



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

August 10, 1992

CWS LTR #92-514

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

Licensee Event Report #91-15-01, Docket #050237 is being submitted to provide additional information with regard to the corrective actions performed for this event.

*L. J. Gerner for 8/13/92*

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

240042

(ZDVR/719)

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LICENSEE EVENT REPORT (LER)

Form Rev 2.0

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 | 6

Title (4) Orderly Unit Shutdown Due to Leakage Through Primary  
 Containment Isolation Valves A0 2-220-44 and A0 2-220-45

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	0	9	9	1	9	1	0	8	0	1	9	1	N/A						
														N/A						

OPERATING MODE (9) N

POWER LEVEL (10) 0 | 5 | 1

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"/> 50.73(a)(2)(iv)	<input type="checkbox"/> 73.71(b)
<input type="checkbox"/> 20.405(a)(1)(i)	<input type="checkbox"/> 50.36(c)(1)	<input type="checkbox"/> 50.73(a)(2)(v)	<input type="checkbox"/> 73.71(c)
<input type="checkbox"/> 20.405(a)(1)(ii)	<input type="checkbox"/> 50.36(c)(2)	<input type="checkbox"/> 50.73(a)(2)(vii)	<input type="checkbox"/> Other (Specify in Abstract below and in Text)
<input type="checkbox"/> 20.405(a)(1)(iii)	<input checked="" type="checkbox"/> 50.73(a)(2)(i)	<input type="checkbox"/> 50.73(a)(2)(viii)(A)	
<input type="checkbox"/> 20.405(a)(1)(iv)	<input type="checkbox"/> 50.73(a)(2)(ii)	<input type="checkbox"/> 50.73(a)(2)(viii)(B)	
<input type="checkbox"/> 20.405(a)(1)(v)	<input type="checkbox"/> 50.73(a)(2)(iii)	<input type="checkbox"/> 50.73(a)(2)(x)	

LICENSEE CONTACT FOR THIS LER (12)

Name: Ronald R. Skoglund, Technical Staff System Engineer  
 Ext. 2543  
 TELEPHONE NUMBER: 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	MANUFAC-TURER	REPORTABLE TO NPRDS		CAUSE	SYSTEM	COMPONENT	MANUFAC-TURER	REPORTABLE TO NPRDS	
X	A   D	I   S   V	B   3   1   4	Y							
X	A   D	I   S   V	B   3   1   4	Y							

SUPPLEMENTAL REPORT EXPECTED (14)

Expected Submission Date (15) \_\_\_\_\_  
 [Yes (If yes, complete EXPECTED SUBMISSION DATE)] X | NO

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

At approximately 1330 hours on July 9, 1991, with Unit 2 at 51% power, a water leak was discovered at a piping penetration from the "A" Reactor Water Clean-Up Heat Exchanger Room. Air operated Reactor Recirculation sample line Primary Containment isolation valves A0 2-220-44 and A0 2-220-45 were closed in an attempt to isolate the leak. However, the leakage was not secured. At 1700 hours the A0 2-220-44 and A0 2-220-45 valves were declared inoperable as a conservative measure pending further investigation. An entry was then made into the "A" Reactor Water Clean-Up Heat Exchanger Room to close manual valve 2-1299-15 to stop the leakage; the leakage source was identified as a non-safety related tubing fitting. A 24 hour Limiting Condition for Operation was entered per Technical Specification 3.7.D.3 because integrity of the A0 2-220-44 and A0 2-220-45 valves was in question. A unit shutdown was initiated. A primary containment drywell entry was made at 40 percent power to close manual valve 2-220-102 to assure primary containment integrity. Cold shutdown was reached at 2000 hours on July 10, 1991. The safety significance of this event was minimal because testing confirmed that the leakage did not exceed Technical Specification limits. Corrective actions included the machining of the valve seating surfaces and valve maintenance procedure improvement. A previous event involving these valves was reported by LER 91-05/050237.



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

A maintenance history review was performed on the Reactor Recirculation sample line Primary Containment isolation valves on both Dresden Units 2 and 3. The physical differences between Unit 2 and Unit 3 such as valve location and line flow were discounted as contributors to valve leakage. The maintenance history records revealed that previous maintenance on the Unit 3 valves included replacing the air operator diaphragm and the valve packing. No work was performed that could affect the seating surface of the valves. The A0 2-220-44 valve internals were re-machined in August 1990, after it would not isolate a packing leak on the A0 2-220-45 valve. In March 1991, the valve internals on the A0 2-220-44 and A0 2-220-45 valves were re-machined after the downstream line was discovered leaking. Galling was noted in both valves at this time.

