

**LICENSEE EVENT REPORT (LER)**

FACILITY NAME (1) Dresden Nuclear Power Station Unit 3 DOCKET NUMBER (2) 05000249 PAGE (3) 1 OF 04

TITLE (4) Reactor Scram While Unit was Shutdown Due to Low Reactor Water Level Resulting From Procedural Inadequacy and Component 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	21	87	87	008				N/A		050000
									N/A		050000

OPERATING MODE (9)  POWER LEVEL (10) 01010	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)										
	<input type="checkbox"/> 20.402(b)	<input type="checkbox"/> 20.402(a)	<input checked="" type="checkbox"/> 80.73a(2)(iv)	<input type="checkbox"/> 72.71(b)							
	<input type="checkbox"/> 20.402(a)(1)(i)	<input type="checkbox"/> 80.38(a)(1)	<input type="checkbox"/> 80.73a(2)(v)	<input type="checkbox"/> 72.71(a)							
	<input type="checkbox"/> 20.402(a)(1)(ii)	<input type="checkbox"/> 80.38(a)(2)	<input type="checkbox"/> 80.73a(2)(vi)	OTHER (Specify in Abstract below and in Text, NRC Form 302A)							
	<input type="checkbox"/> 20.402(a)(1)(iii)	<input type="checkbox"/> 80.73a(2)(i)	<input type="checkbox"/> 80.73a(2)(vii)(A)								
	<input type="checkbox"/> 20.402(a)(1)(iv)	<input type="checkbox"/> 80.73a(2)(ii)	<input type="checkbox"/> 80.73a(2)(vii)(B)								
<input type="checkbox"/> 20.402(a)(1)(v)	<input type="checkbox"/> 80.73a(2)(iii)	<input type="checkbox"/> 80.73a(2)(viii)									

LICENSEE CONTACT FOR THIS LER (12)  
NAME: Michael E. Moy, Technical Staff Engineer (X-489)  
TELEPHONE NUMBER: 8115 914121-12191210  
AREA CODE: 8115

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	J	B	M	O	L	Z	O		Y		

SUPPLEMENTAL REPORT EXPECTED (14)  
 YES (If yes, complete EXPECTED SUBMISSION DATE)  NO  
EXPECTED SUBMISSION DATE (15): MCNTH: DAY: YEAR:

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

On March 21, 1987 at 1152 hours, Unit 3 reactor scrambled on a low reactor water level of +8 inches above vessel instrument zero. The scram was reset 6 seconds after the scram at 1152.

The root cause of the event was determined to be procedural inadequacy in conjunction with component failure. Dresden Operating Procedure 3200-2 states that the discharge valve for the reactor feedwater pump (RFP) selected for start be closed prior to pump start with no provision for partial opening to relieve differential pressure created across the valve disc. That, in conjunction with a missing motor operator manual engagement lever on the "B" RFP discharge valve, created delay in maintaining reactor feedwater level above the scram setpoint.

The safety significance of the event was minimal since all control rods were inserted at the time of the scram, all reactor protection systems functioned as designed, and the reactor scrambled at the specified conservative setpoint.

To prevent recurrence of this event, a procedural change to DOP 3200-2 was initiated and the manual engagement lever for the "B" RFP discharge valve was secured.

Two previous occurrences were reported by Licensee Event Reports #84-10 Docket #50-249 and #84-9 on Docket #50-237.

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LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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Dresden Nuclear Power Station, Unit 3	0 5   0   0   0   2   4   9	8   7	- 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 (EIIS) codes are identified in the text as [XX].

EVENT IDENTIFICATION:

Unit 3 Reactor Scram While the Unit was Shutdown Due to Low Reactor Water Level Resulting From Procedural Deficiency and Component Failure.

A. PLANT CONDITIONS PRIOR TO EVENT:

Unit: 3                      Event Date: March 21, 1987                      Event Time: 1152  
 Reactor Mode: SD                      Mode Name: Shutdown                      Power Level: 0%

