



**Commonwealth Edison**  
Dresden Nuclear Power Station  
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August 10, 1992

CWS LTR #92-510

U.S. Nuclear Regulatory Commission  
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Licensee Event Report #92-17, Docket #050249 is being submitted as required by Technical Specification 6.6, NUREG 1022 and 10 CFR50.73(a)(2)(v).

*L. J. Gerner for 8/12/92*

Charles W. Schroeder  
Station Manager  
Dresden Nuclear Power Station

CWS/omf

Enclosure

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

ZDVR/718

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LICENSEE EVENT REPORT (LER)

Form Rev 2.0

Facility Name (1) Dresden Nuclear Power Station, Unit 3	Docket Number (2) 0   5   0   10   10   2   4   9	Page (3) 1   of   0   4
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Title (4) HPCI Declared Inoperable Due to Turning Gear Engagement 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	1   7	9   2	9   2	0   1   7	0   0	0   8	1   0	9   2		

OPERATING MODE (9) POWER LEVEL (10) 0   7   6	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(c)
	<input type="checkbox"/> 20.405(a)(1)(i)	<input checked="" type="checkbox"/> 50.36(c)(1)
	<input type="checkbox"/> 20.405(a)(1)(ii)	<input type="checkbox"/> 50.36(c)(2)
	<input type="checkbox"/> 20.405(a)(1)(iii)	<input type="checkbox"/> 50.73(a)(2)(i)
	<input type="checkbox"/> 20.405(a)(1)(iv)	<input type="checkbox"/> 50.73(a)(2)(ii)
	<input type="checkbox"/> 20.405(a)(1)(v)	<input type="checkbox"/> 50.73(a)(2)(iii)
	<input type="checkbox"/> 50.73(a)(2)(iv)	<input type="checkbox"/> 73.71(b)
	<input checked="" type="checkbox"/> 50.73(a)(2)(v)	<input type="checkbox"/> 73.71(c)
	<input type="checkbox"/> 50.73(a)(2)(vii)	<input type="checkbox"/> Other (Specify in Abstract below and in Text)
	<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)	

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	MANUFACTURER	REPORTABLE TO NPRDS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS
X	B   J	T   G   B	G   0   8   0	Y					

SUPPLEMENTAL REPORT EXPECTED (14)

Expected Submission Date (15)

Month | Day | Year

Yes (If yes, complete EXPECTED SUBMISSION DATE)  NO

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

On July 17, 1992 at 1546 hours, with Unit 3 at 76% 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 ~~prudently~~ declared inoperable and a seven day Limiting Condition for Operation (LCO) was entered per Technical Specification (TS) 3.5. The Technical Staff System Engineer was contacted and performed a subsequent walkdown of the engagement circuit. The walkdown identified degraded relay contacts in the auto-engage circuit; certain auxiliary contacts were also checked and found to be dirty. The Electrical Maintenance Department (EMD) cleaned and adjusted the auxiliary contacts. The HPCI TGR was tested satisfactorily, and the seven day LCO was terminated on July 18, 1992. The safety significance of this event is minimal in that the HPCI System was available for core injection, if needed, and ~~since~~ all other Emergency Core Cooling Systems (ECCs) required by TS 3.5.C.2.a were operable. A previous event involving Unit 2 HPCI 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:

HPCI [BJ] Declared Inoperable Due to Turning Gear Engagement Failure

A. CONDITIONS PRIOR TO EVENT:

Unit: 3

Event Date: July 17, 1992

Event Time: 0740 Hours

Reactor Mode: N

Mode Name: Run

Power Level: 76%

Reactor Coolant System (RCS) Pressure: 970 psig

B. DESCRIPTION OF EVENT:

While performing Dresden Operating Procedure (DOP) 2300-2, High Pressure Coolant Injection (HPCI) System Turning Gear (TGR) Operation with Unit 3 at 76% of rated core thermal power, the Unit 3 Nuclear Station Operator (NSO) was unable to engage the HPCI TGR from the Control Room. The HPCI System Engineer was contacted and performed a walkdown of the TGR circuit. The walkdown identified degraded contacts associated with the engagement circuit. 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 11018 was written to investigate and repair the problem. The investigation revealed that the TGR Motor Auxiliary Contacts were dirty which prevented full voltage to the engagement solenoid. The contacts were cleaned and adjusted. The TGR was tested satisfactorily and the seven day LCO was terminated at 1250 on July 18, 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 coolant injection into the reactor.

The engagement solenoid consists of two coils. The purpose of the first coil, the engagement coil, is to engage the TGR when energized. Once the TGR is fully engaged, the purpose of the second coil, the holding coil, is to hold the mechanism in place to allow the TGR to stabilize. Upon energizing the holding coil, current in the circuit is also reduced.

Investigation into the problem revealed that the voltage to the engagement coil was low. With a low voltage to the engagement coil, the solenoid could not fully engage the TGR. Without the TGR fully engaged, the holding coil could not energize and reduce system current; therefore, the contacts in the auto-engagement circuit experienced high current conditions. It was determined that the low voltage to the coils was caused by dirty TGR Motor Auxiliary Contacts in the engagement circuit. These contacts are located in a 250 VDC [EI] Distribution Cabinet, in Motor Control Center (MCC) 3A.

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The auxiliary contacts were cleaned and adjusted and the TGR was tested satisfactorily on July 18, 1992.

A history review indicated that similar events involving Unit 2 and Unit 3 occurred in February 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, where as 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. Consequently, these contacts were already scheduled to be cleaned during the cubicle overhaul.

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 auxiliary contacts in the TGR Motor Breaker were cleaned and adjusted. The TGR was tested satisfactorily on July 18, 1992.

The degraded contacts for relay 3-2330-120 in the auto engagement circuit will be replaced under Work Request 10081 by the Electrical Maintenance Department (EMD). This action will be completed by October 1, 1992 (249-200-92-09601).

The EMD will overhaul the TGR Motor Breakers during Unit 2 Refuel Outage D2R13 and Unit 3 Refuel Outage D3R13 (237-200-92-131-02).

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).

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 D2R13 Refuel outage (249-200-91-05105).

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

F. PREVIOUS OCCURRENCES:

LER/Docket Numbers    Title

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

While performing Dresden Operating Procedure (DOP) 2300-2 the HPCI TGR would not engage due to dirty auxiliary contacts and mispositioned spring clip.

92-024/050237    HPCI Declared Inoperable Due to Turning Gear Motor Failure

While performing DOP 2300-2 the TGR Motor would not start due to dirty contacts. The contacts were cleaned and the TGR was tested satisfactorily.

G. COMPONENT FAILURE DATA:

<u>Manufacturer</u>	<u>Nomenclature</u>	<u>Model Number</u>	<u>Mfg. Part Number</u>
General Electric	Auxiliary 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