



**Commonwealth Edison**  
Dresden Nuclear Power Station  
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April 11, 1994

GFSLTR 94-0118

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

Licensee Event Report 94-009, Docket 50-249 is being submitted as required by Technical Specification 6.6, NUREG 1022 and 10CFR50.73(a)(2)(i).

Sincerely,

Gary F. Spedl  
Station Manager  
Dresden Station

GFS/MMcG:cfq

Enclosure

cc: J. Martin, Regional Administrator, Region III  
NRC Resident Inspector's Office  
File/NRC  
File/Numerical

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**LICENSEE EVENT REPORT (LER)**

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (MNBB 7714), 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.

**FACILITY NAME (1)**  
Dresden Nuclear Power Station, Unit 3

**DOCKET NUMBER (2)**  
05000249

**PAGE (3)**  
1 OF 6

**TITLE (4)**  
Type B and C Leakage Limit Exceeded Due to Valve 3-1301-3 Not Fully Closed

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 NAME	DOCKET NUMBER
03	12	94	94	-- 009 --	00	04	11	94	None	
									FACILITY NAME	DOCKET NUMBER

<b>OPERATING MODE (9)</b>	N	<b>THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)</b>							
<b>POWER LEVEL (10)</b>	000	20.402(b)	20.405(c)	50.73(a)(2)(iv)	73.71(b)	20.405(a)(1)(i)	50.36(c)(1)	50.73(a)(2)(v)	73.71(c)
		20.405(a)(1)(ii)	50.36(c)(2)	50.73(a)(2)(vii)	OTHER	20.405(a)(1)(iii)	X 50.73(a)(2)(i)	50.73(a)(2)(viii)(A)	(Specify in Abstract below and in Text, NRC Form 366A)
		20.405(a)(1)(iv)	50.73(a)(2)(ii)	50.73(a)(2)(viii)(B)		20.405(a)(1)(v)	50.73(a)(2)(iii)	50.73(a)(2)(x)	

**LICENSEE CONTACT FOR THIS LER (12)**

<b>NAME</b>	M. McGivern, Local Leak Rate Test Coordinator Ext.2526	<b>TELEPHONE NUMBER (Include Area Code)</b>	(815) 942-2920
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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

**SUPPLEMENTAL REPORT EXPECTED (14)**

<input checked="" type="checkbox"/> YES (If yes, complete EXPECTED SUBMISSION DATE).	<input type="checkbox"/> NO	<b>EXPECTED SUBMISSION DATE (15)</b>	MONTH	DAY	YEAR
			07	31	94

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

At approximately 1800, on March 12, 1994 with Unit 3 in Refuel Outage D3R13, the performance of Dresden Technical Surveillance DTS 1600-01, Local Leak Rate Testing Of Primary Containment Isolation Valves, identified the Isolation Condenser System [BL] Condensate Return Throttling Valve 3-1301-3 to be leaking an undetermined amount. This value when added to the existing maximum pathway leakage rate exceeded the maximum pathway leakage rate limit for Type B and C primary containment leakage, 488.452 scfh (0.6L<sub>s</sub>), as listed in Technical Specification 3.7.A.2.b.(2)(a). Trouble-shooting determined that the Motor Operated Valve (MOV) had not closed completely when stroked earlier for draining the system. MOV testing was performed with diagnostic test equipment and no anomalies were determined. After the valve was closed using primary containment isolation logic another LLRT was performed and leakage was determined to be 5.3 scfh. The safety significance of not fully closing the 3-1301-3 valve for the LLRT is considered minimal since when the valve was fully closed with primary containment isolation logic an acceptable LLRT was obtained. A supplement will be submitted to report the cause and corrective actions for other valve failures which occur during the course of the Unit 3 Refuel Outage.

