



Commonwealth Edison

Dresden Nuclear Power Station

R.R. #1

Morris, Illinois 60450

Telephone 815/942-2920

July 29, 1992

CWS LTR #92-471

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

Licensee Event Report #92-24, Docket #050237 is being submitted as required by Technical Specification 6.6, NUREG 1022 and 10 CFR 50.73(a)(2)(v).

L. F. Newmeyer 7/31/92

Charles W. Schroeder
Station Manager
Dresden Nuclear Power Station

CWS/jmt

Enclosure

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

(ZDVR/687)

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LICENSEE EVENT REPORT (LER)

Form Rev. 2.0

Facility Name (1) Dresden Nuclear Power Station, Unit 2	Docket Number (2) 0 5 0 0 0 2 3 7	Page (3) 1 of 0 4
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Title (4) HPCI Declared Inoperable Due to Turning Gear Motor 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	7	19	9	0 2 4	0 0	0	7	19	N/A				

OPERATING MODE (9) POWER LEVEL (10) 0 7 5	N	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10CFR (Check one or more of the following) (11)																				
		<input type="checkbox"/> 20.402(b)	<input type="checkbox"/> 20.405(a)(1)(i)	<input type="checkbox"/> 20.405(a)(1)(ii)	<input type="checkbox"/> 20.405(a)(1)(iii)	<input type="checkbox"/> 20.405(a)(1)(iv)	<input type="checkbox"/> 20.405(a)(1)(v)	<input type="checkbox"/> 20.405(c)	<input type="checkbox"/> 50.36(c)(1)	<input checked="" type="checkbox"/> 50.36(c)(2)	<input type="checkbox"/> 50.73(a)(2)(i)	<input type="checkbox"/> 50.73(a)(2)(ii)	<input type="checkbox"/> 50.73(a)(2)(iii)	<input type="checkbox"/> 50.73(a)(2)(iv)	<input checked="" type="checkbox"/> 50.73(a)(2)(v)	<input type="checkbox"/> 50.73(a)(2)(vii)	<input type="checkbox"/> 50.73(a)(2)(viii)(A)	<input type="checkbox"/> 50.73(a)(2)(viii)(B)	<input type="checkbox"/> 50.73(a)(2)(x)	<input type="checkbox"/> 73.71(b)	<input type="checkbox"/> 73.71(c)	<input type="checkbox"/> Other (Specify in Abstract below and in Text)

LICENSEE CONTACT FOR THIS LER (12)

Name Mark Churilla Technical Staff System Engineer	Ext. 2788	TELEPHONE NUMBER AREA CODE 8 1 5 9 4 2 - 2 9 2 0
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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	B J	T G B	G 0 8 0	Y							

SUPPLEMENTAL REPORT EXPECTED (14)

<input type="checkbox"/> Yes (If yes, complete EXPECTED SUBMISSION DATE)	X	Expected Submission Date (15) Month Day Year
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ABSTRACT (Limit to 1400 spaces, i.e., approximately fifteen single-space typewritten lines) (16)

On July 11, 1992 at 1625 hours, with Unit 2 at 75% rated core thermal power, while performing Dresden Operating Procedure (DOP) 2300-2, High Pressure Coolant Injection (HPCI) System Turning Gear Operation, the HPCI turning gear (TGR) could not be engaged from the Control Room. The HPCI system was declared inoperable and a seven day Limiting Condition for Operation (LCO) was entered per Technical Specification (TS) 3.5. Work Request (WR) 10787 was initiated to investigate the TGR Breaker. The TGR Breaker was inspected and was found to have dirty TGR Motor contacts. The dirty contacts prevented the TGR Motor from operating, which prevented TGR engagement. The Electrical Maintenance Department (EMD) cleaned the contacts. The HPCI TGR was tested satisfactorily, and the seven day LCO was terminated on July 11, 1992. The Safety Significance of this event is minimal in that the HPCI System was available for injection into the reactor, if needed, and all other Emergency Core Cooling Systems (ECCs) required by TS 3.5.C.2.a were operable. A previous event involving Unit 2 TGR engagement difficulty occurred in February 1992 (LER 92-007/050237).

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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:

High Pressure Coolant Injection (HPCI) System [BJ] Declared Inoperable Due to Turning Gear Motor Failure

A. CONDITIONS PRIOR TO EVENT:

Unit: 2

Event Date: July 11, 1992

Event Time: 1625 Hours

Reactor Mode: N

Mode Name: Run

Power Level: 75%

Reactor Coolant System (RCS) Pressure: 965 psig

B. DESCRIPTION OF EVENT:

While performing Dresden Operating Procedure (DOP) 2300-2, HPCI System Turning Gear (TGR) Operation, the Unit 2 Nuclear Station Operator (NSO) was unable to engage the HPCI TGR from the Control Room. With the TGR not operating properly the HPCI system was declared inoperable and a seven day Limiting Condition for Operation (LCO) was entered per Technical Specification (TS) 3.5. Work Request (WR) 10887 was written to investigate and repair the problem. The investigation revealed that the TGR Motor contacts were dirty. The improper closure of these contacts prevented full voltage across the TGR Motor solenoids. The contacts were cleaned, the TGR was tested satisfactorily, and the seven day LCO was terminated at 2357 hours on July 11, 1992.

