



# LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) **Wolf Creek Generating Station** DOCKET NUMBER (2) **050004821** OF **06** PAGE (3)

TITLE (4) **Containment Isolation Valves Failed Local Leak Rate Test Causing Total Path Leakage And Overall Integrated Leakage To Be Above 0.6 La And 0.75 La Respectively**

EVENT DATE (5)			LER NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)																		
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	DOCKET NUMBER (5)																		
1	2	0	5	9	1	9	1	-	0	2	0	-	0	1	0	1	0	6	9	2	0	5	0	0	0		

OPERATING MODE (9) **5** THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR : (Check one or more of the following) (11)

POWER LEVEL (10)	20.402(b)	20.405(a)(1)(i)	20.405(a)(1)(ii)	20.405(a)(1)(iii)	20.405(a)(1)(iv)	20.405(a)(1)(v)	20.405(c)	50.36(c)(1)	50.36(c)(2)	50.73(a)(2)(i)	50.73(a)(2)(ii)	50.73(a)(2)(iii)	50.73(a)(2)(iv)	50.73(a)(2)(v)	50.73(a)(2)(vi)	50.73(a)(2)(vii)(A)	50.73(a)(2)(vii)(B)	50.73(a)(2)(x)	79.71(b)	79.71(c)	OTHER (Specify in Abstract below and in Text, NRC Form 366A)
<b>000</b>											<input checked="" type="checkbox"/>										

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER
<b>Merlin G. Williams - Manager Plant Support</b>	<b>316 364 - 8831</b>

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRC	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRC	
<b>X</b>	<b>B</b>	<b>I</b>	<b>I</b>	<b>S</b>	<b>V</b>	<b>F</b>	<b>1</b>	<b>3</b>	<b>0</b>	<b>Y</b>

SUPPLEMENTAL REPORT EXPECTED (14)

YES (If yes, complete EXPECTED SUBMISSION DATE)	NO	EXPECTED SUBMISSION DATE (16)	MONTH	DAY	YEAR
<input checked="" type="checkbox"/>	<input type="checkbox"/>				

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

On October 22, 1991, during Refueling Outage V, with all fuel removed from the core, the Control Room was informed that the total path Containment Local Leakage Rates for Type B and C tests was above the Technical Specification limit of 0.6 La. This was determined following the performance of a Local Leak Rate Test on Containment Isolation Valves EF HV032 and EF HV034. These valves, associated with Penetration 28, isolate Containment Air Coolers "B" and "D" from Essential Service Water Train "P". Also, these valves are normally open and receive an open signal on a Safety Injection Signal. On December 1, 1991, at 1600 CST, following calculations to determine the "as-found" condition for the Overall Containment Integrated Leakage Rate (ILR), it was determined that the overall ILR was greater than 1.0 La after factoring in the total path leakage for all applicable penetrations including Penetration 28.

The excessive leakage through valves EF HV032 and EF HV034 resulted from erosion/corrosion (E/C) of the valve discs. The valve discs were replaced. An evaluation of E/C damage to the newly installed discs will be conducted during the next refueling outage.

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TEXT (If more space is required, use additional NRC Form 360A's) (17)

**INTRODUCTION**

On October 22, 1991, at approximately 0510 CDT, with all fuel removed from the core, the Control Room was informed that the total path Containment Local Leakage Rates for Type B and C tests was above the Technical Specification limit of  $0.6 I_a$ . This was determined following the performance of a Local Leak Rate Test (LLRT) on Containment Isolation Valves EF HV032 and EF HV034 [BI-ISV]. These valves, located on both sides of Containment Penetration 28 [Figure 1], isolate Containment Air Coolers "B" and "D" from Essential Service Water (ESW) Train "B". This excessive leakage is being reported pursuant to 10 CFR 50.73(a)(2)(ii) as a degradation of a principal safety barrier.

On December 5, 1991, at 1600 CST, following calculations to determine the "as-found" condition for the Overall Containment Integrated Leakage Rate (ILR), it was determined that the ILR was greater than  $1.0 I_a$ . This excessive leakage is also being reported pursuant to 10 CFR 50.73(a)(2)(ii) as a degradation of a principal safety barrier.

**DESCRIPTION OF EVENT**

Appendix J of 10 CFR Part 50 requires that the combined leakage rate for all penetrations and valves subject to Type B and C tests shall be less than  $0.60 I_a$ . This equates to a leakage rate of 252,028 standard cubic centimeters per minute (scm). Containment Isolation Valves EF HV032 and EF HV034 are required to have a Type C leak test performed at least once per 24 months or prior to conducting any maintenance that can affect valve leakage characteristics. These valves are normally open and receive an open signal in the event a Safety Injection Signal is generated.