B. DESCRIPTION OF EVENT:

On March 21, 1987 at 1152 hours, while recovering from a full reactor scram at 1152 hours (see Licensee Event Report #87-006; Docket #50-249), Unit 3 reactor scrambled on a low reactor water level of +8 inches above vessel instrument zero. Due to the initial scram at 1125, the "A" and "B" reactor feedwater pumps [JB], both of which were running prior to the scram to maintain reactor water level during power operation, tripped on high reactor water level of +55 inches (558" above vessel zero). The Nuclear Station Operator (NSO) proceeded to lower reactor water level to clear the +55 inch reactor water level reactor feedwater pump (RFP) trip and allow RFP start, by establishing blowdown through the reactor water cleanup system [CE] to the main condenser [SG]. Once the +55 inch level trip was cleared, the NSO and operating personnel prepared to start the "B" RFP in accordance with Dresden Operating Procedure (DOP) 3200-2 (startup of the First Reactor Feedpump). The NSO closed the "B" RFP discharge valve, started the "B" RFP, and then applied an open signal to the "B" discharge valve (3-3201-B). Control room double indication for the valve indicated that the valve was opening, however, operating personnel in the RFP room visually verified that it was not opening. The NSO immediately tripped the "B" RFP and then applied a close signal to the "B" RFP discharge valve. The NSO once again applied an open signal to the "B" discharge valve in an attempt to cycle the valve when operating personnel in the RFP room requested that a different pump be started. The "B" discharge valve motor operator manual engagement lever was missing preventing manual operation of the valve. The NSO immediately terminated operation with the "B" RFP and applied close signals to the "A" and "C" RFP discharge valves (MOV-3-3201-A,C). As the NSO started the "A" RFP while applying an open signal to the "A" RFP discharge valve, the reactor scrambled on low reactor water level of +8 inches above instrument zero at 11:52:15. Primary Containment Group II and III isolations were also received on the +8 inches reactor level signal. The scram was immediately reset at 11:52:21.

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

C. CAUSE OF EVENT:

The event is being submitted to comply with 10 CFR50.73(a)(2)(iv) which requires the reporting of any event or condition that resulted in manual or automatic activation of any Engineered Safety Feature, including the Reactor Protection System (RPS).

The root cause of this event has been determined to be procedural inadequacy in conjunction with component failure. DOP 3200-2 states that when starting a reactor feedwater pump, the discharge valve be closed before pump start. The procedure has no provision for partially opening the discharge valve before pump start to relieve the differential pressure created across the valve disc by the running pump's discharge pressure. In addition to the inadequacy of DOP 3200-2, the failure of the "B" discharge valve motor operator manual engagement lever to be in place prevented manually moving the discharge valve off its seat and allowing the motor operator to bring the discharge valve to its full open position. This prevented use of the "B" RFP to supply feedwater to the reactor and created delay in maintaining reactor vessel water above the scram trip setpoint. It was realized that the keyway securing the manual engagement lever had become loose allowing the lever to fall off. The setscrew holding the keyway in place appeared to have vibrated loose. Total evolution time in restoring feedwater pump operation was approximately 5 to 10 minutes.

D. SAFETY ANALYSIS:

The safety significance of this event was minimal since all control rods were already inserted at the time of the scram and all reactor protection system functions performed as designed. Further, the reactor scrammed at a conservative reactor water level. Technical Specification 2.1.C. "Limiting Safety System Setting" states that the reactor low water level scram setting shall be greater than or equal to 144" above the top of active fuel in the vessel at normal operating conditions. This corresponds to a reactor level of +1 inch indicated. Level differences inside and outside the reactor dryer skirt vary from 0 inch difference at 0% steam flow to 7 inch difference at 100% steam flow. The actual scram setpoint is therefore set at +8 inches indicated level. Reactor water level, as indicated by reactor level and feedwater flow chart recorder 3-640-26 indicated reactor water level of +17 inches at the time of the scram.

E. CORRECTIVE ACTIONS

To prevent recurrence of this event, a procedural change to DOP 3200-2 was initiated by the Technical Staff to add provision for partially opening reactor feedwater pump discharge valves just prior to starting the pump. The manual engagement lever for the "B" RFP discharge valve was secured in place.

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

F. PREVIOUS OCCURRENCES:

LER Number/Docket

Title

84-10/50-249

Reactor Scram During Normal Operation Due to Low Reactor Water Level Caused by "A" Feedwater Regulating Valve Failing Closed Due to Vibration.

Corrective actions were to drill holes into the regulating valve coupling block and locknuts and installed set screws to secure the valve stem and valve operator to the coupling block.

84-9/50-237

Reactor Scram Due to Reactor Low Reactor Water Level Caused by "A" Feedwater Regulating Valve Failing Closed Due to Vibration.

The valve operator and stem were reconnected with sheet metal locktabs installed to prevent the locknuts from vibrating loose.

G. COMPONENT FAILURE DATA:

Manufacturer: Limitorque

Nomenclature: Motor Operator

Model Number: SMB-3



**Commonwealth Edison**  
Dresden Nuclear Power Station  
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April 13, 1987

EDE LTR #87-245

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

Licensee Event Report #87-008-0, Docket #050249 is being submitted as required by Technical Specification 6.6, NUREG 1022 and 10 CFR 50.73(a)(2)(iv).

E.D. Eenigenburg  
Station Manager  
Dresden Nuclear Power Station

EDE/jmt

Enclosure

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

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