

LICENSEE EVENT REPORT (LER)

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
--	--	------------------------

TITLE (4)  
Reactor Scram Due to Personnel Error While Installing Jumper

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	1 0	8 7	8 7	0 0 8	0 0	0 4	0 7	8 7	N/A		0 5   0   0   0
									N/A		0 5   0   0   0

OPERATING MODE (9) N	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)									
POWER LEVEL (10) 0 1 0 1 0	20.402(b)	<input checked="" type="checkbox"/>	80.73a(2)(iv)	<input checked="" type="checkbox"/>	73.71(b)	<input type="checkbox"/>				
	20.405(a)(1)(i)	<input type="checkbox"/>	80.73a(2)(v)	<input type="checkbox"/>	73.71(c)	<input type="checkbox"/>				
	20.405(a)(1)(ii)	<input type="checkbox"/>	80.73a(2)(vi)	<input type="checkbox"/>	OTHER (Specify in Abstract below and in Text, NRC Form 385A)					
	20.405(a)(1)(iii)	<input type="checkbox"/>	80.73a(2)(vii)(A)	<input type="checkbox"/>						
	20.405(a)(1)(iv)	<input type="checkbox"/>	80.73a(2)(vii)(B)	<input type="checkbox"/>						
20.405(a)(1)(v)	<input type="checkbox"/>	80.73a(2)(iii)	<input type="checkbox"/>			<input type="checkbox"/>				

LICENSEE CONTACT FOR THIS LER (12)				TELEPHONE NUMBER			
NAME Lawrence E. Bihlman Technical Staff Engineer (X-549)				AREA CODE 8 1 5			
				9 4   2   -   2   9   2   0			

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	

SUPPLEMENTAL REPORT EXPECTED (14)			EXPECTED SUBMISSION DATE (15)		
<input type="checkbox"/> YES (If yes, complete EXPECTED SUBMISSION DATE) <input checked="" type="checkbox"/> NO			MONTH	DAY	YEAR

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

On March 10, 1987 with Unit 2 in the shutdown mode, a reactor scram occurred while Electrical Maintenance personnel were placing jumpers around the Reactor Protection System (RPS) condenser low vacuum and main steam line isolation valve closure bypass relays to prevent a full scram. When one RPS bus is de-energized with reactor pressure less than 600 psig during the performance of Dresden Operating Surveillance (DOS) 6600-5, a full scram will occur unless the relays are jumpered. Electrical Maintenance (EM) Department had installed the first jumper resulting in an expected half scram. Prior to the Nuclear Station Operator (NSO) resetting the half scram, the EM Mechanics lifted another relay lead resulting in a full scram.

The root cause of the event has been determined to be personnel error on the part of the Station Control Room Engineer (SCRE) and the EM Mechanics to establish an adequate line of communication prior to the performance of plant evolutions. The safety significance of the event is minimal because the reactor was in the shutdown mode and the RPS system functioned as designed. The personnel involved were counselled by their respective department heads on the necessity to establish adequate communications. Procedure changes will be made to all Bus Undervoltage and ECCS Integrated Functional Test surveillances DOS 6600-3, 4, 5 and 6. The procedure changes will provide instructions on how to jumper the relays without receiving half scrams. A Maintenance Memorandum will be issued to describe the required line of communication between Maintenance work crews and the Control Room for complex plan evolutions. The last occurrence of this type was reported on Dresden Licensee Event Report (LER) No. 85-012 on Docket #050237.

1502  
11

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME (1)  Dresden Nuclear Power Station, Unit 2	DOCKET NUMBER (2)  0 5 0 0 0 2 3 7 8 7 -	LER NUMBER (6)			PAGE (3)	
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER		
		0 0 8	- 0 0	0 2	OF	0 4

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

PLANT AND SYSTEM IDENTIFICATION:

General Electric - Boiling Water Reactor - 2527 MWt rated core thermal power. Energy Industry Identification System (EIIS) codes are identified in the text as [XX].

EVENT IDENTIFICATION:

Dresden Unit 2 reactor scram caused by personnel error while improperly placing jumpers during the performance of Dresden Operating Surveillance (DOS) 6600-5, Bus Undervoltage and Emergency Core Cooling System [JE] Integrated Functional Test for the Unit 2 Diesel Generator [EK].

A. PLANT CONDITIONS PRIOR TO EVENT:

Event Date: March 10, 1987      Event Time: 0134 hours  
Reactor Mode: N - Shutdown      Power Level: 0%