C. APPARENT CAUSE OF EVENT:

This report is being submitted in accordance with 10CFR50.73 (a)(2)(v)(D), which requires the reporting of any condition that could have prevented the fulfillment of a safety system needed to mitigate the consequences of an accident. It should be noted, however, that this condition would not have prevented initial HPCI initiation for injection into the reactor.

The TGR Motor is started by energizing two coils in the TGR Motor Breaker. When each coil energizes, a contactor arm is closed to energize the armature and fields of the motor. Mechanically connected to the motor contactor arms are two sets of four auxiliary contacts. The breaker is designed so that when the Motor contactor arms close, the auxiliary contacts also close. The auxiliary contacts are used to interlock the contactor arms closed and provide inputs to the TGR engagement circuit. These contacts are located in a 250 VDC [EI] Distribution Cabinet in Motor Control Center (MCC) 2A.

Investigation into the problem revealed that contacts in the TGR Motor coil circuit were dirty. This prevented the full voltage to be applied to the TGR Motor coils. Consequently, when the TGR Motor attempted to start, only one contactor arm closed, preventing the motor from starting and causing the TGR to fail.

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This problem was compounded when the auxiliary contacts for the arm that closed energized the engagement circuit. The TGR attempted to engage, but since the TGR motor was not turning the engagement arm was prevented from engaging fully. If the TGR engagement lever is not allowed to fully engage, the initial high current condition is not reduced in the circuit. Consequently, relay 2-2330-120 contacts in the engagement circuit arced upon opening due to the high opening current, causing a slight degradation of the contacts.

The contacts in the TGR motor circuit were cleaned. The HPCI TGR was successfully tested and the LCO was terminated at 2357 hours on July 11, 1992. The relay contacts which experienced arcing were slightly degraded and were not immediately changed since the TGR operated properly.

A history review indicated that similar events involving Unit 2 and Unit 3 occurred in February 1992 and August 1991, respectively. During the investigation of the Unit 2 TGR concern, it was determined that dirty auxiliary contacts in the engagement circuit and a mispositioned spring clip prevented TGR engagement. During the investigation into the Unit 3 TGR concern, it was determined that contacts in the auto-engage circuit degraded as a result of dirty auxiliary contacts in the TGR motor circuit. The aforementioned events involved the failure of the engagement circuit, whereas this event is attributed to the failure of the TGR Motor to start. The breakers where these contacts are located are included in a Preventative Maintenance program, and are scheduled to be overhauled during Unit 2 Refuel Outage D2R13 and Unit 3 Refuel Outage D3R13.

D. SAFETY ANALYSIS OF EVENT:

The HPCI TGR is used to rotate the turbine shaft after system operation. Without the TGR there is a possibility of the shaft bowing after prolonged system use. An Operability Evaluation was written on August 13, 1991 that addressed the operability of the HPCI system without the TGR. The Evaluation concluded that the TGR function is needed to support HPCI restart under design basis accident conditions, and the ability to remotely engage the TGR is necessary to declare the HPCI system operable. Without the TGR, however, the HPCI system would still initiate and supply the necessary pump discharge pressure and flow. In addition, the Isolation Condenser [BL] and Automatic Depressurization [SB] systems were operable throughout this event. Therefore, since HPCI initiation was possible without the TGR and the necessary safety systems were operable during the time of this event, the safety significance of this event is minimal.

E. CORRECTIVE ACTIONS:

The TGR Motor contacts in the TGR Motor Breaker were cleaned. The TGR was tested satisfactorily on July 11, 1992.

The degraded contacts for relay 2-2330-120 will be replaced under Work Request 10887 by the Electrical Maintenance Department (EMD). This action will be completed by September 1, 1992 (237-200-92-13101).

The EMD will overhaul both TGR Motor Breakers during Unit 2 Refuel Outage D2R13 and Unit 3 Refuel Outage D3R13 (237-200-92-13102).

A request has been submitted to the Nuclear Engineering Department to determine 1) if the circuit may be enhanced using spare contacts 2) if the internals of the TGR Motor Breaker can be upgraded with a better contactor. A determination on whether these items will be implemented will be made by 12/31/92 (237-200-92-13103).

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

A preventative maintenance (PM) program has been initiated by the Maintenance staff to check the TGR every refuel outage. This maintenance will include a functional test with voltage monitoring equipment by Electrical Maintenance Department (EMD) to determine if the engagement coils are functioning correctly. The gear will also be inspected by the Mechanical Maintenance Department (MMD) to determine if any adjustments are needed. The PM program will also inspect/replace other major components of TGR (i.e. TGR motor, Aux. DC contacts). This PM program will be in place by the Unit 2 DZR13 Refuel outage (249-200-91-05105).

F. PREVIOUS OCCURENCES:

LER/Docket Numbers Title

92-007 050237 HPCI Declared Inoperable Due to Turning Gear Engagement Failure

While performing DOP 2300-2 the TGR would not engage. The investigation revealed that dirty Auxiliary Contacts as well as a mispositioned spring clip caused the TGR to fail. The contacts were replaced and the spring clip repositioned.

G. COMPONENT FAILURE DATA:

<u>Manufacturer</u>	<u>Nomenclature</u>	<u>Model Number</u>	<u>Mfg. Part Number</u>
General Electric	Breaker Contacts	N/A	N/A

An industry wide NPRDS data base search revealed several occurrences of TGR malfunction. These malfunctions were only reported by Dresden and Quad Cities Nuclear Power Stations. All of the failures involved the failure of the TGR to engage.