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EVENT IDENTIFICATION:

Type B and C Leakage Limit Exceeded Due to Valve 3-1301-3 Not Fully Closed

A. PLANT CONDITIONS PRIOR TO EVENT:

Unit: 3                      Event Date: 03/12/94      Event Time: 1800 hrs

Reactor Mode: N              Mode Name: Refuel              Power Level: 0%

Reactor Coolant System Pressure: 0 psig

B. DESCRIPTION OF EVENT:

At approximately 1800, on March 12, 1994 with Unit 3 in Refuel Outage D3R13, the performance of Dresden Technical Surveillance DTS 1600-01, Local Leak Rate Testing Of Primary Containment Isolation Valves, identified the Isolation Condenser System [BL] Condensate Return Throttling Valve 3-1301-3 to be leaking an undetermined amount. This value when added to the existing maximum pathway leakage rate exceeded the maximum pathway leakage rate limit for Type B and C primary containment leakage, 488.452 scfh (0.6L), as listed in Technical Specification 3.7.A.2.b.(2)(a). The Shift Control Room Engineer (SCRE) was notified of the event.

In order to quantify minimum pathway leakage (leakage through the 3-1301-4), the throttling valve's motor was disengaged and the valve was closed manually. Approximately 8 turns with the handwheel were needed in order to shut the valve. Leakage promptly dropped to 18.81 scfh.

Due to the configuration of the system piping, the 3-1301-3 throttling valve had been opened to facilitate draining of the system prior to performing the Local Leak Rate Test (LLRT). The 3-1301-3 was then closed from the Control Room by its control switch (normal means).

To determine why the valve did not fully close, a Motor Operated Valve (MOV) diagnostic test was performed in order to verify that the torque switch setting had not changed since April 1993 when the valve had been last tested. Thrust values were essentially the same. Upon completion of the diagnostic testing, the valve was closed using the Primary Containment Group V [JM] logic circuitry. The valve was then given another LLRT which resulted in the volume leaking 5.3 scfh.

A Problem Identification Form (PIF) was initiated per Dresden Administrative Procedure (DAP) 02-27, Integrated Reporting Process.

C. CAUSE OF EVENT:

This report is being submitted in accordance with 10 CFR 50.73(a)(2)(i) which requires the reporting of any operation or condition prohibited by the Technical Specifications.

The closing logic for throttling valve 3-1301-3 is designed such that the control switch could be released (spring return to normal) any time during valve

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travel, prior to reaching closed torque switch trip, and the valve would stop in the open position. The operator also has the option of using a Pull-to-Lock feature of the control switch which would maintain the control switch closed signal and the valve would stop on achieving closed torque switch trip. Also, a Primary Containment Group V isolation signal would provide a close signal, regardless of control switch position, and the valve would stop on achieving closed torque switch trip. See attached Figure 1, MOV 3-1301-3 Simplified Schematic.

The logic for MOV 3-1301-3, includes an interlock (MO/NC) between the open and close contactors that prevents energizing the close contactor (MC) if the open contactor (MO) is energized. When a close signal is received from either the control switch or the Group V isolation logic and the valve is in the full open position (LS/O) or the intermediate open position (LS/IO), the throttling valve will start to go closed, as the close contactor (MC) is energized. Upon energization of the closing contactor (MC), auxiliary contact (MC/NO) will close bringing the close torque switch into the circuit. The close torque switch contacts (CTS) are normally closed and open upon the close torque switch setting being reached (valve full closure).

Operators normal action to full close this valve is to move the control switch to the CLOSE position (closing contact CS/CLOSE) and to hold it there until 5 seconds after full close indication is received. The operator can stop the valve anywhere in its closing cycle by releasing the control switch and allowing it to spring return to the AUTO position (opening contact CS/CLOSE). The valve can be given a close signal again through either the control switch or the Group V isolation logic and the valve would close as long as the valve was in the intermediate position (limit switch contact LS/IO is closed).

The closing logic is designed with close contactor auxiliary contact (MC/NO) in series with the close torque switch (CTS) since this valve has non-locking actuator gears. Once the actuator stops, the gear engagement relaxes slightly, allowing relaxation of the spring pack, thus resulting in reclosure of the close torque switch contact (CTS). The close contactor auxiliary contact (MC/NO) prevents anti-hammering of the valve by opening on initial deenergization of the close contactor (MC) and eliminating circuit continuity through the close torque switch (CTS) despite its reclosure.