Upon disassembly of the A0 2-220-44 valve on July 11, 1991, no wire draw marks were present; therefore, steam cutting or erosion were discounted. The plug's seating surface contained a 3/4 inch long galling mark on the seating surface. Subsequent machining revealed that the galling mark was approximately 10 thousandths of an inch deep. A similar galling mark was on the seating surface of the seat. The galling has been determined to be the cause of the excessive leakage. The galling is believed to have occurred during maintenance activities while setting stem travel or adjusting the valve to reduce its leakage in March 1991. An underlying root cause involved Dresden Maintenance Procedure (DMP) 0040-06, Copes-Vulcan Valve and Reverse Acting (Air to Open) Operator Maintenance, which did not mention that damage could be done to the seating surface by rotating the plug in place.

D. SAFETY ANALYSIS OF EVENT:

A0 2-220-44 and A0 2-220-45 are Primary Containment Group I [JM] isolation valves and will close when any of the following conditions are met:

- Reactor low-low water level
- Main steam line high flow
- Main steam line high radiation
- Main steam tunnel high temperature
- Main steam line low pressure

The purpose of isolating the reactor recirculation sample line is to prevent the release of radioactive material in accordance with 10CFR100. The Copes Vulcan, Model D-100-60 valves that are being utilized as Reactor Recirculation sample line Primary Containment isolation valves exert a seating force of approximately 500 pounds per linear inch of seating circumference. A value between 300 and 600 pounds per linear inch is acceptable per ANSI B16.104. This force is adequate to allow the valves to close when necessary. Prior to maintenance activities, an as-found local leak rate test (LLRT) was performed to measure the as-found leakage rate. The total leak rate for the A0 2-220-44/A0 2-220-45 test volume was 43.7 standard cubic feet per hour (SCFH). This leakage, when added to existing containment leakage data, was well below the allowable limits for total leakage of Primary Containment. It should also be noted that the majority of this leakage (41.5 SCFH) was attributed to the A0 2-220-44 valve; as such, through-leakage from this volume was minimal. However, the valves were declared inoperable and an orderly Unit shutdown was initiated as a conservative practice upon identification of the leak, because it could not be quantified and the valves had exhibited leakage previously. The LCO requiring achievement of cold shutdown within 24 hours was terminated within 21.5 hours when inboard manual valve 2-220-102 was closed. Therefore, the safety significance of this event was minimal.

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E. CORRECTIVE ACTIONS:

The immediate corrective actions included machining the seating surfaces on the A0 2-220-44 valve. During the as-found LLRT, 41.5 SCFH of the 43.7 SCFH leakage was determined to be through the A0 2-220-44 valve. After all valve work was completed, Dresden Operating Surveillance (DOS) 1600-1, Quarterly Valve Timing, was successfully performed. The leaking sample line was also repaired.

After completion of all maintenance activities and backflushing, an as-left LLRT showed a leakage of 4.1 SCFH, which verified satisfactory integrity of the valves. An On-Site review of this event and the corrective actions implemented was also completed prior to unit startup.

~~Further corrective actions that were investigated for this event included replacing the A0 2-220-44 and 45 valves, extending the safety related boundary to the 2-1299-28 valve, and revising procedure DMP 0040-06.~~

Replacing the valves is no longer deemed practical. The valves being utilized are adequately designed for their function as shown by the performance of the Unit 3 valves. This is supported by the fact that the A0 3-220-44 and 45 valves exhibited 0 scfh leakage during the last LLRT. No significant design differences exist between the Unit 2 and Unit 3 valves.

A cost estimate was provided by the Nuclear Engineering Department to extend the safety related boundary out to the 2-1299-28 valve. This extension is cost-prohibitive and will not be done. At this time, the need to extend the boundary is not necessary since the problem with these valves had been identified.

DMP 0040-06 has been revised to include the appropriate cautions.

F. PREVIOUS OCCURRENCES:

LER/Docket Numbers    Title

91-005/05000237    Orderly Unit Shutdown Due to Leakage Through Primary Containment Isolation Valves A0 2-220-44 and A0 2-220-45

A0 2-220-44 and A0 2-220-45 valves were identified to be leaking through after a fitting leak was discovered and could only be isolated with manual valves. Conservative actions were taken and the Unit was shutdown. Corrective actions included repacking, replacing the stem, and machining the seating surfaces.

