

Commonwealth Edison Company  
Dresden Generating Station  
6500 North Dresden Road  
Morris, IL 60450  
Tel 815-942-2920

10 CFR 50.73



April 24, 2000

PSLTR: #00-0073

U.S. Nuclear Regulatory Commission  
ATTN: Document Control Desk  
Washington, DC 20555

Dresden Nuclear Power Station, Unit 3  
Facility Operating License No.DRP-25  
NRC Docket No. 50-249

Subject: Licensee Event Report 2000-001-00, "Instrument Root Valve Found Closed During Unit 3 LPCI System Pump In-Service Testing"

The enclosed Licensee Event Report, which is a final report, describes the Instrument Root Valve found closed during Unit 3 LPCI System Pump In-Service Testing due to human error in the failure to self-check. This condition is being reported pursuant to 10 CFR 50.73 (a)(2)(i)(B), which requires the reporting of any operation or condition prohibited by the plant's Technical Specifications.

The following actions were taken:

Implement AD-AA-104-103, Verification Practices, and current Instrument Maintenance Department (IMD) standards in order to ensure concurrent verification is performed during instrument valving both during the isolation of instruments and return of instruments to service.

IMD reinforced expectations for procedural adherence and placekeeping, focusing on minimization of configuration control events. Clarification was made on requirements to have the procedure at the job site, reiteration of the placekeeping methodology, and the expectation placed on supervisors to monitor compliance with procedure adherence expectations.

The correspondence contains the following commitment:

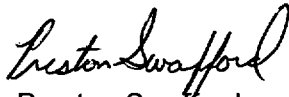
Surveillance procedure DOS 1500-10, "LPCI System Pump Operability Test With Torus Availability and In-Service Testing (IST) Program", will be revised to verify ADS permissive function is intact.

A handwritten signature in black ink, appearing to read "JESS", is located in the bottom right corner of the page.

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If you have any questions, please contact Dale Ambler, Dresden Regulatory Assurance Manager at (815) 942-2920 extension, 3800.

Respectfully,

A handwritten signature in black ink, appearing to read "Preston Swafford". The signature is fluid and cursive, with the first name "Preston" and last name "Swafford" clearly distinguishable.

Preston Swafford  
Site Vice President  
Dresden Nuclear Power Station

Enclosure

cc:                   Regional Administrator – NRC Region III  
                        NRC Senior Resident Inspector – Dresden Nuclear Power Station

<b>NRC FORM 366</b> (6-1998)		<b>U.S. NUCLEAR REGULATORY COMMISSION</b>		<b>APPROVED BY OMB NO. 3150-0104</b> <b>EXPIRES 06/30/2001</b> <small>Estimated burden per response to comply with this mandatory information collection request: 50 hrs. Reported lessons learned are incorporated into the licensing process and fed back to industry. Forward comments regarding burden estimate to the information and Records Management Branch (1-6 f33), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, and to the Paperwork Reduction Project (3150-0104), Office Of Management And Budget, Washington, DC 20503. If an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.</small>							
<h2 style="margin: 0;">LICENSEE EVENT REPORT (LER)</h2>											
<b>FACILITY NAME (1)</b> <b>Dresden Nuclear Power Station, Unit 3</b>			<b>DOCKET NUMBER (2)</b> <b>05000249</b>		<b>PAGE (3)</b> <b>1 of 6</b>						
<b>TITLE (4)</b> <b>Instrument Root Valve Found Closed During Unit 3 LPCI System Pump In-Service Testing</b>											
<b>EVENT DATE (5)</b>		<b>LER NUMBER (6)</b>		<b>REPORT DATE (7)</b>		<b>OTHER FACILITIES INVOLVED (8)</b>					
MON TH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER	
03	24	2000	2000	001	00	04	24	2000	N/A	N/A	
<b>OPERATING MODE (9)</b>		<b>POWER LEVEL (10)</b>		<b>THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR § (Check one or more) (11)</b>							
1		100		20.2201(b)		20.2203(a)(2)(v)		X	50.73(a)(2)(i)		50.73(a)(2)(viii)
				20.2203(a)(i)		20.2203(a)(3)(i)			50.73(a)(2)(ii)		50.73(a)(2)(x)
				20.2203(a)(2)(i))		20.2203(a)(3)(ii)			50.73(a)(2)(iii)		73.71
				20.2203(a)(2)(ii)		20.2203(a)(4)			50.73(a)(2)(iv)		OTHER <small>Specify in Abstract below or in NRC Form 366A</small>
				20.2203(a)(2)(iii)		50.36(c)(1)			50.73(a)(2)(v)		
				20.2203(a)(2)(iv)		50.36(c)(2)			50.73(a)(2)(vii)		