As with any MOV, when the close signal is removed, the valve momentarily continues to move in the close direction due to close contactor drop out time and MOV inertia. For this valve, this creates a condition in which the control switch could be released while the valve is in the intermediate position (LS/IO closed) and the valve could coast into the closed indication region (LS/IO open) but not be fully seated (achieve close torque switch trip). In order to fully seat the valve, the valve would first have to be opened to at least the intermediate position and then reclosed. This condition has been recognized and is explained to the operators in step F.9 of Dresden Operating Surveillance DOS 1300-3, Manual Operation of the Isolation Condenser:

IF MO 2(3)-1301-3, RX INLET ISOL valve is determined to be NOT full closed, AND only the CLOSE indication is lit, THEN the valve must be reopened to obtain a dual OR OPEN indication before an attempt to close the valve can be made.

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The operators are also instructed to hold the control switch in the closed position beyond full close indication to ensure valve full closure in DOS 1300-3, step F.8:

When closing the MO 2(3)-1301-3, RX INLET ISOL valve the control switch should be held in the CLOSE position for a minimum of five (5) seconds to ensure full closure.

MOV 3-1301-3 is a 14 inch gate valve that is set for a total stroke of approximately 1-3/4 inches. The stroke time of the valve is about six seconds. The LLRT volume for the Isolation Condenser condensate return line includes the outboard isolation MOV, 3-1301-3, and the inboard isolation MOV, 3-1301-4. The 3-1301-4 is located at an elevation lower than the 3-1301-3, and a drain valve is located adjacent to the 3-1301-4 to support volume draining. In order to perform the LLRT the 3-1301-3 was cycled several times to support draining of the system. The Operator was instructed to close the 3-1301-3 valve for the LLRT and he proceeded to hold the control switch in the closed position and continued that for at least 5 seconds after receipt of full closed indication. The exact root cause for this event is unknown but it is speculated that the control switch was engaged for valve closure but then was unknowingly relaxed prior to reaching full closure (torque switch trip), but the valve travelled far enough to achieve closed indication. Due to the control logic for the valve, as previously explained, the operators action of continuing to hold the control switch would not continue to close the valve. This appears to be the cause as the MOV diagnostic test did not indicate any differences from the previous test (April, 1993) and when the valve was closed with the primary containment isolation logic a successful LLRT was obtained.

A supplement will be submitted to report the cause of other valve failures which occur during the course of the Unit 3 Refuel Outage.

D. SAFETY ANALYSIS:

The safety significance of not fully closing the 3-1301-3 valve for the LLRT is considered minimal since when the valve was fully closed with primary containment isolation logic an acceptable LLRT was obtained.

In addition, it is known that valve 3-1301-3 was fully closed during operation, since the Isolation Condenser did not heat up and cause steaming of the Isolation Condenser cooling water.

E. CORRECTIVE ACTIONS:

During a feedwater transient in 1987, the reactor operators observed that small changes in 3-1301-3 valve position were difficult to perform due to the rapid speed of valve movement. A modification request form was submitted to consider providing a slower speed gearing ratio for the 3-1301-3 valve in order to facilitate fine adjustment of 3-1301-3 valve position. This will be accomplished through installation of modification M12-3-92-001 which will increase the gear ratio for the 3-1301-3 valve to support commitments to NRC Generic Letter 89-10. In addition, the closing limit switches will also be repositioned closer to valve seat contact. These changes will improve the

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thrust capability and valve controllability. This modification will be completed during Refuel Outage D3R13.

This LER will be incorporated into the required reading list for Reactor Operators. (NTS 249-180-94-00901)

A supplement will be submitted to report the corrective actions for other valve failures which occur during the course of the Unit 3 Refuel Outage.

F. PREVIOUS OCCURRENCES:

<u>LER/Docket Number</u>	<u>Title</u>
91-007/0500249	Type B and C Containment Local Leak Rate Testing Limit Exceeded Due to HPCI Turbine Exhaust Check Valve Leakage
93-002/0500237	Type B and C Primary Containment Local Leak Rate Testing Limit Exceeded Due to Leakage Past Head Cooling Inlet Isolation Valve 2-205-2-4

G. COMPONENT FAILURE DATA:

No component failure.

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TEXT CONTINUATION**

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**FIGURE 1  
MOV 3-1301-3 Simplified Schematic**