Non-Reportable    Title  
Event No. \_\_\_\_\_

12-2-90-19/21    Failure of Primary Containment Isolation Valves A0 2-220-44 and A0 2-220-45 Due to Mechanical Binding

This event involved separate failures of valves A0 2-220-44 and 2-220-45. Corrective Actions included repacking, lubrication, further maintenance during the subsequent refuel outage, and implementation of preventative maintenance surveillances for packing replacement and diaphragm replacement.

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

G. COMPONENT FAILURE DATA:

<u>Manufacturer</u>	<u>Nomenclature</u>	<u>Model Number</u>	<u>Mfg. Part Number</u>
Copes Vulcan (Division of Blaw Knox)	Diaphragm Operated Control Valve	D-100-60	N/A

An industry wide NPRDS data base search revealed 63 failures of similar valves. The root cause of these failures include packing leaks, leaking through due to normal wear, steam cutting, and unknown causes.

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

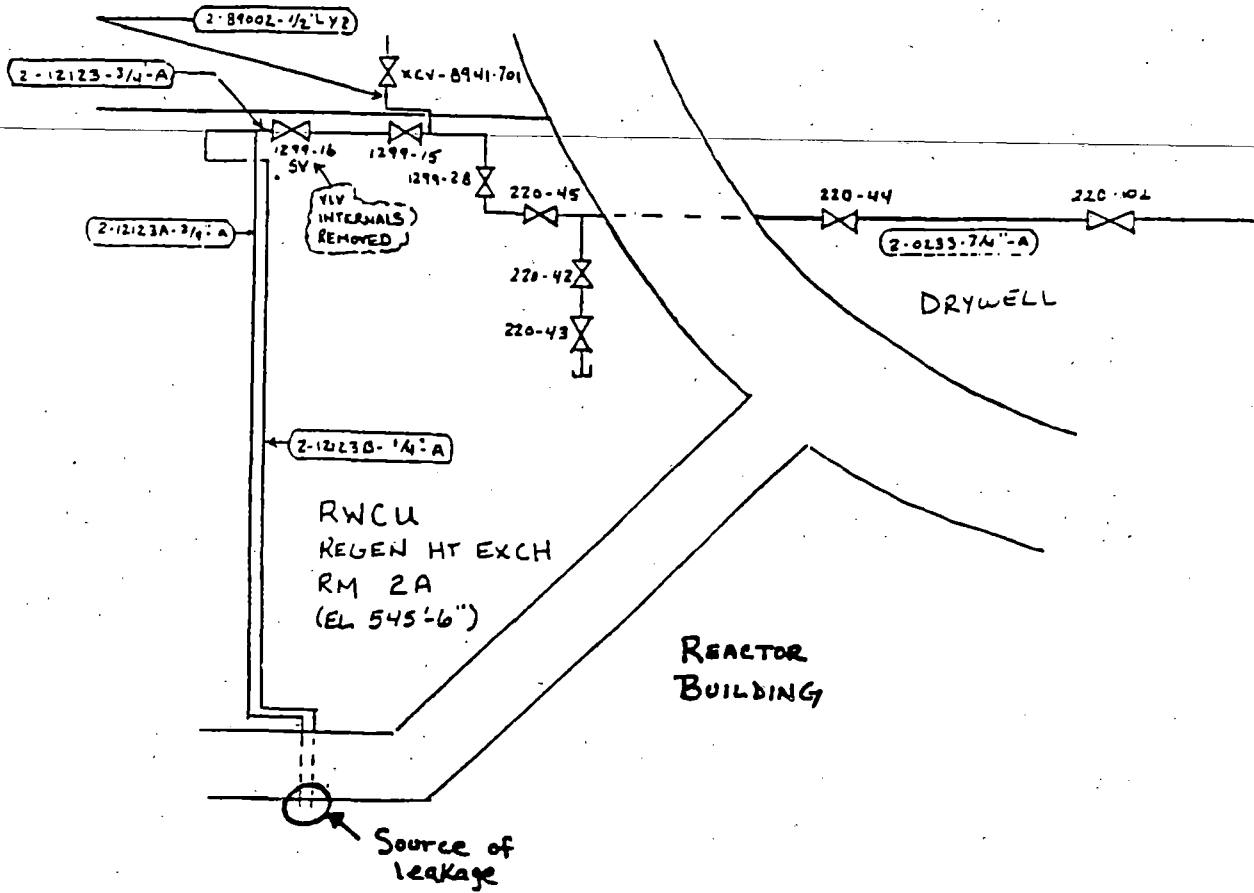


FIGURE 1