On October 22, 1991, during the performance of surveillance procedure STS PE-017-028, "Local Leak Rate Test for Containment Penetration 28", the test volume contained by valves EF HV032 and EF HV034 could not be pressurized to the required 48 pounds per square inch gauge (psig). This procedure is performed to determine the Containment Local Leakage Rates for Type B and C tests.

In order to quantify an actual leakage rate, which could be used as the minimum pathway leak rate for the Overall Containment Integrated Leak Rate Test and to determine which valve was leaking, a temporary change was made to STS PE-017-028 to allow testing of each valve individually. This temporary change required that valves GN V040 and GN V042, which are downstream of EF HV032 and EF HV034, be closed to provide a boundary for the test. However, after closing these valves and performing STS PE-017-028, the required pressure could still not be reached. It was determined that air was passing through GN V040 and GN V042. These valves are normally locked-open valves inside containment and are used to isolate the individual Containment Air Coolers from ESW.

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Wolf Creek Generating Station	0 5 0 0 0 4 8 2 9 1	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="width: 10%;">YEAR</th> <th style="width: 10%;">SEQUENTIAL NUMBER</th> <th style="width: 10%;">REVISION NUMBER</th> </tr> <tr> <td style="text-align: center;">-</td> <td style="text-align: center;">0 2 0</td> <td style="text-align: center;">-</td> </tr> </table>	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	-	0 2 0	-	0 3 OF 0 6
YEAR	SEQUENTIAL NUMBER	REVISION NUMBER							
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TEXT (If more space is required, use additional NRC Form 366A's) (17)

Since the required pressure could not be obtained, a blind flange was installed downstream of EF HV032 and EF HV034 but upstream of GN V040 and GN V042 [Figure 2]. This would allow the individual testing of the valves without the use of GN V040 and GN V042 as a test boundary. Although the required pressure could still not be obtained, a leak rate was obtained for each valve using a pressure decay method of calculating leakage. This method estimated the leakage for valve EF HV032 to be approximately 281,857  $\pm$  28,186 sccm. Valve EF HV034 had approximately 265,310  $\pm$  26,531 sccm leakage. This increased the total path leakage to 404,418 sccm which is above the the Technical Specification limit of 252,028 sccm. The failure to meet the Technical Specification LLRT limit is considered a degradation of a principal safety barrier.

On October 31, 1991, at approximately 2345 CST, following repairs to valve EF HV034, results of a LLRT revealed that the leakage through the valve was 0 sccm. Following repairs to valve EF HV032 on November 2, 1991, at approximately 0250 CST, leakage through the valve was calculated to be 2500 sccm. This reduced the total path leakage to 92,879 sccm for all penetrations and valves requiring Type B and C tests, which is below the Technical Specification limit of 252,028 sccm.

Additionally, Appendix J of 10 CFR Part 50 also requires that the Overall Containment ILR be less than 0.75  $L_a$ . On December 5, 1991, at 1600 CST, following calculations to determine the "as-found" condition for the Containment Integrated Leakage Rate Test, it was determined that the ILR was greater than 1.0  $L_a$ . It was determined that the ILR was greater than 1.0  $L_a$  after factoring in the total path leakage for all penetrations with the largest path leakage occurring from Penetration 28. This penetration was isolated during the Containment Integrated Leakage Rate Test and the "as-found" leakage was not determined until all of the applicable LLRTs were completed.

#### ROOT CAUSE AND CORRECTIVE ACTIONS

A subsequent investigation determined that the excessive leakage through valves EF HV032 and EF HV034 resulted from erosion/corrosion (E/C) of the valve discs. The valve discs were replaced.

Previous performances of STS PE-017-028 had not indicated that a degradation of valves EF HV032 and EF HV034 was occurring. However, an evaluation of E/C damage to the newly installed discs will be conducted during the next refueling outage.



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Technical Specification 4.6.1.2.b states, in part, that if any periodic Type A test fails to meet either  $0.75 L_a$  or  $0.75 L_t$ , the test schedule for subsequent Type A tests shall be reviewed and approved by the Commission. The current schedule for performing Type A tests is to conduct them during every other refueling outage which is approximately every three years. The test is scheduled to be performed during Refueling Outage VII in the fall of 1994. Wolf Creek Nuclear Operating Corporation intends to continue this same schedule for subsequent Type A tests based on the following:

1. The failure described in this report is a failure of the "as-found" Overall Containment Integrated Leakage Rate Test which was caused mainly by the leakage through one Containment Penetration. The repairing of valves EF HV032 and EF HV034 subsequent to finding excessive leakage has reduced the "as-left" Overall Containment ILR to less than  $0.75 L_a$  and therefore the "as-left" Overall Containment Integrated Leakage Rate Test passed.
2. The erosion/corrosion which caused the excessive leakage through valves EF HV032 and EF HV034 has been identified and inspections of the valve discs will be performed during the next refueling outage to ensure that these valves do not degrade to the same condition found during Refueling V.
3. A Type B test of each Containment Penetration is performed during each refueling outage. The Type B test for the Containment Penetration containing these two valves will ensure that they are not leaking excessively.
4. The overall condition of the Containment Building is very good. The Overall Containment Leakage Rate including this one Containment Penetration was approximately  $0.35 L_a$ .

ADDITIONAL INFORMATION

Although testing of EF HV032 and EF HV034 indicated leakage greater than  $0.6 L_a$ , this does not represent a significant condition adverse to safety. These valves are normally open valves and receive an open signal on a Safety Injection Signal. The valves are motor-operated and fail as-is. Therefore, in order to isolate ESW flow to Containment Air Coolers "B" and "D", operator action would be required. Containment Penetration isolation would only be necessary if a break occurred in the ESW piping on the inside of Containment.

Additionally, an LLRT was performed on valves EF HV031 and EF HV033, which isolate Containment Air Coolers "A" and "C" from ESW Train "A". This LLRT indicated that these valves had a leak rate of 35 sccm.

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The leakage identified in GN V040 and GN V042 is not a safety concern. These valves are normally locked open and are safety related because of their inclusion as a pressure boundary on a safety related line. In addition, the valve actuator is safety related to ensure that inadvertent closure of the valve does not occur which would preclude ESW flow to the Containment Coolers in an accident situation.

Licensee Event Reports 86-034-00, 87-023-00, 87-033-00, and 87-050-00 discuss previous similar occurrences of excessive primary containment leakage. The corrective actions taken in these reports were appropriate to those events and had no affect on this event.

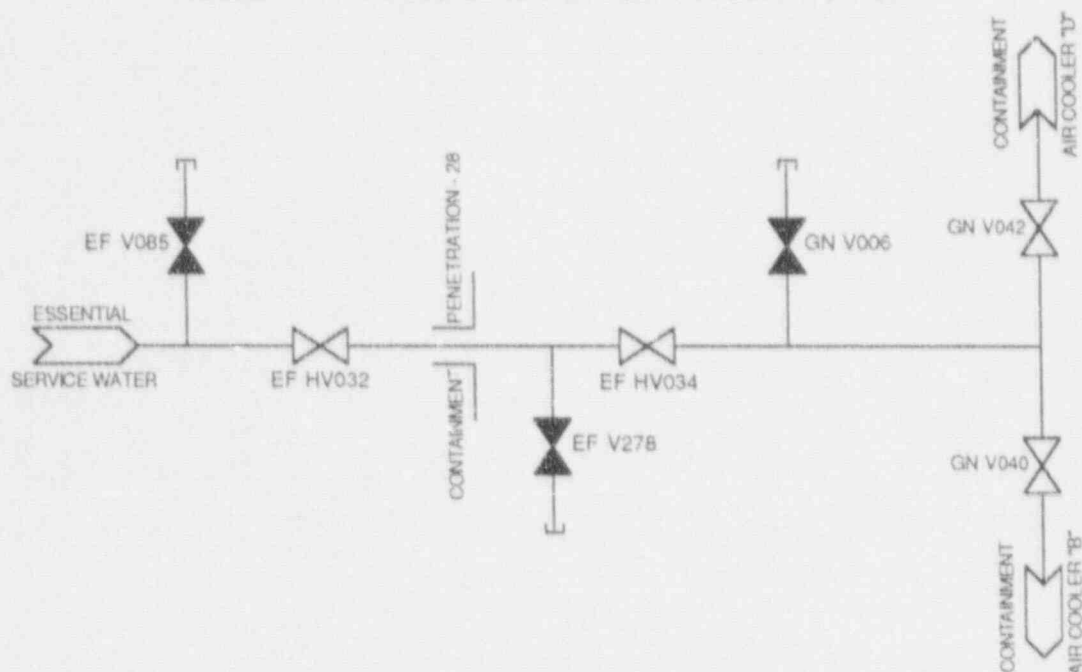
Valves EF HV032 and EF HV034 are Model 9220 butterfly valves and were manufactured by Fisher Controls Company.

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**FIGURE 1 - PIPING DIAGRAM FOR PENETRATION 28**



**FIGURE 2 - LOCAL LEAK RATE TEST WITH  
BLIND FLANGE FOR PENETRATION 28**