<b>LICENSEE CONTACT FOR THIS LER (12)</b>											
<b>NAME</b> <b>Timothy P. Heisterman, Regulatory Assurance</b>								<b>TELEPHONE NUMBER (Include Area Code)</b> <b>(815) 942-2920 ext 3324</b>			

<b>COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)</b>											
CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX		CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX	

<b>SUPPLEMENTAL REPORT EXPECTED (14)</b>					<b>EXPECTED SUBMISSION DATE (15)</b>		MONTH	DAY	YEAR
YES	X	NO							
(If yes, complete EXPECTED SUBMISSION DATE).									

**ABSTRACT (Limit to 1400 spaces, i. e., approximately 15 single-spaced typewritten lines) (16)**

On March 24, 2000 at 2047 hours, during the performance of surveillance DOS 1500-10, "LPCI System Pump Operability Test With Torus Available and In-Service Testing (IST) Program", the 3C LPCI (Low Pressure Coolant Injection) Pump was started and then the 3D LPCI Pump was secured. Control room annunciator alarm 903-3 H-13, "LPCI/CS PP AT PRESS" cleared when it should have remained in the alarmed state. Operators were dispatched to investigate why the alarm did not remain in the alarm state with the 3C LPCI Pump running. It was identified that the instrument header root valve (3-1554C-HV) for the Unit 3 LPCI Pump Automatic Depressurization System (ADS) 100 psig permissive pressure switches (PS 3-1554H and PS 3-1554C) was in the incorrect position (closed).

An investigation into the event utilized the Control Room Sequence of Events Recorder to determine that the header root valve was closed sometime after September 28, 1999 and prior to December 28, 1999. Based on the investigation performed, the exact time or group responsible for the loss of configuration control event could not be determined but is not believed to have been performed as part of a surveillance activity. The most likely root cause for the event is human error involving failure to self-check / verify. Corrective action includes implementing procedures and verification practices to ensure concurrent verification is performed during instrument valving, both during the isolation of instruments and return of instruments to service.

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

**PLANT AND SYSTEM IDENTIFICATION:**

General Electric – Boiling Water Reactor - 2527 MWt rated core thermal power

Energy Industry Identification System (EIIIS) Codes are identified in the text as [XX] and are obtained from IEEE Standard 805-1984, IEEE Recommended Practice for System Identification in Nuclear Power Plants and Related Facilities.

**EVENT IDENTIFICATION:**

Instrument Root Valve Found Closed During Unit 3 LPCI System Pump In-Service Testing

**A. PLANT CONDITIONS PRIOR TO EVENT:**

Unit: 3	Event Date: 03-24-2000	Event Time: 2047
Reactor Mode: 1	Mode Name: Run	Power Level: 100
Reactor Coolant System Pressure: 1002 psig		

**B. DESCRIPTION OF EVENT:**

This LER is being submitted pursuant to 10 CFR 50.73 (a)(2)(i)(B), which requires within 30 days after the discovery of the event, the licensee shall report any operation or condition prohibited by the plant's Technical Specifications.

On March 24, 2000 at 2047 hours, during the performance of surveillance DOS 1500-10, Low Pressure Coolant Injection (LPCI) [BO] System Pump Operability Test With Torus Available and In-Service Testing (IST) Program, the 3C LPCI Pump was started and then the 3D LPCI Pump was secured. Control room alarm 903-3 H-13, "LPCI/CS PP AT PRESS" cleared when it should have remained in the alarm state. Operators were dispatched to investigate why the alarm did not remain in the alarm state with the 3C LPCI Pump running. It was identified that the instrument header root valve for the Unit 3 LPCI Pump Automatic Depressurization System (ADS) 100 psig permissive pressure switches (PS 3-1554H and PS 3-1554C) was in the incorrect position (closed). The valve should have been in its normally open position. Technical Specification (TS) 3.2.B.3 was entered due to both ADS trip systems being inoperable as of 2047 hours on March 24, 2000. At 2148 hours on March 24, 2000, the instrument header root valve (3-1554C-HV) was slowly opened. When the valve was opened, the control room alarm 903-3 H-13, "LPCI/CS PP AT PRESS" initiated and TS 3.2.B.3 for both ADS trip systems being inoperable was exited.