B. DESCRIPTION OF EVENT:

During the performance of DOS 6600-5 a full scram occurred while Electrical Maintenance personnel were placing jumpers around the Reactor Protection System (RPS) condenser low vacuum [SH] and main steam line isolation valve closure bypass relays (590-112A, 590-112B, 590-112C and 590-112D). Installation of the jumpers was necessary to prevent a full reactor scram during performance of DOS 6600-5. By design, a full reactor scram will occur when one train of electrical power is lost when the reactor pressure is less than 600 psig and the relays are not jumpered. The Electricians informed the Station Control Room Engineer (SCRE) of their intent to install the jumpers via Work Request (WR) #D62532. The SCRE told the Electricians to proceed with the installation after informing the Nuclear Station Operator (NSO). The NSO and the licensed Senior Reactor Operator (SRO) in charge of the undervoltage test conferred and told the Electricians to install the jumpers at the positions indicated by DOS 6600-5 rather than as indicated by the work instructions listed in WR #D62532. Both DOS 6600-5 and WR #D62532 provided instructions concerning jumpering of the relays. However, the method used to jumper the relays in DOS 6600-5 and WR #D66532 were different. Each instruction was correct. DOS 6600-5 required the jumpers to be placed on the terminal strips of the relay cabinet. Circuit continuity is interrupted when the relay lead is lifted to install the jumper. The interruption causes one of the RPS relays to de-energize, resulting in a half scram of the affected channel. The work instructions in WR #D62532 specified that the jumpers were to be placed on the contacts themselves which would eliminate the half scram possibility. At the instructions of the SRO in charge, the Electricians followed instructions in DOS 6600-5 and lifted the first lead which resulted in a half scram. The SCRE believed the Electricians were following WR #D62532 instructions and was not aware that a half scram would occur. He instructed the Electricians to return the circuit to its original condition. The half scram was then reset. The SCRE conferred with the SRO in charge of the test and they reviewed the work request, the procedure, and the electrical schematics. The cause of the half scram was determined and the decision was made to install the jumpers per DOS 6600-5 at the terminal strips. The SCRE explained the half

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME (1)  Dresden Nuclear Power Station, Unit 2	DOCKET NUMBER (2)  0 5 0 0 0 2 3 7	LER NUMBER (6)			PAGE (3)	
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER		
		8 7	- 0 0 8	- 0 0	0 3	OF 0 4

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

scram to the Electricians and informed them to wait before installing the second jumper so the half scram could be reset, thus preventing a full scram. The Electricians, who had not heard the instruction to wait, proceeded with the jumper installation. The first lead was lifted and the half scram occurred as expected. Before the NSO reset the half scram a lead was lifted to install the second jumper which de-energized a scram relay in the other RPS channel resulting in the full scram. The Electrician's work was stopped again by the SCRE and the scram was reset. The Electricians were instructed to inform the NSO at his desk after each jumper was installed. The remaining jumpers were installed without further incident.

C. CAUSE OF EVENT:

The root cause of the event has been attributed to personnel error. The SCRE, NSO and the Electricians failed to establish an adequate line of communication as required by Operating Order #16-87, "Required Communications Prior to Complex Plant Evolutions". A contributing factor to this event was that Electrical Maintenance was not fully aware of the ramifications of lifting leads in this portion of the RPS circuitry. Contacts from each of the bypass relays are utilized in both channels of the RPS scram relay circuitry. Two jumpers are installed on each relay, one for the Channel A trip bypass and one for the Channel B trip bypass. Therefore, even though leads from only one relay are lifted a full scram may result. A second contributing cause was that the procedure does not note that half or full scrams will result when leads are lifted. Also, the procedure did not provide the optimum method of jumpering the relays.

D. SAFETY SIGNIFICANCE:

The safety significance of the event was deemed minimal. The reactor was in the shutdown condition and the RPS system functioned as designed. There were no equipment malfunctions or damage as a result of the error.

E. CORRECTIVE ACTIONS:

The involved personnel were counselled by their respective department heads on the need to establish adequate communications prior to plant evolutions. The personnel error scram will be discussed at a weekly tailgate session. A Maintenance Memo will be issued to remind Maintenance personnel of the proper line of communications with the Control Room when performing a complex plant evolution. Also, procedure changes will be made to all Bus Undervoltage and ECCS Integrated Functional Test surveillances, DOS 6600-3, 4, 5 and 6. These procedure changes will provide jumper instructions similar to those found in WR #D62532 placing jumpers on the relay contacts rather than lifting leads. This will eliminate the possibility of half scrams while placing the jumper.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME (1)  Dresden Nuclear Power Station, Unit 2	DOCKET NUMBER (2)  0   5   0   0   0   2   3   7	LER NUMBER (8)						PAGE (3)			
		YEAR	SEQUENTIAL NUMBER		REVISION NUMBER						
		8   7	-   0   0   8		-   0   0		0   4	OF	0   4		

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

F. PREVIOUS OCCURRENCE OF EVENT:

The last occurrence of this event was Licensee Event Report No. 85-012, Docket #050237, Reactor Scram During Refueling While Performing DOP 7000-1 Due to RPS Electrical Continuity Being Lost When the Styrofoam Block for the Relay Contacts was Misaligned. To prevent future occurrences of this type, Operating and Technical Staff surveillances were revised to require the use of jumpers to maintain electrical continuity in RPS circuitry. Had Operations and Electrical Maintenance established an adequate line of communication during the placement of the jumpers this event would have been avoided. The utilization of jumpers remains an adequate method to assure electrical continuity.

G. COMPONENT FAILURE DATA:

None.



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

April 7, 1987

EDE LTR #87-233

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

Licensee Event Report #87-008-0, Docket #050237 is being submitted as required by Technical Specification 6.6, NUREG 1022 and 10 CFR 50.73(a)(2)(iv).

*R.A. Hessler for*

E.D. Eenigenburg  
Station Manager  
Dresden Nuclear Power Station

EDE/kjl

Enclosure

cc: A. Bert Davis, Acting Regional Administrator, Region III  
File/NRC  
File/Numerical

IE22  
11