone concurrence received on 4/13/92

**See previous concurrence.

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

Sincerely,

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OFF	VIB/DRIS	OEAB/NRR	R III	VIB/DRIS	VIB/DRIS	VIB/DRIS
NAME	WPHaass*	ENFields*	KLandis**	GCwalina*	LNorrholm*	BKGrimes*
DATE	04/15/92	04/15/92	04/13/92	04/15/92	04/21/92	04/23/92

OFF	OEAB/NRR	OGCB/NRR	DOEA/NRR			
NAME	AChaffee*	CBerlinger**	CRossi <i>CR</i>	Tch. Edtr.*		
DATE	04/29/92	05/ /92	05/ /92	04/15/92		

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DISTRIBUTION:

VIB R/F	DRIS R/F	LNorrholm	WPHaass
AChaffee	BKGrimes	ENFields	CBerlinger
KLandis	CRossi	GCwalina	

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Distribution:

VIB R/F	INorrholm
DRIS R/F	BKGrimes
WPHaass	AChaffee
ENFields	CBerlinger
KLandis	CRossi
GCwalina	

Concurrence:

OFF	VIB/DRIS	OEAB/NRR	R III	VIB/DRIS	VIB/DRIS	VIB/DRIS
NAME	WPHaass*	ENFields*	KLandis**	GCwalina*	INorrholm*	BKGrimes*
DATE	04/15/92	04/15/92	04/13/92	04/15/92	04/21/92	04/23/92

OFF	OEAB/NRR	OGCB/NRR	DOEA/NRR			
NAME	AChaffee*	CBerlinger	CRossi	Tch. Edtr.*		
DATE	04/29/92	05/10/92	05/ /92	04/15/92		

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DISTRIBUTION

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 DRIS R/F
 WHaass
 ENFields
 KLandis
 GCwalina
 LNorrholm
 AChaffee
 CBerlinger
 CRossi

Concurrence:

OFC	VIB/DRIS	OEAB/NRR	RIII	VIB/DRIS	VIB/DRIS	VIB/DRIS
NAME	WHaass*	ENFields*	KLandis**	GCwalina*	LNorrholm	BGrimes <i>am</i>
DATE	04/15/92	04/15/92	04/13/92	04/15/92	04/21/92*	04/23/92

OFC	OEAB/NRR	OGCB/NRR	DOEA/NRR			
NAME	<i>AS</i> AChaffee	CBerlinger	CRossi	TechEditor*		
DATE	04/29/92	04/ /92	04/ /92	04/15/92		

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DISTRIBUTION

VIB R/F
DRIS R/F
WHaass
ENFields
KLandis
GCwalina
LNorrholm
AChaffee
CBerlinger
CRossi

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OFC	VIB/DRIS	OEAB/NRR	RIII	VIB/DRIS	VIB/DRIS	VIB/DRIS
NAME	WHaass*	ENFields*	KLandis**	GCwalina*	LNorrholm	BGrimes
DATE	04/15/92	04/15/92	04/13/92	04/15/92	04/21/92	04/ /92

OFC	OEAB/NRR	OGCB/NRR	DOEA/NRR			
NAME	AChaffee	CBerlinger	CRossi	TechEditor*		
DATE	04/ /92	04/ /92	04/ /92	04/15/92		

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IN 92-XX
April 15, 1992
Page 2 of 2

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OFC	<i>WPH</i>		<i>WPH</i>	<i>WPH</i>		
NAME	WHaass	EN ^{ENT} Fields	KLandis	GCWalina	LNorrholm	BGrimes
DATE	04/15/92	04/15/92	04/13/92	04/15/92	04/ /92	04/ /92

OFC				JMain <i>JM</i>		
NAME	ACHaffee	CBerlinger	CRossi	Tech. Editor		
DATE	04/ /92	04/ /92	04/ /92	04/15/92		

* *Telephone concurrence received on 4/13/92*