A prompt investigation and a root cause investigation were initiated immediately to determine how the event occurred. The 3C LPCI Pump has two (2) ADS 100 psig permissive pressure switches located downstream of the discharge of the ECCS pump. These two (2) switches are piped in a parallel arrangement with individual instrument stop valves and one common instrument header root valve. Each time the 3C LPCI Pump is operated per DOS 1500-10, pump discharge pressure exceeds 100 psig. If root valve 3-1554C-HV is open, then the contacts for the two ADS 100 psig pressure switches (PS 3-1554H and PS 3-1554C) change state providing an ADS permissive.

Surveillance DOS 1500-10's purpose is to verify LPCI operability and only indirectly verifies the 100 psig ADS permissive function. Therefore, a review of the operability history for the 3C LPCI Pump, utilizing the Control Room Sequence of Events Recorder (SER), was performed to determine when the last indicated ADS permissive occurred with the 3C LPCI pump operating. Each time the 3C LPCI Pump motor breaker closes, a breaker auxiliary contact completes a circuit to the process computer point T106 indicating that the 3C LPCI Pump was operated. A "point history search" using computer point T106 was performed to obtain the dates and times in which the 3C LPCI Pump was operated. The search revealed the 3C LPCI Pump was operated on the July 08, July 09, 1999, September 28, 1999, December 28, 1999, January 07, 2000 and twice on March 24, 2000.

The Control Room SER printouts was obtained for these LPCI pump runs. An analysis of the SER printouts revealed that for the pump runs on December 28, 1999 through March 24, 2000, the ADS permissives dropped out (returned

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to normal state) with only the 3C LPCI Pump running which indicated root valve 3-1554C-HV was closed.

The SER printouts revealed the last time the ADS permissives indicated as expected (held in) with only the 3C LPCI Pump running was September 28, 1999. Based on these SER printouts, it was determined that root valve, 3-1554C-HV, was closed sometime after September 28, 1999 and prior to December 28, 1999.

To determine any possible events that might have resulted in the inappropriate manipulation of root valve 3-1544C-HV between September 28, 1999 and December 28, 1999 the following searches were performed:

1. Instrument Maintenance Department (IMD) surveillances were reviewed to determine which surveillance performs calibration checks on pressure switches PS 3-1554H and PS 3-1554C. This review identified that DIS 0287-01, Automatic Depressurization System CS and LPCI Pumps Discharge Pressure – High (Permissive) Channel Calibration and Channel Functional Test, is performed on a monthly basis. The surveillance procedure requires removing pressure switches 3-1554H and 3-1554C from service with instructions stating "Close PS instrument isolation valve" but does not identify the specific valve to close. Root valve 3-1554C-HV is not required to be manipulated during this surveillance. However, the next isolation valve downstream of the root valve, 3-1554H-SV, is required to be manipulated in order to isolate pressure switch PS 3-1554-H and is approximately ten inches below root valve 3-1554C-HV.
2. EWCS surveillance history was searched to determine the dates DIS 0287-01 was performed. The investigation analyzed Control Room SER printouts for these dates between the period of September 7, 1999 through March 16, 2000 to determine any anomalies, which might have given indication when, valve 3-1544C-HV may have been closed. The SER printout search identified some inconsistencies beginning with the performance of the November 3, 1999 surveillance; however, no correlation was made to the closing of valve 3-1544C-HV. Additionally, interviews with the IMD Technicians who performed the surveillances within the time period between September 28, 1999 and December 28, 1999 were conducted. The results of the interviews were inconclusive in determining when root valve 3-1554C-HV may have been mispositioned and did not identify any inappropriate actions performed by IMD personnel. However, the interviews did reveal that prior to November 16, 1999 the IM Department standards did not require concurrent verification (CV) for removing (isolating) equipment from service but only for placing equipment back into service. On November 16, 1999, AD-AA-104-103, Verification Practices, which requires CV for both isolating and returning equipment from service, was implemented as a standardized procedure.
3. A review of the Electronic Work Control System (EWCS) maintenance history for all valves and instruments originating from the 3C LPCI Pump discharge piping was performed. No maintenance was identified as being performed on these valves or instruments for the time period between September 28, 1999 through December 28, 1999.
4. EWCS equipment operational status history was reviewed to determine if valve 3-1544C-HV was used in an Out of Service (OOS). The search revealed that the valve was not part of any OOS for that time period. The Personal OOS (POOS) Log was also searched for the time period between September 28, 1999 and December 28, 1999 and revealed no POOS was used to remove valves 3-1554C-HV, 3-1554H-SV, or 3-1554C-SV from service. In addition, historical copies of the completed Unit 3 LPCI Containment Cooling Valve Checklist, DOP 1500-M1, were reviewed to determine the last time valve 3-1544C-HV was verified to be open per required valve checklists. This review identified the valve was last verified open by Operations on February 19, 1999.
5. Finally, the U3 Unit Supervisor Log was reviewed for the time period between September 28, 1999 and December 28, 1999 to determine if some evolution may have transpired causing root valve 3-1554C-HV to be manipulated. This review did not identify any possible evolutions leading to when the valve may have been closed.

