



Commonwealth Edison
Dresden Nuclear Power Station
R.R. #1
Morris, Illinois 60450
Telephone 815/942-2920

April 11, 1992

CWS LTR #92-199

U.S. Nuclear Regulatory Commission
Document Control Desk
Washington, D.C. 20555

Licensee Event Report 92-10, Docket 050249 is being submitted as required by Technical Specification 6.6, NUREG 1022 and 10 CFR 50.73(a)(2)(iv).

L. J. Hemen for 4/14/92

Charles W. Schroeder
Station Manager
Dresden Nuclear Power Station

CWS/lma

Enclosure

cc: A. Bert Davis, Regional Administrator, Region III
NRC Resident Inspector's Office
File/NRC
File/Numerical

(ZDVR/546)

9204210040 920408
PDR ADOCK 05000249
S PDR

IF22
11

LICENSEE EVENT REPORT (LER)

Form Rev 2.0

Facility Name (1) Dresden Nuclear Power Station, Unit 3 Docket Number (2) 0 5 10 0 10 2 14 9 Page (3) 1 of 4

Title (4) Engineered Safety Feature Actuation Due to Reactor Protection System Motor Generator Set Drive Motor Breaker Failure

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	3	2	1	9	2	9	2	0	4	0	8	9	2	N/A	

OPERATING MODE (9)	N	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10CFR (Check one or more of the following) (11)															
POWER LEVEL (10)	0	0	0	20.402(b)	20.405(c)	X	50.73(a)(2)(iv)	73.71(b)	20.405(a)(1)(i)	50.36(c)(1)	50.73(a)(2)(v)	73.71(c)	20.405(a)(1)(ii)	50.36(c)(2)	50.73(a)(2)(vii)	Other (Specify in Abstract below and in Text)	
				20.405(a)(1)(iii)	50.73(a)(2)(i)		50.73(a)(2)(viii)(A)		20.405(a)(1)(iv)	50.73(a)(2)(ii)		50.73(a)(2)(viii)(B)		20.405(a)(1)(v)	50.73(a)(2)(iii)		

LICENSEE CONTACT FOR THIS LER (12)

Name: David Baran, Technical Staff Engineer Ext. 2513

TELEPHONE NUMBER: 8 1 5 9 4 2 -12 19 10

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFAC-TURER	REPORTABLE TO NPRDS	CAUSE	SYSTEM	COMPONENT	MANUFAC-TURER	REPORTABLE TO NPRDS
X	J	C	C L	Y	X	J	C	R L Y	Y
X	J	C	X F M R	Y					

SUPPLEMENTAL REPORT EXPECTED (14)

Expected Submission Date (15) X | NO

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

On March 21, 1992, with Unit 3 in cold shutdown for a refueling outage, Special Procedure 92-3-57, Bus Undervoltage and ECCS Integrated Functional Test for Unit 2/3 Diesel Generator (Unit 3 Test Only) was in progress. The Channel B Reactor Protection System (RPS) bus deenergized due to a short and subsequent fire in the 3A RPS Motor Generator (MG) Set Drive Motor Breaker resulting in a half scram and an unplanned Engineered Safety Feature actuation. The Channel B Reactor Building and Refuel Floor Radiation Monitors were deenergized causing an isolation of both Units 2 and 3 Reactor Building Ventilation and an auto start of the Standby Gas Treatment System. The breaker was racked out and the fire was immediately extinguished. Based on Unit status and the fact that all systems performed as designed, the safety significance of this event is minimal.

The damaged breaker components were replaced and the 3A RPS MG Set was returned to service on March 22, 1992. A maintenance history review revealed that these breakers may require additional preventive measures to prevent recurrence of this event. In addition, a minor design deficiency in the motor start circuitry for the RPS MG Sets was identified which results in uncontrolled restarts during extended loss of power events. Bus undervoltage surveillances will be revised to include caution statements to make the operators aware of this design feature.

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)				Page (3)			
		Year	Sequential Number	Revision Number					
Dresden Nuclear Power Station	0 5 0 0 0 2 4 9	9 2	- 0 1 0	- 0 0				0 2 0 F 0 4	

TEXT Energy Industry Identification System (EIIS) codes are identified in the text as [XX]

PLANT AND SYSTEM IDENTIFICATION:

General Electric - Boiling Water Reactor - 2527 Mwt rated core thermal power

Nuclear Tracking System (NTS) tracking code numbers are identified in the text as (XXX-XXX-XX-XXXXX)

EVENT IDENTIFICATION:

Engineered Safety Feature Actuation Due to Reactor Protection System Motor Generator Set Drive Motor Breaker Failure

A. CONDITIONS PRIOR TO EVENT:

Unit: 3	Event Date: March 21, 1992	Event Time: 1046 Hours
Reactor Mode: N	Mode Name: Shutdown	Power Level: 0%
Reactor Coolant System (RCS) Pressure: 0 psig		

B. DESCRIPTION OF EVENT:

On March 21, 1992, with Unit 3 in the cold shutdown mode, Special Procedure (SP) 92-3-57, Bus Undervoltage and ECCS Integrated Functional Test for Unit 2/3 Diesel Generator [EK] (Unit 3 Test Only) was in progress. While establishing a normal plant lineup, the Channel B Reactor Protection System (RPS) bus deenergized due to a short and subsequent fire in the 3A RPS Motor Generator (MG) Set Drive Motor Breaker. The 3A RPS MG Set feeds the 3B RPS bus. The loss of power on the 3B RPS bus resulted in a half scram and an unplanned Engineered Safety Feature (ESF) actuation. The Channel B Reactor Building and Refuel Floor Radiation Monitors [IL] were deenergized causing an isolation of both units Reactor Building Ventilation and an auto start of the Standby Gas Treatment (SBGT) [BH] System. Operators were dispatched to investigate, and found the 3A RPS MG Set Drive Motor Breaker control power transformer smoking. The breaker was racked out and the fire was immediately extinguished.