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No other systems, components or structures were identified which contributed to the isolation event.

**C. CAUSE OF EVENT:**

Based on the investigation performed, the exact time or group responsible for the loss of configuration control event could not be determined. The most probable root cause for the event is human error involving failure to self-check / verify (NRC Cause Code A). If the valve was unintentionally mispositioned during the performance of DIS 0287-01 prior to November 16, 1999 concurrent verification would not have been performed during the isolation of the ADS Permissive pressure switches (PS 3-1554H and PS 3-1554C) and the valve manipulation would not have been challenged.

**D. SAFETY ANALYSIS**

There are six (6) low-pressure Emergency Core Cooling System (ECCS) pumps. Each pump has two (2) ADS 100 psig permissive pressure switches located downstream of the discharge of the ECCS pump. These two (2) switches are piped in a parallel arrangement with individual instrument stop valves and one common instrument header root valve. Each ADS 100 psig permissive pressure switches inputs to both Division I and Division II ADS logic. ADS initiation logic is two out of two taken once logic, which can be satisfied by any one low pressure ECCS pump running.

A review of the U3 low pressure ECCS pump history for the period between September 28, 1999 through March 24, 2000 was performed to analyze the safety significance of having ADS permissive pressure switches 3-1554C and 3-1554H valved out. The review identified that during the week of March 6, 2000, Unit 3 Division I of LPCI was removed from service to repair a tube leak in the 3A LPCI Heat Exchanger, therefore, the 3A and 3B LPCI Pumps could not initiate their respective ADS permissive pressure switches. If a Loss of Coolant Accident occurred concurrently with a Loss of Off-site Power per Dresden Station's Design Basis Accident and the Unit 3 Emergency Diesel Generator would have failed to start (one active failure that would prevent running of the 3B Core Spray Pump and the 3C and 3D LPCI Pumps), the Unit 2/3 EDG would have been available to supply power to the 3A Core Spray Pump which could have activated its two ADS permissive pressure switches and satisfied ADS initiation logic.

Therefore, the safety significance of the manually-operated instrument header root valve 3-1554C-HV being inadvertently closed and isolating ADS Permissive Pressure Switches PS 3-1554C and PS 3-1554H was minimal due to redundant instrumentation and initiation logic.

**E. CORRECTIVE ACTIONS:**

1. Implement AD-AA-104-103, Verification Practices, and current Instrument Maintenance Department (IMD) standards in order to ensure concurrent verification is performed during instrument valving both during the isolation of instruments and return of instruments to service. (Complete)
2. IMD will reinforce expectations for procedural adherence and placekeeping, focusing on minimization of configuration control events. Clarification will be made on requirements to have the procedure at the job site, reiteration of the placekeeping methodology, and expectation placed on supervisors to monitor compliance with procedure adherence expectations. (Complete)
3. Surveillance procedure DOS 1500-10, "LPCI System Pump Operability Test with Torus Available and In-Service Testing (IST) Program," will be revised to verify ADS permissive function is intact. (ATI 26096-15)

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## F. PREVIOUS OCCURRENCES:

None

## G. COMPONENT FAILURE DATA:

N/A

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## Instrument Tubing Configuration