A contributing factor to this event was the unavailability of the Reserve RPS Power Supply during the bus undervoltage test. This alternate power source to the RPS busses was out-of-service to support a modification to its voltage regulator. When available, the Reserve RPS Power Supply is used to maintain the B RPS bus energized throughout the Diesel Generator 2/3 ECCS auto start and loading test. The 3A RPS MG Set was used during the SP to power RPS Channel B. The design of the start circuitry for the MG set is such that it attempts to restart during an event where power is lost, and is subsequently restored. The current surge from accelerating this high inertia device results in tripping the thermal overloads which are downstream of the run contactor. During a normal start, the thermal overloads are bypassed and a higher capacity start contactor is used until the MG set is rotating at its normal operating speed.

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)						Page (3)		
		Year	///	Sequential Number	///	Revision Number				
Dresden Nuclear Power Station	0 5 0 0 0 2 4 9	9 2	-	0 1 0	-	0 0	0 3	OF	0 4	

TEXT Energy Industry Identification System (EIIS) codes are identified in the text as [XX]

C. APPARENT CAUSE OF EVENT:

This event is being reported in accordance with 10 CFR Part 50 Section 73(a)(2)(iv), which requires reporting of any event or condition that resulted in manual or automatic actuation of any Engineered Safety Feature, if the actuation was not part of a preplanned sequence during testing or reactor operation.

The cause of the 3A RPS MG Set Drive Motor Breaker failure was a short in the run contactor coil. This short drew excessive current in the control power transformer causing it to fail. The fire damaged a start control relay located next to the control power transformer and its connecting wiring. A review of the maintenance history for both unit's RPS MG Set Drive Motor Breakers revealed four previous corrective maintenance activities performed subsequent to reportable events. The preventive maintenance currently performed on these breakers is an annual thermographic inspection. Due to the importance of these breakers to plant reliability, additional measures are being implemented to prevent failures of the type experienced in this event.

A contributing cause to this event is a design deficiency in the motor start circuitry for RPS MG Sets. This design deficiency results in uncontrolled starts of the MG sets during loss of power events. In addition, plant conditions during the bus undervoltage test challenged this deficiency by tripping the MG Set thermal overloads.

D. SAFETY ANALYSIS OF EVENT:

The purpose of the Reactor Protection System is to monitor the critical parameters of reactor operation to protect against conditions that could degrade the fuel barriers and the reactor coolant pressure boundary. The Reactor Protection System logic fails conservatively whenever it is deenergized. The Unit was in the cold Shutdown mode with all rods fully inserted at the time of the event. Due to the Unit status and the fact that all systems performed as designed, the safety significance of this event is minimal.

E. CORRECTIVE ACTIONS:

Work Request 07989 was generated to repair the 3A RPS MG Set Drive Motor Breaker. The control power transformer, run contactor coil, start control relay, and their connecting wiring were replaced. The 3A RPS MG Set was started successfully on March 22, 1992, and thermography was performed to verify all connections were secure.

The RPS MG Set Drive Motor Breakers will be overhauled during the next refueling outage for each unit as part of an existing Station program for maintenance Balance of Plant Motor Control Center breakers. This periodic preventive maintenance activity will be included in the General Surveillance System (249-200-92-04401).

The Nuclear Engineering Department will investigate the feasibility of a design change to the RPS MG Set start circuitry to prevent uncontrolled restarts during extended loss of power events (Action Item Record 12-92-7).

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)						Page (3)		
		Year	///	Sequential Number	///	Revision Number				
Dresden Nuclear Power Station	0 5 0 0 0 2 4 9	9 2	-	0 1 0	-	0 0	0 4	OF	0 4	

TEXT Energy Industry Identification System (EIIS) codes are identified in the text as [XX]

The following Dresden Operating Surveillances (DOS) have been reviewed and determined to provide sufficient guidance to prevent uncontrolled RPS MG Set restarts. However, caution statements will be added to these procedures to make the operators aware of this design feature of the RPS MG Set start circuitry (249-200-92-04402).

- DOS 6600-03 Bus Undervoltage and ECCS Integrated Functional Test for Unit 2/3 Diesel Generator (Unit 3 Test Only)
- DOS 6600-04 Bus Undervoltage and ECCS Integrated Functional Test for Unit 3 Diesel Generator
- DOS 6600-05 Bus Undervoltage and ECCS Integrated Functional Test for Unit 2 Diesel Generator
- DOS 6600-06 Bus Undervoltage and ECCS Integrated Functional Test for Unit 2/3 Diesel Generator (Unit 2 Test Only)

F. PREVIOUS OCCURENCES:

LER/Docket Numbers Title

88-013/0500249 Loss of the 3A Reactor Protection System Bus and Subsequent ESF Actuations Due to a Loose Wire Connection

In this event a loose wire connection on the MG set breaker thermal overloads caused the MG set to trip.

89-015/0500237 Trip of the 2A Reactor Protection System Motor Generator Set Due to High Ambient Temperatures

In this event the MG set thermal overloads were tripping due to high ambient temperatures.

G. COMPONENT FAILURE DATA:

<u>Manufacturer</u>	<u>Nomenclature</u>	<u>Model Number</u>	<u>Mfg. Part Number</u>
General Electric	Starter Coil	15022G2	N/A
General Electric	Control Transformer	9T58B280505	N/A
General Electric	Relay	CR120A02022AA	N/A

An industry wide NPRDS data base search revealed no previous failures of the starter coil, three failures of the control power transformer, and 168 recorded failures of the control start relay.